

Installer's Guide

BACS9V2CA22MUAA

Kit is used to convert S9V2-VS revision B and later to a Link Communicating furnace.

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.

Introduction

Read this manual thoroughly before operating or servicing this unit.

This document is customer property and is to remain with this unit. Return to the service information pack upon completion of work.

Warnings, Cautions, and Notices

Safety advisories appear throughout this manual as required. Your personal safety and the proper operation of this machine depend upon the strict observance of these precautions.

The three types of advisories are defined as follows:



WARNING

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



CAUTION

Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It could also be used to alert against unsafe practices.

NOTICE

Indicates a situation that could result in equipment or property-damage only accidents.

⚠ WARNING

Proper Field Wiring and Grounding Required!

Failure to follow code could result in death or serious injury.

All field wiring **MUST** be performed by qualified personnel. Improperly installed and grounded field wiring poses **FIRE** and **ELECTROCUTION** hazards. To avoid these hazards, you **MUST** follow requirements for field wiring installation and grounding as described in NEC and your local/state/national electrical codes.

⚠ WARNING

Personal Protective Equipment (PPE) Required!

Failure to wear proper PPE for the job being undertaken could result in death or serious injury.

Technicians, in order to protect themselves from potential electrical, mechanical, and chemical hazards, **MUST** follow precautions in this manual and on the tags, stickers, and labels, as well as the instructions below:

- Before installing/servicing this unit, technicians **MUST** put on all PPE required for the work being undertaken (Examples; cut resistant gloves/sleeves, butyl gloves, safety glasses, hard hat/bump cap, fall protection, electrical PPE and arc flash clothing). **ALWAYS** refer to appropriate Safety Data Sheets (SDS) and OSHA guidelines for proper PPE.
- When working with or around hazardous chemicals, **ALWAYS** refer to the appropriate SDS and OSHA/GHS (Global Harmonized System of Classification and Labelling of Chemicals) guidelines for information on allowable personal exposure levels, proper respiratory protection and handling instructions.
- If there is a risk of energized electrical contact, arc, or flash, technicians **MUST** put on all PPE in accordance with OSHA, NFPA 70E, or other country-specific requirements for arc flash protection, **PRIOR** to servicing the unit. **NEVER** **PERFORM ANY SWITCHING, DISCONNECTING, OR VOLTAGE TESTING WITHOUT PROPER ELECTRICAL PPE AND ARC FLASH CLOTHING. ENSURE ELECTRICAL METERS AND EQUIPMENT ARE PROPERLY RATED FOR INTENDED VOLTAGE.**

⚠ WARNING**Follow EHS Policies!**

Failure to follow instructions below could result in death or serious injury.

- All Trane personnel must follow the Environmental, Health and Safety (EHS) policies when performing work such as hot work, electrical, fall protection, and lockout/tagout. Where local regulations are more stringent than these policies, those regulations supersede these policies.
- Non-Trane personnel should always follow local regulations.

⚠ WARNING**Cancer and Reproductive Harm!**

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**Safety Hazard!**

Failure to follow instructions below could result in death or serious injury or property damage.

This unit is not to be used by persons (including children) with reduced physical, sensory, or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning the use of the appliance by a person responsible for their safety.

Do not allow children to play or climb on the unit or to clean or maintain the unit without supervision.

⚠ WARNING**Electrical Shock Hazard!**

Failure to follow this warning could result in an electric shock, fire, injury, or death.

Ensure cabinet has an uninterrupted or unbroken ground in accordance with National Electrical Code, ANSI/NFPA 70 – latest edition and Canadian Electrical Code, CSA C22.1 or local codes in case of an electrical fault.

⚠ WARNING**Electrical Shock Hazard!**

Failure to follow instructions below could result in death or serious injury or property damage..

Do not touch any components other than the Menu and Option buttons on IFC when setting up the system or during fault code recovery.

⚠ CAUTION**Improper Voltage Connection!**

Failure to follow instructions below could result in personal injury or equipment damage.

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

⚠ CAUTION**Wiring Hazard!**

Failure to follow instructions below could result in minor to moderate injury or property damage.

The integrated furnace control is polarity sensitive. Connect the hot leg of the 120 VAC power to the black field lead.

NOTICE**Electrostatic Discharge!**

Electrostatic discharge can short equipment circuitry. Ensure that you are properly grounded before handling sensitive electronic equipment.

