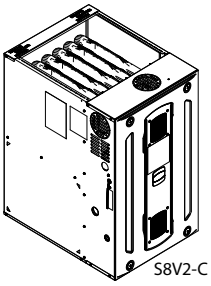
Installation, Operation, and Maintenance

Link Communicating or 24 Volt Gas-Fired 2 Stage Induced Draft Furnaces with Variable Speed Motor

Upflow, Downflow, Horizontal Right/Left
Two Stage

S8V2A040M3PCB
S8V2B060M4PCB
S8V2B080M4PCB
S8V2C080M5PCB
S8V2C100M5PCB
S8V2D120M5PCB


S8V2-C

Note: *Models that have a "D" in the 12th digit designating they meet California less than 40 ng/J (NOx) emissions requirements.*

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

⚠ WARNING

FIRE HAZARD!

Failure to follow this Warning could result in property damage, severe personal injury, or death.
This Warning applies to installations with a flammable refrigeration system. The furnace must be powered except for service. The furnace shall be installed and connected according to installation instructions and wiring diagrams that are provided with the evaporator coil.

S8V2-SVX001-1B-EN

Link™

The Diagnostics Mobile App is available by scanning a QR code located inside this unit or by searching for the Link Diagnostics App in your App Store.
When using the Link Communicating protocol, the furnace must be used with A/T HUI2360A200U thermostat and TSYS2C60A2VVU System Controller.*

⚠ 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.

August 2023 **S8V2-SVX001-1B-EN**

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. For vertical downflow applications, subbase (BAYBASE205) must be used between the furnace and combustible flooring.When the downflow furnace is installed vertically with a cased coil, a subbase is not required.

⚠ 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

EXPLOSION HAZARD!

Failure to follow this Warning could result in property damage, severe personal injury, or death.
Propane gas is heavier than air and may collect in any low areas or confined spaces. In addition, odorant fade may make the gas undetectable except with a warning device. If the gas furnace is installed in a basement, an excavated areas or a confined space, it is strongly recommended to contact a gas supplier to install a gas detecting warning device in case of leak. The manufacturer of your furnace does not test any detectors and makes no representations regarding any brand or type of detector.

⚠ 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 when setting up the system or during fault code recovery.

⚠ 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" during the finishing phases of construction until the requirements listed in the Furnace Installation Guidelines section have been met. Condensate in the presence of chlorides and fluorides from paint, varnish, stains, adhesives, cleaning compounds, and cement create a corrosive condition which may cause rapid deterioration of the heat exchanger.

⚠ 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.**

Table of Contents

Accessories

Table 1. Accessories

Model Number	Description	Use with
BAYHANG	Horizontal Hanging Kit	All Furnaces
BAYSENSC360	Supply Air Temperature Sensor	All Furnaces
BAYFURNPTKT	Return Air Static Pressure Sensor	All Furnaces
BAYLIFTB	Dual Return Kit (B size extension)	B Cabinet Furnaces
BAYLIFTC	Dual Return Kit (C size extension)	C Cabinet Furnaces
BAYLIFTD	Dual Return Kit (D size extension)	D Cabinet Furnaces
BAYBASE205	Downflow Subbase	All Furnaces in Downflow orientation
BAYFLTR203	Horizontal Filter Kit	B Cabinet Modular Blowers in Downflow/ Horizontal
BAYFLTR204	Horizontal Filter Kit	C Cabinet Modular Blowers in Downflow/ Horizontal
BAYFLTR205	Horizontal Filter Kit	D Cabinet Modular Blowers in Downflow/ Horizontal
BAYSF1165*[(a)]	1" SlimFit Box with MERV 4 Filter	All Furnaces
BAYSF1255*	1" SlimFit Filter and Insulated Frame	All furnaces when used in side return application B Cabinet furnaces only when in bottom return application
FLRSF1255	1" Filter replacement (Qty 12)	BAYSF1255*
BAYVENT600A	Internal venting kit	B, C, and D Furnaces in Downflow orientation
BAYVENT800B	Masonry Chimney Vent Kit	All furnaces
BAYSWT22AHALTAA	High Altitude Pressure Switch Kit	S8V2A040M3P*
BAYSWT16AHALTAB	High Altitude Pressure Switch Kit	S8V2C080M5P*
BAYSWT18AHALTAA	High Altitude Pressure Switch Kit	S8V2B080M4P*
BAYSWT19AHALTAA	High Altitude Pressure Switch Kit	S8V2C100M5P*
BAYSWT23AHALTAA	High Altitude Pressure Switch Kit	S8V2B060M4P*
BAYSWT24AHALTAA	High Altitude Pressure Switch Kit	S8V2D120M5P*
BAYLPSS400*	Propane Conversion Kit with Stainless Steel Burners	All Furnaces
PIP02095	U fitting for gas piping	All Furnaces for right hand gas entry
* Denotes latest revision.		

[(a)] Airflow greater than 1600 CFM requires dual returns

Part List

• Igniter	• Inducer Assembly	• Pressure Switch(es)
• Flame Sensor	• Blower Motor	• Main Thermal Limit
• In-shot Burner(s)	• Blower Wheel	• Roll-Out Switch(es)
• Gas Valve	• IFC (Integrated Furnace Control)	• Reverse Air Switch(es)

Product Specification

Model	**S8V2A040M3PCB[a]**	**S8V2B060M4PCB[a]**	**S8V2B080M4PCB[a]**
Type	Upflow / Horizontal / Downflow	Upflow / Horizontal / Downflow	Upflow / Horizontal / Downflow
RATINGS [b]			
1st Stage Input BTUH	26,000	39,000	52,000
1st Stage Capacity BTUH (ICS)	21,000	31,300	41,200
2nd Stage Input BTUH	40,000	60,000	80,000
2nd Stage Capacity BTUH (ICS) [c]	32,200	49,100	65,800
1st Stage Temp. Rise (Min. - Max.) °F	20 - 50	20 - 50	30 - 60
2nd Stage Temp. Rise (Min. - Max.) °F	30 - 60	30 - 60	30 - 60
AFUE (%) – Rating [c]	80	80	80
Return Air Temp. (Min. - Max.) °F	55°F - 80°F	55°F - 80°F	55°F - 80°F
BLOWER DRIVE	DIRECT	DIRECT	DIRECT
Diameter - Width (in.)	11 X 8	11 X 8	11 X 8
No. Used	1	1	1
Speeds (No.) [d]	Variable	Variable	Variable
CFM vs. in. w.g.	See Fan Performance Table	See Fan Performance Table	See Fan Performance Table
Motor HP	1/2	3/4	3/4
R.P.M.	Variable	Variable	Variable
Volts / Ph / Hz	120 / 1 / 60	120 / 1 / 60	120 / 1 / 60
FLA	6.4	8	8
COMBUSTION FAN - Type	PSC	PSC	PSC
Drive - No. Speeds	Direct - 2	Direct - 2	Direct - 2
Motor HP - RPM	3200/2700	3200/2700	3200/2900
Volts/Ph/Hz	120 / 1 / 60	120 / 1 / 60	120 / 1 / 60
FLA	0.30	0.30	0.33
Inducer Orifice	1.20	1.40	1.75
FILTER - Furnished?	No	No	No
Type Recommended	High Velocity	High Velocity	High Velocity
Hi Vel. (No.-Size-Thk.)	1 - 14 X 25 - 1 in.	1 - 16 X 25 - 1 in.	1 - 16 X 25 - 1 in.
VENT PIPE DIAMETER - Min. (in.)	4 Round	4 Round	4 Round
HEAT EXCHANGER - Type	Aluminized Steel	Aluminized Steel	Aluminized Steel
Gauge (Fired)	20 - 19	20 - 19	20 - 19
ORIFICES - Main			
Nat. Gas Qty. - Drill Size	2 - 45	3 - 45	4 - 45
L.P. Gas Qty. - Drill Size	2 - 56	3 - 56	4 - 56
GAS VALVE	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
BURNERS - QTY	2	3	4
POWER CONN. - V/Ph/HZ [e]	120 / 1 / 60	120 / 1 / 60	120 / 1 / 60
Ampacity (Amps)	8.5	10.5	10.5
Max. Overcurrent Protection (Amps)	15	15	15
PIPE CONN. SIZE (IN.)	1/2	1/2	1/2

Model	**S8V2C080M5PCB** [a]	**S8V2C100M5PCB**[a]	**S8V2D120M5PCB**[a]
Type	Upflow / Horizontal / Downflow	Upflow / Horizontal / Downflow	Upflow / Horizontal / Downflow
RATINGS [b]			
1st Stage Input BTUH	52,000	65,000	84,000
1st Stage Capacity BTUH (ICS)	41,800	52,300	67,900
2nd Stage Input BTUH	80,000	100,000	120,000
2nd Stage Capacity BTUH (ICS) [c]	64,800	81,200	98,000
1st Stage Temp. Rise (Min. - Max.) °F	30 - 60	25 - 55	30 - 60
2nd Stage Temp. Rise (Min. - Max.) °F	30 - 60	30 - 60	35 - 65
AFUE – Rating [c]	80	80	80
Return Air Temp. (Min. - Max.) °F	55°F - 80°F	55°F - 80°F	55°F - 80°F
BLOWER DRIVE	DIRECT	DIRECT	DIRECT
Diameter - Width (in.)	11 X 11	11 X 11	11 X 11
No. Used	1	1	1
Speeds (No.) [d]	Variable	Variable	Variable
CFM vs. in. w.g.	See Fan Performance Table	See Fan Performance Table	See Fan Performance Table
Motor HP	1	1	1
R.P.M.	Variable	Variable	Variable
Volts / Ph / Hz	120 / 1 / 60	120 / 1 / 60	120 / 1 / 60
FLA	10	10	10
COMBUSTION FAN - Type	PSC	PSC	PSC
Drive - No. Speeds	Direct - 2	Direct - 2	Direct - 2
Motor HP - RPM	3300/2700	3200/2900	3200/2900
Volts/Ph/Hz	120 / 1 / 60	120 / 1 / 60	120 / 1 / 60
FLA	0.30	0.33	0.33
Inducer Orifice	1.80	2.50	2.15
FILTER - Furnished?	No	No	No
Type Recommended	High Velocity	High Velocity	High Velocity
Hi Vel. (No.-Size-Thk.)	1 - 20 X 25 - 1 in.	1 - 20 X 25 - 1 in.	1 - 24 X 25 - 1 in.
VENT PIPE DIAMETER - Min. (in.)	4 Round	4 Round	4 Round
HEAT EXCHANGER - Type	Aluminized Steel	Aluminized Steel	Aluminized Steel
Gauge (Fired)	20 - 19	20 - 19	20 - 19
ORIFICES - Main			
Nat. Gas Qty. - Drill Size	4 - 45	5 - 45	6 - 45
L.P. Gas Qty. - Drill Size	4 - 56	5 - 56	6 - 56
GAS VALVE	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
BURNERS - QTY	4	5	6
POWER CONN. - V/Ph/HZ [e]	120 / 1 / 60	120 / 1 / 60	120 / 1 / 60
Ampacity (Amps)	13	13	13
Max. Overcurrent Protection (Amps)	15	15	15
PIPE CONN. SIZE (IN.)	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] Direct drive variable speed blower motor is an ECM constant airflow blower motor.
[e] The above wiring specifications are in accordance with National Electric Code, however, installations must comply with local codes.

Furnace Installation Guidelines

The following sections give general guidelines for the installation of the gas furnaces.

Safety Practices and Precautions

The following safety practices and precautions must be followed during the installation, servicing, and operation of this Furnace.

1. Use only with the type gas approved for this Furnace. Refer to the Furnace rating plate.
2. Install the Furnace only in a location and position as specified in “Locations and Clearances” of these instructions.
3. Provide adequate combustion and ventilation air to the Furnace space as specified in “Air for Combustion and Ventilation” of these instructions.
4. Combustion products must be discharged outdoors. Connect this Furnace to an approved vent system only, as specified in the “Venting” section of these instructions.
5. 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, as specified in the “Gas Piping” section of these instructions.
6. Always install the Furnace to operate within the Furnace’s intended temperature-rise range with a duct system which has an external static pressure within the allowable range, as specified on the unit rating plate. Airflow within temperature rise for cfm versus static is shown in the Airflow Tables section of these instructions.
7. When a Furnace is installed so that the supply ducts carry air circulated by the Furnace to areas outside the space containing the Furnace, the return air shall also be handled by a duct(s) sealed to the Furnace casing and terminating outside the space containing the Furnace.
8. A gas-fired Furnace for installation in a residential garage must be installed as specified in "Location and Clearances" section of these instructions.
9. The furnace may be used for temporary heating of buildings or structures under construction only when the following conditions have been met:
    a. The Furnace venting system must be complete and installed per manufacturer’s instructions.
    b. The Furnace is controlled only by a room Comfort Control (no field jumpers).
    c. The Furnace return air duct must be complete and sealed to the Furnace.
    d. The Furnace input rate and temperature rise must be verified to be within the nameplate marking.
    e. A minimum 4” MERV 11 air filter must be in place.
    f. 100% of the Furnace combustion air requirement must come from outside the structure.
    g. The Furnace return air temperature range is between 55 and 80 Fahrenheit.

        80% models = 55°F

        90%+ models = 45°F

    h. Clean the Furnace, duct work, and components upon substantial completion of the construction process, and verify Furnace operating conditions including ignition, input rate, temperature rise, and venting, according to the manufacturer’s instructions.
10. **In the Commonwealth of Massachusetts, this product must be gas piped by a Licensed Plumber or Gas Fitter.**

This Furnace is certified to leak 1% or less of nominal air conditioning CFM delivered when pressurized to .5” water column with all inlets, outlets, and drains sealed.

General Guidelines

The manufacturer assumes no responsibility for equipment installed in violation of any code or regulation.

It is recommended that Manual J of the Air Conditioning Contractors Association (ACCA) or A.R.I. 230 be followed in estimating heating requirements. When estimating heating requirements for installation at Altitudes above 2000 ft., remember the gas input must be reduced. See Combustion and Input Check.

Material in this shipment has been inspected at the factory and released to the transportation agency without known damage. Inspect exterior of carton for evidence of rough handling in shipment. Unpack carefully after moving equipment to approximate location. If damage to contents is found, report the damage immediately to the delivering agency.

Codes and local utility requirements governing the installation of gas fired equipment, wiring, plumbing, and flue connections must be adhered to. In the absence of local codes, the installation must conform with latest edition of the National Fuel Gas Code ANSI Z223.1 / NFPA 54. The latest code may be obtained from the American Gas Association Laboratories, 400 N. Capitol St. NW, Washington D.C. 20001. 202-824-7000 or www.aga.org.

These furnaces have been classified as Fan Assisted Combustion system CATEGORY I furnaces as required by ANSI Z21.47 "latest edition". Therefore they do not

require any special provisions for venting other than what is indicated in these instructions.

Warning: These furnaces are not approved or intended for installation in manufactured (mobile) housing, trailers, or recreational vehicles.

Locations and Clearances

The location of the Furnace is normally selected by the architect, the builder, or the installer.

However, before the Furnace is moved into place, be sure to consider the following requirements:

1. Is the location selected as near the chimney or vent and as centralized for heat distribution as practical?
2. Do all clearances between the Furnace and enclosure equal or exceed the minimums stated in Clearance Table below?

Minimum clearance to combustible materials

INSTALLATION CLEARANCE TO COMBUSTIBLE CONSTRUCTION

CLEARANCE IN INCHES.

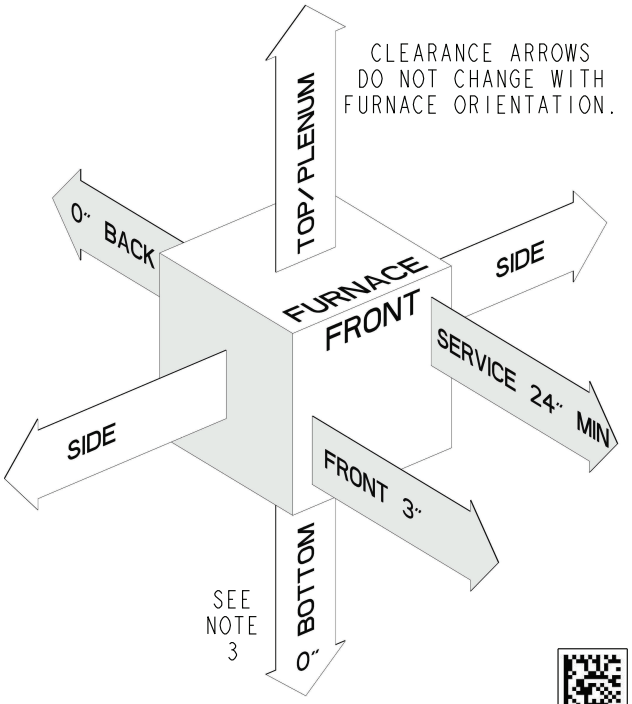
THIS FURNACE IS APPROVED FOR UPFLOW, DOWNFLOW AND HORIZONTAL APPLICATIONS.

FOR VERTICAL APPLICATIONS
14.5" CABINETS, ALL BTU: 0" SIDES, 1" TOP
17.5" CABINETS, ALL BTU: 0" SIDES, 1" TOP
21.0" CABINETS, ALL BTU: 0" SIDES, 1" TOP
24.5" CABINETS, ALL BTU: 0" SIDES, 1" TOP

FOR HORIZONTAL APPLICATIONS
14.5" CABINETS, ALL BTU: 1" SIDES, 2" TOP
17.5" CABINETS, ALL BTU: 1" SIDES, 2" TOP
21.0" CABINETS, ALL BTU: 1" SIDES, 3" TOP
24.5" CABINETS, ALL BTU: 1" SIDES, 5" TOP

NOTES:
1: MUST FOLLOW NATIONAL FUEL & GAS CODES FOR INSTALLS.
2: TYPE B VENT CLEARANCE IS 1".
3: MUST USE SPECIAL BASE (BAYBASE205) WHEN INSTALLING IN DOWNFLOW ORIENTATION ON COMBUSTIBLE FLOOR.

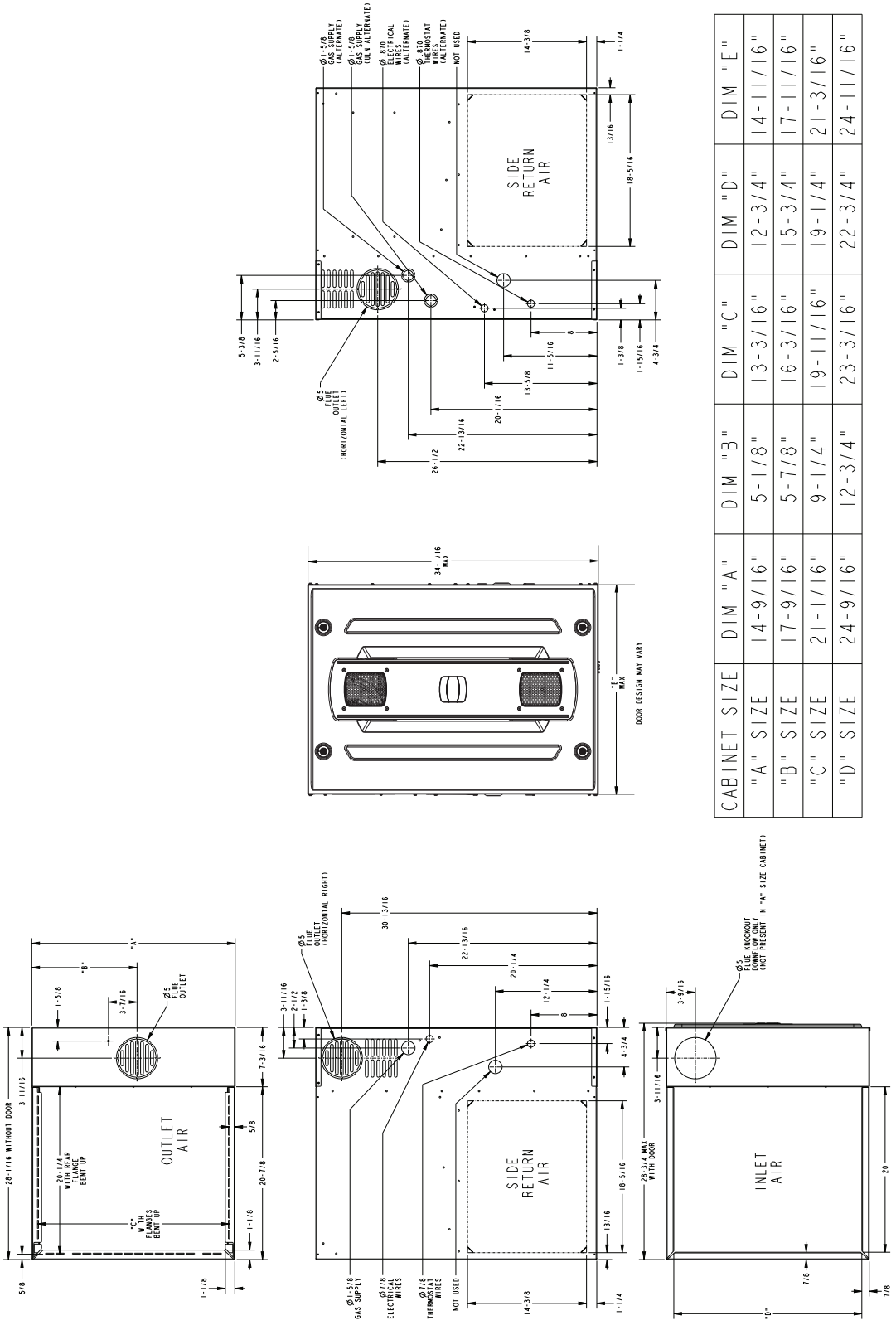
LINE CONTACT ONLY PERMISSIBLE BETWEEN LINES FORMED BY INTERSECTIONS OF THE TOP AND TWO SIDES OF THE FURNACE JACKET, AND BUILDING JOISTS, STUDS OR FRAMING.



3. Is there sufficient space for servicing the Furnace and other equipment? A minimum of 24 inches front accessibility to the Furnace must be provided. Any access door or panel must permit removal of the largest component.
4. Are there at least 3 inches of clearance between the Furnace combustion air openings in the front panel and any closed panel or door provided?
5. Are the ventilation and combustion air openings large enough and will they remain unobstructed? If outside air is used, are the openings set 12" above the highest snow accumulation level?
6. Allow sufficient height in supply plenum above the Furnace to provide for cooling coil installation, if the cooling coil is not installed at the time of this Furnace installation.
7. The Furnace shall be installed so electrical components are protected from water.
8. A vertical downflow furnace without a coil, must use BAYBASE205 when installed on combustible flooring.
9. If the Furnace is installed in a garage, it must be installed so that the burners, and the ignition source are located not less than 18 inches above the floor and the Furnace must be located or protected to avoid physical damage from vehicles.
10. The gas furnace must not be located where excessive exposure to contaminated combustion air will result in safety and performance related problems. Avoid the following known contaminants:
    a. Permanent wave solutions

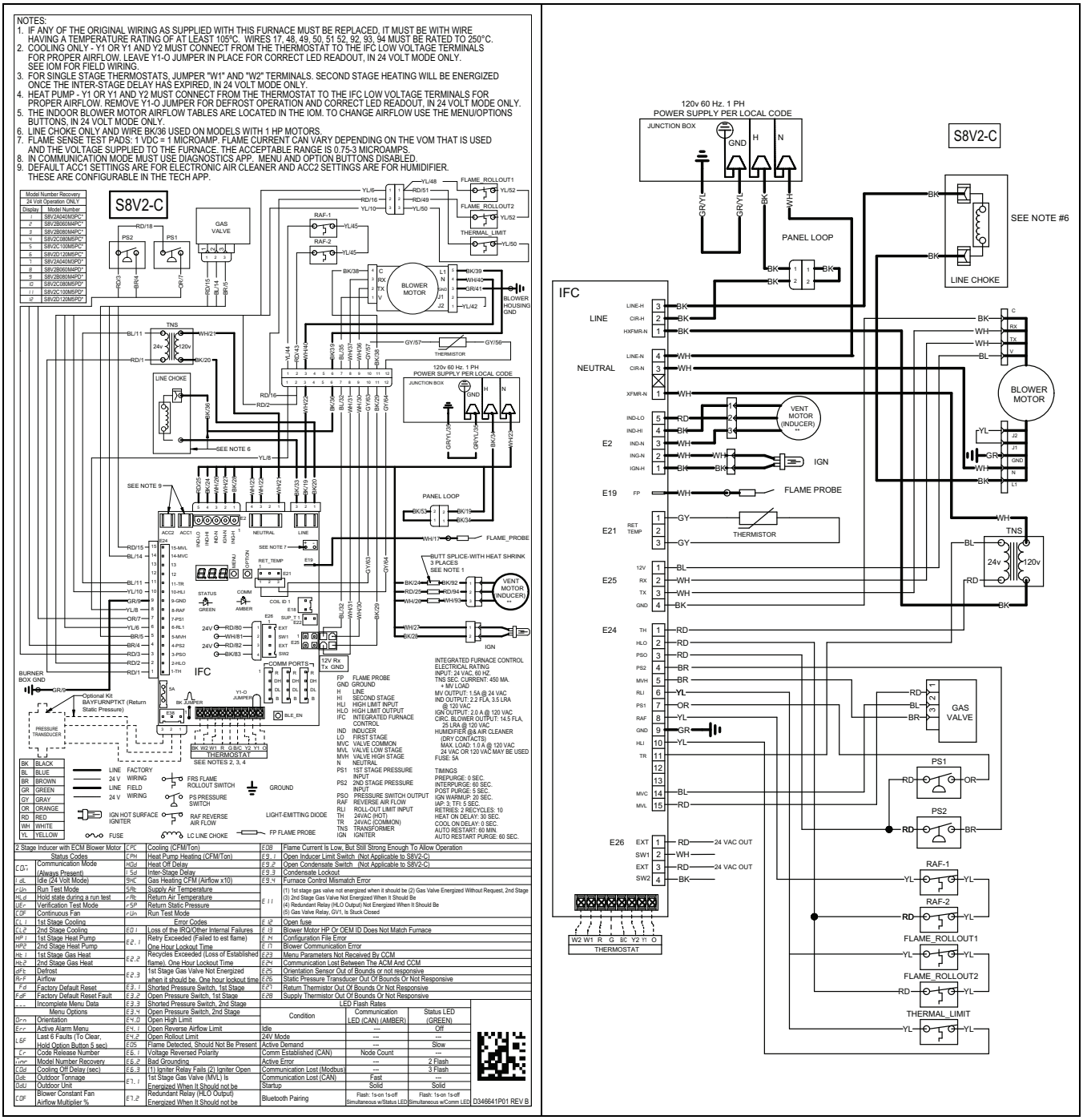
b. Chlorinated waxes and cleaners
c. Chlorine based swimming pool chemicals
d. Water softening chemicals
e. De-icing salts or chemicals
f. Carbon tetrachloride
g. Halogen type refrigerants
h. Cleaning solvents (such as perchloroethylene)
i. Printing inks, paint removers, varnishes, etc.
j. Hydrochloric acid
k. Cements and glues
l. Antistatic fabric softeners for clothes dryers
m. Masonry acid washing materials

Outline Drawing



CABINET SIZE	DIM "A"	DIM "B"	DIM "C"	DIM "D"	DIM "E"
"A" SIZE	14-9/16"	5-1/8"	13-3/16"	12-3/4"	14-11/16"
"B" SIZE	17-9/16"	5-7/8"	16-3/16"	15-3/4"	17-11/16"
"C" SIZE	21-1/16"	9-1/4"	19-11/16"	19-1/4"	21-3/16"
"D" SIZE	24-9/16"	12-3/4"	23-3/16"	22-3/4"	24-11/16"

Wiring Diagrams



2 Stage Inducer with ECM Blower Motor		CFC	Cooling (CFM/Ton)	E08	Flame Current Is Low, But Still Strong Enough To Allow Operation
Status Codes		CFH	Heat Pump Heating (CFM/Ton)	E9.1	Open Inducer Limit Switch (Not Applicable to S8V2-C)
CdE	Communication Mode (Always Present)	HOd	Heat Off Delay	E9.2	Open Condensate Switch (Not Applicable to S8V2-C)
Idl	Idle (24 Volt Mode)	Isd	Inter-Stage Delay	E9.3	Condensate Lockout
rUn	Run Test Mode	SHE	Gas Heating CFM (Airflow x10)	E9.4	Furnace Control Mismatch Error
HLd	Hold state during a run test	SFb	Supply Air Temperature	E11	(1) 1st stage gas valve not energized when it should be (2) Gas Valve Energized Without Request, 2nd Stage (3) 2nd Stage Gas Valve Not Energized When It Should Be (4) Redundant Relay (HLO Output) Not Energized When It Should Be (5) Gas Valve Relay, GV1, Is Stuck Closed
UEr	Verification Test Mode	rAt	Return Air Temperature		
COF	Continuous Fan	rSP	Return Static Pressure		
CL1	1st Stage Cooling	rUn	Run Test Mode		
CL2	2nd Stage Cooling	Error Codes		E12	Open fuse
HP1	1st Stage Heat Pump	ED1	Loss of the IRQ/Other Internal Failures	E13	Blower Motor HP Or OEM ID Does Not Match Furnace
HP2	2nd Stage Heat Pump	E2.1	Retry Exceeded (Failed to est flame)	E14	Configuration File Error
HL1	1st Stage Gas Heat	E2.2	One Hour Lockout Time	E15	Blower Communication Error
HL2	2nd Stage Gas Heat		Recycles Exceeded (Loss of Established flame). One Hour Lockout Time	E23	Menu Parameters Not Received By CCM
dFb	Defrost	E2.3	1st Stage Gas Valve Not Energized when it should be. One hour lockout time	E24	Communication Lost Between The ACM And CCM
AirF	Airflow			E25	Orientation Sensor Out of Bounds or not responsive
Fcd	Factory Default Reset	E3.1	Shorted Pressure Switch, 1st Stage	E26	Static Pressure Transducer Out Of Bounds Or Not Responsive
FdF	Factory Default Reset Fault	E3.2	Open Pressure Switch, 1st Stage	E27	Return Thermistor Out Of Bounds Or Not Responsive
...	Incomplete Menu Data	E3.3	Shorted Pressure Switch, 2nd Stage	E28	Supply Thermistor Out Of Bounds Or Not Responsive
Menu Options		E3.4	Open Pressure Switch, 2nd Stage	LED Flash Rates	
Orn	Orientation	E4.0	Open High Limit	Condition	Communication LED (CAN) (AMBER) / Status LED (GREEN)
Err	Active Alarm Menu	E4.1	Open Reverse Airflow Limit	Idle	--- / Off
LSF	Last 6 Faults (To Clear, Hold Option Button 5 sec)	E4.2	Open Rollout Limit	24V Mode	--- / ---
		E05	Flame Detected, Should Not Be Present	Active Demand	--- / Slow
Cr	Code Release Number	E6.1	Voltage Reversed Polarity	Comm Established (CAN)	Node Count / ---
mnr	Model Number Recovery	E6.2	Bad Grounding	Active Error	--- / 2 Flash
Cbd	Cooling Off Delay (sec)	E6.3	(1) Igniter Relay Fails (2) Igniter Open	Communication Lost (Modbus)	--- / 3 Flash
Odt	Outdoor Tonnage	E7.1	1st Stage Gas Valve (MVL) Is Energized When It Should not be	Communication Lost (CAN)	Fast / ---
OdU	Outdoor Unit			Startup	Solid / Solid
CDF	Blower Constant Fan Airflow Multiplier %	E7.2	Redundant Relay (HLO Output) Energized When It Should not be	Bluetooth Pairing	Flash: 1s-on 1s-off Simultaneous w/Status LED / Flash: 1s-on 1s-off Simultaneous w/Comm LED

D346641P01 REV B

Airflow Tables

Table 2. S8V2A040M3P Heating Airflow

S8V2A040M3P Furnace Heating Airflow (CFM), Temp. Rise (°F), and Power (Watts) vs. External Static Pressure with Filter (iwc)								
				1st Stage Capacity = 21,000 2nd Stage Capacity = 32,200				
Heating	Airflow Setting	Target Airflow		External Static Pressure				
				0.1	0.3	0.5	0.7	0.9
Heating 1st Stage	Low	427	CFM	458	459	460	461	462
			Temp. Rise	42	42	42	41	41
			Watts	23	55	87	119	151
	Medium Low[a]	506	CFM	521	522	524	525	527
			Temp. Rise	37	37	37	37	37
			Watts	30	64	98	132	166
	Medium	593	CFM	611	605	598	592	585
			Temp. Rise	32	33	33	33	34
			Watts	40	76	112	149	185
	High	672	CFM	694	680	667	653	639
			Temp. Rise	28	29	29	30	31
			Watts	50	88	126	164	202
Heating 2nd Stage	Low	540	CFM	605	601	596	591	586
			Temp. Rise	49	49	50	50	50
			Watts	32	71	109	148	187
	Medium Low [a]	640	CFM	660	661	662	663	664
			Temp. Rise	45	45	45	45	45
			Watts	44	84	125	165	206
	Medium	750	CFM	785	779	773	768	762
			Temp. Rise	39	39	39	39	40
			Watts	64	108	152	196	240
	High	850	CFM	898	887	875	863	851
			Temp. Rise	33	33	34	34	35
			Watts	82	130	177	224	272

[a] Factory setting.