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Preparing the Furnace for Kit Installation

Figure 2. Kit installation video



1. Confirm the furnace model number is in [Table 1, p. 5](#) and can be converted.
2. Remove the front panel of the furnace.
3. Remove the bottom panel by removing the four screws holding the panel on the furnace. There are two screws on the back and one screw on each side. Retain the screws if bottom return is not used.

Figure 3. Screw locations on back panel



Figure 4. Screw locations on side panel, one screw each side



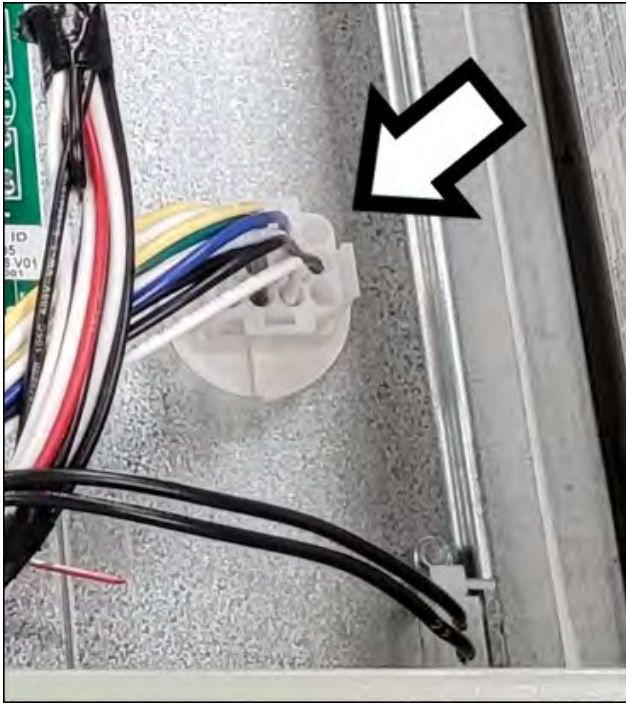
4. Position the furnace on its back panel.

Figure 5. Furnace positioned on its back panel



5. Disconnect the 12-pin wire harness from the blower vestibule panel.

Figure 6. 12-pin wire harness



6. Remove the 4-1/4 inch screws from the bottom cross member panel for easier access to the bottom screw of the voltage interlock. DO NOT remove the cross member panel. Retain the screws for replacement.

Figure 7. Bottom cross member panel screw location right side

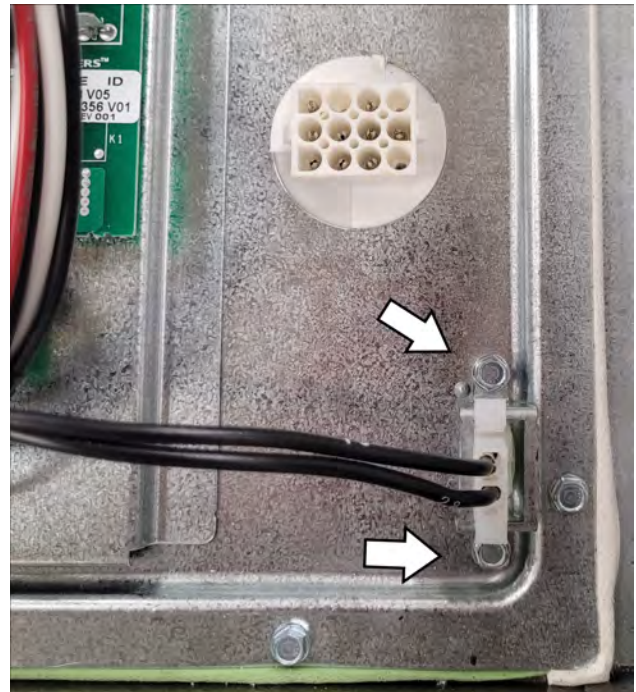


Figure 8. Bottom cross member panel screw location left side



7. Remove the 2-1/4 inch screws from the line voltage interlock. Disconnect the 2-pin harness from the vestibule panel.

Figure 9. Vestibule panel



8. Disconnect the flame sensor wire from the IFC.
9. Disconnect the remaining six wire harnesses from the IFC.
10. Disconnect the four wires from the transformer.

Preparing the Furnace for Kit Installation

11. Remove the 2-1/4 inch screws from the IFC platform to the blower vestibule.

Figure 10. IFC platform screws

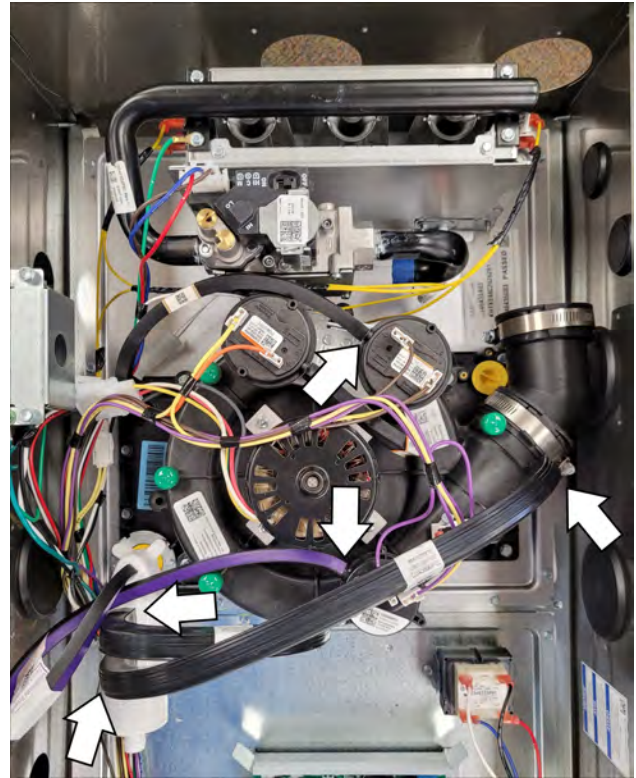


Notes:

- Leave the PM attached to the IFC, as both can be used for future use as replacement parts for another S9V2-VS furnace.
- The PM can only be used on the same model it was removed from.

12. Remove the condensate tubing from the inducer and condensate trap. Hold the condensate trap as backup when removing the tubing.
13. Remove the pressure switch tubing from PS2 and the condensate pressure switch.

Figure 11. Remove pressure switch tubing



14. Disconnect wiring to all pressure switches.
15. Disconnect wiring to the inducer limit switch.

Figure 12. Inducer limit switch wiring



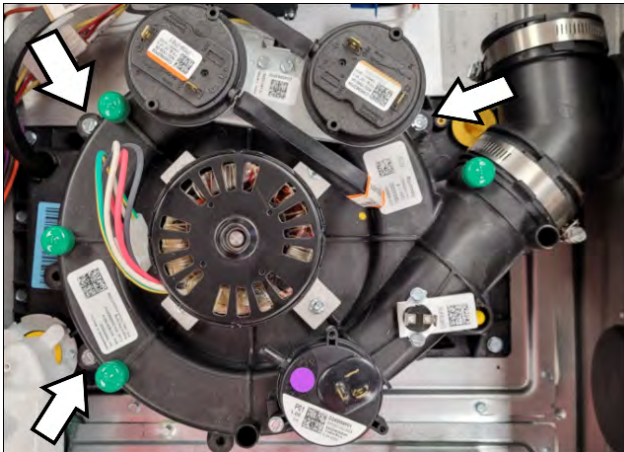
16. Disconnect the 4-pin inducer wire harness.

Figure 13. 4-pin inducer wire harness



17. Loosen the 3-5/16 inch screws on the inducer and remove the inducer. Retain the screws.

Figure 14. Inducer



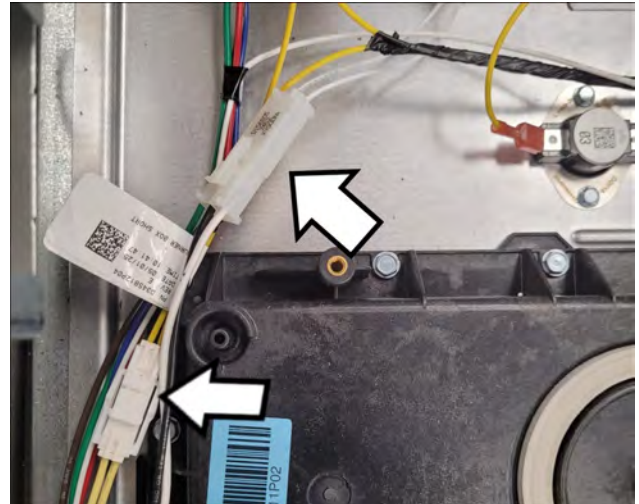
18. Disconnect the 3-pin wiring harness from the gas valve.
19. Remove four 1/4 inch screws and remove the manifold assembly. Retain the screws.