Table 3. S8V2A040M3P Cooling Airflow

S8V2A040M3P Furnace Cooling Airflow (CFM) and Power (Watts) vs. External Static Pressure with Filter (iwc)							
Outdoor Tonnage - "Odt" (tons)	Airflow Setting - "CPC" (CFM/ton)		EXTERNAL STATIC PRESSURE (IN. W. C.)				
			0.1	0.3	0.5	0.7	0.9
1.5	450	CFM / WATTS	672 / 52	655 / 91	641 / 134	627 / 180	611 / 228
	420	CFM / WATTS	630 / 45	611 / 83	596 / 124	581 / 168	566 / 215
	400	CFM / WATTS	601 / 41	581 / 78	566 / 118	551 / 161	535 / 207
	370	CFM / WATTS	558 / 35	537 / 70	521 / 109	505 / 151	489 / 196
	350	CFM / WATTS	529 / 32	507 / 66	490 / 104	475 / 145	458 / 189
	330	CFM / WATTS	500 / 29	477 / 62	460 / 98	444 / 139	427 / 183
	310	CFM / WATTS	471 / 26	447 / 58	429 / 94	413 / 133	396 / 176
	290	CFM / WATTS	437 / 23	405 / 53	400 / 89	363 / 125	326 / 165
2.0	450	CFM / WATTS	869 / 93	863 / 142	852 / 193	823 / 240	800 / 291
	420	CFM / WATTS	827 / 82	814 / 128	803 / 177	790 / 228	776 / 281
	400	CFM / WATTS	790 / 74	776 / 118	764 / 166	751 / 215	736 / 267
	370	CFM / WATTS	734 / 63	718 / 105	705 / 150	692 / 198	677 / 248
	350	CFM / WATTS	690 / 55	680 / 96	646 / 136	632 / 181	628 / 233
	330	CFM / WATTS	658 / 49	640 / 88	626 / 131	612 / 176	596 / 224
	310	CFM / WATTS	620 / 44	601 / 81	586 / 122	571 / 166	555 / 213
	290	CFM / WATTS	582 / 38	562 / 74	546 / 114	531 / 157	515 / 202

Table 3. S8V2A040M3P Cooling Airflow (continued)

S8V2A040M3P Furnace Cooling Airflow (CFM) and Power (Watts) vs. External Static Pressure with Filter (iwc)							
Outdoor Tonnage - "Odt" (tons)	Airflow Setting - "CPC" (CFM/ton)		EXTERNAL STATIC PRESSURE (IN. W. C.)				
			0.1	0.3	0.5	0.7	0.9
2.5	450	CFM / WATTS	1087 / 163	1065 / 212	1074 / 278	1064 / 339	1052 / 402
	420	CFM / WATTS	1019 / 138	998 / 186	1004 / 248	993 / 306	981 / 366
	400	CFM / WATTS	974 / 123	953 / 171	945 / 225	922 / 277	902 / 331
	370	CFM / WATTS	898 / 101	886 / 149	876 / 200	848 / 248	825 / 300
	350	CFM / WATTS	859 / 90	848 / 137	837 / 187	824 / 240	810 / 294
	330	CFM / WATTS	813 / 79	800 / 124	788 / 173	775 / 223	761 / 276
	310	CFM / WATTS	766 / 69	752 / 112	739 / 159	726 / 208	711 / 259
	290	CFM / WATTS	719 / 60	704 / 101	690 / 146	677 / 193	661 / 243
3.0 [a]	450	CFM / WATTS	1288 / 255	1286 / 319	1282 / 386	1274 / 455	1264 / 525
	420	CFM / WATTS	1208 / 215	1205 / 276	1199 / 340	1191 / 405	1180 / 473
	400	CFM / WATTS	1155 / 190	1150 / 249	1144 / 311	1135 / 375	1124 / 440
	370	CFM / WATTS	1074 / 157	1068 / 213	1060 / 272	1050 / 332	1038 / 394
	350 [a]	CFM / WATTS	1019 / 138	1012 / 191	1004 / 248	993 / 306	981 / 366
	330	CFM / WATTS	965 / 120	956 / 171	947 / 226	936 / 282	923 / 340
	310	CFM / WATTS	910 / 104	900 / 153	889 / 205	878 / 259	864 / 315
	290	CFM / WATTS	854 / 89	843 / 136	832 / 186	820 / 238	805 / 292

[a] Factory setting.

Table 4. S8V2B060M4P Heating Airflow

S8V2B060M4P Furnace Heating Airflow (CFM), Temp. Rise (°F), and Power (Watts) vs. External Static Pressure with Filter (iwc)								
				1st Stage Capacity = 31,300 2nd Stage Capacity = 49,100				
Heating	Airflow Setting	Target Airflow		External Static Pressure				
				0.1	0.3	0.5	0.7	0.9
Heating 1st Stage	Low	711	CFM	690	687	684	681	678
			Temp. Rise	42	42	42	43	43
			Watts	44	83	122	161	200
	Medium Low [a]	830	CFM	808	812	816	820	824
			Temp. Rise	36	36	36	36	35
			Watts	63	107	151	194	238
	Medium	948	CFM	917	921	925	929	932
			Temp. Rise	32	32	32	32	32
			Watts	87	137	186	235	285
	High	1106	CFM	1063	1067	1070	1074	1077
			Temp. Rise	27	27	27	27	27
			Watts	119	176	233	289	347
Heating 2nd Stage	Low	900	CFM	880	880	879	878	877
			Temp. Rise	51	51	51	51	50
			Watts	71	121	172	223	273
	Medium Low [a]	1050	CFM	1037	1032	1027	1021	1016
			Temp. Rise	43	44	44	43	44
			Watts	108	162	216	269	323
	Medium	1200	CFM	1179	1175	1171	1168	1164
			Temp. Rise	39	39	39	39	39
			Watts	165	226	287	347	408
	High	1400	CFM	1367	1366	1364	1363	1361
			Temp. Rise	33	33	33	33	33
			Watts	240	311	381	451	522

[a] Factory setting.

Table 5. S8V2B060M4P Cooling Airflow

S8V2B060M4P Furnace Cooling Airflow (CFM) and Power (Watts) vs. External Static Pressure with Filter (iwc)							
Outdoor Tonnage - "Odt" (tons)	Airflow Setting - "CPC" (CFM/ton)		EXTERNAL STATIC PRESSURE (IN. W. C.)				
			0.1	0.3	0.5	0.7	0.9
1.5	450	CFM / WATTS	650 / 42	649 / 77	653 / 116	658 / 159	659 / 205
	420	CFM / WATTS	600 / 36	599 / 69	604 / 107	609 / 149	611 / 195
	400	CFM / WATTS	567 / 33	566 / 65	571 / 102	576 / 143	578 / 189
	370	CFM / WATTS	518 / 28	516 / 59	521 / 94	526 / 135	529 / 180
	350	CFM / WATTS	484 / 25	483 / 55	488 / 90	493 / 130	496 / 176
	330	CFM / WATTS	451 / 23	449 / 51	455 / 86	460 / 126	462 / 171
	310	CFM / WATTS	417 / 20	415 / 48	421 / 82	426 / 122	429 / 167
	290	CFM / WATTS	325 / 15	325 / 41	340 / 75	346 / 115	326 / 161
2.0	450	CFM / WATTS	892 / 81	892 / 124	895 / 171	898 / 220	899 / 272
	420	CFM / WATTS	828 / 69	828 / 110	832 / 154	835 / 202	836 / 252
	400	CFM / WATTS	785 / 61	785 / 101	789 / 144	792 / 190	793 / 240
	370	CFM / WATTS	720 / 51	720 / 89	724 / 130	728 / 174	729 / 222
	350	CFM / WATTS	677 / 45	676 / 81	681 / 121	685 / 164	686 / 212
	330	CFM / WATTS	633 / 40	632 / 74	637 / 113	641 / 155	643 / 202
	310	CFM / WATTS	589 / 35	588 / 68	593 / 105	598 / 147	600 / 193
	290	CFM / WATTS	545 / 31	544 / 62	549 / 98	554 / 139	556 / 185
2.5	450	CFM / WATTS	1127 / 142	1128 / 193	1131 / 248	1133 / 305	1132 / 365
	420	CFM / WATTS	1040 / 117	1042 / 165	1045 / 217	1047 / 271	1046 / 327
	400	CFM / WATTS	997 / 105	998 / 152	1001 / 202	1003 / 255	1003 / 310
	370	CFM / WATTS	918 / 87	919 / 131	922 / 178	925 / 228	925 / 281
	350	CFM / WATTS	865 / 76	865 / 118	869 / 164	872 / 212	873 / 264
	330	CFM / WATTS	812 / 66	812 / 106	816 / 150	819 / 197	820 / 247
	310	CFM / WATTS	758 / 57	758 / 95	762 / 138	766 / 183	767 / 232
	290	CFM / WATTS	704 / 49	703 / 86	708 / 126	712 / 170	713 / 218
3.0	450	CFM / WATTS	1355 / 228	1358 / 288	1360 / 352	1361 / 417	1358 / 485
	420	CFM / WATTS	1265 / 190	1267 / 247	1269 / 307	1270 / 369	1268 / 433
	400	CFM / WATTS	1204 / 167	1205 / 222	1208 / 279	1209 / 339	1208 / 402
	370	CFM / WATTS	1111 / 137	1113 / 188	1116 / 242	1117 / 299	1116 / 358
	350	CFM / WATTS	1049 / 119	1050 / 168	1053 / 220	1055 / 274	1055 / 331
	330	CFM / WATTS	987 / 103	987 / 149	991 / 199	993 / 251	993 / 306
	310	CFM / WATTS	923 / 88	924 / 132	927 / 180	930 / 230	930 / 283
	290	CFM / WATTS	860 / 75	860 / 117	864 / 162	867 / 211	867 / 262
3.5	450	CFM / WATTS	1576 / 345	1580 / 414	1582 / 486	1582 / 560	1578 / 636
	420	CFM / WATTS	1474 / 286	1477 / 351	1479 / 419	1479 / 489	1476 / 561
	400	CFM / WATTS	1405 / 251	1408 / 314	1410 / 379	1410 / 446	1408 / 516
	370	CFM / WATTS	1300 / 204	1302 / 262	1305 / 324	1305 / 387	1303 / 453
	350	CFM / WATTS	1229 / 177	1231 / 232	1234 / 291	1235 / 351	1233 / 414
	330	CFM / WATTS	1158 / 152	1159 / 204	1162 / 260	1163 / 319	1162 / 379
	310	CFM / WATTS	1085 / 129	1087 / 179	1090 / 232	1092 / 288	1091 / 346
	290	CFM / WATTS	1013 / 109	1014 / 157	1017 / 207	1019 / 261	1019 / 316
4.0 [a]	450	CFM / WATTS	1791 / 497	1795 / 575	1797 / 656	1796 / 739	1791 / 823
	420	CFM / WATTS	1677 / 411	1681 / 485	1683 / 561	1683 / 639	1678 / 719
	400	CFM / WATTS	1601 / 360	1604 / 430	1606 / 503	1606 / 578	1602 / 655
	370	CFM / WATTS	1484 / 291	1487 / 357	1489 / 425	1489 / 496	1486 / 568
	350[a]	CFM / WATTS	1405 / 251	1408 / 314	1410 / 379	1410 / 446	1408 / 516
	330	CFM / WATTS	1325 / 215	1327 / 274	1330 / 336	1331 / 401	1328 / 467
	310	CFM / WATTS	1244 / 182	1246 / 238	1249 / 297	1250 / 359	1248 / 422
	290	CFM / WATTS	1163 / 153	1164 / 206	1167 / 262	1169 / 321	1167 / 381

[a] Factory setting.

Table 6. S8V2B080M4P Heating Airflow

S8V2B080M4P Furnace Heating Airflow (CFM), Temp. Rise (°F), and Power (Watts) vs. External Static Pressure with Filter (iwc)								
				1st Stage Capacity = 41,200 2nd Stage Capacity = 65,800				
Heating	Airflow Setting	Target Airflow		External Static Pressure				
				0.1	0.3	0.5	0.7	0.9
Heating 1st Stage	Low	689	CFM	692	684	678	670	664
			Temp. Rise	56	56	57	57	58
			Watts	50	93	136	179	222
	Medium Low [a]	865	CFM	854	858	861	864	867
			Temp. Rise	45	45	45	45	45
			Watts	78	125	173	221	268
	Medium	956	CFM	947	941	936	930	924
			Temp. Rise	41	41	42	42	42
			Watts	100	151	201	252	302
	High	1040	CFM	1033	1019	1005	991	978
			Temp. Rise	37	38	38	39	40
			Watts	121	174	227	280	334
Heating 2nd Stage	Low	1060	CFM	1071	1068	1065	1061	1058
			Temp. Rise	56	56	56	56	57
			Watts	107	180	254	327	401
	Medium Low [a]	1330	CFM	1320	1318	1315	1313	1311
			Temp. Rise	45	45	45	45	45
			Watts	211	287	364	441	517
	Medium	1470	CFM	1460	1453	1446	1439	1432
			Temp. Rise	41	41	42	42	42
			Watts	305	383	460	538	615
	High	1600	CFM	1591	1579	1568	1556	1545
			Temp. Rise	38	38	38	38	38
			Watts	393	471	550	628	707

[a] Factory setting.

Table 7. S8V2B080M4P Cooling Airflow

S8V2B080M4P Furnace Cooling Airflow (CFM) and Power (Watts) vs. External Static Pressure with Filter (iwc)							
Outdoor Tonnage - "Odt" (tons)	Airflow Setting - "CPC" (CFM/ton)		EXTERNAL STATIC PRESSURE (IN. W. C.)				
			0.1	0.3	0.5	0.7	0.9
1.5	450	CFM / WATTS	692 / 42	684 / 78	678 / 119	672 / 163	667 / 212
	420	CFM / WATTS	647 / 37	639 / 71	632 / 110	626 / 153	621 / 201
	400	CFM / WATTS	617 / 33	609 / 66	602 / 105	596 / 147	591 / 194
	370	CFM / WATTS	572 / 28	563 / 60	556 / 97	550 / 139	545 / 185
	350	CFM / WATTS	542 / 26	533 / 56	526 / 92	520 / 134	515 / 180
	330	CFM / WATTS	512 / 23	502 / 53	495 / 88	489 / 129	484 / 175
	310	CFM / WATTS	481 / 21	472 / 49	465 / 84	459 / 125	453 / 170
	290	CFM / WATTS	450 / 18	443 / 46	450 / 82	450 / 123	417 / 166
2.0	450	CFM / WATTS	915 / 82	909 / 126	903 / 175	897 / 226	893 / 281
	420	CFM / WATTS	856 / 69	849 / 112	843 / 158	838 / 207	833 / 260
	400	CFM / WATTS	817 / 62	809 / 103	803 / 147	798 / 195	793 / 247
	370	CFM / WATTS	757 / 52	749 / 90	743 / 133	737 / 179	732 / 229
	350	CFM / WATTS	717 / 46	709 / 83	703 / 124	697 / 169	692 / 218
	330	CFM / WATTS	677 / 40	669 / 76	662 / 116	657 / 160	652 / 208
	310	CFM / WATTS	637 / 35	629 / 69	622 / 108	616 / 151	611 / 199
	290	CFM / WATTS	597 / 31	589 / 63	582 / 101	576 / 143	571 / 190
2.5	450	CFM / WATTS	1135 / 143	1130 / 196	1124 / 253	1120 / 312	1115 / 375
	420	CFM / WATTS	1062 / 119	1056 / 170	1050 / 224	1045 / 281	1041 / 340
	400	CFM / WATTS	1013 / 106	1007 / 154	1002 / 206	997 / 261	992 / 319
	370	CFM / WATTS	940 / 87	933 / 133	927 / 182	922 / 235	917 / 290
	350	CFM / WATTS	891 / 76	884 / 120	878 / 167	872 / 218	868 / 272
	330	CFM / WATTS	841 / 66	834 / 108	828 / 154	823 / 203	818 / 255
	310	CFM / WATTS	792 / 57	784 / 97	778 / 141	772 / 188	768 / 239
	290	CFM / WATTS	742 / 49	734 / 87	728 / 129	722 / 175	717 / 225

Table 7. S8V2B080M4P Cooling Airflow (continued)

S8V2B080M4P Furnace Cooling Airflow (CFM) and Power (Watts) vs. External Static Pressure with Filter (iwc)							
Outdoor Tonnage - "Odt" (tons)	Airflow Setting - "CPC" (CFM/ton)		EXTERNAL STATIC PRESSURE (IN. W. C.)				
			0.1	0.3	0.5	0.7	0.9
3.0	450	CFM / WATTS	1353 / 230	1348 / 292	1343 / 358	1339 / 426	1335 / 496
	420	CFM / WATTS	1266 / 192	1261 / 250	1256 / 312	1252 / 377	1247 / 444
	400	CFM / WATTS	1208 / 169	1203 / 225	1198 / 285	1193 / 347	1189 / 412
	370	CFM / WATTS	1121 / 138	1115 / 191	1110 / 247	1105 / 306	1101 / 367
	350	CFM / WATTS	1062 / 120	1056 / 170	1051 / 224	1046 / 281	1041 / 340
	330	CFM / WATTS	1004 / 103	997 / 151	992 / 203	987 / 258	982 / 315
	310	CFM / WATTS	945 / 88	938 / 134	932 / 184	927 / 236	922 / 292
	290	CFM / WATTS	886 / 75	879 / 119	873 / 166	867 / 216	863 / 270
3.5	450	CFM / WATTS	1568 / 349	1564 / 420	1559 / 494	1556 / 571	1552 / 650
	420	CFM / WATTS	1468 / 289	1463 / 356	1459 / 427	1455 / 499	1451 / 574
	400	CFM / WATTS	1401 / 253	1396 / 318	1392 / 385	1387 / 455	1383 / 528
	370	CFM / WATTS	1300 / 206	1295 / 266	1290 / 330	1286 / 396	1282 / 464
	350	CFM / WATTS	1232 / 178	1227 / 235	1222 / 296	1218 / 359	1213 / 425
	330	CFM / WATTS	1165 / 153	1159 / 207	1154 / 265	1149 / 326	1145 / 389
	310	CFM / WATTS	1096 / 130	1091 / 182	1085 / 237	1080 / 295	1076 / 356
	290	CFM / WATTS	1028 / 110	1022 / 159	1016 / 212	1011 / 267	1007 / 325
4.0 [a]	450	CFM / WATTS	1780 / 503	1776 / 584	1773 / 667	1769 / 753	1766 / 841
	420	CFM / WATTS	1667 / 416	1663 / 492	1659 / 570	1656 / 651	1652 / 734
	400	CFM / WATTS	1592 / 364	1587 / 436	1583 / 512	1579 / 590	1576 / 670
	370	CFM / WATTS	1477 / 294	1473 / 362	1469 / 433	1464 / 506	1461 / 581
	350 [a]	CFM / WATTS	1401 / 253	1396 / 318	1392 / 385	1387 / 455	1383 / 528
	330	CFM / WATTS	1324 / 217	1319 / 278	1314 / 342	1310 / 409	1306 / 478
	310	CFM / WATTS	1247 / 184	1242 / 242	1237 / 303	1232 / 367	1228 / 433
	290	CFM / WATTS	1169 / 154	1164 / 209	1159 / 267	1154 / 328	1150 / 392

[a] Factory setting.

Table 8. S8V2C080M5P Heating Airflow

S8V2C080M5P Furnace Heating Airflow (CFM), Temp. Rise (°F), and Power (Watts) vs. External Static Pressure with Filter (iwc)								
				1st Stage Capacity = 41,800 2nd Stage Capacity = 64,800				
Heating	Airflow Setting	Target Airflow		External Static Pressure				
				0.1	0.3	0.5	0.7	0.9
Heating 1st Stage	Low	748	CFM	771	741	711	682	652
			Temp. Rise	50	52	54	56	58
			Watts	46	90	134	178	221
	Medium Low [a]	878	CFM	879	854	830	805	781
			Temp. Rise	44	45	46	47	48
			Watts	59	116	174	232	290
	Medium	943	CFM	958	948	938	929	919
			Temp. Rise	40	41	41	42	42
			Watts	70	132	194	256	318
	High	1073	CFM	1035	1026	1016	1007	997
			Temp. Rise	37	38	38	39	40
			Watts	90	150	210	271	331
Heating 2nd Stage	Low	1150	CFM	1175	1159	1142	1126	1109
			Temp. Rise	50	51	52	53	53
			Watts	105	174	243	312	381
	Medium Low[a]	1350	CFM	1387	1373	1359	1345	1331
			Temp. Rise	43	43	43	44	44
			Watts	154	243	333	422	512
	Medium	1450	CFM	1446	1444	1443	1441	1439
			Temp. Rise	41	41	41	41	41
			Watts	94	215	336	457	577
	High	1650	CFM	1642	1621	1601	1580	1560
			Temp. Rise	36	36	37	37	38
			Watts	279	373	467	561	655

[a] Factory setting.

Table 9. S8V2C080M5P Cooling Airflow

S8V2C080M5P Furnace Cooling Airflow (CFM) and Power (Watts) vs. External Static Pressure with Filter (iwc)							
Outdoor Tonnage - "Odt" (tons)	Airflow Setting - "CPC" (CFM/ton)		EXTERNAL STATIC PRESSURE (IN. W. C.)				
			0.1	0.3	0.5	0.7	0.9
2.5	450	CFM / WATTS	1057 / 107	1057 / 168	1055 / 231	1051 / 296	1047 / 363
	420	CFM / WATTS	982 / 91	980 / 149	976 / 209	972 / 270	968 / 334
	400	CFM / WATTS	932 / 82	928 / 137	924 / 194	919 / 254	914 / 316
	370	CFM / WATTS	856 / 69	850 / 121	844 / 174	838 / 231	832 / 290
	350	CFM / WATTS	806 / 62	797 / 111	790 / 162	783 / 217	777 / 274
	330	CFM / WATTS	755 / 55	744 / 101	735 / 151	728 / 204	721 / 260
	310	CFM / WATTS	704 / 48	691 / 92	681 / 140	672 / 191	665 / 246
	290	CFM / WATTS	652 / 42	637 / 84	625 / 130	616 / 180	608 / 233
3.0	450	CFM / WATTS	1279 / 164	1284 / 237	1285 / 311	1283 / 387	1280 / 463
	420	CFM / WATTS	1190 / 139	1194 / 207	1194 / 277	1192 / 348	1188 / 421
	400	CFM / WATTS	1131 / 124	1133 / 189	1132 / 256	1130 / 324	1126 / 394
	370	CFM / WATTS	1042 / 104	1041 / 164	1039 / 227	1036 / 291	1032 / 357
	350	CFM / WATTS	982 / 91	980 / 149	976 / 209	972 / 270	968 / 334
	330	CFM / WATTS	922 / 80	918 / 135	913 / 192	908 / 251	903 / 312
	310	CFM / WATTS	861 / 70	855 / 122	849 / 176	843 / 232	838 / 292
	290	CFM / WATTS	800 / 61	792 / 110	784 / 161	778 / 215	771 / 273
3.5	450	CFM / WATTS	1498 / 238	1505 / 324	1508 / 410	1507 / 497	1504 / 585
	420	CFM / WATTS	1396 / 201	1402 / 281	1404 / 362	1404 / 443	1401 / 525
	400	CFM / WATTS	1328 / 179	1333 / 255	1335 / 332	1334 / 410	1331 / 489
	370	CFM / WATTS	1225 / 148	1229 / 219	1229 / 290	1227 / 363	1224 / 437
	350	CFM / WATTS	1156 / 130	1158 / 197	1158 / 265	1156 / 334	1152 / 405
	330	CFM / WATTS	1087 / 114	1087 / 176	1086 / 241	1083 / 307	1079 / 375
	310	CFM / WATTS	1017 / 98	1016 / 158	1013 / 219	1009 / 282	1005 / 347
	290	CFM / WATTS	947 / 85	944 / 141	939 / 198	935 / 259	930 / 321
4.0	450	CFM / WATTS	1714 / 332	1721 / 431	1724 / 530	1724 / 629	1720 / 728
	420	CFM / WATTS	1599 / 279	1607 / 371	1609 / 463	1609 / 556	1606 / 649
	400	CFM / WATTS	1522 / 247	1529 / 335	1532 / 422	1532 / 511	1529 / 599
	370	CFM / WATTS	1406 / 204	1412 / 285	1414 / 366	1414 / 448	1411 / 531
	350	CFM / WATTS	1328 / 179	1333 / 255	1335 / 332	1334 / 410	1331 / 489
	330	CFM / WATTS	1250 / 155	1254 / 227	1254 / 300	1253 / 374	1250 / 449
	310	CFM / WATTS	1171 / 134	1173 / 201	1173 / 270	1171 / 340	1168 / 412
	290	CFM / WATTS	1091 / 115	1092 / 178	1091 / 243	1088 / 309	1084 / 377
4.5	450	CFM / WATTS	1926 / 449	1933 / 561	1935 / 672	1934 / 784	1929 / 895
	420	CFM / WATTS	1799 / 376	1807 / 480	1809 / 584	1808 / 688	1805 / 792
	400	CFM / WATTS	1714 / 332	1721 / 431	1724 / 530	1724 / 629	1720 / 728
	370	CFM / WATTS	1585 / 273	1592 / 364	1595 / 455	1595 / 547	1592 / 639
	350	CFM / WATTS	1498 / 238	1505 / 324	1508 / 410	1507 / 497	1504 / 585
	330	CFM / WATTS	1411 / 206	1417 / 287	1419 / 368	1418 / 450	1416 / 534
	310	CFM / WATTS	1323 / 177	1328 / 253	1330 / 330	1329 / 407	1326 / 486
	290	CFM / WATTS	1235 / 151	1239 / 222	1239 / 294	1238 / 367	1234 / 442
5.0 [a]	450	CFM / WATTS	2135 / 590	2140 / 715	2141 / 839	2137 / 964	2131 / 1088
	420	CFM / WATTS	1996 / 493	2003 / 609	2004 / 725	2002 / 841	1997 / 956
	400	CFM / WATTS	1903 / 435	1910 / 545	1912 / 655	1911 / 765	1906 / 875
	370	CFM / WATTS	1761 / 356	1769 / 458	1772 / 559	1771 / 661	1767 / 763
	350 [a]	CFM / WATTS	1666 / 310	1674 / 405	1677 / 501	1676 / 501	1673 / 694
	330	CFM / WATTS	1570 / 267	1578 / 357	1580 / 448	1580 / 538	1577 / 630
	310	CFM / WATTS	1474 / 229	1481 / 313	1483 / 398	1483 / 484	1480 / 570
	290	CFM / WATTS	1377 / 194	1383 / 273	1385 / 353	1384 / 433	1381 / 515

[a] Factory setting.

Table 10. S8V2C100M5P Heating Airflow

S8V2C100M5P Furnace Heating Airflow (CFM), Temp. Rise (°F), and Power (Watts) vs. External Static Pressure with Filter (iwc)								
				1st Stage Capacity = 52,300 2nd Stage Capacity = 81,200				
Heating	Airflow Setting	Target Airflow		External Static Pressure				
				0.1	0.3	0.5	0.7	0.9
Heating 1st Stage	Low	979	CFM	1014	998	981	966	950
			Temp. Rise	48	49	50	51	51
			Watts	77	139	200	261	322
	Medium Low	1080	CFM	1103	1093	1083	1073	1062
			Temp. Rise	44	44	45	45	46
			Watts	98	163	228	294	359
	Medium [a]	1188	CFM	1202	1190	1177	1165	1153
			Temp. Rise	41	41	41	42	42
			Watts	119	188	257	327	397
	High	1296	CFM	1332	1314	1296	1278	1260
			Temp. Rise	37	37	38	38	39
			Watts	156	229	302	376	449
Heating 2nd Stage	Low	1360	CFM	1401	1393	1385	1377	1369
			Temp. Rise	54	54	54	54	54
			Watts	164	249	334	419	503
	Medium Low	1500	CFM	1537	1523	1509	1495	1482
			Temp. Rise	49	49	49	50	50
			Watts	223	313	404	494	585
	Medium [a]	1650	CFM	1673	1667	1661	1654	1649
			Temp. Rise	45	45	45	45	45
			Watts	285	381	478	575	671
	High	1800	CFM	1825	1819	1812	1806	1800
			Temp. Rise	42	41	41	42	42
			Watts	371	480	588	696	805

[a] Factory setting.

Table 11. S8V2C100M5P Cooling Airflow

S8V2C100M5P Furnace Cooling Airflow (CFM) and Power (Watts) vs. External Static Pressure with Filter (iwc)							
Outdoor Tonnage - "Odt" (tons)	Airflow Setting - "CPC" (CFM/ton)		EXTERNAL STATIC PRESSURE (IN. W. C.)				
			0.1	0.3	0.5	0.7	0.9
2.5	450	CFM / WATTS	1120 / 108	1119 / 167	1115 / 229	1109 / 294	1101 / 360
	420	CFM / WATTS	1043 / 92	1041 / 148	1036 / 207	1030 / 268	1021 / 332
	400	CFM / WATTS	992 / 83	989 / 136	984 / 193	976 / 252	968 / 315
	370	CFM / WATTS	915 / 70	910 / 120	904 / 173	895 / 230	886 / 290
	350	CFM / WATTS	863 / 62	857 / 110	850 / 161	841 / 216	831 / 275
	330	CFM / WATTS	811 / 55	804 / 100	795 / 150	786 / 204	776 / 261
	310	CFM / WATTS	759 / 48	750 / 92	741 / 140	730 / 192	719 / 248
	290	CFM / WATTS	706 / 42	696 / 84	686 / 130	674 / 181	663 / 236
3.0	450	CFM / WATTS	1346 / 166	1348 / 236	1346 / 309	1341 / 383	1335 / 458
	420	CFM / WATTS	1256 / 140	1257 / 207	1254 / 275	1249 / 345	1243 / 417
	400	CFM / WATTS	1196 / 125	1196 / 188	1193 / 254	1187 / 321	1180 / 391
	370	CFM / WATTS	1104 / 104	1103 / 163	1099 / 225	1093 / 288	1085 / 355
	350	CFM / WATTS	1043 / 92	1041 / 148	1036 / 207	1030 / 268	1021 / 332
	330	CFM / WATTS	982 / 81	979 / 134	973 / 190	965 / 249	957 / 311
	310	CFM / WATTS	920 / 70	916 / 121	909 / 174	901 / 231	892 / 292
	290	CFM / WATTS	858 / 61	852 / 109	844 / 160	835 / 215	825 / 274
3.5	450	CFM / WATTS	1568 / 242	1571 / 324	1570 / 407	1566 / 492	1560 / 577
	420	CFM / WATTS	1465 / 204	1467 / 281	1466 / 359	1462 / 438	1456 / 519
	400	CFM / WATTS	1396 / 181	1398 / 254	1396 / 329	1392 / 405	1386 / 483
	370	CFM / WATTS	1291 / 150	1292 / 218	1290 / 287	1285 / 359	1279 / 432
	350	CFM / WATTS	1221 / 131	1221 / 196	1218 / 262	1213 / 331	1206 / 401
	330	CFM / WATTS	1150 / 114	1150 / 175	1146 / 239	1140 / 304	1133 / 372
	310	CFM / WATTS	1079 / 99	1078 / 157	1073 / 217	1067 / 280	1059 / 345
	290	CFM / WATTS	1007 / 85	1005 / 140	999 / 197	992 / 257	984 / 320

Table 11. S8V2C100M5P Cooling Airflow (continued)

S8V2C100M5P Furnace Cooling Airflow (CFM) and Power (Watts) vs. External Static Pressure with Filter (iwc)							
Outdoor Tonnage - "Odt" (tons)	Airflow Setting - "CPC" (CFM/ton)		EXTERNAL STATIC PRESSURE (IN. W. C.)				
			0.1	0.3	0.5	0.7	0.9
4.0	450	CFM / WATTS	1785 / 339	1788 / 433	1787 / 527	1784 / 623	1778 / 719
	420	CFM / WATTS	1670 / 284	1673 / 372	1672 / 460	1669 / 550	1663 / 640
	400	CFM / WATTS	1592 / 252	1595 / 335	1594 / 419	1591 / 505	1585 / 592
	370	CFM / WATTS	1475 / 207	1477 / 284	1476 / 363	1472 / 443	1466 / 524
	350	CFM / WATTS	1396 / 181	1398 / 254	1396 / 329	1392 / 405	1386 / 483
	330	CFM / WATTS	1316 / 157	1318 / 226	1315 / 297	1311 / 370	1304 / 444
	310	CFM / WATTS	1236 / 135	1237 / 200	1234 / 267	1229 / 337	1222 / 408
	290	CFM / WATTS	1155 / 116	1155 / 177	1151 / 240	1146 / 306	1138 / 374
4.5	450	CFM / WATTS	1997 / 459	2000 / 564	1998 / 671	1994 / 777	1988 / 885
	420	CFM / WATTS	1870 / 384	1873 / 482	1872 / 582	1869 / 681	1863 / 782
	400	CFM / WATTS	1785 / 339	1788 / 433	1787 / 527	1784 / 623	1778 / 719
	370	CFM / WATTS	1655 / 278	1658 / 365	1658 / 452	1654 / 541	1648 / 631
	350	CFM / WATTS	1568 / 242	1571 / 324	1570 / 407	1566 / 492	1560 / 577
	330	CFM / WATTS	1479 / 209	1482 / 286	1481 / 365	1477 / 445	1471 / 527
	310	CFM / WATTS	1391 / 179	1393 / 252	1391 / 327	1387 / 403	1381 / 480
	290	CFM / WATTS	1301 / 153	1302 / 221	1300 / 291	1296 / 363	1289 / 437
5.0 [a]	450	CFM / WATTS	2204 / 604	2206 / 722	2203 / 840	2198 / 958	2191 / 1077
	420	CFM / WATTS	2067 / 504	2069 / 614	2067 / 724	2063 / 835	2056 / 946
	400	CFM / WATTS	1974 / 444	1976 / 549	1975 / 653	1971 / 759	1965 / 865
	370	CFM / WATTS	1832 / 363	1835 / 460	1835 / 557	1831 / 655	1825 / 754
	350 [a]	CFM / WATTS	1737 / 315	1740 / 406	1739 / 498	1736 / 591	1730 / 685
	330	CFM / WATTS	1641 / 272	1644 / 358	1643 / 445	1639 / 533	1634 / 622
	310	CFM / WATTS	1543 / 232	1546 / 313	1545 / 395	1542 / 478	1536 / 563
	290	CFM / WATTS	1445 / 197	1447 / 273	1446 / 350	1442 / 428	1436 / 509

[a] Factory setting.

Table 12. S8V2D120M5P Heating Airflow

S8V2D120M5P Furnace Heating Airflow (CFM), Temp. Rise (°F), and Power (Watts) vs. External Static Pressure with Filter (iwc)								
				1st Stage Capacity = 67,900 2nd Stage Capacity = 98,000				
Heating	Airflow Setting	Target Airflow		External Static Pressure				
				0.1	0.3	0.5	0.7	0.9
Heating 1st Stage	Low	1155	CFM	1223	1238	1254	1270	1286
			Temp. Rise	52	51	51	50	49
			Watts	103	173	243	313	384
	Medium Low [a]	1340	CFM	1398	1421	1443	1466	1488
			Temp. Rise	44	44	44	43	43
			Watts	149	229	310	390	471
	Medium	1450	CFM	1496	1510	1525	1540	1555
			Temp. Rise	42	41	41	41	41
			Watts	181	264	347	430	513
	High	1540	CFM	1629	1633	1638	1642	1647
			Temp. Rise	39	38	38	38	38
			Watts	225	312	398	484	571
Heating 2nd Stage	Low	1500	CFM	1597	1603	1608	1613	1619
			Temp. Rise	56	56	56	55	55
			Watts	200	294	388	482	575
	Medium Low [a]	1740	CFM	1822	1832	1843	1854	1865
			Temp. Rise	50	49	49	49	48
			Watts	296	405	514	624	733
	Medium	1850	CFM	1916	1930	1944	1958	1972
			Temp. Rise	47	46	46	46	45
			Watts	366	484	602	721	839
	High	2000	CFM	2045	2064	2082	2101	2120
			Temp. Rise	44	44	43	43	42
			Watts	463	593	723	854	983

[a] Factory setting.