Figure 15. Manifold assembly



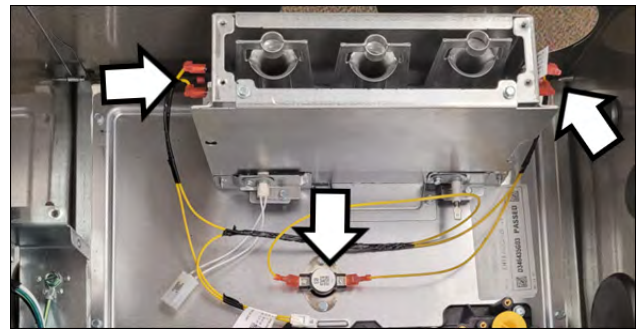
20. Disconnect the 2-pin wire harness from the igniter.
21. Disconnect the 2-pin wire harness from the burner box wiring harness.

Figure 16. Burner box wiring harness



22. Disconnect the wiring from the high limit, flame roll-out switches, and flame probe.

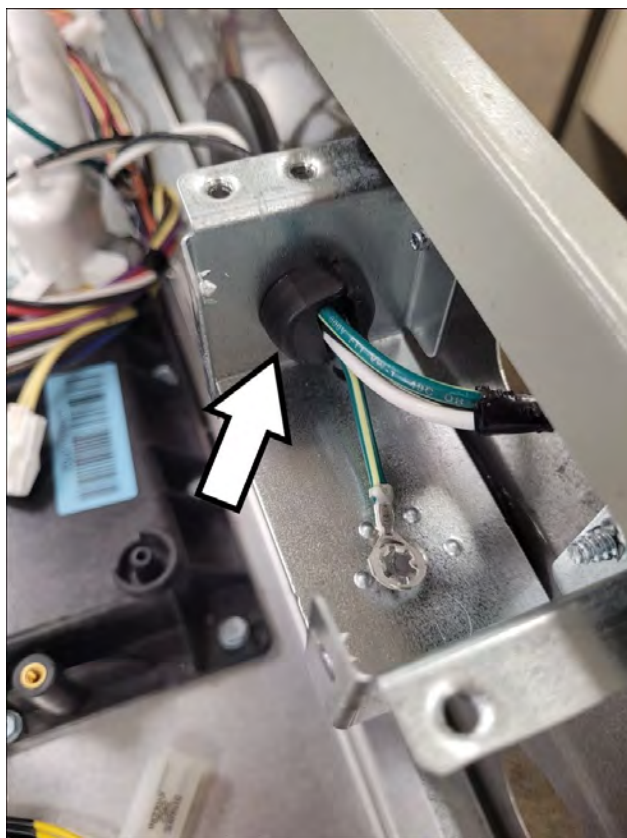
Figure 17. High limit and flame roll-out switches wiring



23. Remove the J-box cover and ground screws.
24. Depress the strain relief and pull wires from the junction box. Retain the strain relief for use in reassembly.

Preparing the Furnace for Kit Installation

Figure 18. Strain relief



The unit should look like the following figure.

Figure 19. Furnace prepared for kit assembly



Installing the Link Communicating Kit

1. Remove the 12-pin blower connector by rotating it clockwise. Push the connector through the blower vestibule and retrieve through the bottom of the unit.

Figure 20. Blower vestibule



2. Install the return air thermistor on the back side of the connector. Push the pin connectors into the open slots highlighted below.

Figure 21. Pin connectors



Figure 22. Install return air thermistor



3. Using one of the supplied wire ties, strap the return air thermistor to the wiring loom of the blower harness. Insert the blower connector back into the vestibule panel and turn counterclockwise to lock it in place.

Important: Do not apply wire tie on the heat shrink material.

Figure 23. Blower connector

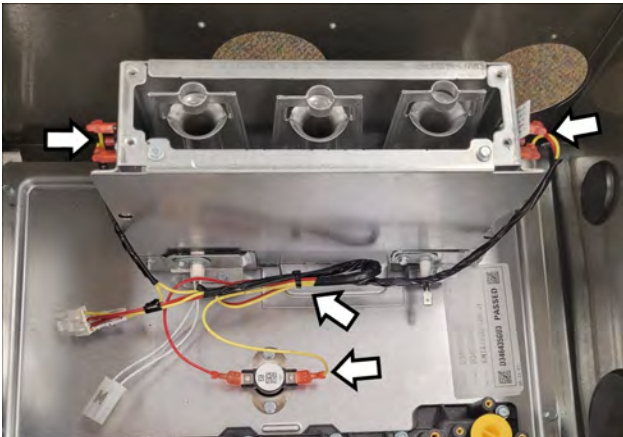


Figure 24. Reinsert blower connector



4. Install the new burner wire harness per the image below.
- a. Both wire harnesses have extra lengths when installing into the B-width (17.5 inch) and C-width (21.0 inch) cabinets. Use the supplied wire ties to dress the wiring for a neat installation.
 - b. The flame roll-out switches should be turned up toward the top cross member panel of the furnace to prevent wire rub on the edges of the burner box.
 - c. The long lead with the red/yellow wires connect to the right-side flame roll-out switch.
 - d. The remaining yellow wires connect to the left side roll-out switch.
 - e. Dress the wiring as below and wire tie.

Figure 25. Vestibule panel



5. Install the new power wiring harness.

Note: Each individual wire is labeled for easy identification. Multiple wire connections are not labeled but cannot be placed into the wrong connector.

- a. Starting with the junction box, install the green/white tracer ground wire (JBOX-GND) on the inside of the j-box.
- b. Reinstall the strain relief and push up into the j-box.
- c. Install the second ground wire (JBOX-GND) to the left front of the j-box.

Table 3. Wire labeling

Printed Text	Wire Color
24V-C	Blue
24V-H	Red
PS1-1	Orange
PS1-2	Red
PS2-1	Brown
PS2-2	Red
COND-1	Red/Purple
COND-2	Red
IND-LIM	Red
IND-LIM	Purple
BNR-GND	Green
120V-H	Black
120V-N	White
IFC FP	White
BNR-FP	White
JBOX-GND	Green

Figure 26. Wiring harness

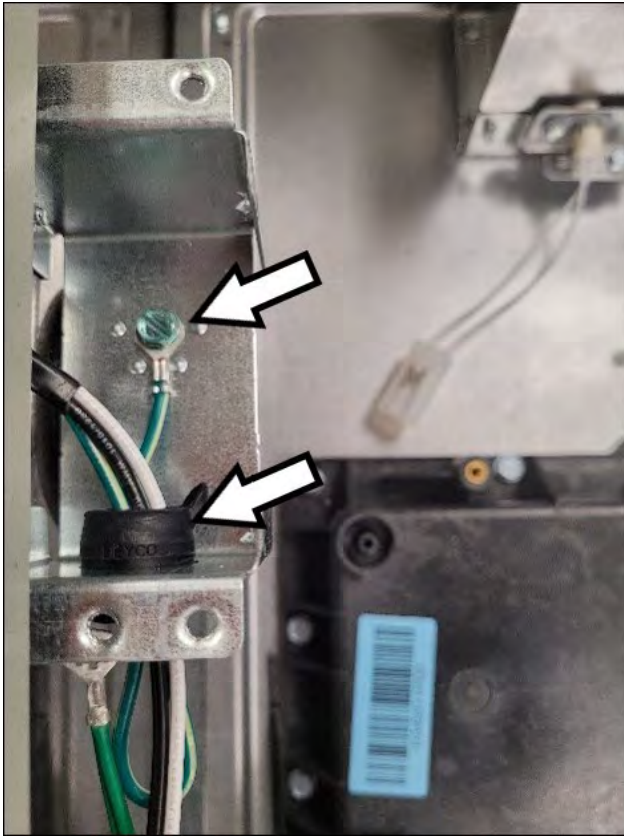
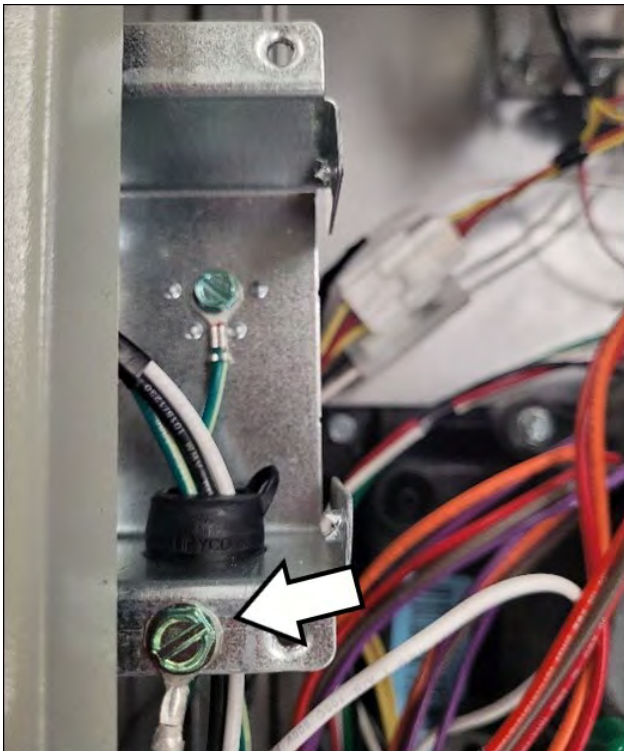
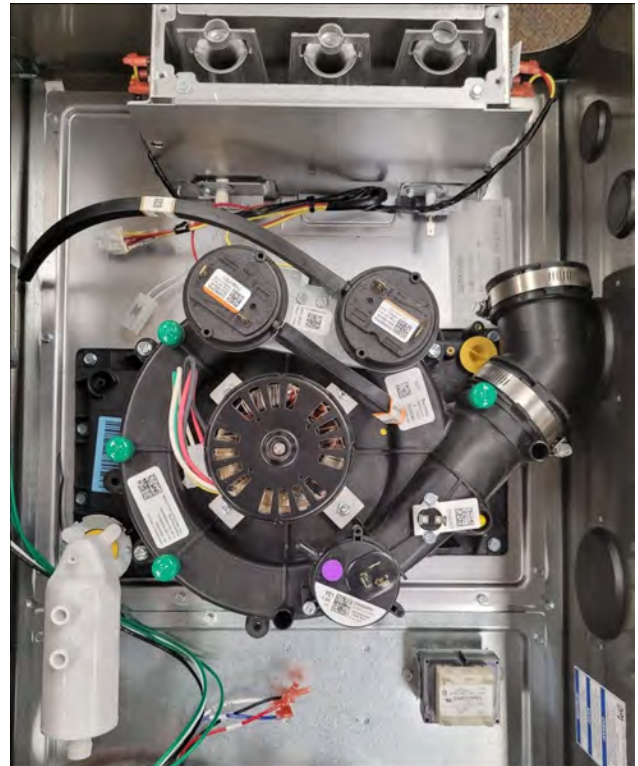