Table 13. S8V2D120M5P Cooling Airflow

S8V2D120M5P Furnace Cooling Airflow (CFM) and Power (Watts) vs. External Static Pressure with Filter (iwc)							
Outdoor Tonnage - "Odt" (tons)	Airflow Setting - "CPC" (CFM/ton)		EXTERNAL STATIC PRESSURE (IN. W. C.)				
			0.1	0.3	0.5	0.7	0.9
3.0	450	CFM / WATTS	1376 / 149	1382 / 217	1382 / 287	1378 / 359	1371 / 434
	420	CFM / WATTS	1283 / 126	1288 / 189	1286 / 255	1281 / 323	1274 / 395
	400	CFM / WATTS	1221 / 112	1225 / 172	1222 / 235	1216 / 301	1208 / 370
	370	CFM / WATTS	1126 / 93	1129 / 149	1125 / 208	1118 / 271	1108 / 337
	350	CFM / WATTS	1063 / 82	1064 / 135	1059 / 192	1051 / 252	1040 / 316
	330	CFM / WATTS	998 / 71	999 / 122	993 / 176	984 / 234	972 / 297
	310	CFM / WATTS	934 / 62	933 / 110	926 / 162	916 / 218	904 / 279
	290	CFM / WATTS	869 / 54	867 / 99	859 / 149	848 / 203	834 / 263
3.5	450	CFM / WATTS	1602 / 219	1611 / 299	1614 / 380	1613 / 463	1609 / 547
	420	CFM / WATTS	1497 / 184	1505 / 258	1506 / 334	1504 / 412	1499 / 492
	400	CFM / WATTS	1427 / 163	1433 / 234	1434 / 306	1431 / 380	1425 / 457
	370	CFM / WATTS	1319 / 134	1325 / 200	1324 / 267	1319 / 337	1312 / 409
	350	CFM / WATTS	1247 / 117	1251 / 179	1249 / 243	1244 / 310	1235 / 380
	330	CFM / WATTS	1174 / 102	1177 / 160	1174 / 221	1167 / 286	1158 / 353
	310	CFM / WATTS	1100 / 88	1102 / 143	1098 / 201	1090 / 263	1080 / 328
	290	CFM / WATTS	1025 / 76	1026 / 127	1021 / 182	1012 / 241	1001 / 304
4.0	450	CFM / WATTS	1821 / 310	1832 / 402	1838 / 495	1839 / 588	1838 / 683
	420	CFM / WATTS	1705 / 259	1715 / 344	1719 / 431	1720 / 519	1717 / 608
	400	CFM / WATTS	1627 / 228	1636 / 310	1639 / 392	1638 / 476	1635 / 561
	370	CFM / WATTS	1507 / 187	1515 / 262	1517 / 338	1515 / 416	1510 / 497
	350	CFM / WATTS	1427 / 163	1433 / 234	1434 / 306	1431 / 380	1425 / 457
	330	CFM / WATTS	1345 / 141	1351 / 207	1350 / 276	1346 / 347	1339 / 420
	310	CFM / WATTS	1262 / 121	1267 / 184	1265 / 248	1260 / 316	1252 / 386
	290	CFM / WATTS	1179 / 103	1182 / 162	1179 / 223	1173 / 287	1164 / 355
4.5	450	CFM / WATTS	2032 / 423	2045 / 528	2053 / 632	2057 / 738	2059 / 844
	420	CFM / WATTS	1907 / 352	1918 / 449	1925 / 547	1927 / 645	1928 / 744
	400	CFM / WATTS	1821 / 310	1832 / 402	1838 / 495	1839 / 588	1838 / 683
	370	CFM / WATTS	1691 / 253	1700 / 338	1704 / 423	1705 / 510	1702 / 599
	350	CFM / WATTS	1602 / 219	1611 / 299	1614 / 380	1613 / 463	1609 / 547
	330	CFM / WATTS	1512 / 189	1520 / 264	1522 / 341	1520 / 419	1515 / 499
	310	CFM / WATTS	1421 / 161	1428 / 232	1429 / 304	1426 / 378	1420 / 455
	290	CFM / WATTS	1329 / 137	1335 / 203	1334 / 271	1330 / 341	1323 / 414
5.0 [a]	450	CFM / WATTS	2236 / 561	2250 / 678	2260 / 796	2266 / 913	2270 / 1031
	420	CFM / WATTS	2101 / 466	2114 / 575	2123 / 684	2128 / 793	2130 / 903
	400	CFM / WATTS	2009 / 409	2022 / 512	2029 / 616	2033 / 720	2035 / 825
	370	CFM / WATTS	1869 / 333	1880 / 428	1886 / 523	1888 / 619	1888 / 717
	350 [a]	CFM / WATTS	1773 / 288	1784 / 377	1789 / 467	1790 / 558	1788 / 651
	330	CFM / WATTS	1676 / 247	1685 / 331	1689 / 416	1689 / 502	1687 / 590
	310	CFM / WATTS	1577 / 210	1586 / 289	1588 / 369	1587 / 450	1583 / 533
	290	CFM / WATTS	1477 / 178	1485 / 251	1486 / 326	1483 / 403	1478 / 482

[a] Factory setting.

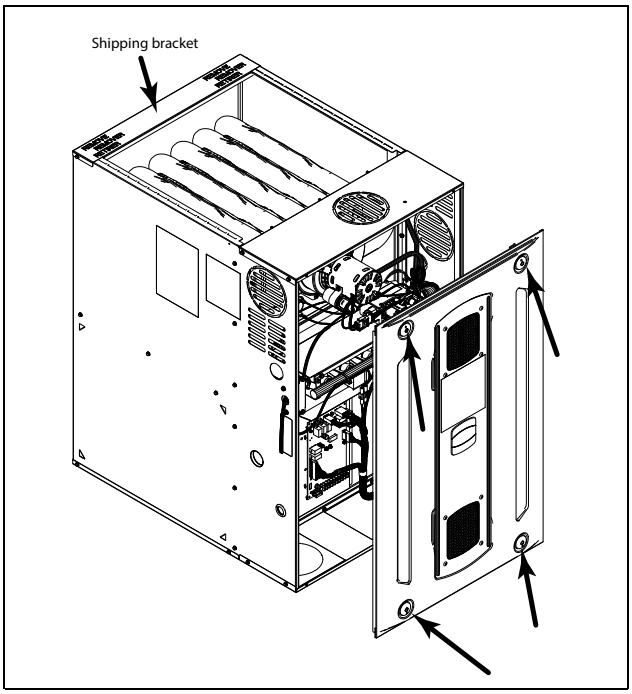
Furnace General Installation

The following sections give general instructions for the installation of the gas furnaces.

S-Series Furnace Panel Removal

Note: *For the S8V2 furnace, a 5/16" Allen wrench is required to remove the four latches on the front panel.*

Note: *Remove the shipping bracket before installation.*

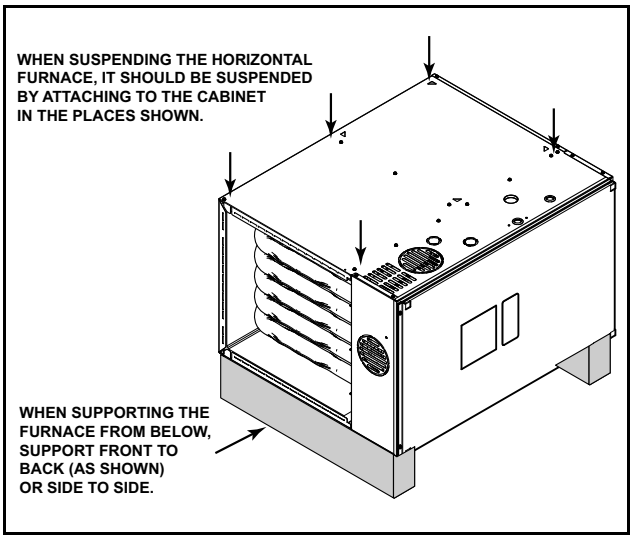


Horizontal Installation in an Attic or Crawlspace

The non-condensing furnace may be installed in an attic or crawl space in the horizontal position by placing the furnace on its left or right side (as viewed from the front in the vertical position). The horizontal furnace installation in an attic should be on a service platform large enough to allow for proper clearances on all sides and service access to the front of the furnace. See the "Locations and Clearances," p. 12. Line contact is only permissible between lines formed by intersections of the top and two sides of the furnace casing and building joists, studs, or framing.

The furnace may be placed horizontally in a crawl space on a pad or other noncombustible material. Place blocks underneath to support the furnace and raise the unit for sufficient protection from moisture.

The furnace may be installed in a hanging position using straps. The furnace should be supported at both ends and have an additional support in the center of the furnace in back.

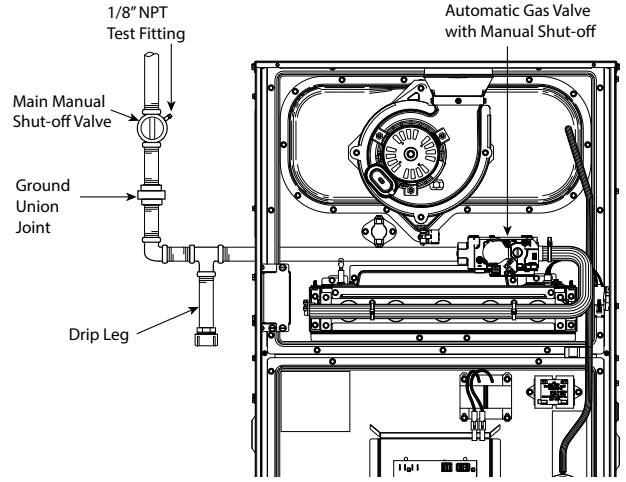


Gas Piping

Important: *The furnace default is left side gas piping.*

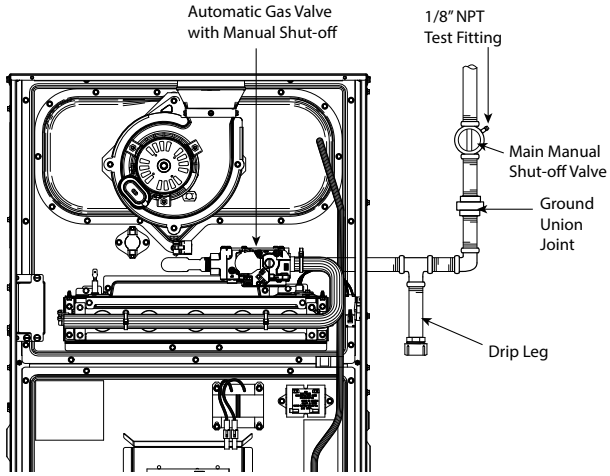
Note: *For ease of installation, optional accessory part PIP02095 is recommended for gas piping entering the right side of the furnace.*

Furnace in upflow orientation with gas piping on left



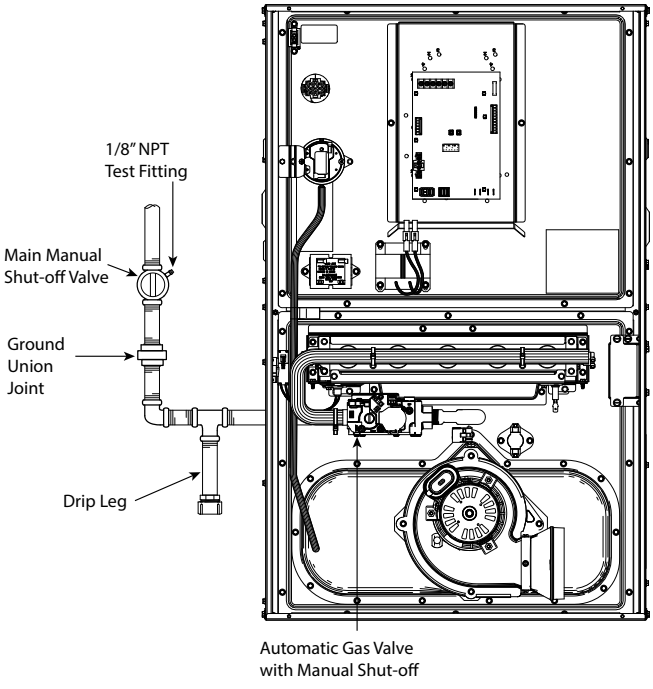
Furnace in upflow orientation with gas piping on right

Note: *For ease of installation, optional accessory part PIP02095 is recommended for gas piping entering the right side of the furnace in the upflow orientation.*

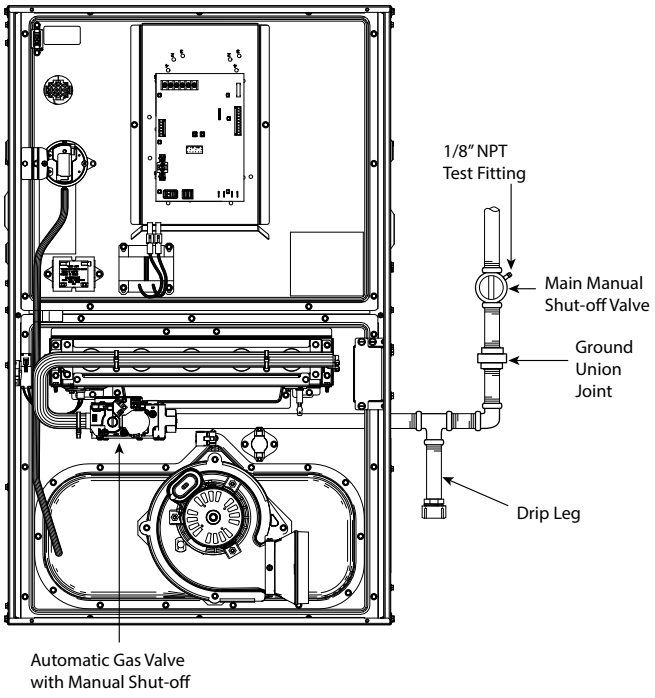


Furnace in downflow orientation with gas piping on left

Note: *For ease of installation, optional accessory part PIP02095 is recommended for gas piping entering the left side of the furnace in the downflow orientation.*



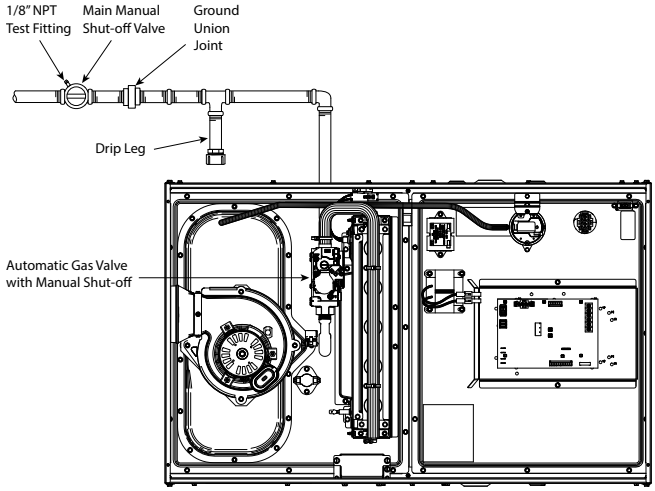
Furnace in downflow orientation with gas piping on right



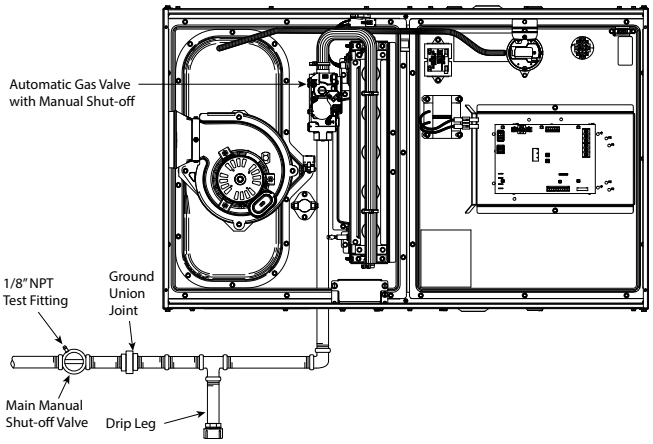
Note: *For ease of installation, optional accessory part PIP02095 is recommended for gas piping entering the right side of the furnace.*

Furnace in horizontal left orientation with gas piping out top

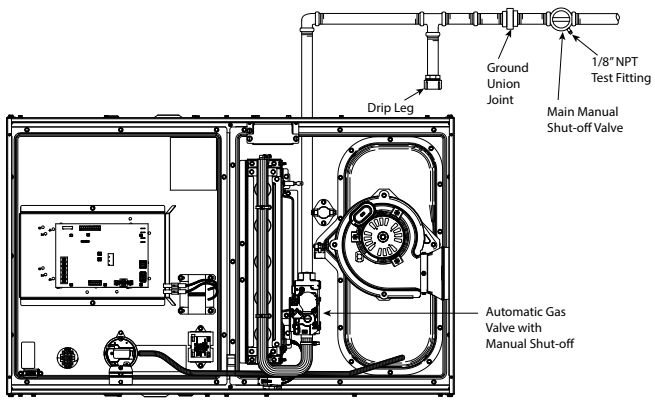
Note: *For ease of installation, optional accessory part PIP02095 is recommended for gas piping entering the top of the furnace in the horizontal left position.*



Furnace in horizontal left orientation with gas piping out bottom

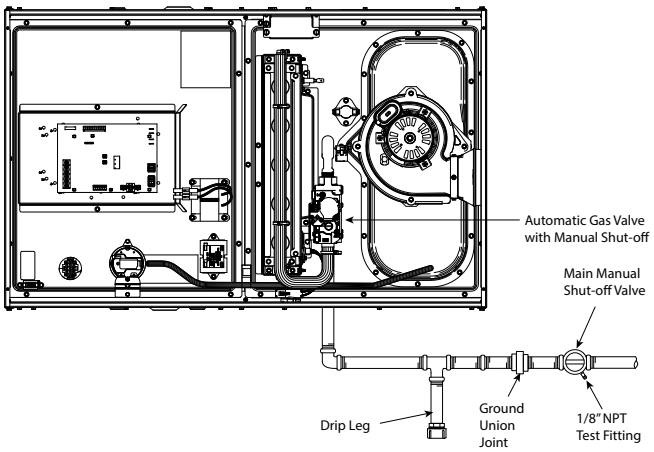


Furnace in horizontal right orientation with gas piping out top



Furnace in horizontal right orientation with gas piping out bottom

Note: *For ease of installation, optional accessory part PIP02095 is recommended for gas piping entering the bottom of the furnace in the horizontal right position.*



The furnace is shipped standard for left side installation of gas piping. A cutout with plug is provided on the right side for an alternate gas piping arrangement.

The installation of piping shall be in accordance with piping codes and the regulations of the local gas company. Pipe joint compound must be resistant to the chemical reaction with liquefied petroleum gases.

Important: *If local codes allow the use of flexible gas appliance connector, always use a new listed connector. Do not use a connector which has previously serviced another gas appliance.*

Refer to the piping table for delivery sizes. Connect gas supply to the unit, using a ground joint union and a manual shut-off valve. National codes require a condensation drip leg to be installed ahead of the gas valve.

The furnace and its individual shut-off valve must be disconnected from the gas supply piping system during any pressure testing of that system at test pressures in excess of 1/2 psig (3.5 kPa).

The furnace must be isolated from the gas supply piping by closing its individual manual shut-off valve during any pressure testing of the gas supply piping system at test pressures equal to or less than 1/2 psig (3.5 kPa).

Note: *Maximum pressure to the gas valve for natural gas is 13.8" W.C. Minimum pressure is 5.0" W.C. Maximum pressure to the gas valve for propane is 13.8" W.C. Minimum pressure is 11.0" W.C.*

NATURAL GAS ONLY							
TABLE OF CUBIC FEET PER HOUR OF GAS FOR VARIOUS PIPE SIZES AND LENGTHS							
PIPE SIZE	**LENGTH OF PIPE**						
	10	**20**	**30**	**40**	**50**	**60**	**70**
1/2	131	90	72	62	55	50	46
3/4	273	188	151	129	114	104	95
1	514	353	284	243	215	195	179
1–1/4	1060	726	583	499	442	400	368
This table is based on Pressure Drop of 0.3 inch W.C. and 0.6 SP. GR. Gas							

All gas fittings must be checked for leaks using a soapy solution before lighting the furnace. ***DO NOT CHECK WITH AN OPEN FLAME!***

For propane conversions on all other S-Series Furnaces, use BAYLPSS400* conversion kit with stainless steel burners.

ORIFICE SIZES			
INPUT RATING BTUH	**NUMBER OF BURNERS**	**MAIN BURNER ORIFICE DRILL SIZE**	
		NAT. GAS	**PROPANE GAS**
40,000	2	45	56
60,000	3	45	56
80,000	4	45	56
100,000	5	45	56
120,000	6	45	56

Combustion and Input Check

1. Make sure all gas appliances are off except the furnace.
2. Clock the gas meter with the furnace operating (determine the dial rating of the meter) for one revolution.
3. Match the "Sec" column in the gas flow table with the time clocked.
4. Read the "Flow" column opposite the number of seconds clocked.
5. Use the following factors if necessary:
   a. For 1 Cu. Ft. Dial Gas Flow CFH = Chart Flow Reading ÷ 2
   b. For 1/2 Cu Ft. Dial Gas Flow CFH = Chart Flow Reading ÷ 4
   c. For 5 Cu. Ft. Dial Gas Flow CFH = 10X Chart Flow Reading ÷ 4
6. Multiply the final figure by the heating value of the gas obtained from the utility company and compare to the nameplate rating. This must not exceed the nameplate rating.

Gas Flow in Cubic Feet Per Hour							
2 Cubic Foot Dial							
Sec.	Flow	Sec.	Flow	Sec.	Flow	Sec.	Flow
10	732	31	236	52	141	86	85
11	666	32	229	53	138	88	83
12	610	33	222	54	136	90	81
13	563	34	215	55	133	94	78
14	523	35	209	56	131	98	75
15	488	36	203	57	128	100	73
16	458	37	198	58	126	104	70
17	431	38	193	59	124	108	68
18	407	39	188	60	122	112	65
19	385	40	183	62	118	116	63
20	366	41	179	64	114	120	61
21	349	42	174	66	111	130	56
22	333	43	170	68	108	140	52
23	318	44	166	70	105	150	49
24	305	45	163	72	102	160	46
25	293	46	159	74	99	170	43
26	282	47	156	76	96	180	41
27	271	48	153	78	94	190	39
28	262	49	149	80	92	200	37
29	253	50	146	82	89		
30	244	51	144	84	87		

Gas Valve Adjustment

Changes can be made by adjusting the manifold pressure, or changing orifices (orifice change may not always be required). To adjust the manifold pressure:

1. Turn off all electrical power to the system.
2. Loosen (Do Not remove) the pressure tap test set screw one turn with 3/32" hex wrench.
   a. The pressure tap adjustment kit (KIT07611) contains a 3/32" hex wrench, a 5/16" hose and a connector and can be ordered through Global Parts.
3. Attach a manifold pressure gauge with flexible tubing to the outlet pressure boss marked "OUT P" on White- Rodgers gas valve model 36J.
4. Turn on system power with NO call for heat.

   Note: *2nd stage manifold pressure should be adjusted first. To shorten the amount of time it takes for 2nd stage to be energized, set the ISD (Interstage Delay) to zero (000) using the Menu and Option buttons on the IFC. This will energize 2nd stage heating immediately after after the blower on delay from 1st stage is complete. This is ~30 seconds after 1st stage flame has been sensed.*

5. Make a call for 2nd stage heating. Insure that the unit is in 2nd stage heating by verifying 24 VAC is measured between C and HI on the gas valve.

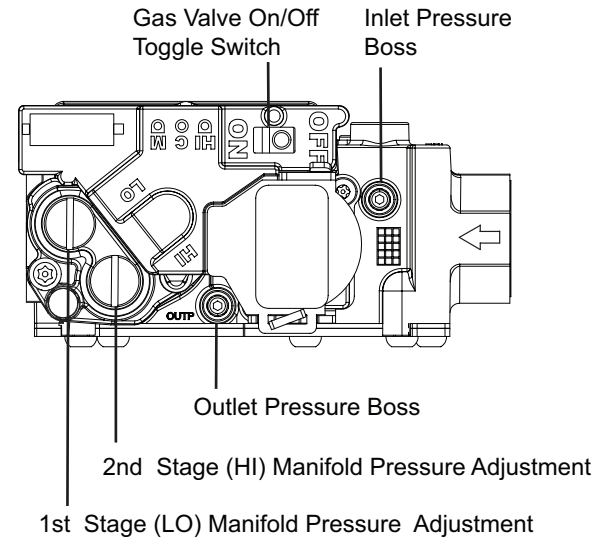
Important: *Adjust 2nd stage on the gas valve before attempting to adjust 1st stage.*

6. Adjust 2nd stage gas heat by removing the high (HI) adjustment regulator cover screw.
   a. To increase outlet pressure, turn the regulator adjust screw clockwise.
   b. To decrease outlet pressure, turn the regulator adjust screw counterclockwise.
   c. Adjust regulator until pressure shown on manometer matches the pressure specified in the table.

      The input of no more than nameplate rating and no less than 93% of the nameplate rating, unless the unit is derated for high altitude.
   d. Replace and tighten the regulator cover screw securely.
   e. Remove call for second stage heat, first stage heat is now running.
7. Adjust 1st stage gas heat by removing the low (LO) adjustment regulator cover screw.
   a. To increase outlet pressure, turn the regulator adjust screw clockwise.
   b. To decrease outlet pressure, turn the regulator adjust screw counterclockwise.
   c. Adjust regulator until pressure shown on manometer matches the pressure specified in the table.

      The input of no more than nameplate rating and no less than 93% of the nameplate rating, unless the unit is derated for high altitude.
   d. Replace and tighten the regulator cover screw securely.
8. Cycle the valve several times to verify regulator setting.
   a. Repeat steps 5-7 if needed.
9. Turn off all electrical power to the system.
10. Remove the manometer and flexible tubing and tighten the pressure tap screw.
11. Using a leak detection solution or soap suds, check for leaks at the pressure outlet boss and pressure tap test screw.
12. Turn on system power and check operation of the unit.

White-Rodgers 36J



Maximum and Minimum INLET Pressure (inches w.c.)		
	Natural Gas	Propane
Maximum	13.8	13.8
Minimum	5	11
Maximum and Minimum Fuel Manifold Pressure Settings (inches w. c.) 2nd Stg/1st Stg		
All models except S8V2D120	3.5/1.6	10/6
S8V2D120	3.5/1.8	10/7.5
Orifice sizes for Natural Gas and Propane		
All models	45	56

High Altitude Derate

Input ratings (BTUH) of these Furnaces are based on sea level operation and should not be changed at elevations up to 2,000 ft. (610 m).

If the installation is 2,000 ft. (610 m) or above, the Furnace input rate (BTUH) shall be reduced 4% for each 1,000 ft. above sea level.

Installations of this furnace at altitudes above 2,000 ft. (610 m) shall be made utilizing the Part Numbers for Replacement Orifices table in these installation instructions.
The Furnace input rate shall be checked by clocking the gas flow rate (CFH) and multiplying by the heating value obtained from the local utility supplier for the gas being delivered at the installed altitude. Input rate changes can be made by adjusting the Manifold Pressure (min 3.0 - max 3.7 in. W.C. - Natural Gas) or changing orifices (orifice change may not always be required).

If the desired input rate can not be achieved with a change in Manifold Pressure, then the orifices must be changed. Propane installations will require an orifice change.

See the table for help in selecting orifices if orifice change is required. Furnace input rate and temperature rise should be checked again after changing orifices to confirm the proper rate for the altitude.

PART NUMBERS FOR REPLACEMENT ORIFICES			
DRILL SIZE	**PART NUMBER**	**DRILL SIZE**	**PART NUMBER**
44	ORF00501	54	ORF00555
45	ORF00644	55	ORF00693
46	ORF00909	56	ORF00907
47	ORF00910	57	ORF00908
48	ORF01099	58	ORF01338
49	ORF00503	59	ORF01339
50	ORF00493		

Turn the main Gas Valve toggle switch within the unit to the "**OFF**" position. Turn the external gas valve to "ON". Purge the air from the gas lines. After purging, check all gas connections for leaks with a soapy solution – **DO NOT CHECK WITH AN OPEN FLAME.** Allow 5 minutes for any gas that might have escaped to dissipate.

Propane Gas being heavier than air may require forced ventilation. Turn the toggle switch on the Gas Valve in the unit to the "ON" position.

Note: *For furnaces requiring modifications other than only gas orifice and/or manifold pressure adjustment for installation at high altitude, installation of this furnace at altitudes above 200 ft (610 m) shall be made in accordance with the listed High Altitude Conversion Kit available for this furnace.*

The table lists the main burner orifices used with the furnace. If a change of orifices is required to correct the furnace input rating refer to the part number for replacement orifices table.

Installation of this furnace at altitudes above 2000 ft (610m) shall be in accordance with local codes, or in the absence of local codes, the *National Fuel Gas Code, ANSI Z223.1/NFPA 54.*

Orifice Twist Drill Size If Installed at Sea Level	Altitude Above Sea Level and Orifice Required at Other Elevations								
	2000	3000	4000	5000	6000	7000	8000	9000	10000
42	42	43	43	43	44	44	45	46	47
43	44	44	44	45	45	46	47	47	48
44	45	45	45	46	47	47	48	48	50
45	46	47	47	47	48	48	49	49	50
46	47	47	47	48	48	49	49	50	51
47	48	48	49	49	49	50	50	51	52
54	54	55	55	55	55	55	56	56	56
55	55	55	55	56	56	56	56	56	57
56	56	56	57	57	57	58	59	59	60
57	58	59	59	60	60	61	62	63	63
58	59	60	60	61	62	62	63	63	64
From National Fuel Gas Code — Table E.1.1(d)									

Table 14. High Altitude Kit

Furnace Models	Kit Model No.	PS1-LOW SET PT	PS2-HIGH SET PT
S8V2A040M3P*	BAYSWT22AHALTAA	-0.25" +/- 0.05" WC	-0.47" +/- 0.05" WC
S8V2B060M4P*	BAYSWT23AHALTAA	-0.40" +/- 0.05" WC	-0.70" +/- 0.05" WC
S8V2B080M4P*	BAYSWT18AHALTAA	-0.37" +/- 0.05" WC	-0.60" +/- 0.05" WC
S8V2C080M5P*	BAYSWT16AHALTAB	-0.25" +/- 0.05" WC	-0.50" +/- 0.05" WC
S8V2C100M5P*	BAYSWT19AHALTAA	-0.37" +/- 0.05" WC	-0.50" +/- 0.05" WC
S8V2D120M5P*	BAYSWT24AHALTAA	-0.45" +/ 0.05" WC	-0.50" +/- 0.05" WC

General Venting

VENT PIPING

These furnaces have been classified as Fan-Assisted Combustion System, Category I furnaces under the "latest edition" provisions of ANSI Z21.47 standards. Category I furnaces operate with a non-positive vent static pressure and with a flue loss of not less than 17 percent.

Multistory and common venting are permitted for these furnaces. Venting systems shall be in accordance with the National Fuel Gas Code, ANSI Z223.1/NFPA 54, local codes, and this installation manual.

If desired, a side wall termination can be accomplished through the use of a listed "add-on" draft inducer. The inducer must be installed according to the inducer manufacturer's instructions. Set the barometric pressure relief to achieve –0.02 inch water column.

The furnace shall be connected to a factory built chimney or vent complying with a recognized standard, or a masonry or concrete chimney lined with a lining material acceptable to the authority having jurisdiction.

VENTING INTO A MASONRY CHIMNEY
If the chimney is oversized, the liner is inadequate, or flue-gas condensation is a problem in your area, consider using the chimney as a pathway or chase for type "B" vent or flexible vent liner. If flexible liner material is used, size the vent using the "B" vent tables, then reduce the maximum capacity by 20% (multiply 0.80 times the maximum capacity). Masonry Chimney Kit BAYVENT800B may be used with these furnaces **(Upflow model furnaces only)** to allow venting into a masonry chimney. Refer to the BAYVENT800B Installer's Guide for application requirements.

INTERNAL MASONRY CHIMNEYS
Venting of fan assisted appliances into a lined, internal masonry chimney is allowed only if it is common vented with at least one natural draft appliance; **OR**, if the chimney is lined with type "B", double wall vent or suitable flexible liner material

⚠ WARNING

Safety Hazard!

Failure to follow this warning could result in carbon monoxide poisoning 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.

The following section does not apply if BAYVENT800B (Masonry Chimney Vent Kit) is used. All instructions with the kit must be followed.

Masonry Chimney Venting				
Type Furnace	Tile Lined Chimney		Chimney Lining	
	Internal	External	"B" Vent	Flexible Metal Liner
Single Fan Assist	No	No	Yes	Yes [a]
Fan Assist + Fan Assist	No	No	Yes	Yes [a]
Fan Assist + Natural	Yes	No	Yes	Yes [a]

[a] Flexible chimney liner size is determined by using the type "B" vent size for the available BTUH input, then reducing the maximum capacity by 20% (multiply maximum capacity times 0.80). The minimum capacity is the same as shown in the "B" vent tables.

EXTERNAL MASONRY CHIMNEY

Venting of fan assisted appliances into external chimneys (one or more walls exposed to outdoor temperatures), requires the chimney be lined with type "B", double wall vent or suitable flexible chimney liner material. This applies in all combinations of common venting as well as for fan assisted appliances vented alone.

The following installation practices are recommended to minimize corrosion caused by condensation of flue products in the furnace and flue gas system.

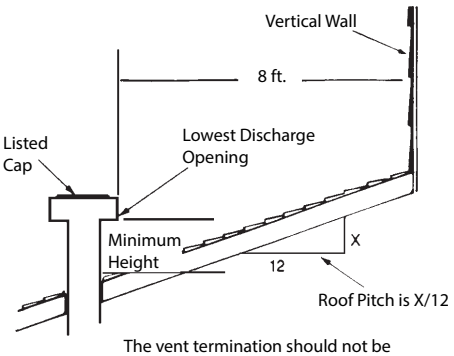
1. Avoid an excessive number of bends.
2. Horizontal runs should pitch upward at least 1/4" per foot.
3. Horizontal runs should be as short as possible.
4. All vent pipe or connectors should be securely supported and must be inserted into, but not beyond the inside wall at the chimney vent.
5. When vent connections must pass through walls or partitions of combustible material, a thimble must be used and installed according to local codes.
6. Vent pipe through the roof should be extended to a height determined by National Fuel Gas Code or local codes. It should be capped properly to prevent rain water from entering the vent. Roof exit should be waterproofed.
7. Use type "B" double wall vent when vent pipe is routed through cool spaces (below 60° F.).
8. Where long periods of airflow are desired for comfort, use long fan cycles instead of continuous airflow.
9. Apply other good venting practices as stated in the venting section of the National Fuel Gas Code ANSI Z223.1 "latest edition".
10. **Vent connectors serving appliance vented by natural draft or non-positive pressure shall not be connected into any portion of a mechanized draft system operating under positive pressure.**
11. Horizontal pipe runs must be supported by hangers, straps or other suitable material in intervals at a minimum of every 3 feet of pipe.
12. A furnace shall not be connected to a chimney or flue serving a separate appliance designed to burn solid fuel.
13. The flow area of the largest section of vertical vent or chimney shall not exceed 7 times the smallest listed appliance categorized vent area, flue collar area, or draft hood outlet area unless designed in accordance with approved engineering methods.

Maximum Vent or Tile Lined Chimney Flow Area = $[\pi(D^*)^2]/4 \times 7$

* Drafthood outlet diameter, flue collar diameter, or listed appliance categorized vent diameter.