Figure 27. Wiring harness



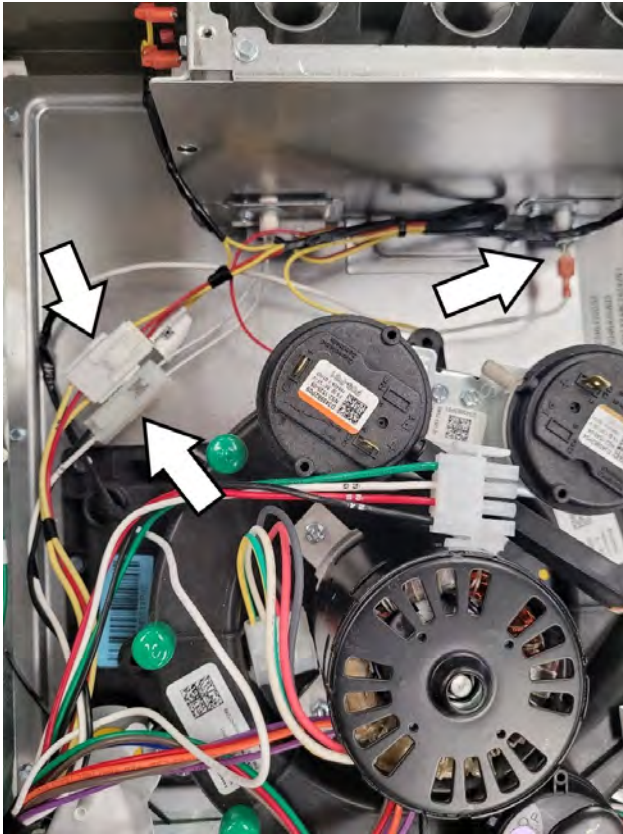
6. Reinstall the inducer assembly. Rotate the assembly if the application requires it.

Figure 28. Inducer assembly



7. Locate the 2-pin ignitor harness connector on the new harness and plug it into the ignitor connector.
8. Locate the 3-pin burner harness connector on the new harness and plug it into the burner harness connector.
9. Locate and connect the white flame sensor wire (BNR-FP) to the flame sensor.

Figure 29. Inducer assembly wiring



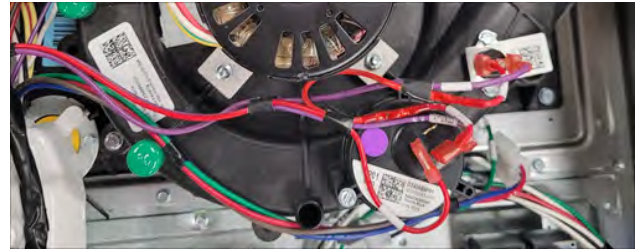
10. Locate the Orange (PS1-1) and Red (PS1-2) wires in the new harness and connect both to Pressure Switch 1 with the orange label.
11. Locate the Brown (PS2-1) and Red (PS2-2) wires in the new harness and connect both to Pressure Switch 2 with the brown label.