Gas Vent Termination	
Roof Pitch	Minimum Height
Flat to 6/12	1.0 Feet [a]
Over 6/12 to 7/12	1.25 Feet
Over 7/12 to 8/12	1.5 Feet
Over 8/12 to 9/12	2.0 Feet
Over 9/12 to 10/12	2.5 Feet
Over 10/12 to 11/12	3.25 Feet
Over 11/12 to 12/12	4.0 Feet
Over 12/12 to 14/12	5.0 Feet
Over 14/12 to 16/12	6.0 Feet
Over 16/12 to 18/12	7.0 Feet
Over 18/12 to 20/12	7.5 Feet
Over 20/12 to 21/12	8.0 Feet

[a] This requirement covers most installations



The vent termination should not be less than 8 ft. from a vertical wall.

[a] This requirement covers most installations

Air for Combustion and Ventilation

Adequate flow of combustion and ventilating air must not be obstructed from reaching the Furnace. Air openings provided in the Furnace casing must be kept free of obstructions which restrict the flow of air. Airflow restrictions affect the efficiency and safe operation of the Furnace. Keep this in mind should you choose to remodel or change the area which contains your Furnace. Furnaces must have a free flow of air for proper performance.

Provisions for combustion and ventilation air shall be made in accordance with "latest edition" of Section 9.3, Air for Combustion and Ventilation, of the National Fuel Gas Code, ANSI Z223.1 / NFPA 54. Installation Codes, and applicable provisions of the local building codes. Special conditions created by mechanical exhausting of air and fireplaces must be considered to avoid unsatisfactory Furnace operation.

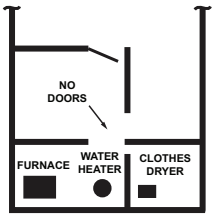
Furnace location may be in an **unconfined** space or a **confined** space.

Unconfined space are installations with 50 cu. ft. or more per 1000 BTU/hr input from all equipment installed. Unconfined spaces are defined in the table and illustration for various furnace sizes. These spaces may have adequate air by infiltration to provide air for combustion, ventilation, and dilution of flue gases. Buildings with tight construction (for example, weather stripping, heavily insulated, caulked, vapor barrier, etc.), may need additional air provided as described for confined space.

Minimum Area in Square Feet for Unconfined Space Installations	
Furnace Maximum BTUH Input Rating	With 8 Ft. Ceiling, Minimum Area in Square Feet of Unconfined Space
40,000 60,000 80,000 100,000 120,000	250 375 500 625 750

UNCONFINED

50 CU. FT. OR MORE PER 1000 BTU/HR INPUT ALL EQUIP. INSTALLED



Confined spaces are installations with less than 50 cu. ft. of space per 1000 BTU/ hr input from all equipment installed. Confined spaces are defined in the table and illustration for various furnace sizes. Air for combustion and ventilation requirements can be supplied from inside the building.

1. The following types of installations will **require** use of OUTDOOR AIR for combustion, due to chemical exposures:

* Commercial buildings
* Buildings with indoor pools
* Furnaces installed in commercial laundry rooms
* Furnaces installed in hobby or craft rooms
* Furnaces installed near chemical storage areas

Exposure to the following substances in the combustion air supply will also require OUTDOOR AIR for combustion:

* Permanent wave solutions
* Chlorinated waxes and cleaners
* Chlorine based swimming pool chemicals
* Water softening chemicals
* Deicing salts or chemicals
* Carbon Tetrachloride
* Halogen type refrigerants
* Cleaning solvents (such as perchloroethylene)
* Printing inks, paint removers, varnish, etc.
* Hydrochloric acid
* Cements and glues
* Antistatic fabric softeners for clothes dryers
* Masonry acid washing material

Note: *Extended warranties are not available in some instances. Extended warranty does not cover repairs to equipment installed in establishments with corrosive atmospheres, including but not limited to, dry cleaners, beauty shops, and printing facilities.*

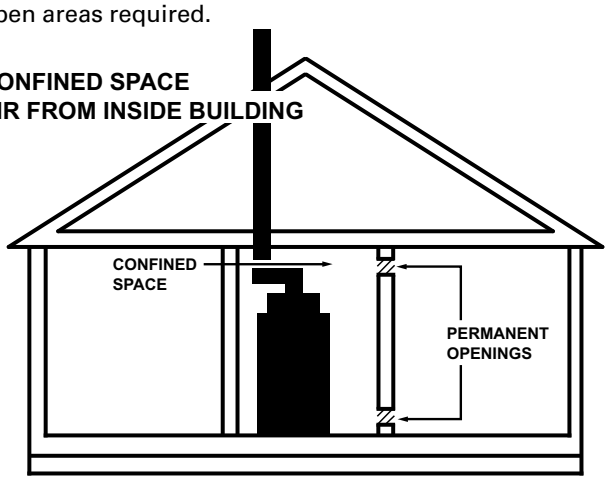
Minimum Free Area in Square Inches Each Opening (Furnace Only) in a Confined Space			
Furnace Max BTUH.Input Rtg.	Air From Inside	Air From Outside	
		Vertical Duct (a)	Horizontal Duct (b)
40,000 60,000 80,000 100,000 120,000	100 100 100 100 120	10 15 20 25 30	20 30 40 50 60
(a) 1 Square inch per 4000 BTU/hr Vertical Duct. (b) 1 Square inch per 2000 BTU/hr Horizontal Duct.			

CONFINED

LESS THAN 50 CU. FT.
PER 1000 BTU/HR INPUT
ALL EQUIP. INSTALLED

All air from inside the building The confined space shall be provided with two permanent openings communicating directly with an additional room(s) of sufficient volume so that the combined volume of all spaces meets the criteria for an unconfined space. The total input of all gas utilization equipment installed in the combined space shall be considered in making this determination. Refer to the Minimum Free Area in square inches for confined spaces table, for minimum open areas required.

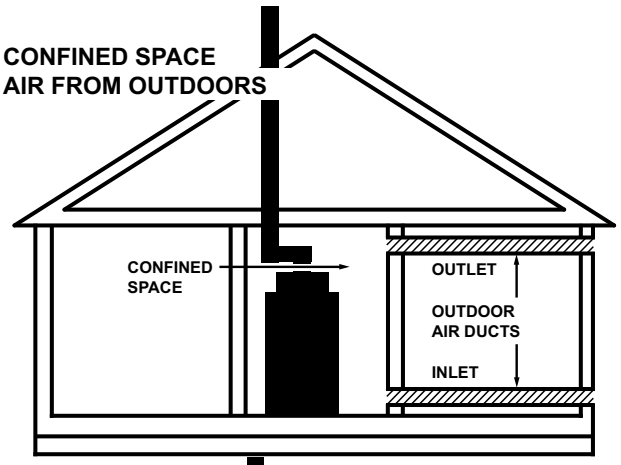
CONFINED SPACE
AIR FROM INSIDE BUILDING



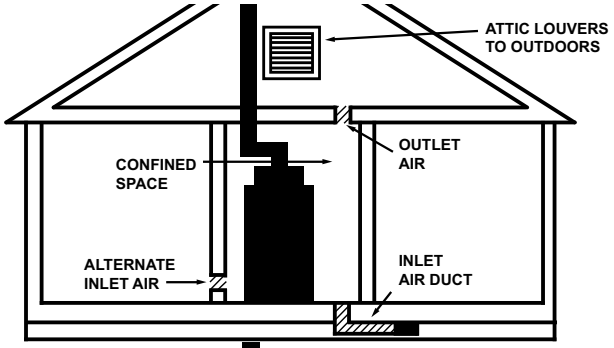
All air from outdoors The confined space shall be provided with two permanent openings, one commencing within 12 inches of the top and one commencing within 12 inches of the bottom of the enclosure.

The openings shall communicate directly, or by ducts, with the outdoors or spaces (crawl or attic) that freely communicate with the outdoors. Refer to the Minimum Free Area in square inches for confined spaces table, for minimum open areas required.

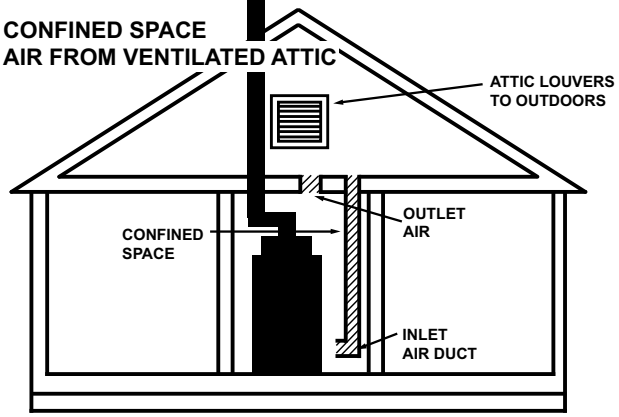
CONFINED SPACE
AIR FROM OUTDOORS



CONFINED SPACE
AIR FROM VENTILATED ATTIC/CRAWL SPACE



CONFINED SPACE
AIR FROM VENTILATED ATTIC



Duct Connections

Air duct systems should be installed in accordance with standards for air conditioning systems, National Fire Protection Association Pamphlet No. 90. They should be sized in accordance with ACCA Manual D or whichever is applicable. Check on controls to make certain they are correct for the electrical supply.
Central furnaces, when used in connection with cooling units, shall be installed in parallel or on the upstream side of the cooling units to avoid condensation in the heating element, unless the furnace has been specifically approved for downstream installation. With a parallel flow arrangement, the dampers or other means used to control flow of air shall be adequate to prevent chilled air from entering the furnace, and if manually operated, must be equipped with means to prevent operation of either unit unless the damper is in full heat or cool position.
Flexible connections of nonflammable material may be used for return air and discharge connections to reduce the transmission of vibration. Though these units have been specifically designed for quiet, vibration free operation, air ducts can act as sounding boards and could, if poorly installed, amplify the slightest vibration to the annoyance level.

When the furnace is located in a utility room adjacent to the living area, the system should be carefully designed with returns which minimize noise transmission through the return air grille. Although these winter air conditioners are designed with large blowers operating at moderate speeds, any blower moving a high volume of air will produce audible noise which could be objectionable when the unit is located very close to a living area. It is often advisable to route the return air ducts under the floor or through the attic. Such design permits the installation of air return remote from the living area (i.e. central hall).
When the furnace is installed so that the supply ducts carry air circulated by the furnace to areas outside the space containing the furnace, the return air shall also be handled by a duct(s) sealed to the furnace and terminating outside the space containing the furnace.
For furnaces not equipped with a cooling coil, it is recommended that the outlet duct be provided with a removable access panel. The opening shall be accessible when the furnace is installed and shall be of such a size that the heat exchanger can be viewed for possible openings using light assistance or a probe can be inserted for sampling the air stream. The removable cover must be sealed to prevent air leaks.

Where there is no complete return duct system, the return connection must be run full size from the Furnace to a location outside the utility room, basement, attic, or crawl space.
Do Not install return air through the back of the Furnace cabinet.
Do Not install return air through the side of the furnace cabinet on horizontal applications without following the guidelines in the Return Air Filters section in the figure for Horizontal furnace with side return.

Carbon monoxide, fire or smoke can cause serious bodily injury, death, and/or property damage.
A variety of potential sources of carbon monoxide can be found in a building or dwelling such as gas-fired clothes dryers, gas cooking stoves, water heaters, furnaces and fireplaces. The U.S. Consumer Product Safety Commission recommends that users of gas-burning appliances install carbon monoxide detectors as well as fire and smoke detectors per the manufactures installation instructions to help alert dwelling occupants of the presence of fire, smoke or unsafe levels of carbon monoxide. These devices should be listed by Underwriters Laboratories, Inc. *Standards for Single and Multiple Station Carbon Monoxide Alarms, UL 2034.*

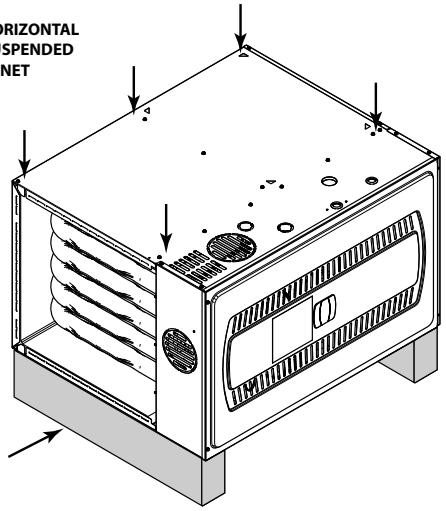
Note: *The manufacturer of your Furnace DOES NOT test any detectors and makes no representations regarding any brand or type of detector.*

Note: *Seal per local codes*

In horizontal applications, the furnace must be supported with one of the following methods.

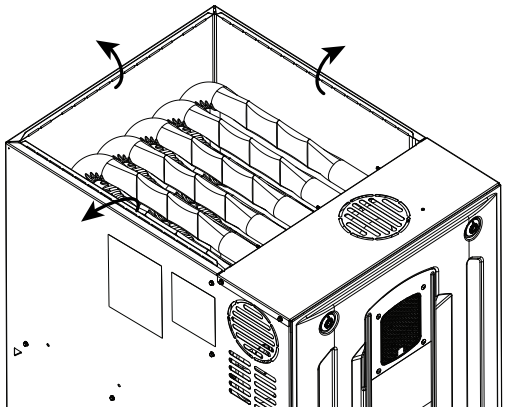
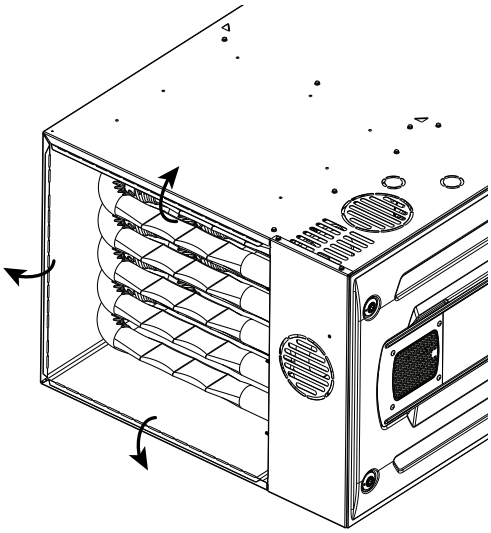
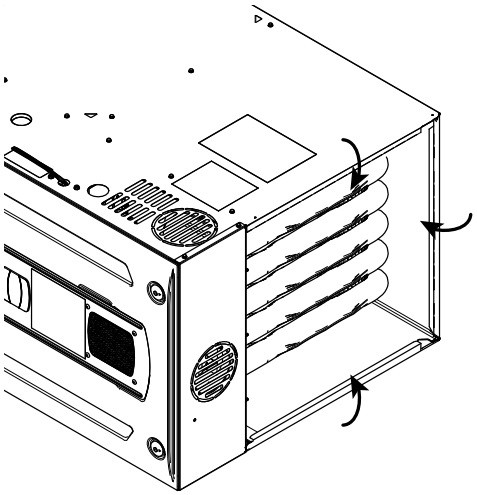
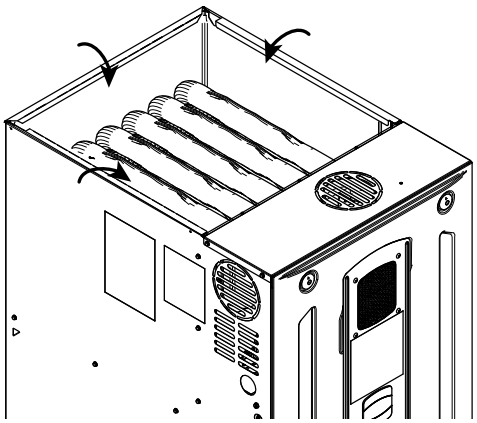
1. Support below with non-combustible material as shown in the illustration.
2. Use BAYHANG kit. See kit instructions.
3. Use unistrut with cabling to provide support from under the unit.
4. Use strapping material in locations shown in illustration.

WHEN SUSPENDING THE HORIZONTAL FURNACE, IT SHOULD BE SUSPENDED BY ATTACHING TO THE CABINET IN THE PLACES SHOWN.



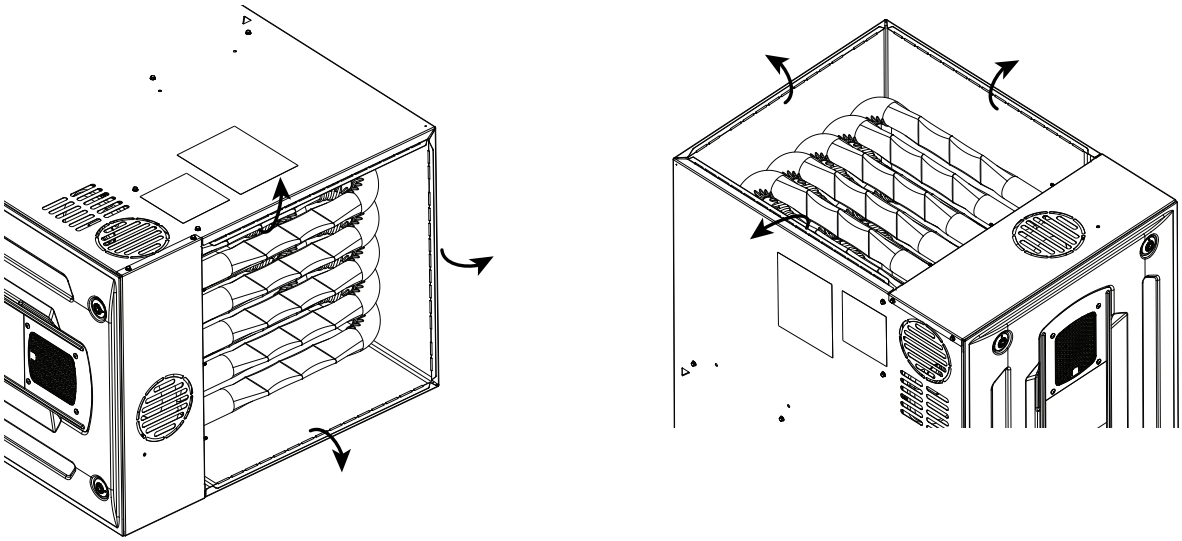
WHEN SUPPORTING THE FURNACE FROM BELOW, SUPPORT FRONT TO BACK (AS SHOWN) OR SIDE TO SIDE.

Table 15. Supply Duct Connections

Upflow Furnace with Coil ***Note:*** *There are no longer guide holes located on the furnace flange.*  Refer to Step 1., Step 3., Step 5., Step 7.	**Furnace in Horizontal Left with Coil** ***Note:*** *There are no longer guide holes located on the furnace flange.*  Refer to Step 1., Step 4., Step 5., Step 7.
Furnace in Horizontal Right with "A" Coil ***Note:*** *Flat or dedicated horizontal coils may require flanges to be bent upward.*  Refer to Step 2., Step 4.	**Downflow Furnace with Coil**  Refer to Step 2., Step 4.

Horizontal Right and Downflow Furnace — no Coil

Important: *A BAYBASE is required when installing the furnace on a combustible floor.*



Refer to Step 1., Step 6., Step 7.

Installation Instructions

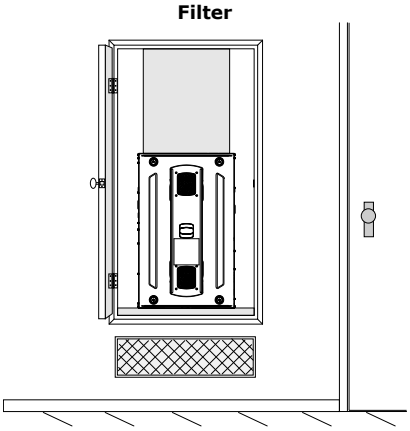
1. Bend furnace flanges up.
2. Bend furnace side flanges down.
3. Set the coil on top of the furnace.
4. Support the furnace and coil independently.
5. Screw through the coil cabinet into the furnace flange. Guide holes are located on the coil.
6. Attach ducting.
7. Seal per local codes and requirements.

Return Duct Connections

Return Ducting General Guidelines

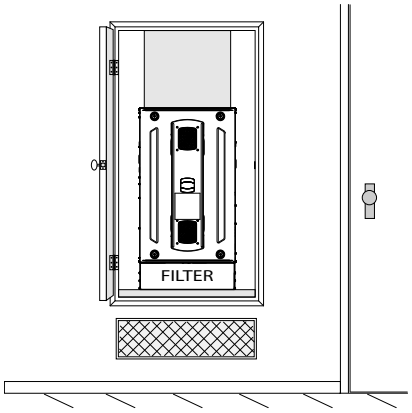
- Back returns are not allowed on any S-Series Furnaces
- Side returns are not allowed on downflow or horizontal S-Series Furnaces
- Mounting flanges must be located on ducting
- Shoot screws through the mount flanges into the furnace cabinet
- Always seal per local codes and requirements
- Furnace, coil, and ducting must be supported separately
- An external overflow drain pan must be installed in all applications over a finished ceiling to prevent property damage

Upflow Furnace with Bottom Return in Closet with Remote Filter



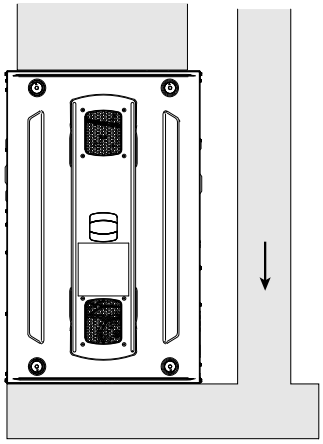
Refer to Step 1., Step 2., Step 3., and Step 8.

Upflow Furnace with Bottom Return in Closet with Filter Box



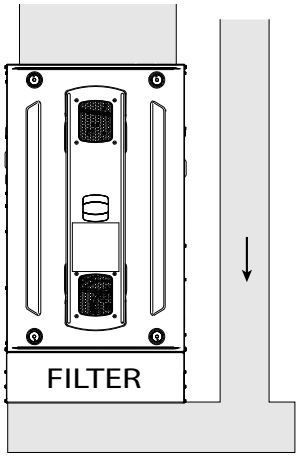
Refer to Step 1., Step 4., Step 5., and Step 8.

Upflow Furnace with Bottom Return Mounted on a Ducted Pedestal



Refer to Step 1., Step 6., Step 3., and Step 8.

Upflow Furnace with Bottom Return Mounted on a Ducted Pedestal with Filter Box



Refer to Step 1., Step 7., and Step 8.

Installation Instructions

1. Remove the bottom plate.
2. Set the furnace on the base inside closet.
3. Install remote filter.
4. Set the furnace on the filter box inside closet.
5. Must have grille present for air.
6. Set the furnace on the ducted pedestal. The ducted pedestal will use ducted air from a remote location.
7. Set the furnace on the filter box. The ducted pedestal will use ducted air from a remote location.
8. Seal per local codes and requirements.

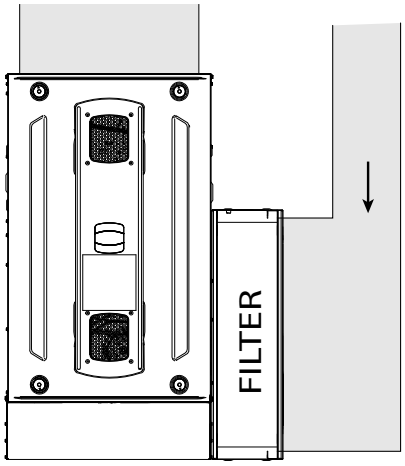
Upflow Furnace with Bottom and Side Returns Mounted on a Ducted Pedestal with Side Return and Filter Box

Important: *Make sure the thermostat wiring hole is sealed on the cabinet side with the side return.*

Important: *Make sure not to cut the cabinet in the "No Cut" area.*

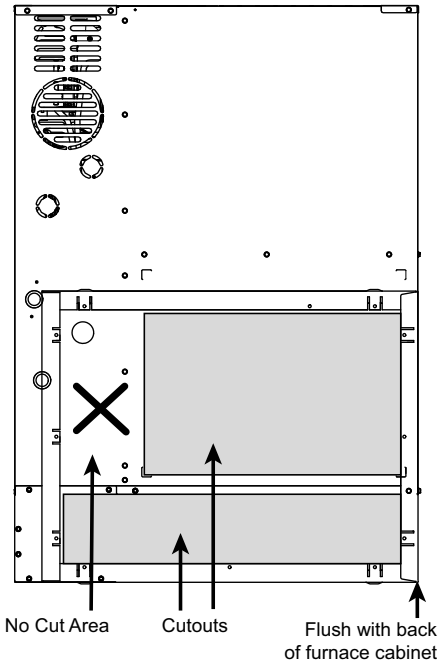
Note: *Use Optional BAYLIFT kit to lift furnace. Follow kit instructions.*

Note: *The furnace bottom pedestal must be a minimum of 6" in height.*



Refer Step 1. to Step 8.

Cabinet cutout when used with BAYLIFT 21" Filter Cabinet with BAYLIFT Kit shown

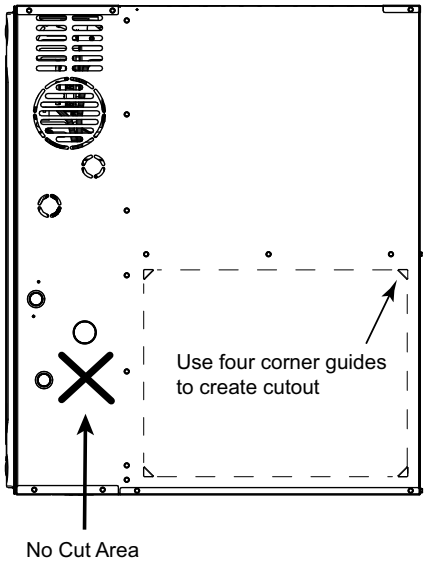


Upflow Furnace with Side Return

Important: *Make sure the thermostat wiring hole is sealed on the cabinet side with the side return.*

Important: *Make sure not to cut the cabinet in the "No Cut" area.*

Note: *If using a filter box, use a transition, if possible, to attach the filter box to the furnace cabinet.*



Refer Step 9. to Step 12.

Upflow Furnace with Two Side Returns

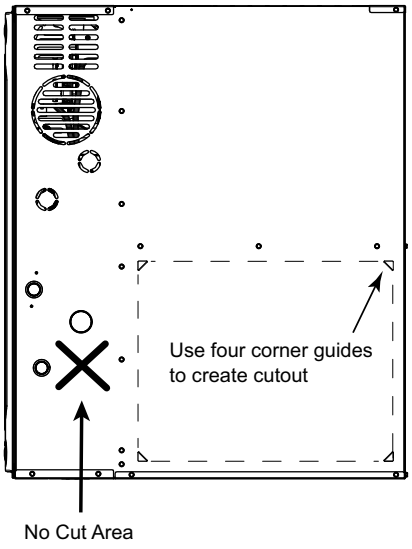
Important: *One of the sides must have a transition to allow the thermostat wiring to exit the cabinet.*

Important: *If a transition is not a viable option, a hole will need to be drilled in the side of the cabinet for the thermostat wiring to exit.*

Important: *Make sure not to cut the cabinet in the "No Cut" area.*

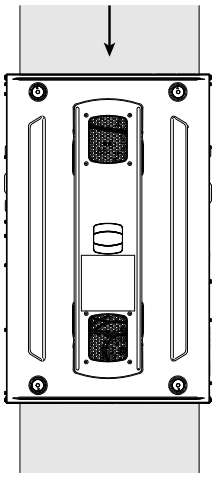
Note: *If using one transition, the thermostat wiring will exit on the transition side.*

Note: *If using a filter boxes, use transitions, if possible, to attach the filter boxes to the furnace cabinet.*



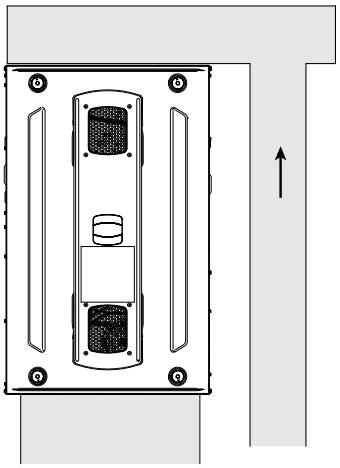
Refer Step 9. to Step 12.

Downflow Furnace with Top Return



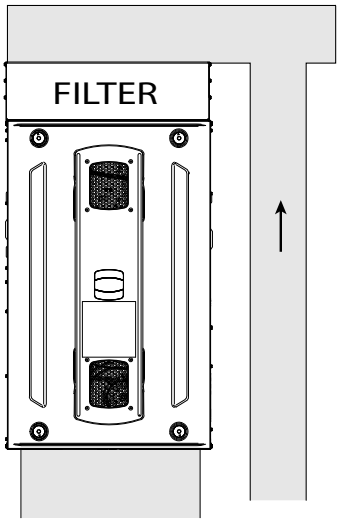
Refer to Step 13., Step 14., Step 17., and Step 8.

Downflow Furnace with Top Return and Plenum



Refer to Step 13., Step 15., Step 17., and Step 8.

Downflow Furnace with Top Return and Plenum with Filter Box



Refer to Step 13., Step 16., Step 14., and Step 8.

Installation Instructions

1. Remove the bottom plate.
2. Create ducting and set the furnace in place.
3. Match the filter cabinet flush to the back and bottom sides of the furnace cabinet and secure in place with screws.
4. Mark the two areas to be cut out for the return air.
5. Cut out the two sections of the cabinet and BAYLIFT kit to be removed.
6. Attach ducting to the filter box.
7. The ducted pedestal will use ducted air from a remote location.
8. Seal per local codes and requirements.
9. Using guides, remove the cutout for the side return.
10. Create ducting and set the furnace in place. Use screws to attach ducting to the furnace cabinet.
11. Seal bottom panel per local codes and requirements.
12. Seal all other panels per local codes and requirements.
13. Remove the top plate.
14. Attach the ducting to the top of the furnace.
15. Attach the plenum ducting to the top of the furnace.
16. Attach the filter box to the top of the furnace.
17. Install remote filter.

Return Air Filters

TYPICAL AIR FILTER INSTALLATIONS
Filters are not factory supplied for furnaces. Filter size needed will be dependent on type of filter and CFM requirement. Filters must be installed externally to the unit.

Important: *It is recommended to transition return ducting to the same size as the opening. It is acceptable for return duct or filter frame to extend forward of the opening but plastic plugs MUST be installed in any opening that the duct or filter frame may cover.*

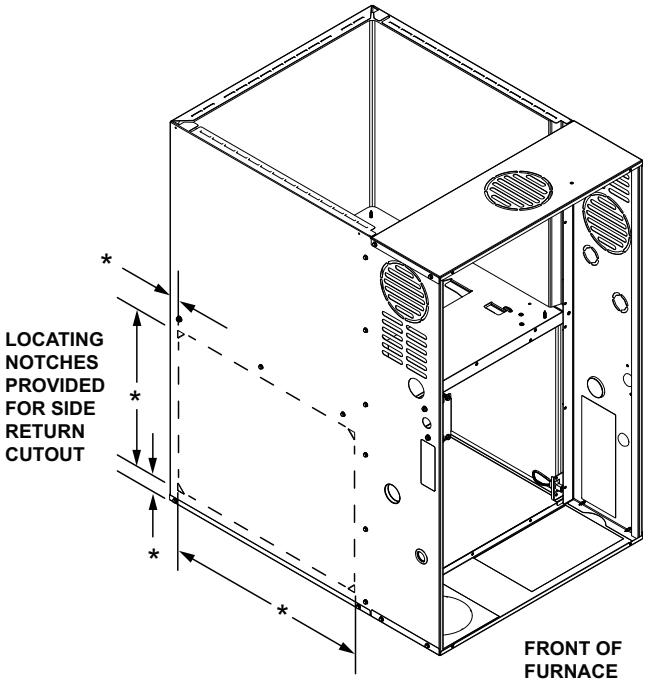
Return Air Filters	
Furnace Width	Filter Qty and Size
14–1/2″	1 — 14″ x 25″ x 1″
17–1/2″	1 — 16″ x 25″ x 1″
21″	1 — 20″ x 25″ x 1″
24–1/2″	1 — 24″ x 25″ x 1″

Note: *For upflow airflow furnaces where the airflow requirement exceeds 1600 CFM - Furnaces will require return air openings and filters on: (1) both sides, or (2) one side and the bottom, or (3) just on the bottom.*

Preparation for Upflow Bottom and Side Return Air Filter Installations
All return air duct systems should provide for installation of return air filters.

1. Determine the appropriate position to set the furnace in order to connect to existing supply and return ductwork.
2. For upflow side return installations, remove the insulation around the opening in the blower compartment
3. The side panels of the upflow furnace include locating notches that are used as guides for cutting an opening for return air, refer to the figure and the upflow furnace outline drawing for duct connection dimensions for various furnaces.
4. If a 3/4" flange is to be used for attaching the air inlet duct, add to cut where indicated by dotted lines. Cut corners diagonally and bend outward to form flange.
5. If flanges are not required, and a filter frame is installed, cut between locating notches as in illustration.
6. The bottom panel of the upflow furnace must be removed for bottom return air.

UPFLOW FURNACES ONLY



*** SEE OUTLINE DRAWING**

RETURN AIR FILTERS FOR FURNACE IN HORIZONTAL CONFIGURATION

When the modular blower is installed in the horizontal configuration, the return air filters must be installed exterior to the modular blower cabinet. Remote filter grilles may be used for homeowner convenience, refer to Figure 1, p. 42 or the filters may be installed in the duct work upstream of the modular blower, refer to Figure 2, p. 42.

Filter kits are available for horizontal applications.

Note: *Direct coupled side returns are not allowed to the blower cabinet.*

Figure 1. Remote Filter Installation

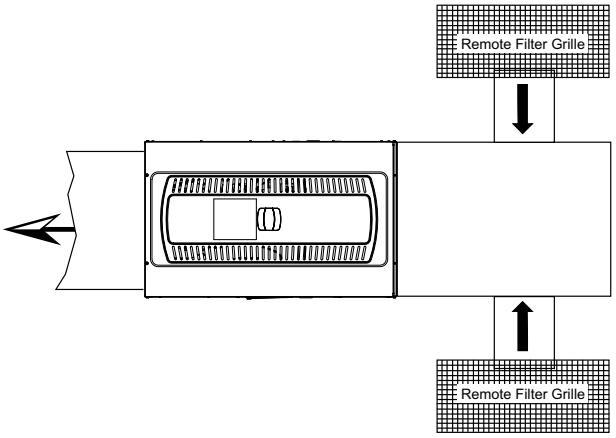
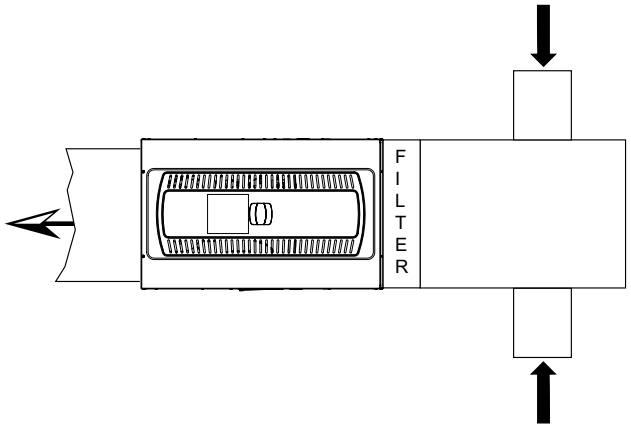


Figure 2. Duct Filter Installation



Electrical Connections

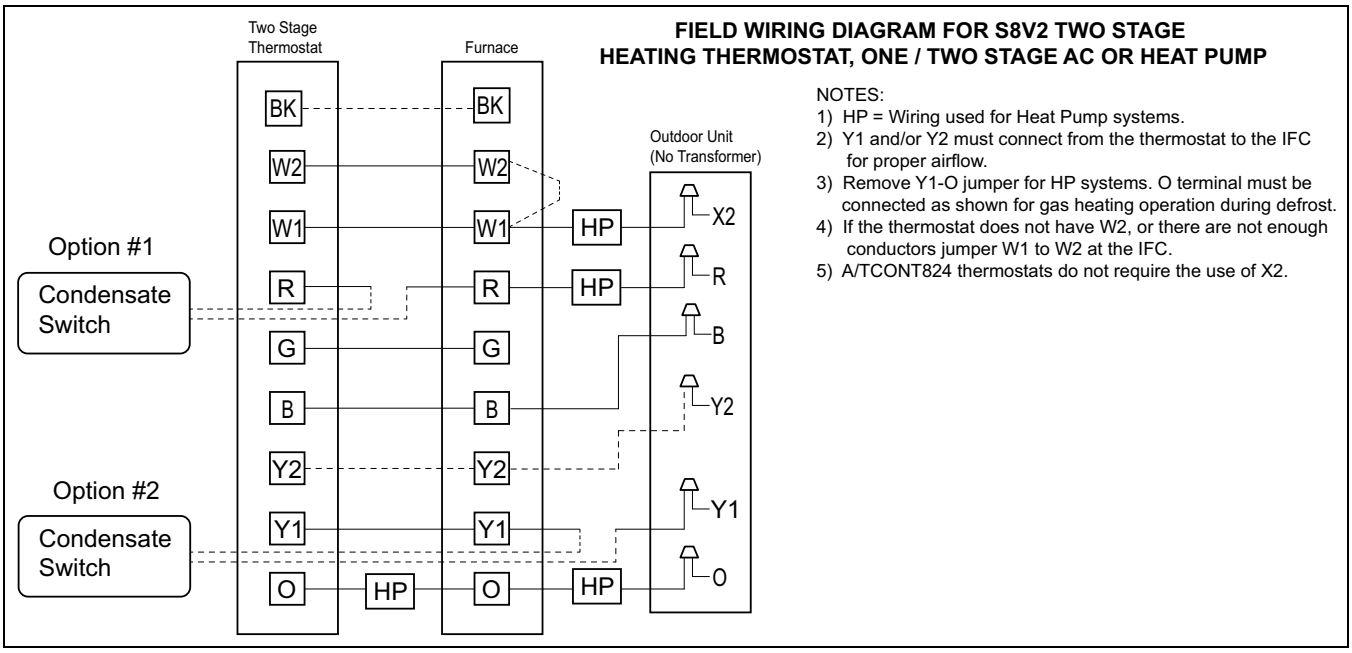
Make wiring connections to the unit as indicated on enclosed wiring diagram. As with all gas appliances using electrical power, this furnace shall be connected into a permanently live electric circuit. It is recommended that furnace be provided with a separate "circuit protection device" electric circuit. The furnace must be electrically grounded in accordance with local codes or in the absence of local codes with the National Electrical Code, ANSI/NFPA 70 , if an external electrical source is utilized. ***The integrated furnace control is polarity sensitive.*** The hot leg of the 120V power supply must be connected to the black power lead as indicated on the wiring diagram.
Refer to the Wiring Diagram section in this document and unit wiring diagram attached to furnace.

⚠ WARNING

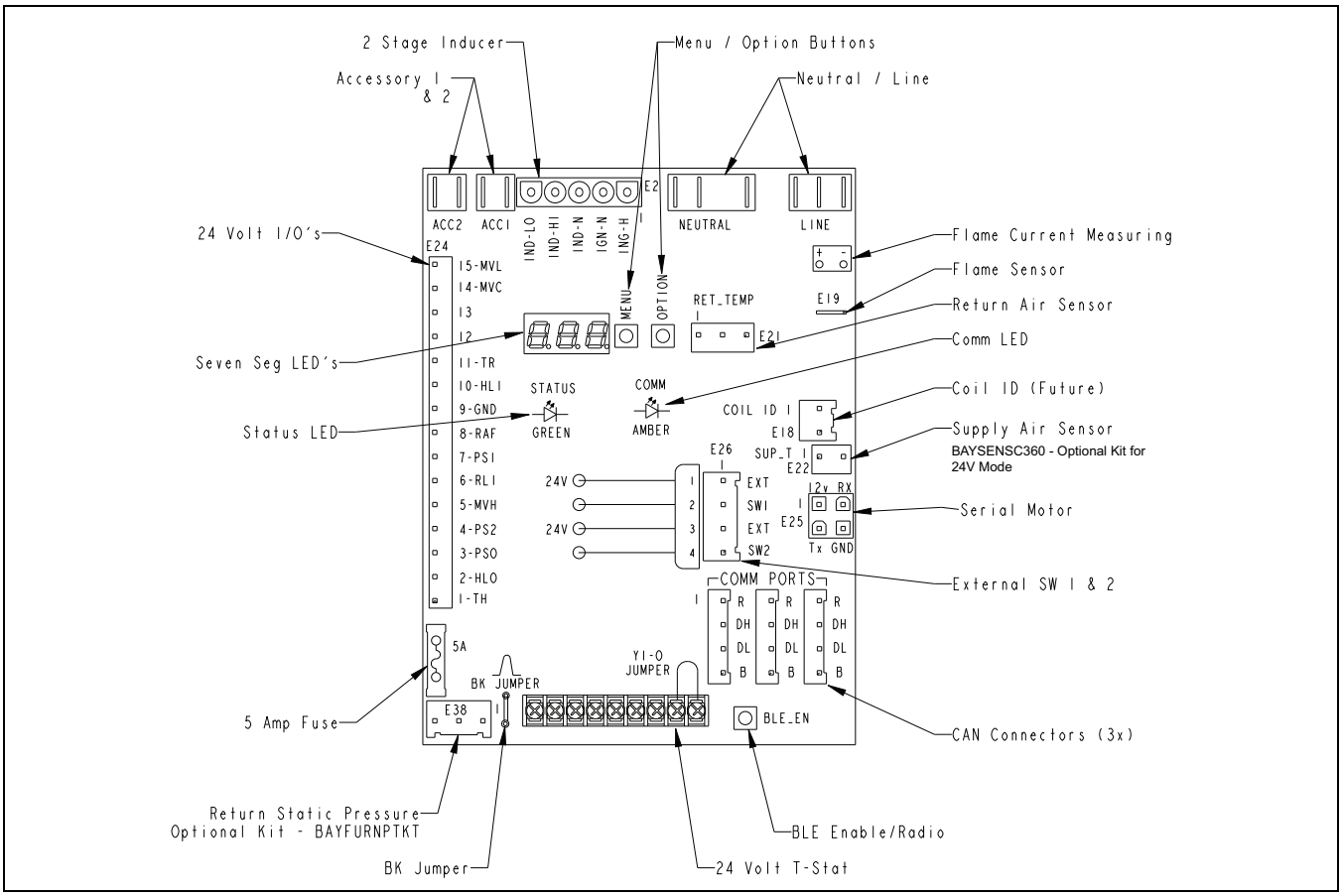
FIRE HAZARD!

Failure to follow this Warning could result in property damage, severe personal injury, or death.
This Warning applies to installations with a flammable refrigeration system. The furnace must be powered except for service. The furnace shall be installed and connected according to installation instructions and wiring diagrams that are provided with the evaporator coil.

24V Field Wiring



1. **Secure the sheathed wiring to the IFC using the factory supplied wire ties.**



2. **Mount Supply Air Temperature Sensor**

The Supply Air Sensor (BAYSENSC360) must be mounted on the leaving side of the cooling coil, or the maximum distance allowed by the wire length on a furnace only application. Testing has shown the left side of the plenum delivers the best average temperature. If the left side cannot be used, take several readings to determine the best place to mount the sensor for your application.

The Supply Air Sensor plugs into connector E22 of the IFC (See IFC layout). In the Diagnostic App, this sensor is defaulted OFF and must be configured to ON.

Note: *Supply Air Temp Sensor (SAT) is used in Link Communicating mode and is optional in 24 volt mode.*

Note: *Supply Air Temp Sensor (SAT) ships with SC360 System Controller.*

Note: *Supply Air Sensor kit is BAYSENSC360.*

Note: *The return air sensor is located within the blower wiring harness, behind the blower panel. In the Diagnostic App, this sensor is defaulted ON.*

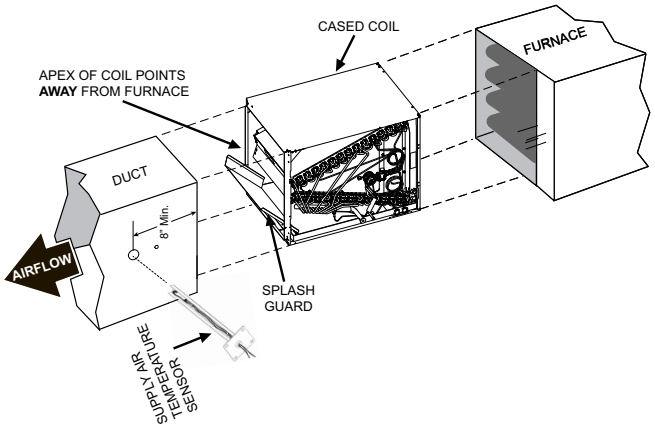


Table 16. Low Voltage Maximum Wire Length

The Low Voltage Maximum Wire Length table defines the size and combined total maximum length of the low voltage wiring from the outdoor unit, to the indoor unit, and to the thermostat. ***Note:*** *The use of color coded low voltage wire is recommended to simplify connections between the outdoor unit, the control, and the indoor unit.*	**Control Wire — Communicating**	
	WIRE SIZE	MAX. WIRE LENGTH
	18 AWG	500 FT. Combined
	Control Wire — 24 Volt	
	WIRE SIZE	MAX. WIRE LENGTH
	18 AWG	100 FT. Combined

Table 17. Link Communicating Low Voltage Wire Connectors

Link mode uses simple connectors for low voltage connections. These connections are color coded which makes the installation easier and quicker.

Wire Colors	
R	Red
DH	White
DL	Green
B	Blue

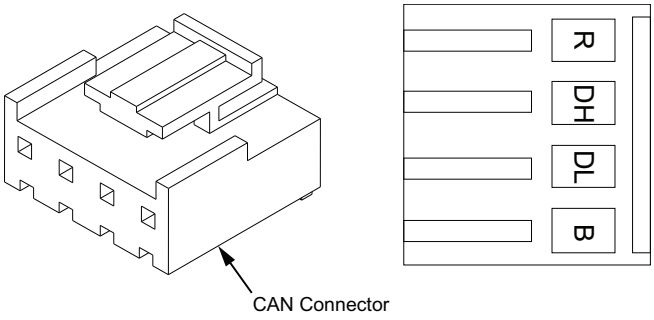
Do the following to make the connections from the actual thermostat wire to the connector.

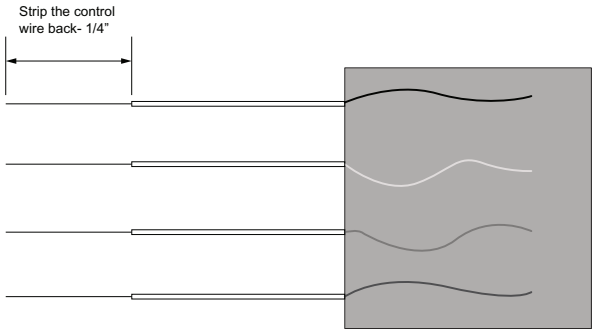
Note: *These connectors are necessary at the communicating outdoor unit, communicating indoor unit, distribution board(s), system controller and communicating accessories.*

1. Strip the Red, White, Green and Blue thermostat wires back 1/4”.
2. Insert the wires into the connector in the correctly colored locations.
3. **When you feel it release, allow each wire to slide in further.**
4. Pull back on the wires individually and slightly and check if the wires are seated properly. If each wire does not pull out for all four wires, the connection is complete.
5. Connectors are ONE TIME USE. If a 18 ga. Thermostat wire gets broken off inside of the connector, the connector will need replaced.
6. Wire colors are for illustration purposes only. If using a different color, ensure it lands at the correct terminal throughout all of the communicating control wiring.

Connect the CAN connector into the male coupling on the low voltage harness at the Outdoor unit.

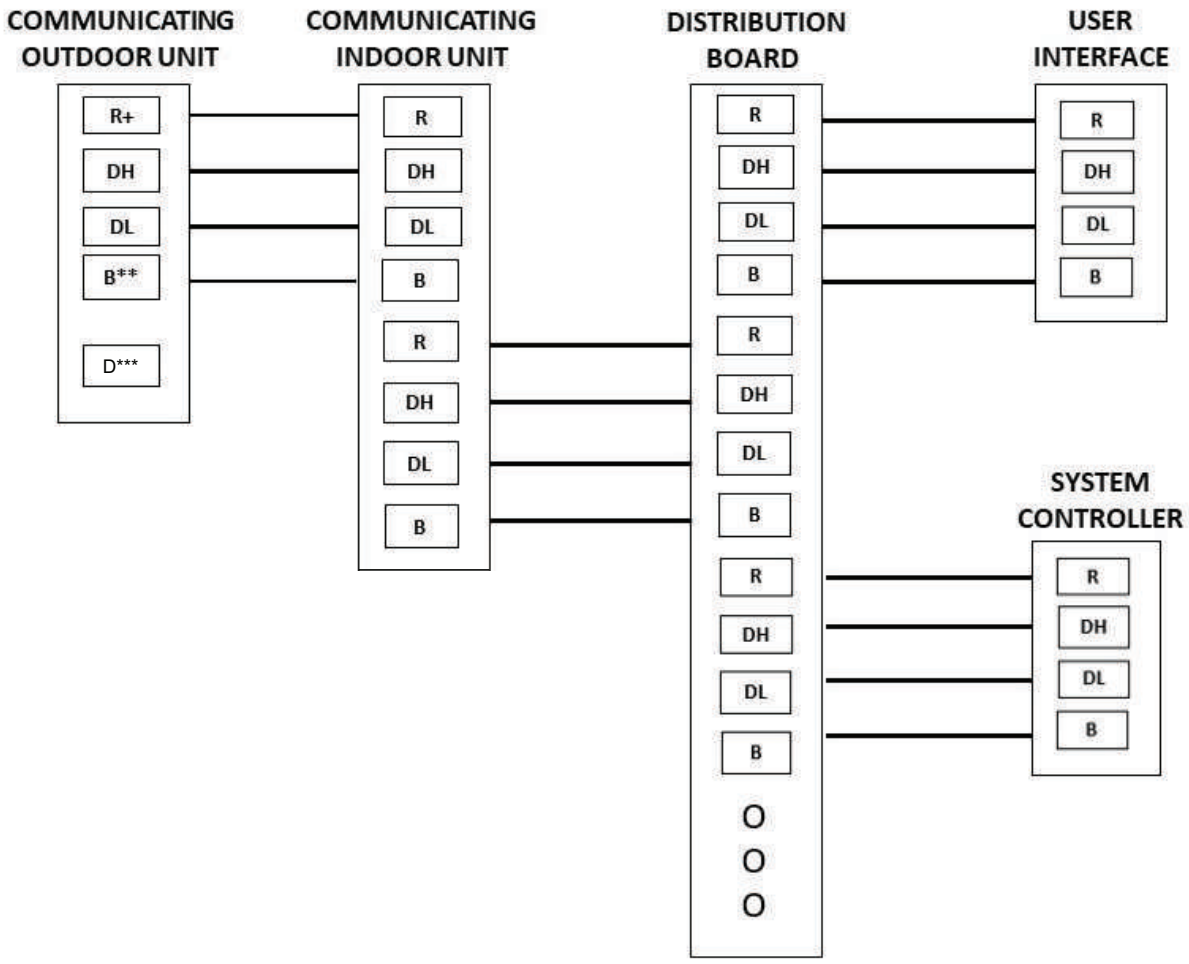
This furnace has three dedicated CAN connectors on the Integrated Furnace Control (IFC). In Link communicating mode, all of them are in the communicating loop. It does not matter which connector is used for the Thermostat, System Controller (HUB), or Outdoor unit. Link accessories can be connected to the Distribution Board if needed.





Note: *For use with 18 ga. solid core thermostat wire.*

Table 18. Link Communicating Low Voltage Hook-Up Diagrams



Wire Colors	
R	Red
DH	White
DL	Green
B	Blue

Note:

\+ —R connection to the outdoor unit is required only in applications utilizing an outdoor loadshed device or when using SmartCharge.

** —B connection to the outdoor unit is optional for 2 wire outdoor applications, but is recommended in other applications.

*** —DATA (Brown) wire only used in Clii mode.

—Wire colors are for illustration purposes only. If using a different color, ensure it lands at the correct terminal throughout all of the communicating control wiring.

—Drawing is for reference only - wiring can be done many different ways.

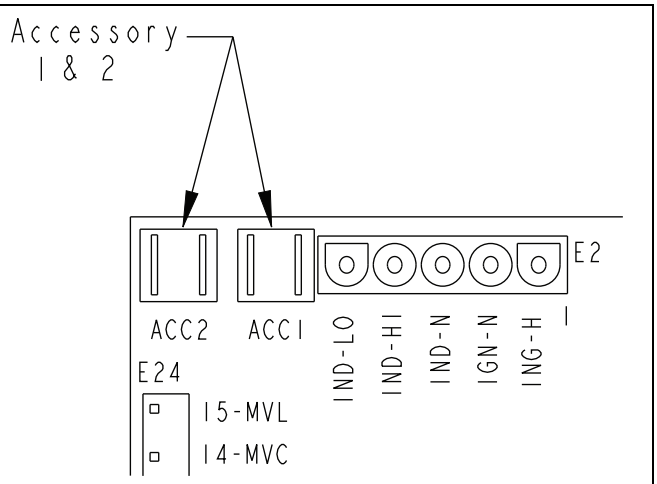
External Switches and Accessories

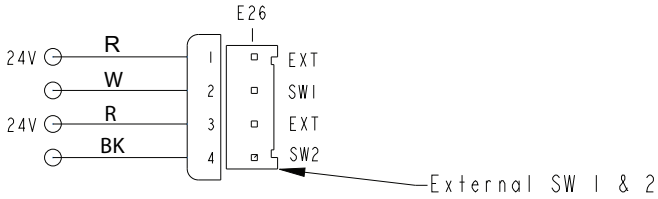
When connecting a humidifier or electronic air cleaner to the furnace, use ACC1 or ACC2.

- Accessory 1 and 2 are dry contacts need source voltage from the accessory.
- External switches 1 and 2 have 24VAC source voltage and are to be connected to Normally Closed (NC) contacts on the device, i.e smoke detector.

Note: *In Link Communicating mode, Accessories and External Switches can be configured in the UX360 User Interface or Diagnostics Mobile app.*

Note: *In 24V mode, Accessories and External Switches must be configured in the Diagnostics Mobile app.*





Wire Colors	
R	Red
W	White
BK	Black

General Start-up and Adjustment

The following sections give instructions for the general start-up and adjustment of the gas furnaces.

Preliminary Inspections

With gas and electrical power "OFF", ensure: 1. Duct connections are properly sealed. 2. Filters are in place. 3. Venting is properly assembled. 4. Blower vestibule panel is in place and all screws in place.	Turn knob on main gas valve within the unit to the "**OFF**" position. Turn the external gas valve to "ON". Purge the air from the gas lines. After purging, check all gas connections for leaks with a soapy solution. — **DO NOT CHECK WITH AN OPEN FLAME.** Allow 5 minutes for any gas that might have escaped to dissipate. Turn the gas valve in the unit to the "ON" position. Propane Gas being heavier than air may require forced ventilation. Turn the toggle switch on the Gas Valve in the unit to the "ON" position.

Lighting Instructions

Lighting instructions appear on each unit. Each installation must be checked out at the time of initial start up to ensure proper operation of all components. Check out should include putting the unit through one complete cycle as outlined below. Turn on the main electrical supply and set the comfort control above the indicated temperature. The igniter will automatically heat, then the gas valve is energized to permit the flow of gas to the burners. After ignition and flame is established, the flame control module monitors the flame and supplies power to the gas valve until the comfort control is satisfied.	**⚠ 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.**

To shut off For complete shutdown: Turn the toggle or control switch located on the main gas valve inside the unit to the "OFF" position and the external main gas shutoff valve to the "OFF" position. Disconnect the electrical supply to the unit.	
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** **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.**

Control and Safety Switch Adjustment

LIMIT SWITCH CHECK OUT The limit switch is a safety device designed to close the gas valve should the furnace become overheated. Since proper operation of this switch is important to the safety of the unit, it **must be checked out on initial start up by the installer**.	To check for proper operation of the limit switches, set the thermostat to a temperature higher than the indicated temperature to bring on the gas valve. Restrict the airflow by blocking the return air to the blower. When the furnace reaches the maximum outlet temperature as shown on the rating plate, the burners must shut off. If they do not shut off after a reasonable time and overheating is evident, a faulty limit switch is probable and the limit switch must be replaced. After checking the operation of the limit control, be sure to remove the paper or cardboard from the return air inlet, or reconnect the blower.

Furnace Combustion Air Exhaust Options

Note: *Default is left side for electric and gas connections.*

The following sections give instructions for the different furnace orientations and the options for venting the exhaust combustion air.

Important: *When looking at the different orientations, the direction of the combustion air exhaust in the illustration's description is after the furnace has been rotated, if needed.*

Table 19. Venting Options for Upflow Applications

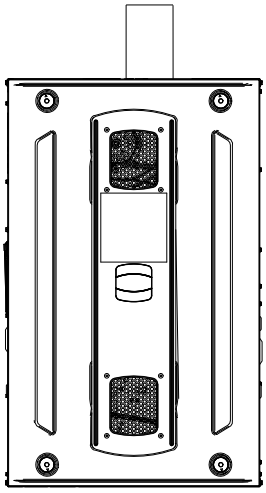
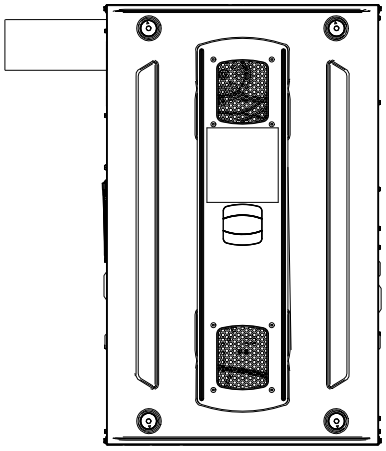
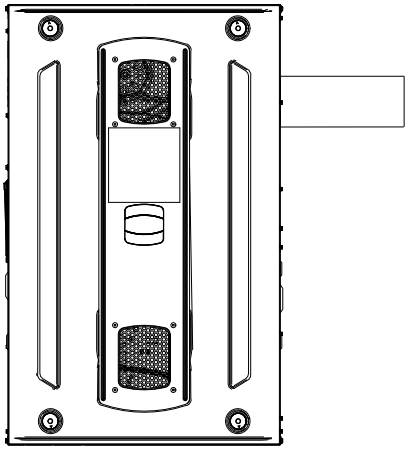
Refer to the illustrations below to find the approved venting options for upflow furnace. ***Important:*** *The exhaust must be vented to the outdoors.*		
Upflow Orientation or Installation		
Vented out top. 	Vented through left side. 	Vented through right side. 

Table 20. Venting Options for Horizontal Left Applications

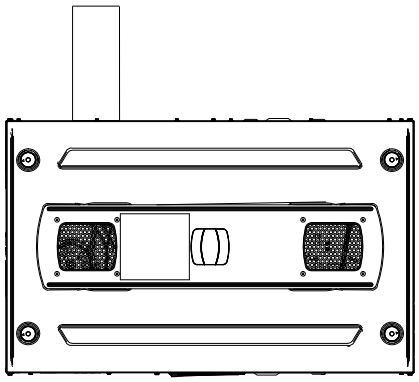
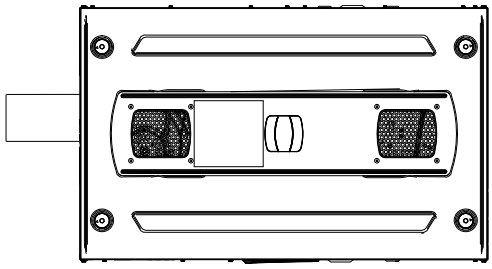
Refer to the illustrations below to find the approved venting options for horizontal left furnace. ***Important:*** *The exhaust must be vented to the outdoors.* ***Note:*** *4" Type B double wall vent pipe must be used inside of the furnace cabinet.*	
Horizontal Left Orientation or Installation	
Vented out top. 	Vented through left side. 

Table 21. Venting Options for Horizontal Right Applications

Refer to the illustrations below to find the approved venting options for horizontal right furnace.

Important: *The exhaust must be vented to the outdoors.*

Note: *4" Type B double wall vent pipe must be used inside of the furnace cabinet.*

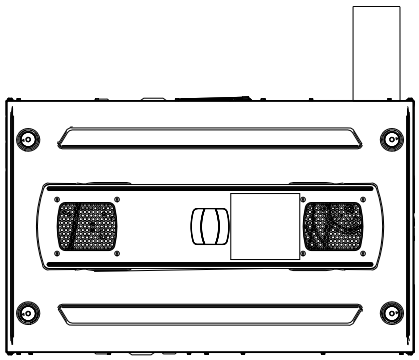
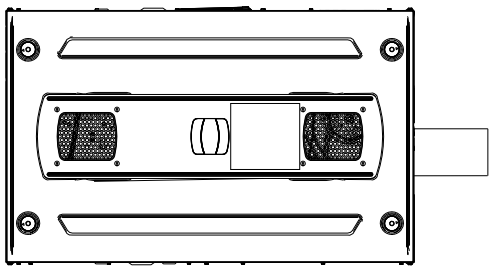
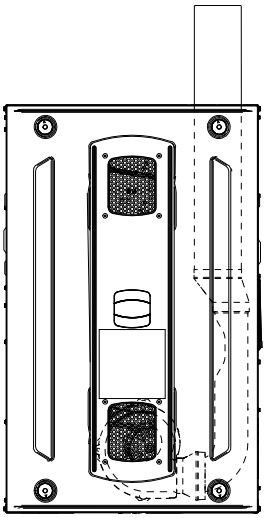
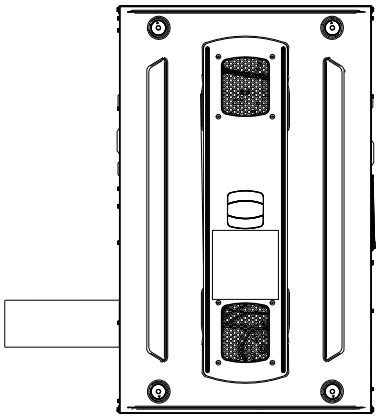
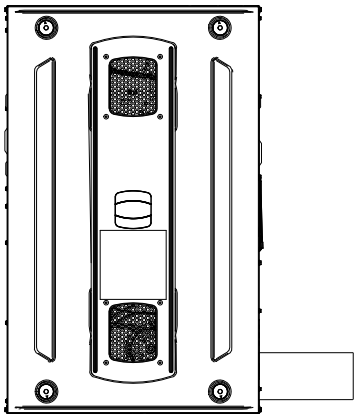
Horizontal Right Orientation or Installation	
Vented out top. 	Vented through right side. 

Table 22. Venting Options for Downflow Applications

Refer to the illustrations below to find the approved venting options for downflow furnace models.

Important: *The combustion air exhaust must be vented to the outdoors.*

Note: *4" Type B double wall vent pipe must be used inside of the furnace cabinet.*

Downflow Orientation or Installation		
Vented out top. ***Note:*** *Requires kit BAYVENT600. Kit used with B, C, and D cabinets only.* ***Note:*** *"A" cabinet furnaces must be vented through the left of right side openings.* 	Vented through left side. 	Vented through right side. 

Combustion Air Conversions

Important: *After deciding the orientation of the flue outlet, cut the metal tabs around the appropriate 5″ metal cutout on the furnace cabinet and remove the cutout, if necessary.*

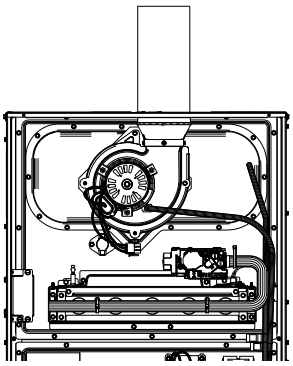
Note: *When rotating the inducer it may be necessary to cut the wire tie. A new wire tie must be installed once the inducer is rotated.*

Pressure Switch locations

S8V2: PS1 is connected to the inducer. PS2 is connected to the hot header.

Note: *Self-tapping screws are recommended for attaching the vent pipe to the inducer outlet.*

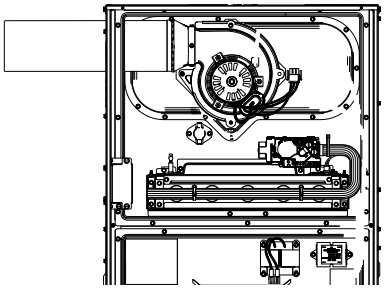
Upflow orientation with top venting



Refer to Step 1.

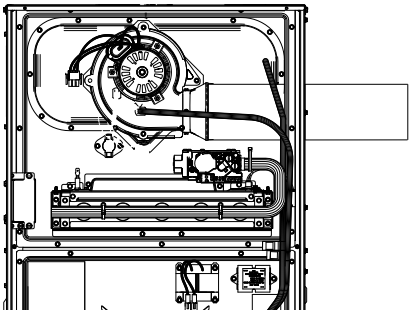
Upflow orientation with left side venting

Note: *When rotating the inducer it may be necessary to cut the wire tie. A new wire tie must be installed once the inducer is rotated.*



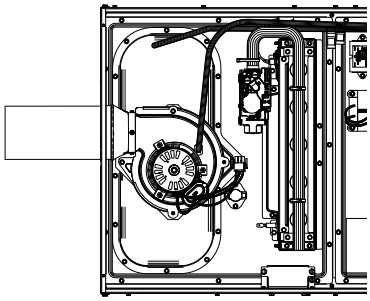
Refer Step 2. to Step 6.

Upflow orientation with right side venting



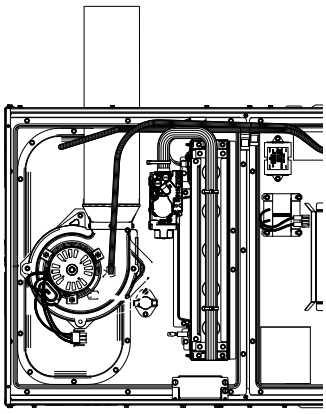
Refer Step 2. to Step 6.

Horizontal left orientation with left side venting



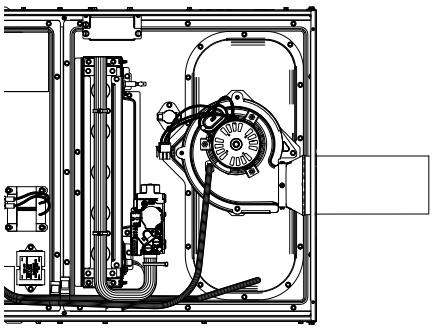
Refer to Step 1.

Horizontal left orientation with top venting



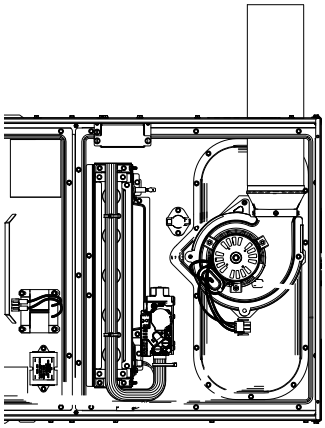
Refer Step 2. to Step 6.

Horizontal right orientation with right side venting



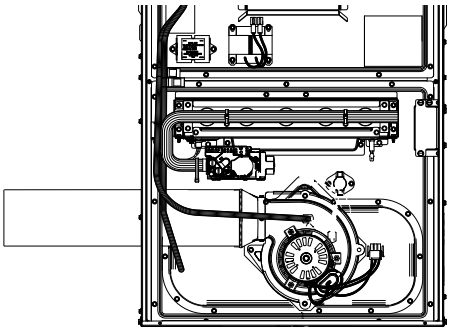
Refer to Step 1.

Horizontal right orientation with top venting



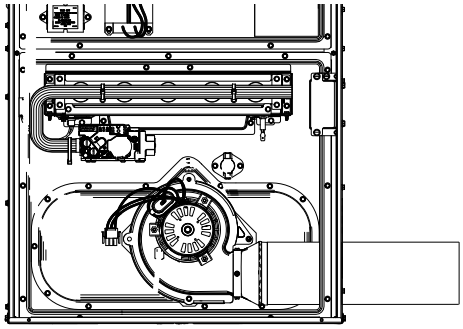
Refer Step 2. to Step 5. and Step 7.

Downflow orientation with left side venting



Refer Step 2. to Step 6.

Downflow orientation with right side venting

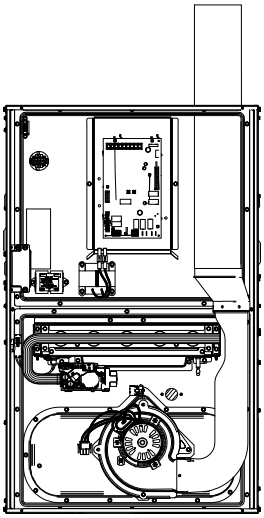


Refer Step 2. to Step 6.