Figure 30. Pressure switch wiring



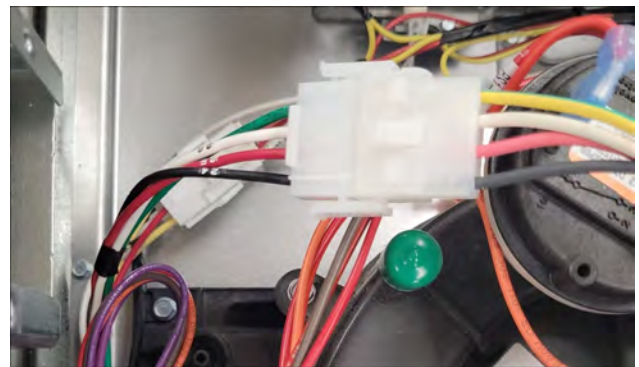
12. Locate the Red/Purple (COND-1) and Red (COND-2) wires in the new harness and connect both to the condensate pressure switch.
13. Locate the Red (IND-LIM) and Purple (IND-LIM) wires in the new harness and connect both to the inducer thermal limit switch.

Figure 31. Condensate pressure switch and inducer limit wiring



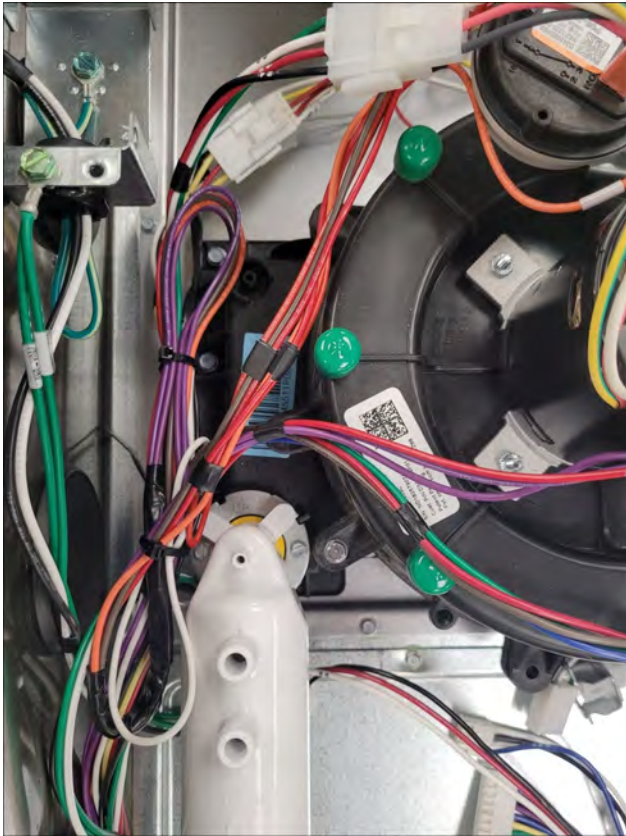
14. Plug the 4-pin connector into the VSPD inducer motor 4-pin connector.

Figure 32. VSPD inducer motor connection



15. Gather the excess wiring (B and C cabinets) and dress and wire tie for a neat installation.

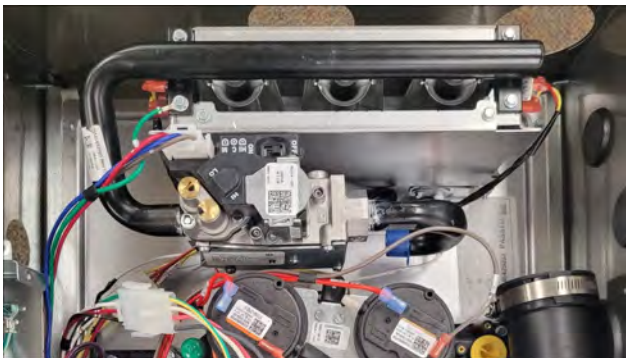
Figure 33. Wire tie excess wiring example



16. Reinstall the gas manifold assembly.

- a. Confirm the ground wire (BNR-GND) is secured to lower left manifold screw for proper flame sensing
- b. Plug the 3-pin connector into the gas valve.