Downflow orientation with top venting

Note: *Requires kit BAYVENT600. Kit used with B, C, and D cabinets only. Follow kit instructions for installation.*

Note: *4″ Type B double wall vent pipe must be used inside of the furnace cabinet.*



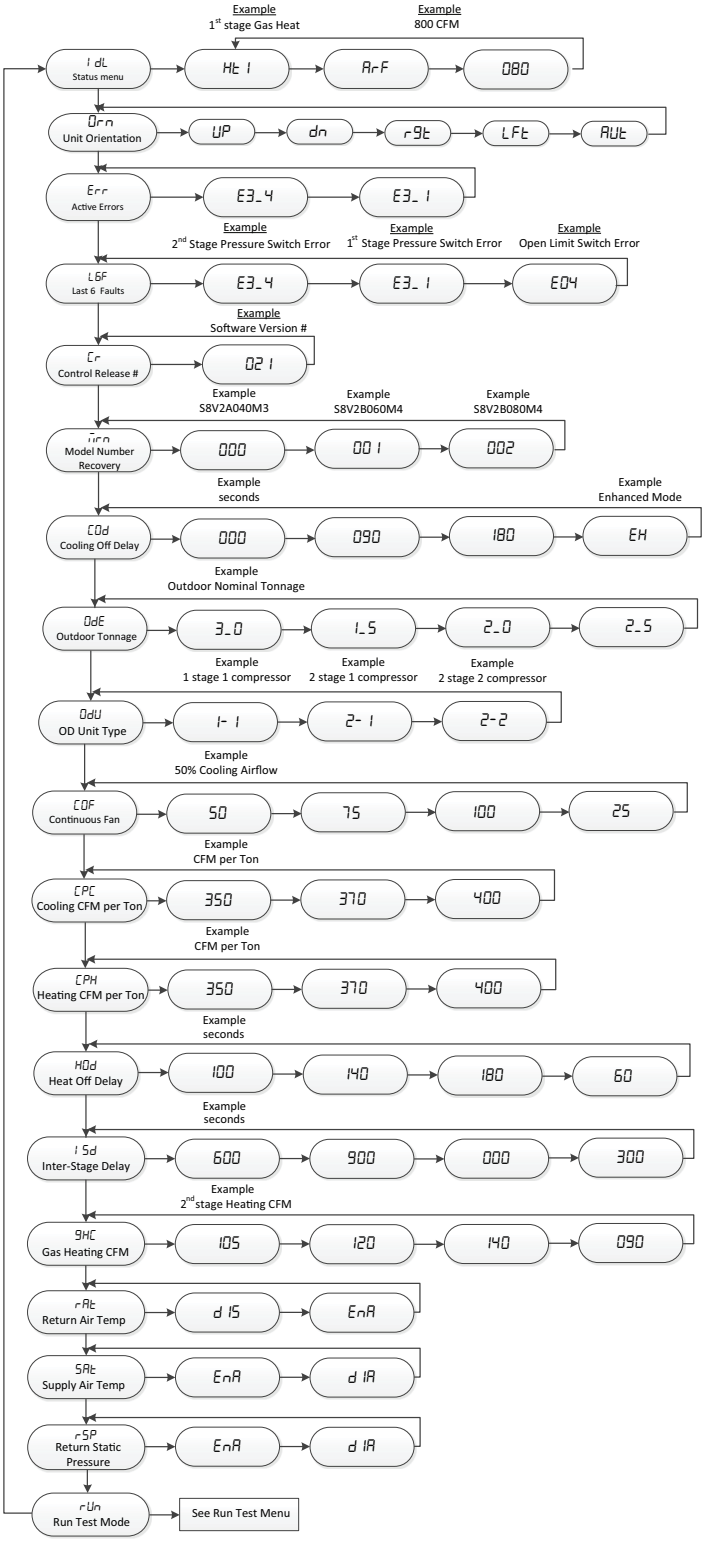
Refer to Step 2., Step 3., Step 4., Step 8. and Step 6.

Installation Instructions

1. No changes need to be made to the inducer when installing the furnace in upflow position when vented through the top.
2. Before proceeding, lay unit on its back to make the conversion easier.
3. Remove the four screws holding the inducer in place.
4. Rotate the inducer so the inducer outlet is pointing towards the 5″ cutout.
5. Secure the inducer in place using the screws removed in step 3.
6. Attach the vent to the inducer outlet.
7. Attach the vent outlet gasket to the vent outlet.
8. Install BAYVENT600 kit per the kit instructions.

Integrated Furnace Control Menu

S8V2-C
24V Control System Menu



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. (IdL 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.

CLEARING THE LAST 6 FAULTS:

To clear the stored faults, scroll to the last 6 faults menu (LF6), 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.

Model Number	Model Number Recovery Digit
S8V2A040M3PC	1
S8V2B060M4PC	2
S8V2B080M4PC	3
S8V2C080M5PC	4
S8V2C100M5PC	5
S8V2D120M5PC	6
S8V2A040M3PD	7
S8V2B060M4PD	8
S8V2B080M4PD	9
S8V2C080M5PD	10
S8V2C100M5PD	11
S8V2D120M5PD	12

Model Number	ODT Options [ ] = Default
S8V2A040M3PC/D	[3T], 1.5T, 2T, 2.5T
S8V2B060M4PC/D	[4T], 1.5T, 2T, 2.5T, 3T, 3.5T
S8V2B080M4PC/D	[4T], 2T, 2.5T, 3T, 3.5T
S8V2C080M5PC/D	[5T], 2.5T, 3T, 3.5T, 4T, 4.5T
S8V2C100M5PC/D	[5T], 2.5T, 3T, 3.5T, 4T, 4.5T
S8V2D120M5PC/D	[5T], 3T, 3.5T, 4T, 4.5T

NOTE:
Do not adjust COF above 75%.

CFM per Ton selections range from 290 - 450.

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

Gas heating CFM shown is 2nd stage airflow. 1st stage airflow is ~80% of the selected 2nd stage airflow and cannot be adjusted.

***NOTE:** Using the link mobile app, (Gas Heating Test) is recommended for setting airflow and adjusting gas manifold pressure.*

Multiply the value shown by 10 for actual airflow.

Setting airflow "On the Fly" is not available on this control.

Model Number	Gas Heating CFM [ ] = Default
S8V2A040M3PC/D	064[064], 075, 085, 054
S8V2B060M4PC/D	105[105], 120, 140, 090
S8V2B080M4PC/D	133[133], 147, 160, 106
S8V2C080M5PC/D	135[135], 145, 165, 115
S8V2C100M5PC/D	165[165], 180, 136, 150
S8V2D120M5PC/D	174[174], 185, 200, 150

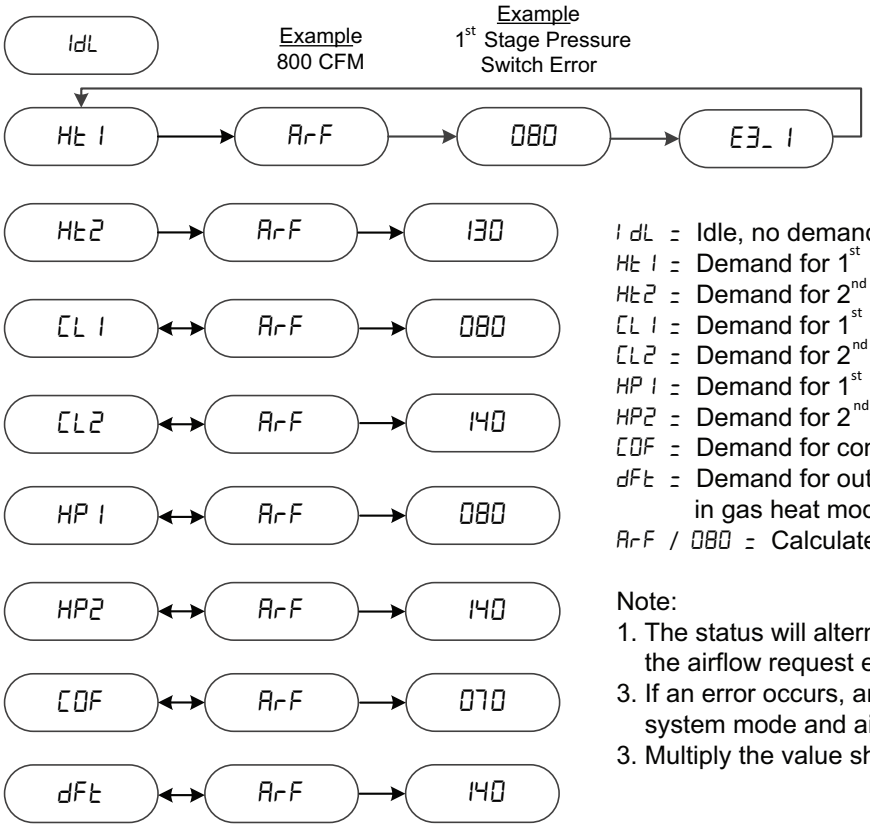
S8V2-C
Run Test Mode

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
rU2 – Turns on the inducer on 2nd stage for 30 seconds
rU3 – Turns the igniter 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
rU7 – Turns on the circulating blower on 2nd 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, igniter and circulating blower are performing as intended.

S8V2-C 24V
System Status Menu

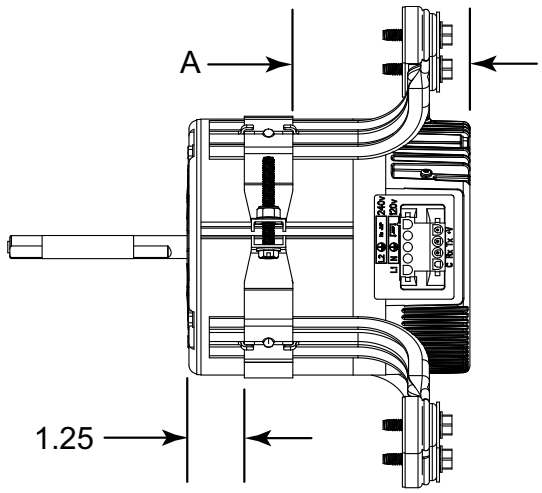


IdL = Idle, no demand for cooling, heating, or fan
Ht1 = Demand for 1st stage gas heat
Ht2 = Demand for 2nd gas heat
CL1 = Demand for 1st stage cooling
CL2 = Demand for 2nd stage cooling
HP1 = Demand for 1st stage heat pump
HP2 = Demand for 2nd stage heat pump
COF = Demand for continuous fan
dFt = Demand for outdoor unit defrost, furnace running in gas heat mode
ArF / 080 = Calculated airflow is 800 cfm

Note:
1. 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.
3. Multiply the value shown by 10 for actual airflow.

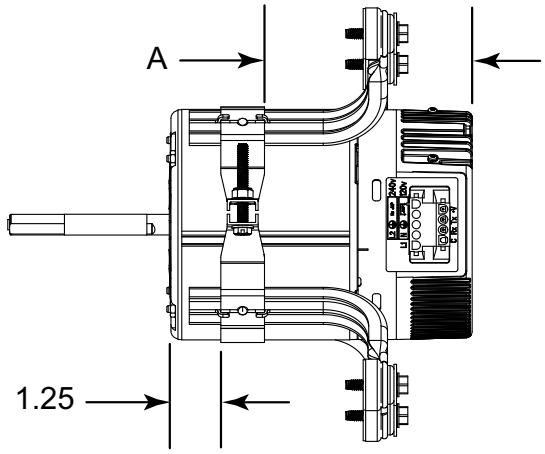
Belly Band Location

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



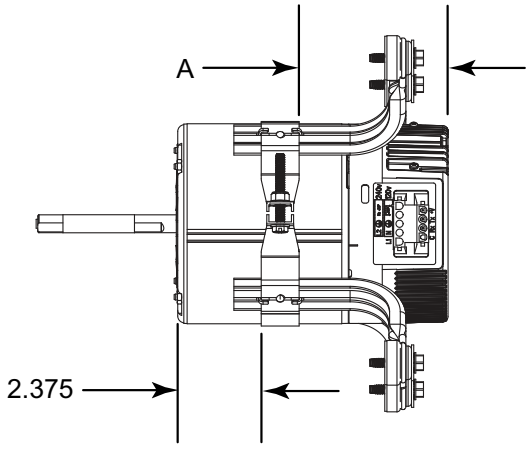
Blower housing and wheel removed from view for clarity.

Furnace Model	Dimension "A" (inches)
A040	3.87



Blower housing and wheel removed from view for clarity.

Furnace Model	Dimension "A" (inches)
B060	5.04
B080	5.04



Blower housing and wheel removed from view for clarity.

Furnace Model	Dimension "A" (inches)
C080	4.17
C100	4.17
D120	4.17

Integrated Furnace Control Display Codes

Menu Options	
Orn	Orientation
Err	Active Alarm Menu
L6F	Last 6 Faults (To clear – Hold Option button down for 5 seconds after entering the L6F menu)
Cr	Code Release Number
ˉmr	Model Number Recovery
COd	Cooling Off Delay (Seconds)
Odt	Outdoor Tonnage
OdU	Outdoor Unit Type (Single / Two Stage)
COF	Blower Constant Fan Airflow Multiplier %
CPC	Cooling (CFM/Ton)
CPH	Heat Pump Heating (CFM/Ton)
Hod	Heat Off Delay (Seconds)
I Sd	Inter-Stage Delay (Seconds)
GHC	Gas Heating CFM (Airflow x10)
SAt	Supply Air Temperature
rAt	Return Air Temperature
rSP	Return Static Pressure
rUn	Run Test Mode

Error Codes	
Alarm Error Code	Alarm Explanation
E01	Loss of the IRQ or other internal IFC failures
E2_1	Retries exceeded (Flame never sensed, one hour lockout after 7 times)
E2_2	Recycles exceeded (Flame sensed then lost, one hour lockout after 10 times)
E2_3	1st stage gas valve not energized when it should be (10 times)
E3_1	Shorted pressure switch, 1st stage
E3_2	Open pressure switch, 1st stage
E3_3	Shorted pressure switch, 2nd stage
E3_4	Open pressure switch, 2nd stage
E04	Open high limit switch
E4_ 1	Open reverse air-flow limit switch
E4_2	Open roll-out limit switch
E05	Flame detected when it should not be present
E6_ 1	Voltage reversed polarity
E6_2	Bad grounding
E6_3	(1) Igniter open or igniter relay failure on IFC
	(2) Igniter relay failure on IFC
E7_1	1st stage gas valve energized without request
E7_2	Redundant relay (HLO output) energized when it should not be
E08	Low flame sense. Current is low but strong enough for operation
E 11	(1) 1st stage gas valve not energized when it should be
	(2) 2nd stage gas valve energized without request
	(3) 2nd stage gas valve not energized when it should be
	(4) Gas valve relay stuck closed
E 12	Open fuse
E 13	Blower HP or OEM ID do not match furnace
E 14	Configuration file error

E17	Blower communication error
E23	Menu parameters not received by CCM
E24	Internal communication error between the ACM and CCM
E25	Orientation sensor out of bounds
E26	1) Return static pressure transducer out of bounds
	2) Return static pressure transducer configured but not connected
E27	1) Return air thermistor out of bounds
	2) Return air thermistor configured but not connected
E28	1) Supply air thermistor out of bounds
	2) Supply air thermistor configured but not connected

Fault Code Recovery

Fault Code Recovery

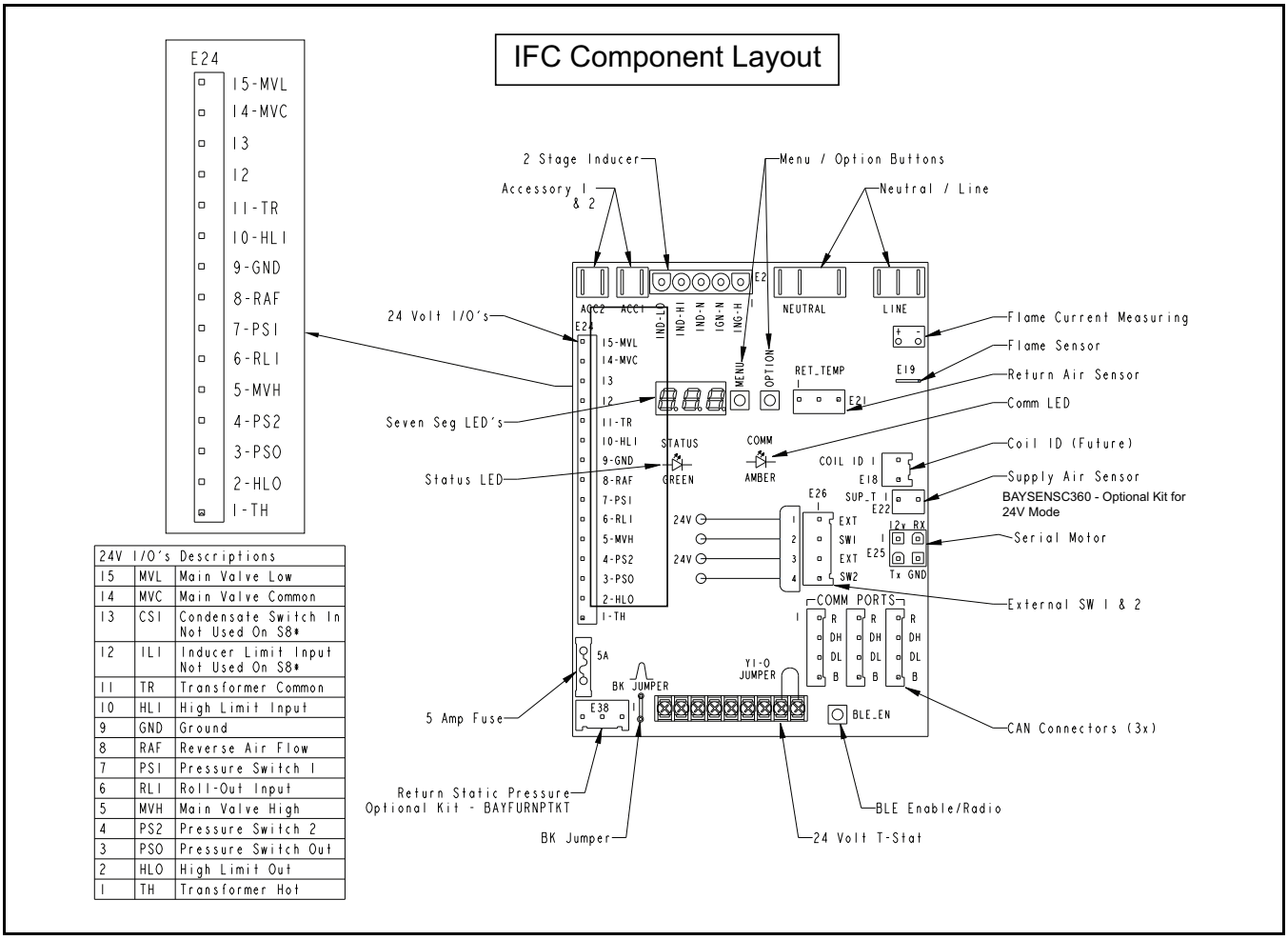
1. To view the last 6 faults, press the "Menu" key until the "Last 6 Faults" (LGF) menu appears.
2. Enter the menu by pressing the "Option" key.
3. The last 6 faults can be viewed.

Clearing the Last 6 Faults

1. To clear the last 6 faults, press the "Menu" key until the "Last 6 Faults" (LGF) menu appears.
2. Enter the menu by pressing the "Option" key.
3. Hold the "Option" key for at least 5 seconds.
4. Release and a set of 3 dashes with be seen 3 times. This confirms the faults have been cleared.

Resetting Factory Defaults

1. Display must be in Idle Mode.
2. Push the "Menu" and "Option" buttons at the same time for 15 seconds then release.
3. The 7 segment will flash "Fd" 3 times. This confirms the unit has been reset to the factory defaults.



24V I/O's Descriptions		
I5	MVL	Main Valve Low
I4	MVC	Main Valve Common
I3	CSI	Condensate Switch In Not Used On S8*
I2	ILI	Inducer Limit Input Not Used On S8*
I1	TR	Transformer Common
I0	HLI	High Limit Input
9	GND	Ground
8	RAF	Reverse Air Flow
7	PSI	Pressure Switch 1
6	RLI	Roll-Out Input
5	MVH	Main Valve High
4	PS2	Pressure Switch 2
3	PSO	Pressure Switch Out
2	HLO	High Limit Out
1	TH	Transformer Hot

Table 23. LED's in 24V Mode

Condition	Communication LED (Amber)	Status LED (Green)
Power-Up	Solid ON	Solid ON
IDLE	ON	OFF
Active Demand	ON	1 Flash
Active Error	ON	2 Flash
Internal Comm Error	ON	3 Flash
BLE Pairing	ON-Flashing	ON-Flashing

Table 24. LED's in Comm Mode

Condition	Communication LED (Amber)	Status LED (Green)
Power-Up	Solid ON	Solid ON
IDLE	Device Count	OFF
Active Demand	Device Count	1 Flash
Active Error	Device Count	2 Flash
Internal Comm Error	Device Count	3 Flash
CAN BUS Error	Fast Flash	OFF
BLE Pairing	ON-Flashing	ON-Flashing

Troubleshooting

The following pages include troubleshooting flowcharts in reference for the 2 Stage S8V2* family of furnaces only.

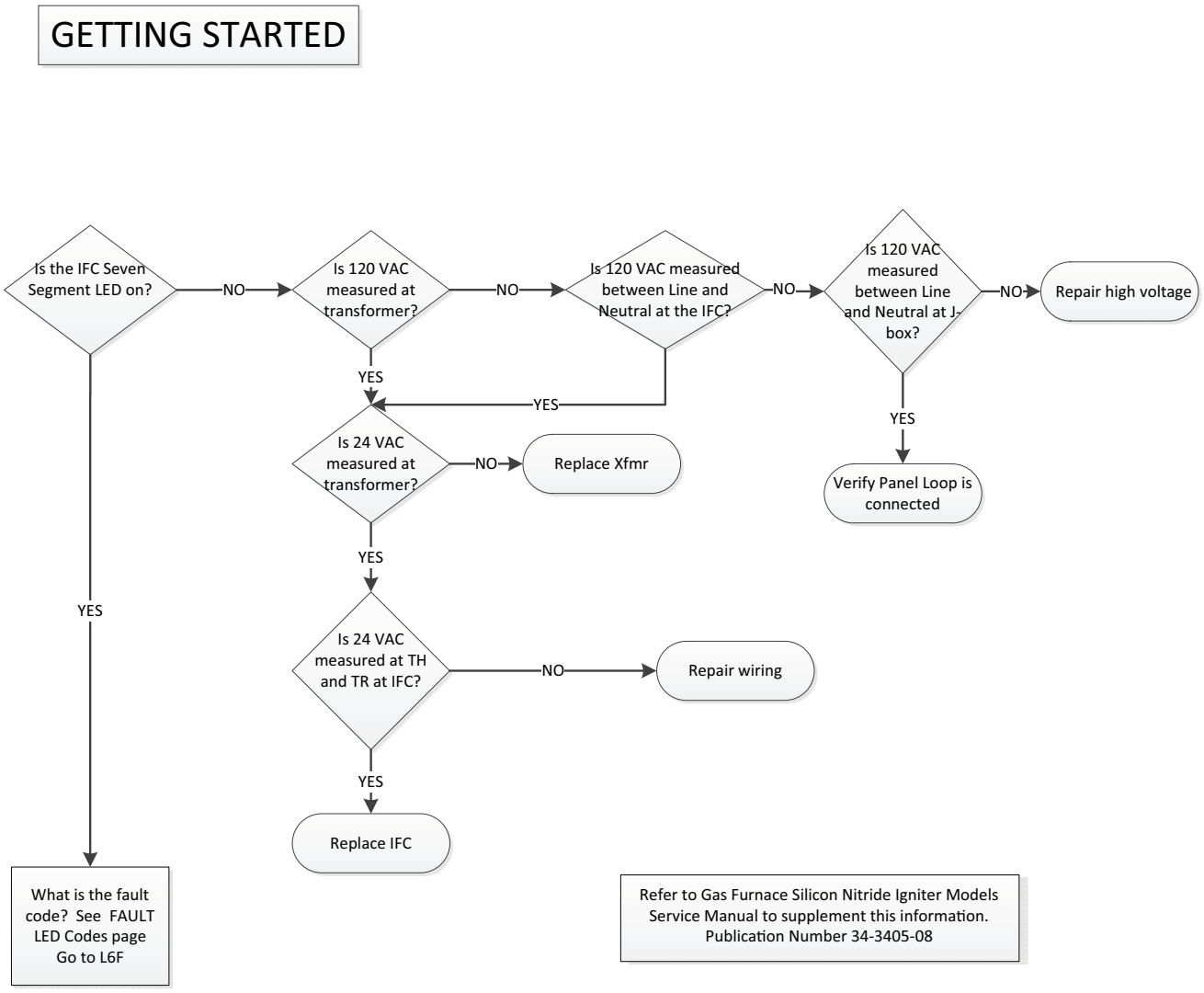
The information contained is for reference only and does not cover all scenarios or problems that may be encountered.

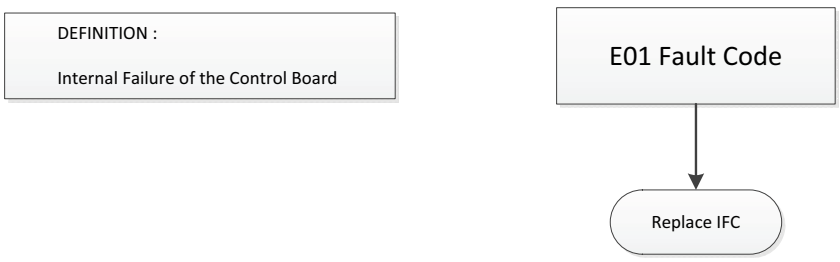
ONLY qualified technicians should attempt to install, troubleshoot, or repair this appliance.

Failure to follow all cautions and /or warnings could result in personal or property damage, including death.

Troubleshooting Flowchart Index

Error Codes


GETTING STARTED
Is the IFC Seven Segment LED on?
NO
Is 120 VAC measured at transformer?
NO
Is 120 VAC measured between Line and Neutral at the IFC?
NO
Is 120 VAC measured between Line and Neutral at J-box?
NO
Repair high voltage
YES
YES
YES
Is 24 VAC measured at transformer?
NO
Replace Xfmr
Verify Panel Loop is connected
YES
YES
Is 24 VAC measured at TH and TR at IFC?
NO
Repair wiring
YES
Replace IFC
What is the fault code? See FAULT LED Codes page Go to L6F
Refer to Gas Furnace Silicon Nitride Igniter Models Service Manual to supplement this information. Publication Number 34-3405-08


DEFINITION :
Internal Failure of the Control Board
E01 Fault Code
Replace IFC

DEFINITION

RETRY Lock Out = 6 unsuccessful tries for ignition within a single call for heat. Lockout period is for one hour

Flame has never been sensed

2.1 Fault Code

Turn all gas appliances on

Disconnect electrical power to furnace. Connect manometer to inlet gas pressure connector

Is inlet gas pressure above 13.8" WC or less than nameplate minimum ?

YES → Correct inlet gas pressure. Maximum pressure is 13.8"WC Check operation

NO

Cycle power to furnace. Connect manometer to manifold pressure connector and call for 1st stage heat

Is any gas pressure present?

NO → Possible causes
Switch OFF?
No voltage to GV
Debris in gas valve

YES

NO

Does gas ignite?

YES

Is manifold pressure ~1.7"WC (NG) ~6.0"WC (LP)

NO → Adjust manifold gas pressure to ~1.7"WC (NG) ~6.0"WC (LP) Check operation

YES

Do all burners ignite within 4 seconds?

NO → Possible causes
Burner alignment
Dirty burners
Low manifold pressure

YES

Check igniter position and correct if needed. Check operation

YES

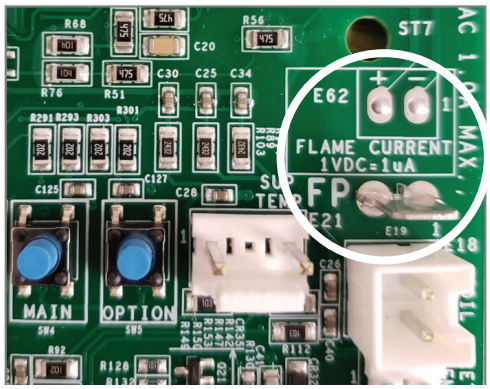
Measure flame current. Is flame current less than 0.5 micro-amp?

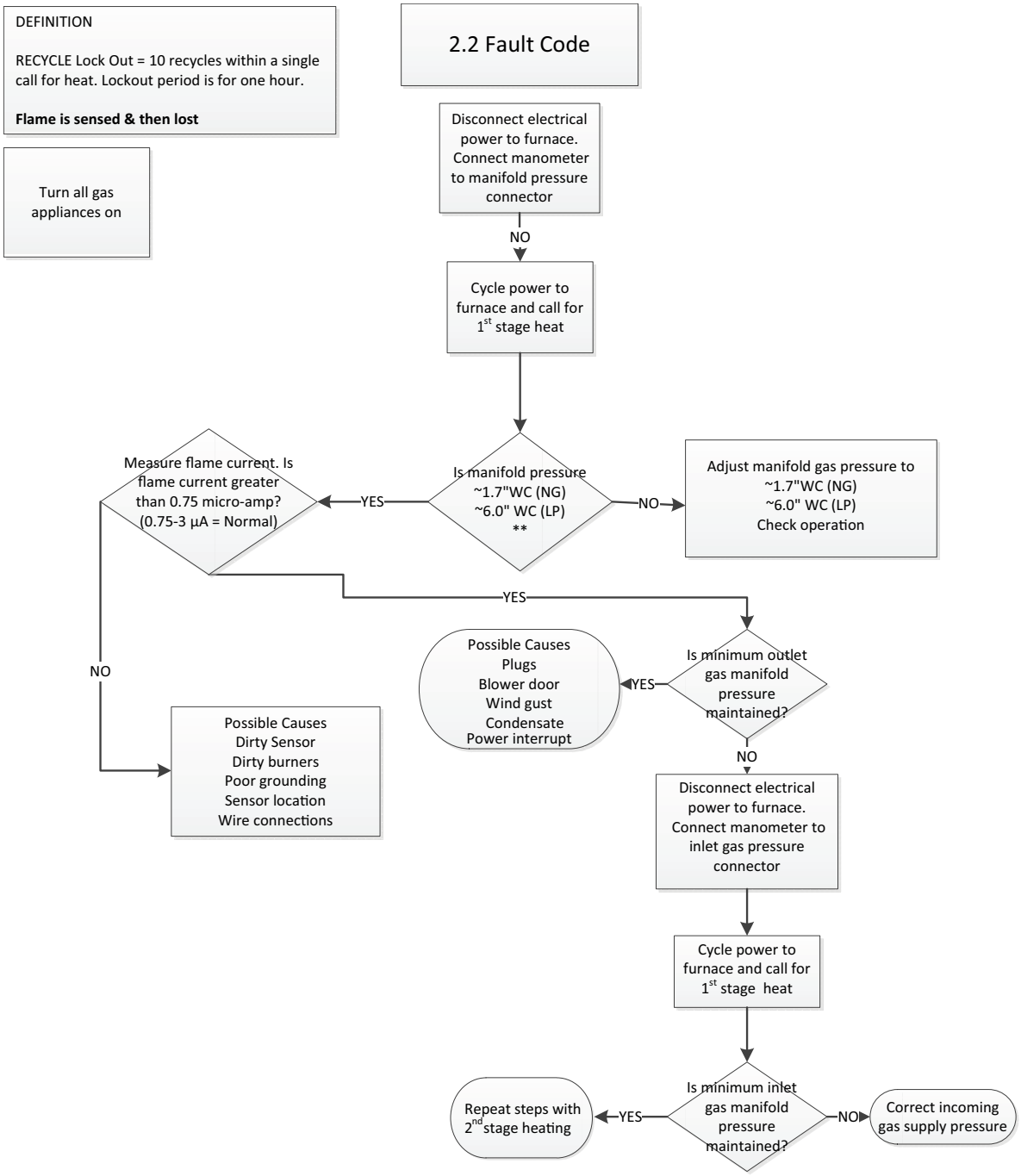
YES → Possible Causes
Dirty Sensor
Dirty burners
Poor grounding
Sensor location
Wire connections

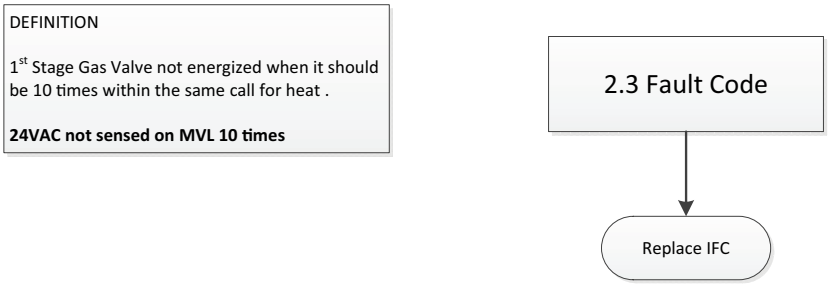
NO

Flame sensor is good

There are two flame sense pads located on the IFC, marked “FP”. To measure flame current, use a VOM set to DC volts. Flame current will vary depending on the type of meter used. Typical flame current ranges from 0.75 – 3.0 micro-amps (0.75 – 3.0 VDC)




DEFINITION
RECYCLE Lock Out = 10 recycles within a single call for heat. Lockout period is for one hour.
Flame is sensed & then lost
Turn all gas appliances on
2.2 Fault Code
Disconnect electrical power to furnace. Connect manometer to manifold pressure connector
NO
Cycle power to furnace and call for 1st stage heat
Is manifold pressure ~1.7"WC (NG) ~6.0" WC (LP) **
YES
Measure flame current. Is flame current greater than 0.75 micro-amp? (0.75-3 µA = Normal)
NO
Adjust manifold gas pressure to ~1.7"WC (NG) ~6.0" WC (LP) Check operation
YES
NO
Possible Causes Dirty Sensor Dirty burners Poor grounding Sensor location Wire connections
Is minimum outlet gas manifold pressure maintained?
YES
Possible Causes Plugs Blower door Wind gust Condensate Power interrupt
NO
Disconnect electrical power to furnace. Connect manometer to inlet gas pressure connector
Cycle power to furnace and call for 1st stage heat
Is minimum inlet gas manifold pressure maintained?
YES
Repeat steps with 2nd stage heating
NO
Correct incoming gas supply pressure


DEFINITION
1st Stage Gas Valve not energized when it should be 10 times within the same call for heat .
24VAC not sensed on MVL 10 times
2.3 Fault Code
Replace IFC

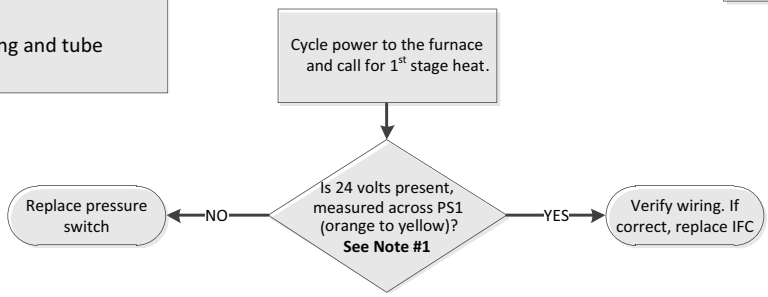
DEFINITION
An error has occurred with the PS1, indicating that the pressure switch is closed when it should be open.

In most cases, the pressure switch is not the problem.

NOTE: Verify pressure switch wiring and tube routing are correct.

3.1 Fault Code

Note #1
24 volts = Open Switch
0 volts = Closed Switch



DEFINITION
An error has occurred with the PS1 indicating that the pressure switch is either open when it should be closed.

In most cases, the pressure switch is not the problem.

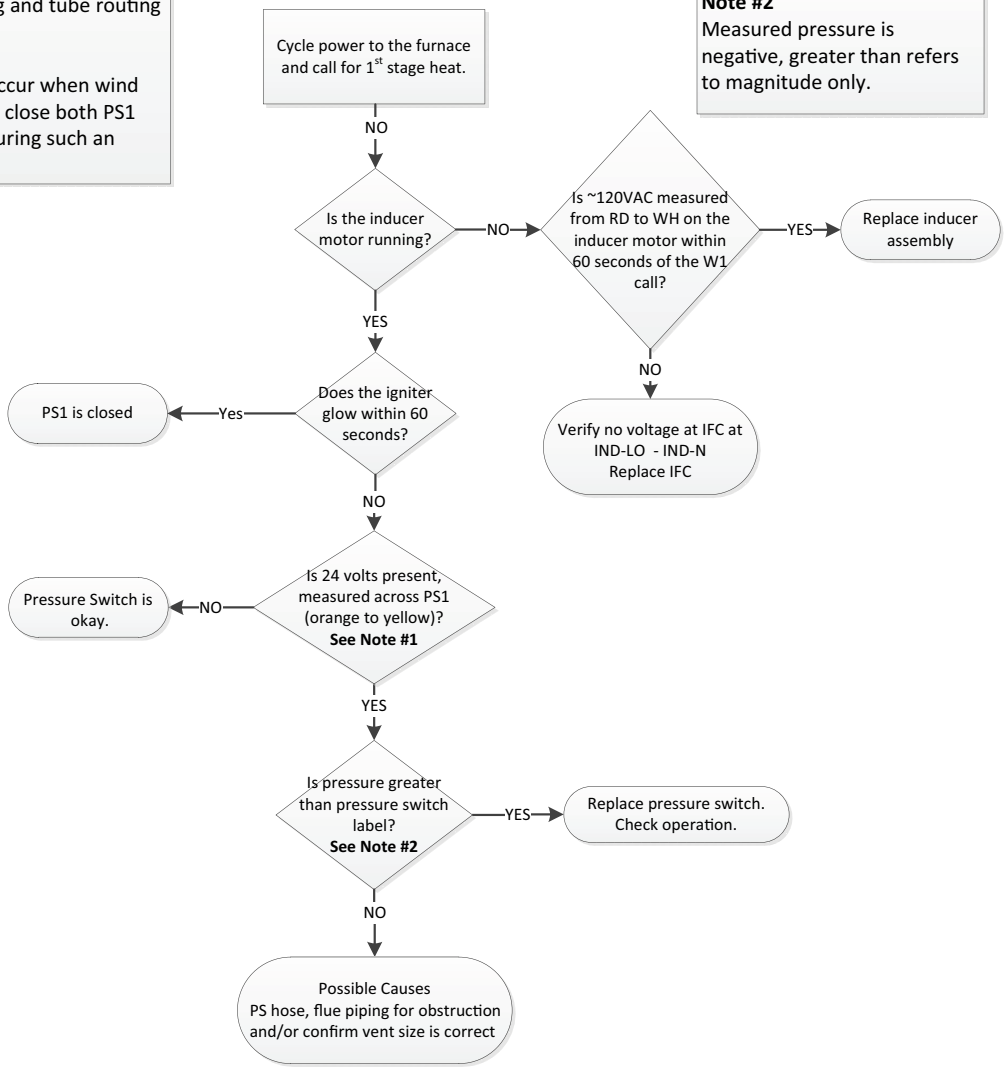
NOTE: Verify pressure switch wiring and tube routing are correct.

PS1 Open errors can occasionally occur when wind gusts occur. The IFC will attempt to close both PS1 and PS2 and operate on 2nd stage during such an event.

3.2 Fault Code

Note #1
24 volts = Open Switch
0 volts = Closed Switch

Note #2
Measured pressure is negative, greater than refers to magnitude only.



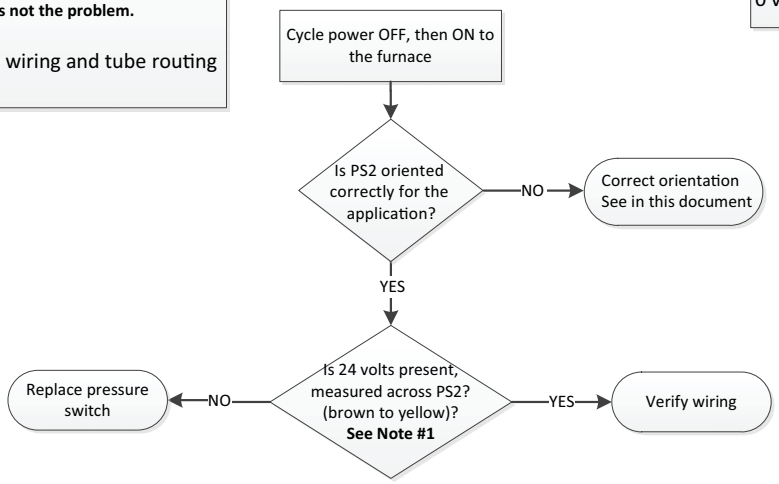
DEFINITION
An error has occurred with the PS2, indicating that the pressure switch is closed when it should be open.

In most cases, the pressure switch is not the problem.

NOTE: Verify pressure switch wiring and tube routing are correct.

3.3 Fault Code

Note #1
24 volts = Open Switch
0 volts = Closed Switch



DEFINITION
An error has occurred with the PS2 indicating that the pressure switch is either open when it should be closed.

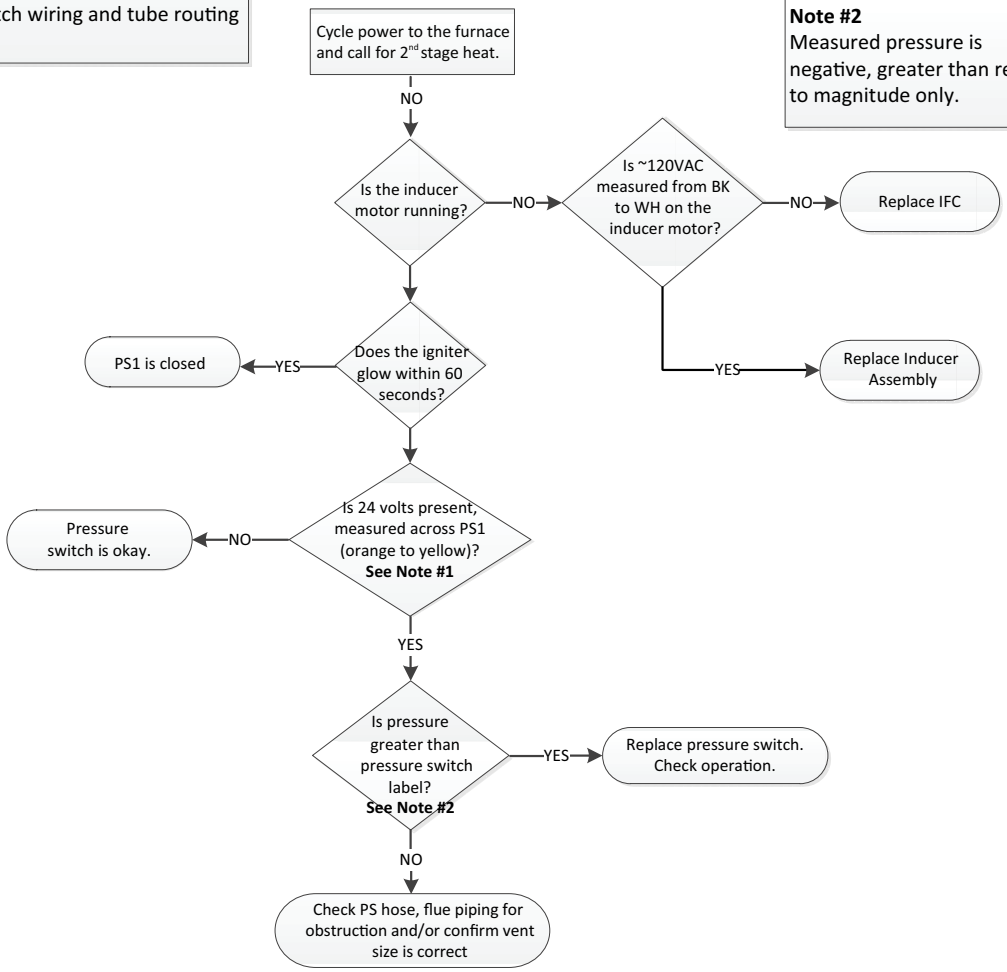
In most cases, the pressure switch is not the problem.

NOTE: Verify pressure switch wiring and tube routing are correct.

3.4 Fault Code

Note #1
24 volts = Open Switch
0 volts = Closed Switch

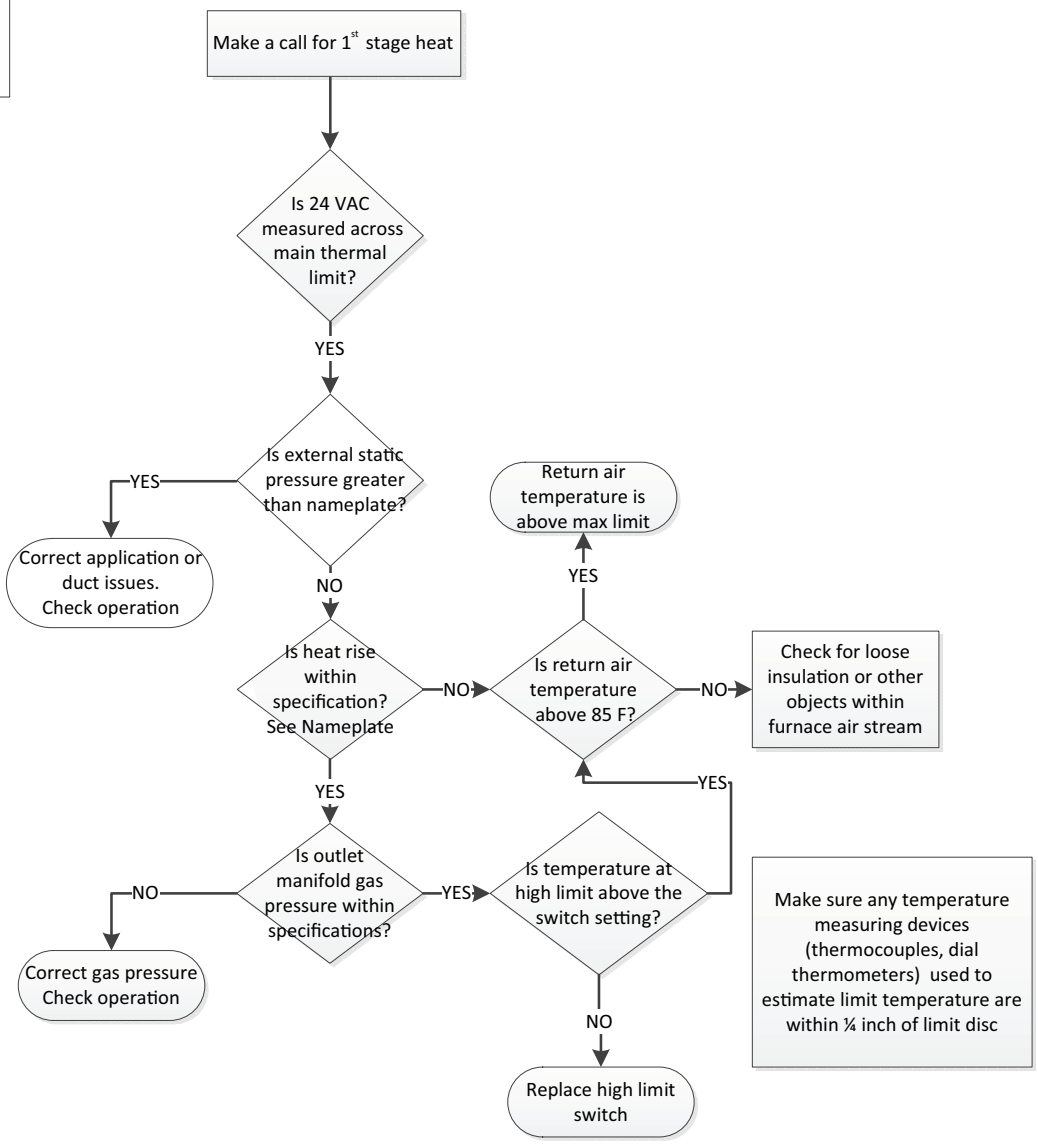
Note #2
Measured pressure is negative, greater than refers to magnitude only.



DEFINITION
Limit switches are safety devices that will open when an abnormal high temperature has been sensed.
REMOVE ALL JUMPER WIRING TO SWITCHES!
Under no circumstances, shall these switches be left jumpered when not troubleshooting.
Verify filters and blower wheels are clean

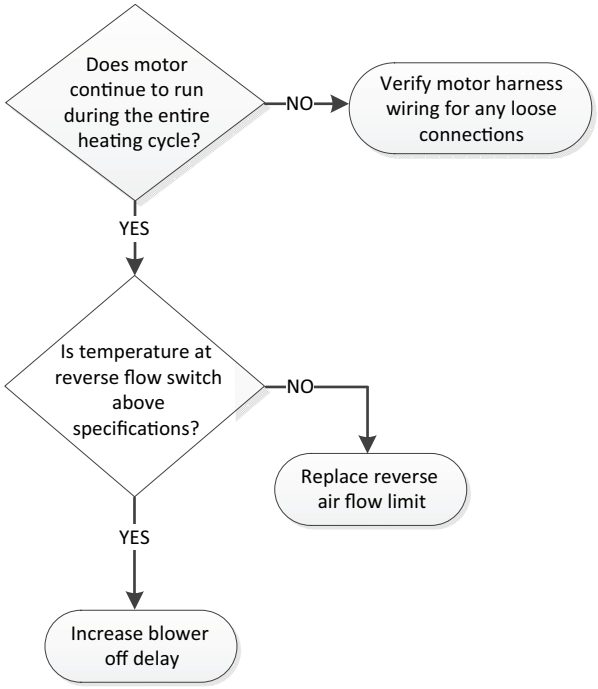
4.0 Fault Code Main Thermal Limit

Note:
Furnace will need to be checked in both 1st & 2nd stage operation.



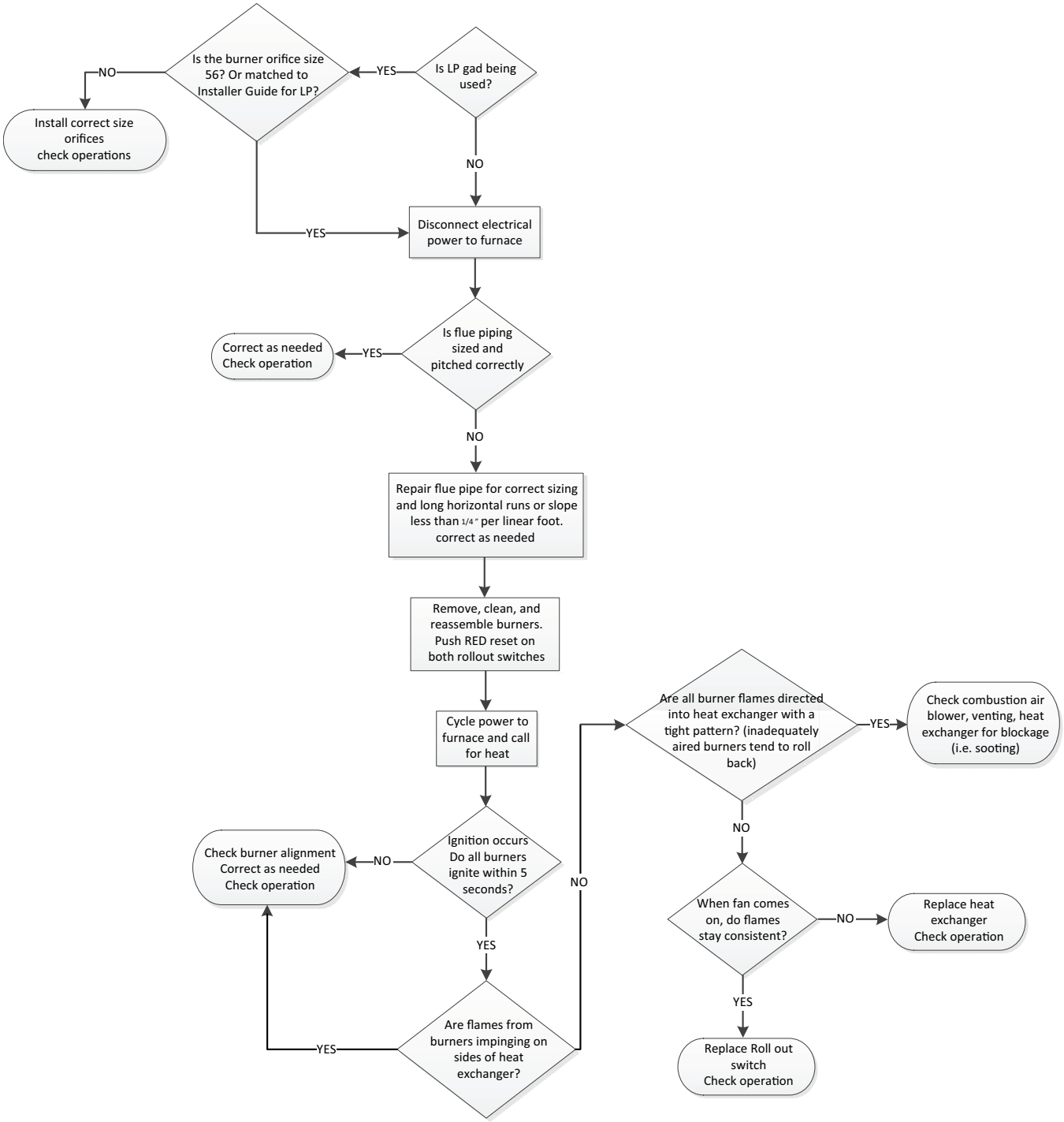
DEFINITION
Limit switches are safety devices that will open when an abnormal high temperature has been sensed.
REMOVE ALL JUMPER WIRING TO SWITCHES!
Under no circumstances, shall these switches be left jumpered when not troubleshooting.
Verify filters and blower wheels are clean

4.1 Fault Code
Open Reverse Air Flow Limit



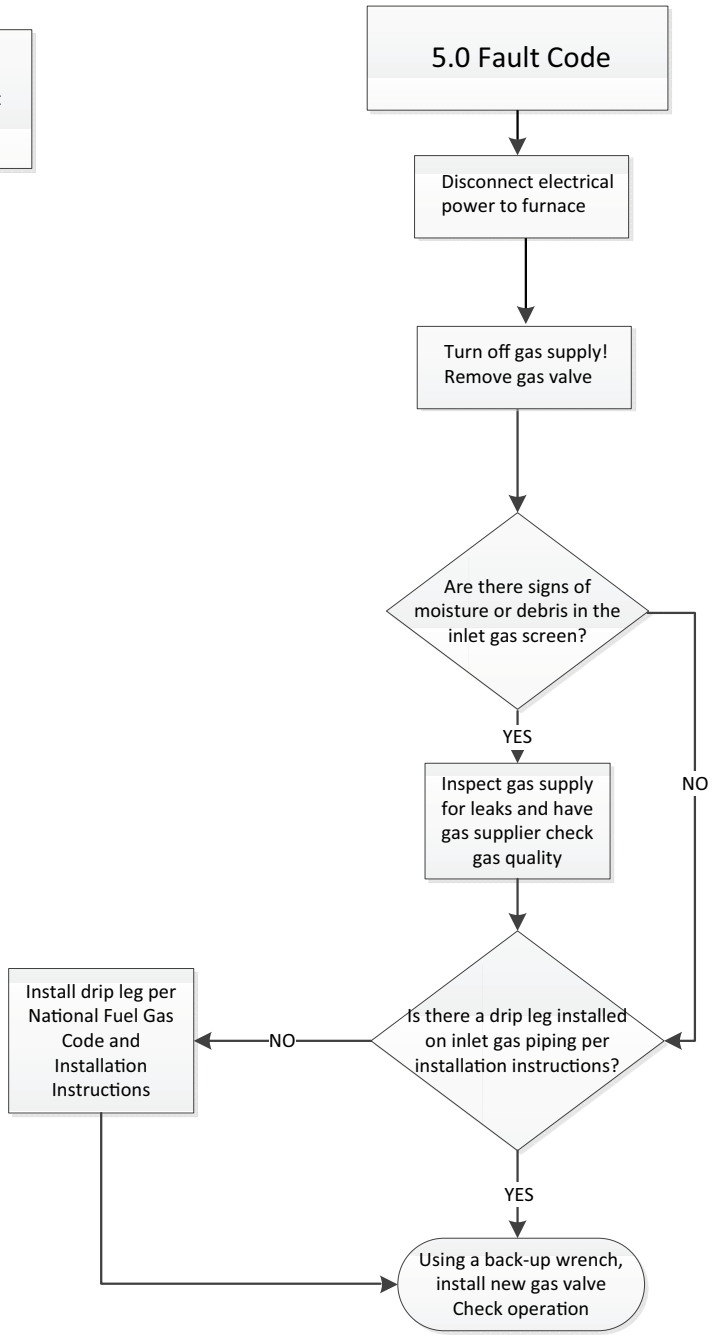
DEFINITION
Limit switches are safety devices that will open when an abnormal high temperature has been sensed.
REMOVE ALL JUMPER WIRING TO SWITCHES!
Under no circumstances, shall these switches be left jumpered when not troubleshooting.

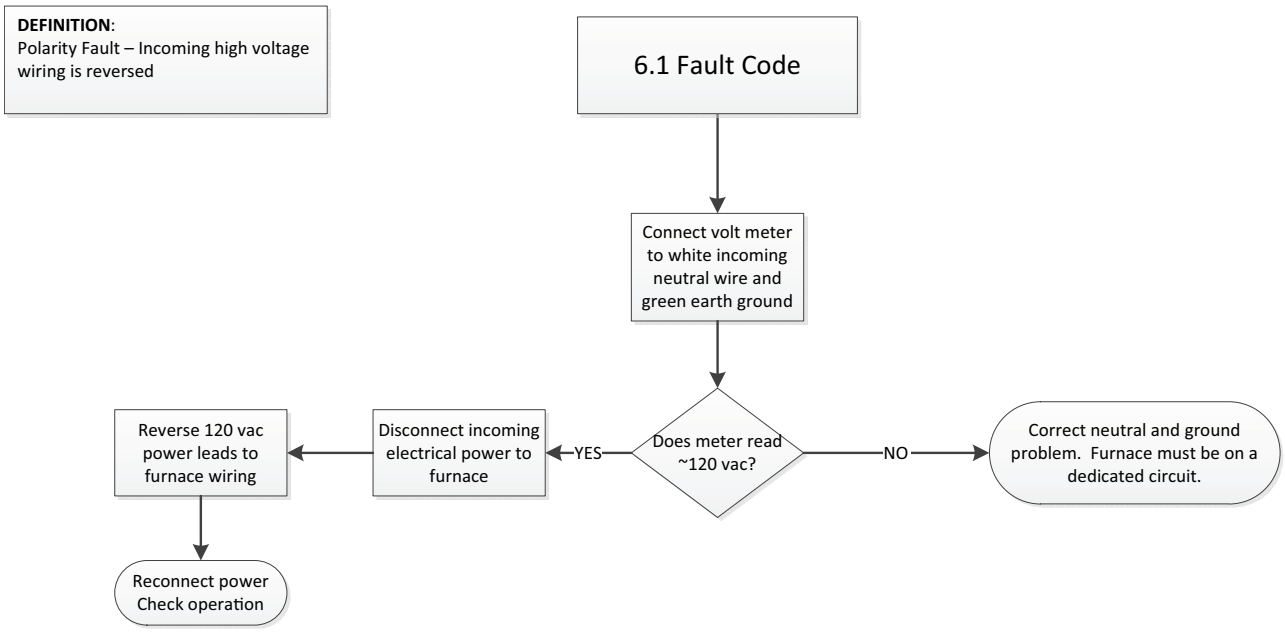
4.2 Fault Code Roll-Out Limit

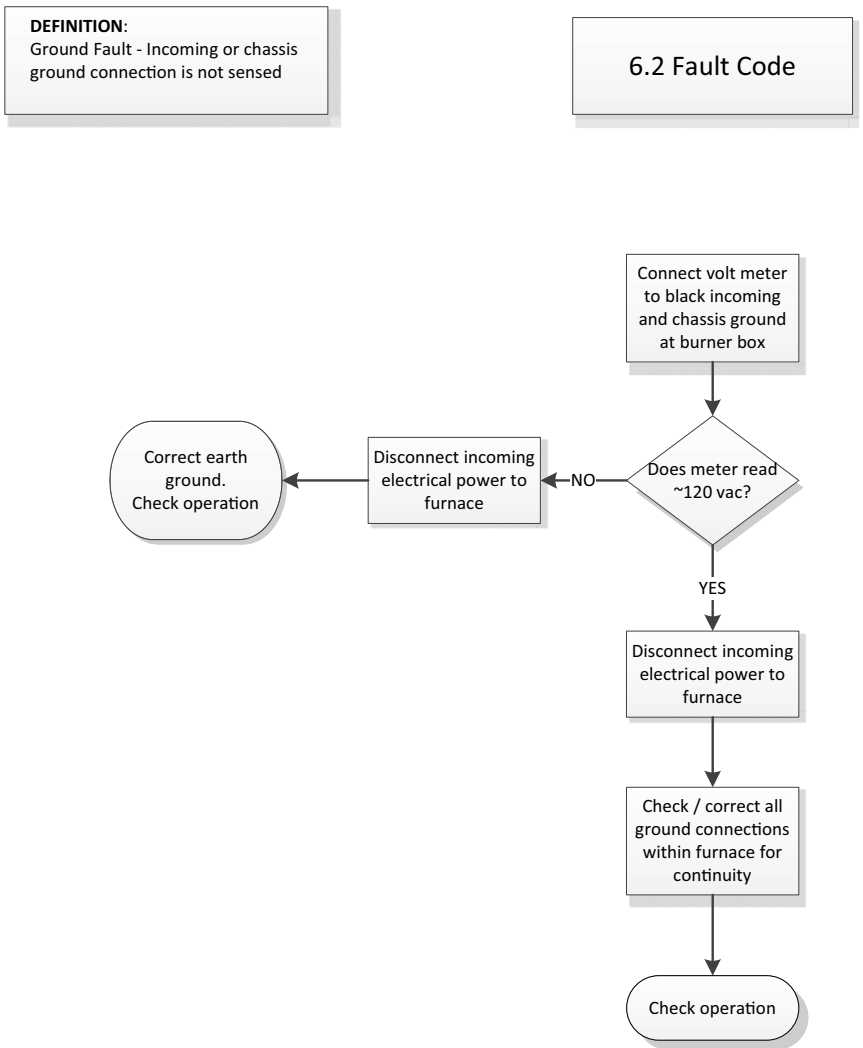


DEFINITION:

Flame is sensed when it should not be sensed.



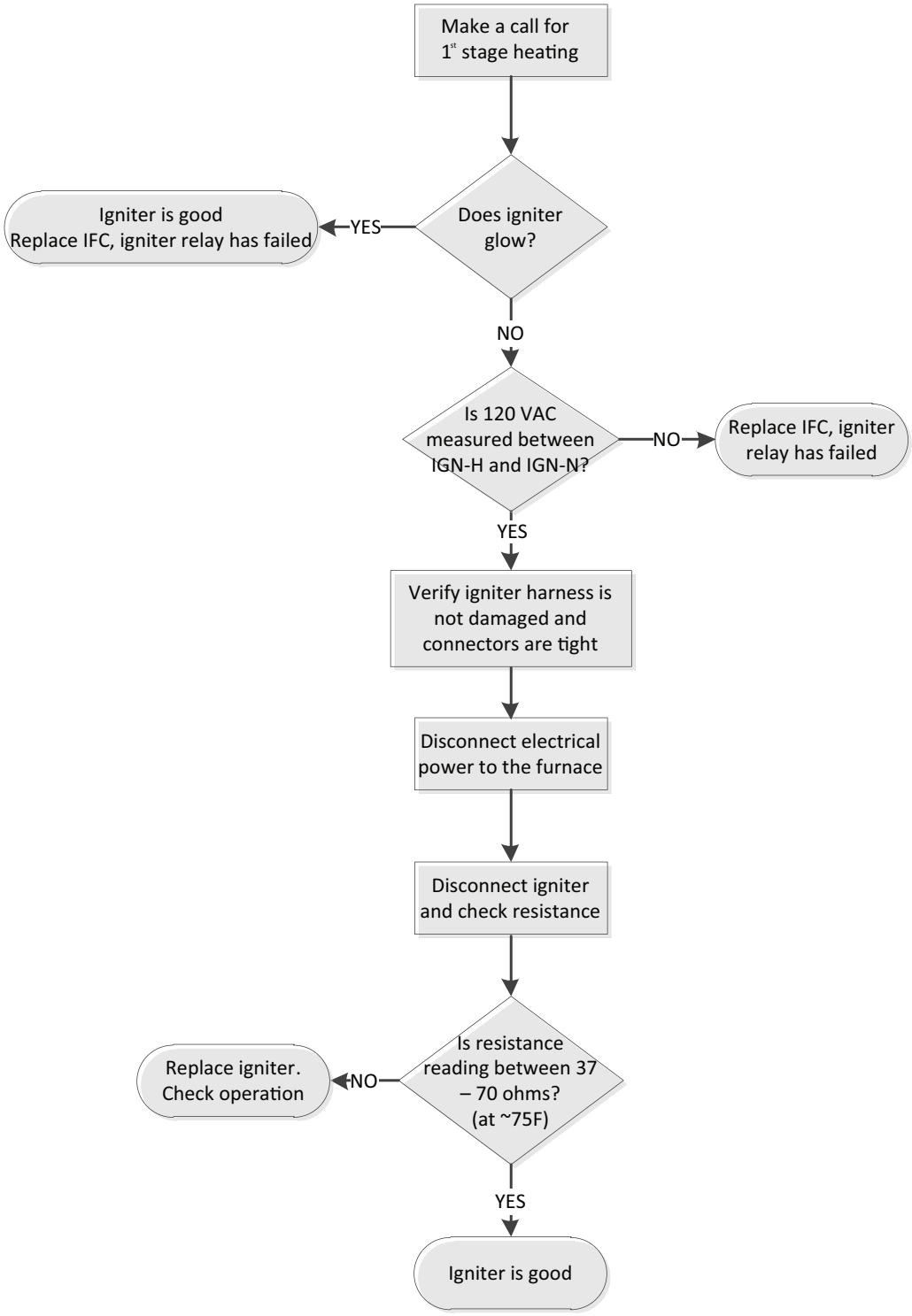

DEFINITION:
Polarity Fault – Incoming high voltage wiring is reversed
6.1 Fault Code
Connect volt meter to white incoming neutral wire and green earth ground
Does meter read ~120 vac?
YES
NO
Disconnect incoming electrical power to furnace
Reverse 120 vac power leads to furnace wiring
Reconnect power Check operation
Correct neutral and ground problem. Furnace must be on a dedicated circuit.


DEFINITION:
Ground Fault - Incoming or chassis ground connection is not sensed
6.2 Fault Code
Connect volt meter to black incoming and chassis ground at burner box
Does meter read ~120 vac?
NO
YES
Disconnect incoming electrical power to furnace
Correct earth ground. Check operation
Disconnect incoming electrical power to furnace
Check / correct all ground connections within furnace for continuity
Check operation

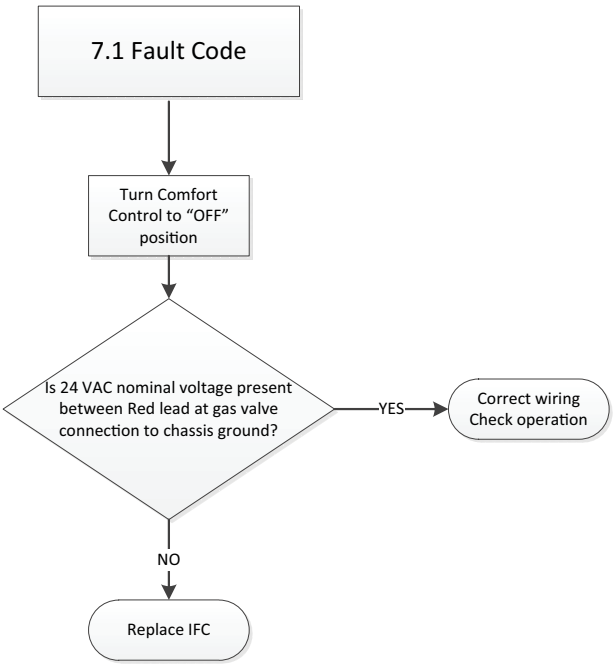
DEFINITION:
Igniter Relay Fault – The control board has sensed that the igniter relay has stuck closed

igniter Fault – The control board has sensed that the igniter circuit is open or shorted.

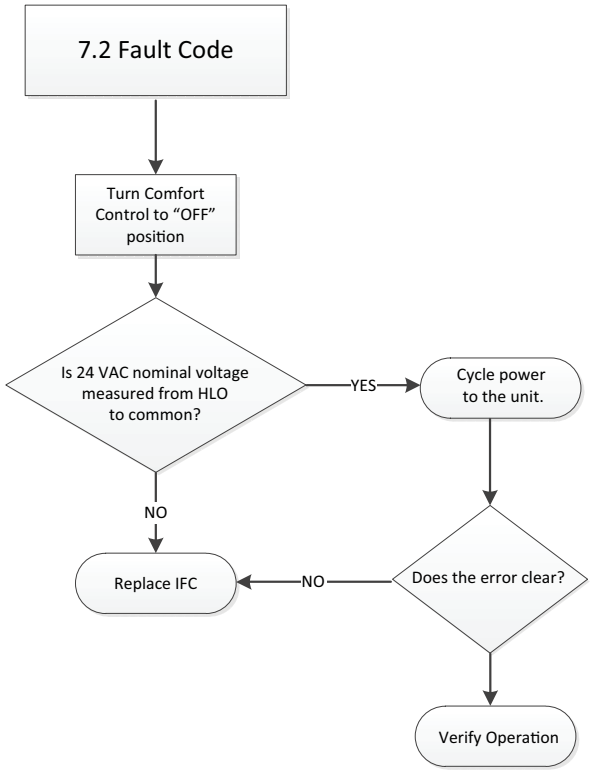
6.3 Fault Code



DEFINITION: External Gas Valve Circuit Error (24 volts is present when it should not be present)

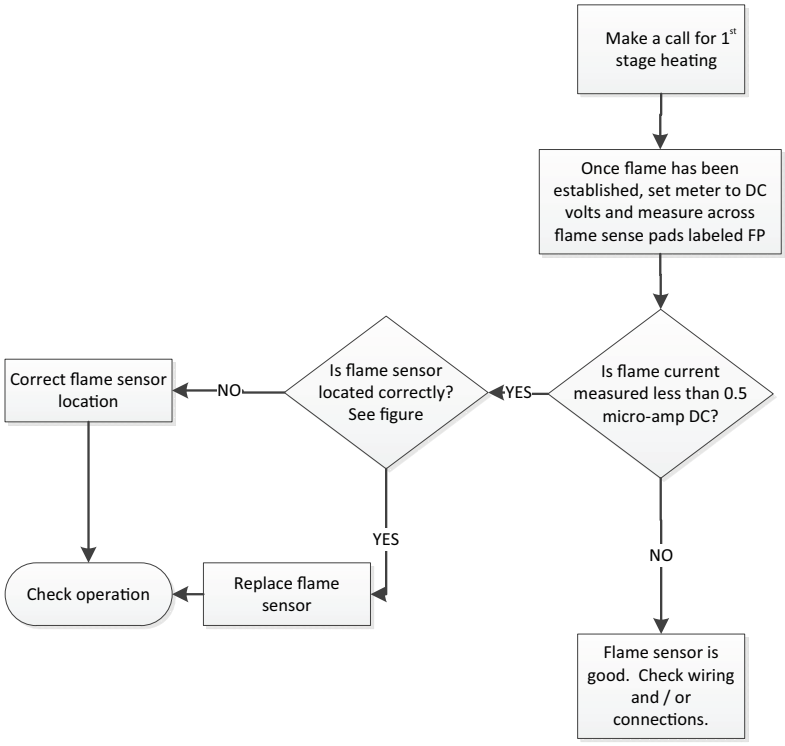


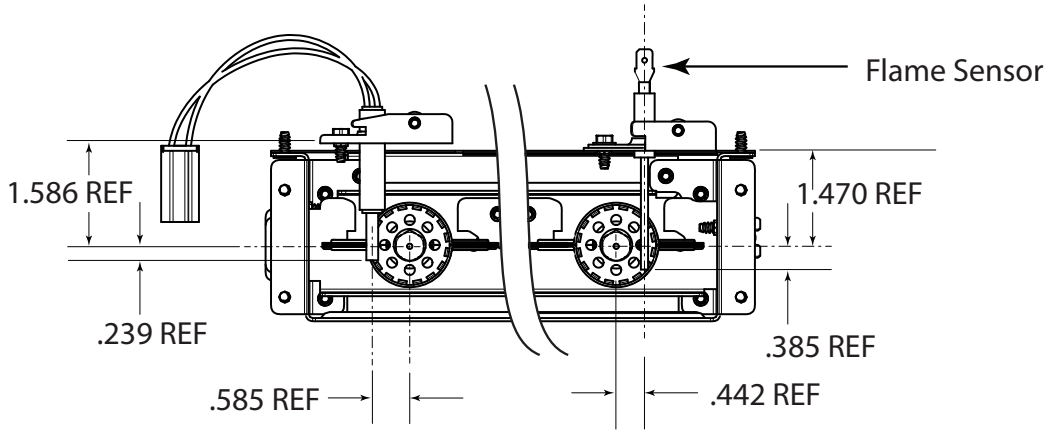
DEFINITION: The HLO (High Limit Out) relay on the IFC is stuck ON



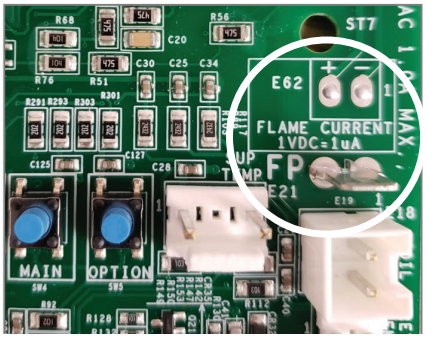
DEFINITION:
The flame sense current is less than 0.5 micro-amp DC

08 Fault Code





There are two flame sense pads located on the IFC, marked “FP”. To measure flame current, use a VOM set to DC volts. Flame current will vary depending on the type of meter used. Typical flame current ranges from 0.75 – 3.0 micro-amps (0.75 – 3.0 VDC)



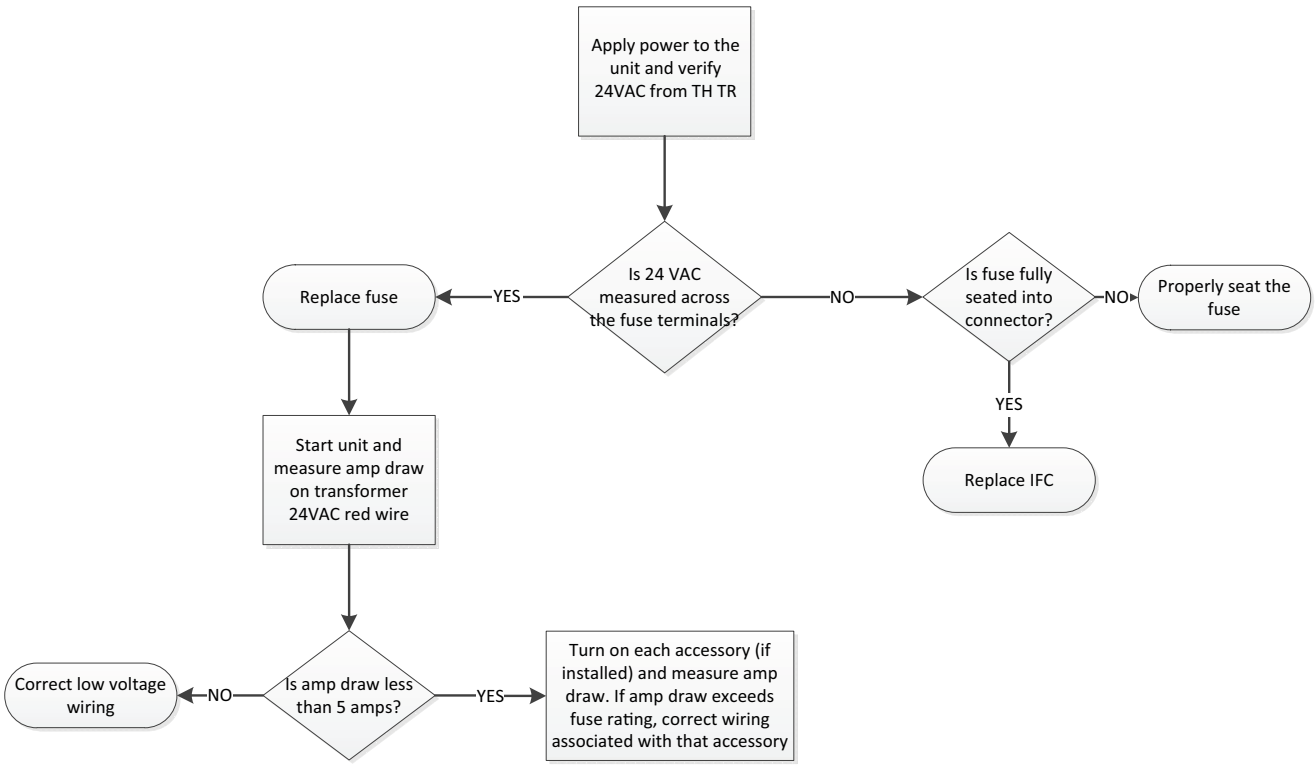
Definition:
The IFC has detected that internal gas valve relays have failed.

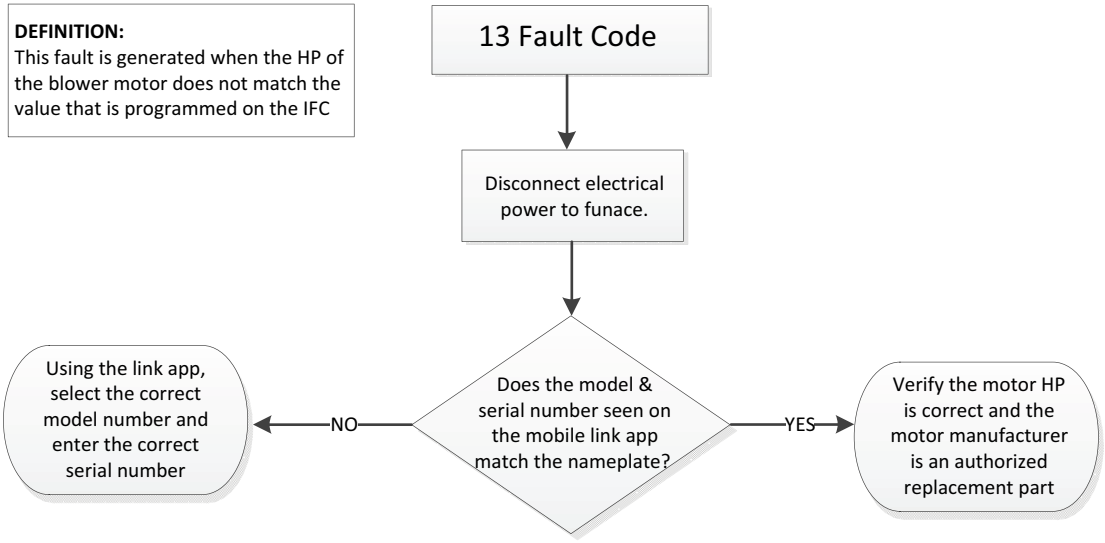
11 Fault Code

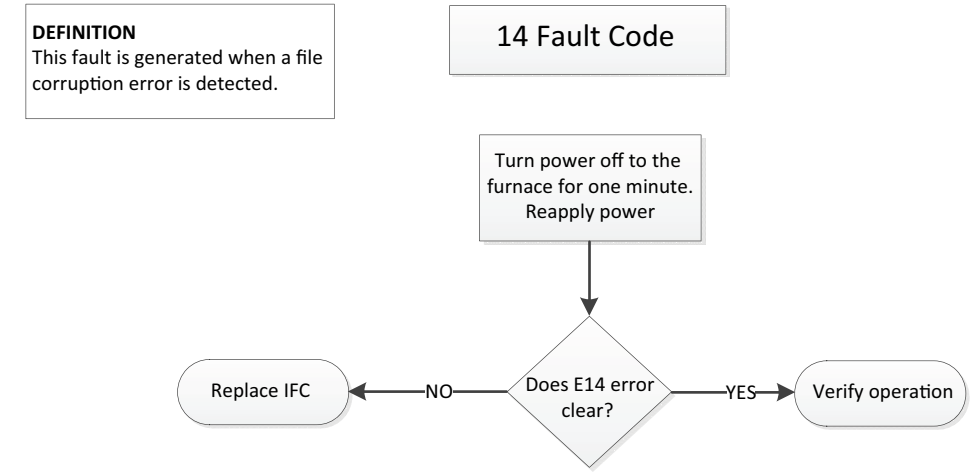
Verify all wiring
Replace IFC

Definition:
The onboard 5 amp fuse is open or missing.

12 Fault Code




DEFINITION:
This fault is generated when the HP of the blower motor does not match the value that is programmed on the IFC
13 Fault Code
Disconnect electrical power to funace.
Does the model & serial number seen on the mobile link app match the nameplate?
NO
Using the link app, select the correct model number and enter the correct serial number
YES
Verify the motor HP is correct and the motor manufacturer is an authorized replacement part


DEFINITION
This fault is generated when a file corruption error is detected.
14 Fault Code
Turn power off to the furnace for one minute. Reapply power
Does E14 error clear?
NO
Replace IFC
YES
Verify operation

DEFINITION:
This fault is most likely due to intermittent low voltage control wiring connections. Insure wiring is per the wiring diagram and connections are secure and fully seated.

E17 Fault Code

FTH: VS Serial Port Motors

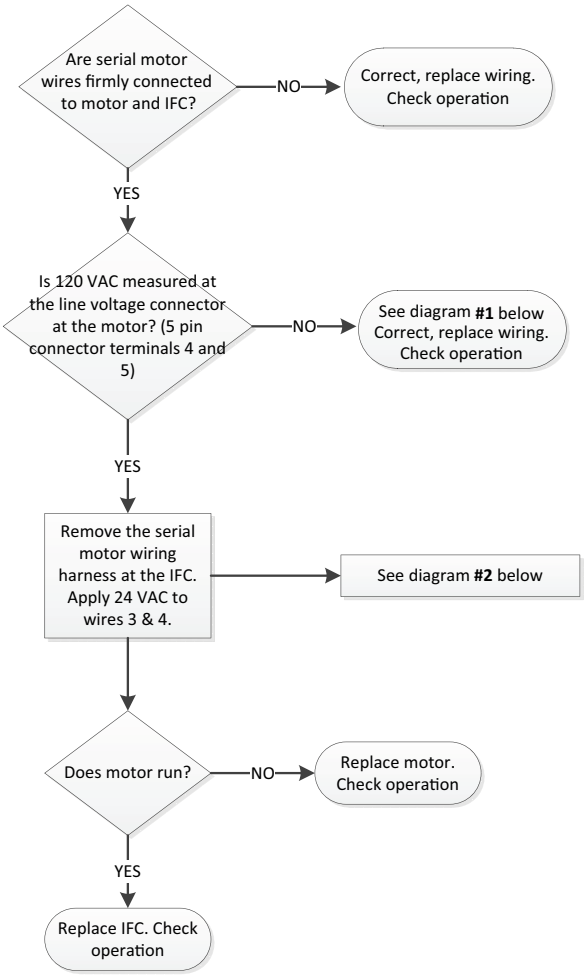


DIAGRAM #1

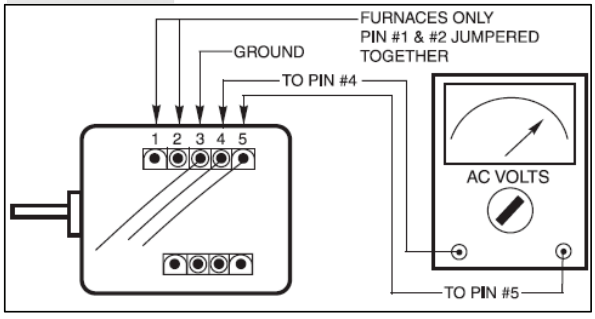
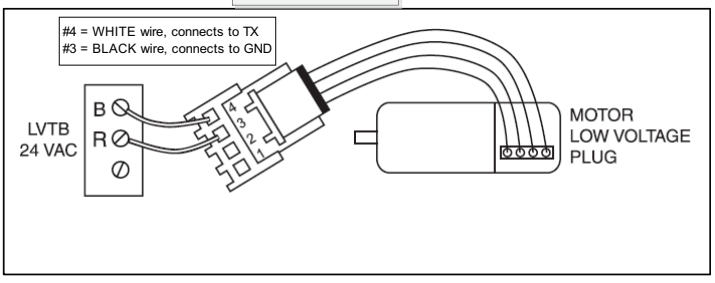
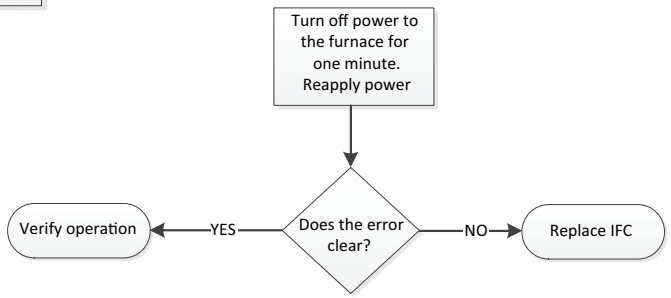


DIAGRAM #2



DEFINITION:
The Combustion Control Micro on the IFC has incomplete menu data.

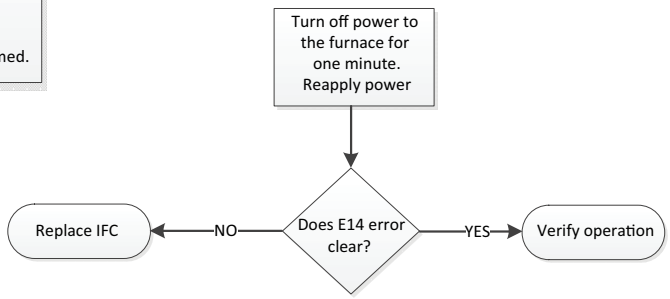
E23 Fault Code



DEFINITION:
This fault is generated when an internal communication error is detected.

NOTE:
This error will populate momentarily when a replacement IFC is powered and the model number has not been programmed.

E24 Fault Code

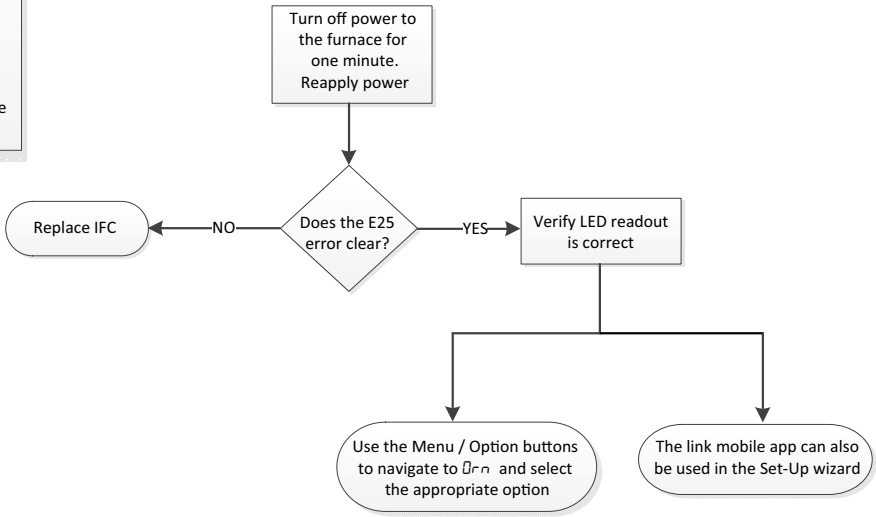


DEFINITION:
This fault is generated when an internal orientation sensor is unresponsive.

NOTE:
This error does not affect operation of the furnace.

NOTE:
This orientation sensor is used to set the display correctly at power up and for remote diagnostics.

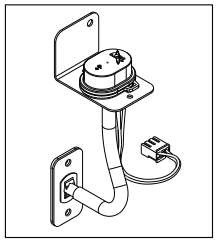
E25 Fault Code

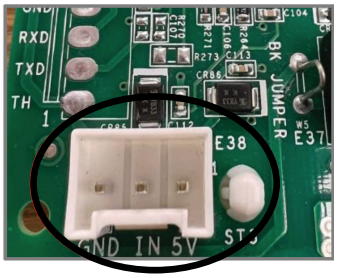


DEFINITION:
This fault is generated when the Return Static pressure transducer (BAYFURNPTKT accessory) is out of bounds or has been enabled and the wiring harness has not been connected to the IFC.

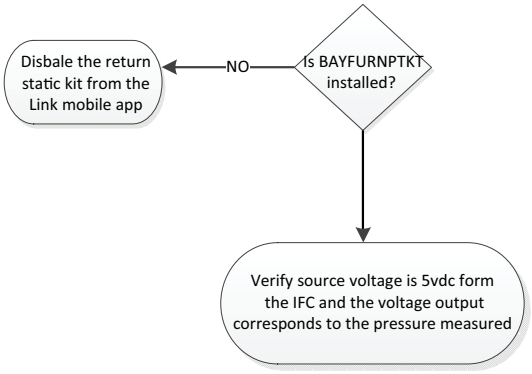
NOTE:
This error does not affect operation of the furnace.

Important:
The Link mobile app must be used to enable or disable the pressure transducer. Disabled is the factory default.





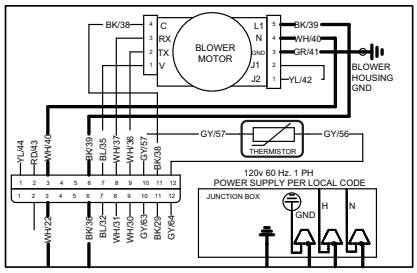
E26 Fault Code

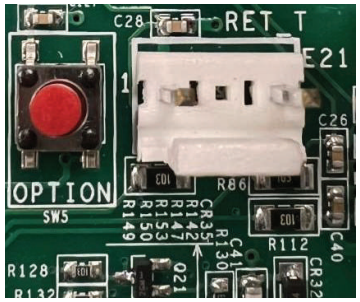


DEFINITION:
This fault is generated when the Return temperature sensor is Open / Shorted or when the sensor has been enabled but not installed/plugged in.

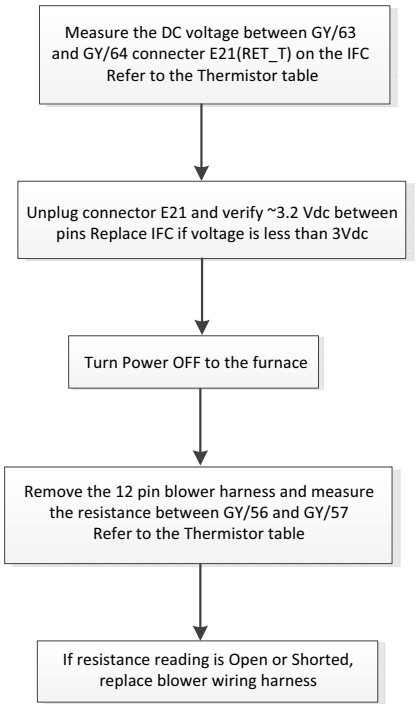
The sensor is part of the blower wiring harness.

NOTE:
This error does not affect operation of the furnace. It can be cleared by disabling the Return Temperature using the mobile diagnostics app or by using the Menu / Option buttons. (24VAC mode only)



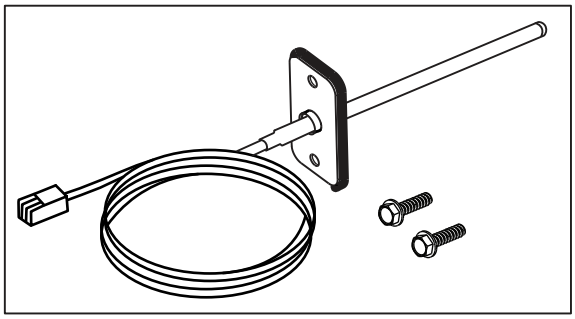


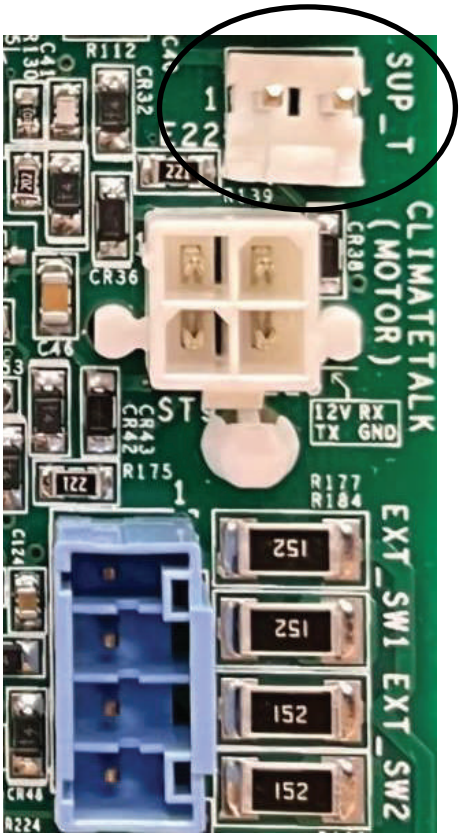
E27 Fault Code



DEFINITION:
This fault is generated when the Supply temperature sensor is Open / Shorted or when the sensor has been enabled but not installed/plugged in.

NOTE:
This error does not affect operation of the furnace. It can be cleared by disabling the Supply Temperature using the mobile diagnostics app or by using the Menu / Option buttons. (24VAC mode only)





E28 Fault Code

Measure the DC voltage between the pins at connecter E22 (SUP_T) on the IFC
Refer to the Thermistor table

↓

Unplug connector E22 and verify ~3.2 Vdc between pins Replace IFC if voltage is less than 3Vdc

↓

Turn Power OFF to the furnace

↓

Remove the Supply temperature sensor and measure the resistance
Refer to the Thermistor table

↓

If resistance reading is Open or Shorted, replace the Supply temperature sensor
BAYSENC360

THERMISTOR TABLE

T deg F	T deg C	THERMISTOR RESISTANCE	VDC
40	4.4	25452	1.64
41	5.0	24761	1.62
42	5.6	24090	1.60
43	6.1	23440	1.58
44	6.7	22810	1.57
45	7.2	22198	1.55
46	7.8	21605	1.53
47	8.3	21030	1.51
48	8.9	20472	1.49
49	9.4	19931	1.47
50	10.0	19405	1.45
51	10.6	18896	1.43
52	11.1	18401	1.41
53	11.7	17921	1.39
54	12.2	17455	1.37
55	12.8	17002	1.35
56	13.3	16563	1.33
57	13.9	16137	1.31
58	14.4	15723	1.29
59	15.0	15320	1.27
60	15.6	14930	1.25
61	16.1	14550	1.23
62	16.7	14182	1.21
63	17.2	13824	1.19
64	17.8	13476	1.17
65	18.3	13138	1.15
66	18.9	12810	1.13
67	19.4	12491	1.11
68	20.0	12181	1.09
69	20.6	11879	1.07
70	21.1	11586	1.06
71	21.7	11301	1.04
72	22.2	11024	1.02
73	22.8	10754	1.00
74	23.3	10492	0.98
75	23.9	10238	0.96
76	24.4	9990	0.95
77	25.0	9749	0.93
78	25.6	9515	0.91
79	26.1	9287	0.89
80	26.7	9065	0.88
81	27.2	8849	0.86
82	27.8	8639	0.84

T deg F	T deg C	THERMISTOR RESISTANCE	VDC
83	28.3	8435	0.83
84	28.9	8236	0.81
85	29.4	8043	0.80
86	30.0	7855	0.78
87	30.6	7671	0.77
88	31.1	7493	0.75
89	31.7	7319	0.74
90	32.2	7150	0.72
91	32.8	6985	0.71
92	33.3	6825	0.69
93	33.9	6669	0.68
94	34.4	6516	0.67
95	35.0	6368	0.65
96	35.6	6224	0.64
97	36.1	6083	0.63
98	36.7	5946	0.61
99	37.2	5812	0.60
100	37.8	5682	0.59
102	38.9	5432	0.56
104	40.0	5194	0.54
106	41.1	4968	0.52
108	42.2	4753	0.50
110	43.3	4548	0.48
112	44.4	4354	0.46
114	45.6	4169	0.44
116	46.7	3992	0.42
118	47.8	3825	0.40
120	48.9	3665	0.39
122	50.0	3513	0.37
124	51.1	3368	0.36
126	52.2	3230	0.34
128	53.3	3098	0.33
130	54.4	2972	0.31
132	55.6	2853	0.30
134	56.7	2738	0.29
136	57.8	2629	0.28
138	58.9	2525	0.27
140	60.0	2425	0.26
142	61.1	2330	0.25
144	62.2	2239	0.24
146	63.3	2153	0.23
148	64.4	2070	0.22
150	65.6	1990	

Sequence of Operation

Note: *The seven-segment LED readout is based on thermostat input. A simultaneous call for W1 and W2, the seven-segment LED will read "Ht 1", the IFC will process the call for 1st stage heat, then transition to "Ht2" after the interstage delay timing has completed.*

ACC1 (EAC) and ACC2 (HUM) Timing

- EAC relay closes approximately 2 seconds after the blower motor starts.
- EAC relay opens when the blower motor stops.
- HUM relay closes on any heating call (HP/Gas) approximately 1 second after the blower motor starts.
- HUM relay opens when the heating call (HP/Gas) is removed.

1st Stage Gas Heating

1. R – W1 contacts close on the thermostat sending 24VAC to the W1 low voltage terminal of the IFC. Technician should read 24VAC from W1 to B/C. The seven-segment LED will read: Ht 1
2. The IFC performs a self-check routine and then confirms that the:
   a. Flame roll-out switches (FRS) 1 & 2, main thermal limit (TCO), and any reverse air flow (RAF) switches are closed by sending 24VAC out the HLO terminal and monitoring the HLI input.
   b. Pressure switch 1 (PS1) and pressure switch 2 are open by sending 24VAC out the PSO terminal and monitoring the PS1 and PS2 inputs.
3. After steps a & b are confirmed, the inducer relay is closed energizing the inducer motor.
4. As the inducer ramps up, PS1 will close.

Note: *The inducer motor starts on high speed for approximately 6 seconds, then switches to low speed. If PS1 does not close within 60 seconds, the control will report a E3.2 error and increase the inducer to high speed in an attempt to close PS1 & PS2. In this error state, 2nd stage heat will operate with a W1 call only. When PS1 closes, the igniter relay on the IFC will close and the igniter is energized. The igniter warm up is approximately 17 seconds.*

5. After the igniter warm up, the 1st stage gas valve relay is closed, which energizes the 1st stage gas valve solenoid to allow ignition.
6. The first burner will ignite, and flame will crossover to the remaining burners, establishing current to the flame sensor. Proof of flame must be established within 4 seconds.

Note: *There are two flame sense pads located on the IFC marked as "FP". To measure the flame current, use a VOM set to DC volts. 1VDC = 1 micro-amp. Flame current will vary depending on the type of meter used. Typical flame current ranges from 0.75 – 3.0 micro-amps (0.75 – 3 VDC).*

7. Once flame sense has been established, a timer on the IFC starts, and the indoor blower will energize at 1st stage speed after the blower "Heat On Delay" has completed. The seven-segment LED for example will alternately read:
   - Ht 1 = Gas heating, stage 1
   - AirF = Airflow
   - 080 = 800 calculated cfm (value shown x 10)
8. When the temperature raises enough to satisfy the thermostat setting, contacts R-W1 will open.
9. The gas valve relay will open, closing the gas valve. The inducer will continue to run for approximately 5 seconds to remove any combustion byproducts from inside the furnace.
10. The indoor blower continues to run to remove heat from the heat exchangers. The blower off time is field adjustable through the IFC menu setup option. The seven-segment LED will read Idl = Idle, no thermostat demand.

2nd Stage Gas Heating

1. See sequence of operation for 1st stage gas heating operation above (steps 1-8)

Note: *2nd stage heating cannot operate without 1st stage operation.*

2. R-W2 contacts close on the thermostat sending 24VAC to the W2 low voltage terminal of the IFC. Technician should read 24VAC from W2 to B/C. The seven-segment LED will read Ht2.
3. The IFC energizes the 2nd stage inducer relay. The inducer is energized on high speed, and the second stage gas valve relay on the IFC closes, energizing second stage gas valve. The indoor blower motor will ramp up to the 2nd stage gas heating speed. The seven-segment LED for example will alternately read:
   - Ht2 = Gas heating, Stage 2
   - AirF = Airflow
   - 112 = 1120 calculated cfm (value shown x 10)
4. The IFC monitors PS2 for closure and if PS2 does not close within 45 seconds, a PS2 open error will be declared and the furnace will operate in 1st stage. If PS2 closes, 2nd stage gas heating will continue until the thermostat R-W2 contacts open.

Note: *If PS2 does not close within the 45 second time, the IFC will wait 10 minutes and repeat steps 3 & 4. If on the third attempt during the same heating call, PS2 does not close within the 45 second proving time, the unit will run in 1st stage until the thermostat contacts R-W2 open.*

5. When the temperature raises enough to satisfy the thermostat setting, contacts R-W2 will open, the 2nd stage gas valve will close, the indoor blower motor will ramp down to 1st stage, and the unit will continue to run until R-W1 contacts open
6. When the temperature raises enough to satisfy the thermostat setting, contacts R-W1 will open.
7. The gas valve relay will open, closing the gas valve. The inducer will continue to run for approximately 5 seconds to remove any combustion byproducts from inside the furnace.
8. The indoor blower continues to run to remove heat from the heat exchangers. This blower off time is field adjustable through the IFC menu setup option. The seven-segment LED will read IdL = Idle, no thermostat demand.

Single Stage Cooling

1. R-Y1-G contacts on the thermostat close sending 24VAC to the Y1 and G low voltage terminals on the IFC. The technician should read 24VAC between Y1-B/C and between G-B/C.

   Note: *The factory supplied Y1-O jumper must remain in place for proper seven-segment LED readout, and furnace operation. If removed, the seven-segment LED will read HP 1.*

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 <u>example</u> will alternately read:

- CL 1 = Cooling, Stage 1
- ArF = Airflow
- 105 = 1050 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 "Cool Off Delay" has been enabled in the IFC setup menu options. The seven-segment LED will read IdL = 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:

- CL2 = Cooling, Stage 2
- ArF = Airflow
- 180 = 1800 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.
6. The OD unit shuts off and the indoor blower shuts off, unless a blower "Cool 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

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.

   Note: *The factory supplied Y1-O jumper must be removed for proper seven-segment LED readout and furnace operation. If left in place, the seven-segment LED will read CL 1.*

2. 24 VAC is sent to the OD unit via thermostat wiring.
3. The indoor blower ramps to the cooling airflow. The seven-segment LED for <u>example</u> will alternately read:

- HP 1 = Heat Pump Heating, Stage 1
- ArF = Airflow
- 105 = 1050 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 Cool 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 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:

- HP2 = Cooling, Stage 2
- ArF = Airflow
- 180 = 1800 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. BURNER – Gas burners do not normally require scheduled servicing, however, accumulation of foreign material may cause a yellowing flame or delayed ignition. Either condition indicates that a service call is required. For best operation, burners must be cleaned annually using brushes and vacuum cleaner. Turn off gas and electric power supply. To clean burners, remove burner bottom plate (2 screws) and bottom burner bracket (2 screws). Twist burner towards slot, lift, and push forward away from orifice. Remove burners.

Alternate method — Remove manifold assembly, bottom burner plate, and bottom burner bracket. Remove burners.

Note: *Be careful NOT to break igniter when removing burners.*

Clean burners with brush and/ or vacuum cleaner. Reassemble parts by reversal of the above procedure.

Note: *Natural gas units should not have any yellow tipped flames. This condition indicates that a service call is required. For best operation, burners must be cleaned annually using brushes and vacuum cleaner*

Note: *On Propane units, due to variations in BTU content and altitude, servicing may be required at shorter intervals.*

6. 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. Some discoloration of PVC pipe is normal.
   c. Remove door from Furnace.
   d. Inspect around insulation covering flue collector box. Inspect induced draft Blower connections from recuperative cell and to the flue pipe connection.
   e. Remove burners. (See 5. Burner)
   f. Use a mirror and flashlight to inspect interior of Heat Exchanger, be careful not to damage the Igniter, Flame Sensor or other components.
   g. If any corrosion is present, the Heat Exchanger should be cleaned by a qualified service technician.
   h. After inspection is complete replace burners and Furnace door.
   i. Restore gas supply. Check for leaks using a soap solution. Restore electrical supply. Check unit for normal operation.
7. 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.

Notices

FCC Notice

Contains FCC ID: WAP3025

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be collocated or operating in conjunction with any other antenna or transmitter.
This equipment has been tested and found to comply with the limits for Class B Digital Device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures.

- *Reorient or relocate the receiving antenna*
- *Increase the separation between the equipment and receiver*
- *Connect the equipment into an outlet on a circuit different from that to which the receiver is connected*
- *Consult the dealer or an experienced radio/TV technician for help*

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

IC Notice

Contains IC ID: 7922A-3025

This device complies with Industry Canada license exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le present appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de license. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil de doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

About Trane and American Standard Heating and Air Conditioning

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Intertek

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