Figure 34. Gas manifold accessory



17. Remove the existing IFC from the furnace control platform by cutting the standoffs.

Figure 35. Remove existing IFC



18. Install the new IFC onto the platform.

Figure 36. IFC



Installing the Link Communicating Kit

19. Place the IFC into the blower vestibule and reinstall the two screws.

Figure 37. IFC and blower vestibule



20. Connect the 15-pin wire control harness and the 4-pin wiring inducer communication harness to the connectors shown below.

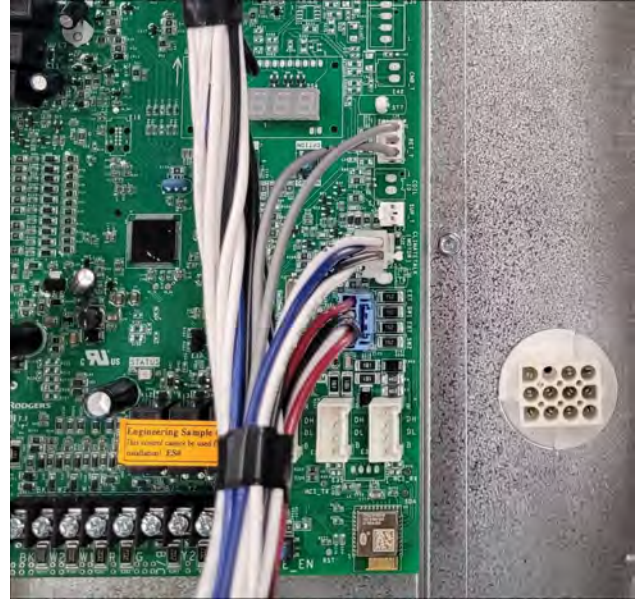
Figure 38. Control harness and inducer communication harness



21. Install the external switch, blower motor communication, and return air harnesses into the connectors as shown below.

Install the Supply Air sensor into the SUP_T connector that ships with the A/T Link Thermostat and System Controller kit.

Figure 39. Connectors



22. Install the flame sense (BNR-FP) wire onto the FP connector. Plug the Line, Neutral, and Ignitor harnesses onto the connectors as shown below.

Figure 40. Connectors



23. Plug the 12-pin motor harness into the connector as shown below.
24. Re-install the line voltage interlock harness into the connector as shown below using the previously removed 2-1/4 inch screws.
 - a. An extra bracket is included but may not be required.
 - b. Reinstall the four screws to the bottom cross member panel if previously removed.

Figure 41. Line voltage interlock harness



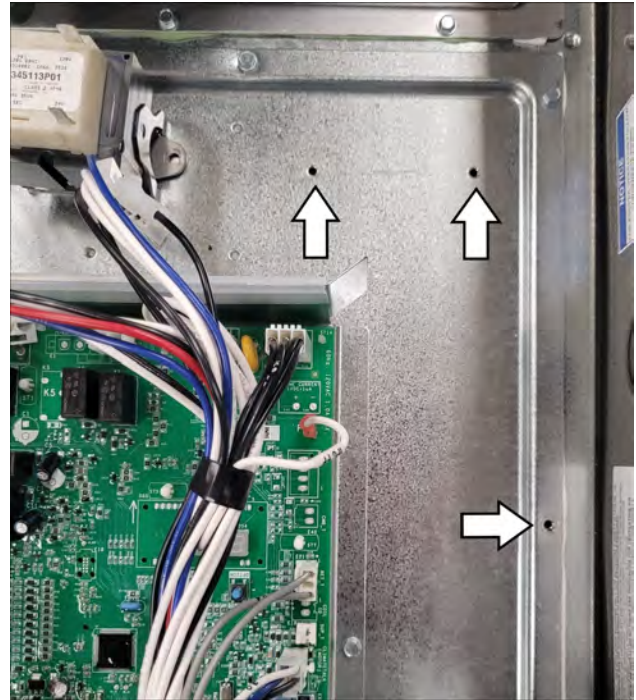
25. Install the Variable Speed Inducer Module (VSIM) to the sheet metal bracket. Orientation of both is as shown.

Figure 42. VSIM



26. Remove the two screws from the transformer mount and the one screw from the blower vestibule panel as shown below.

Figure 43. Remove screws



27. Place the VSIM and bracket so the screw holes align with screws removed in the prior step.

- Install the vestibule panel screw first to hold the assembly in place.
- Place the transformer on top of the bracket and align the screw holes.
- Reinstall the two screws.

Figure 44. VSIM and bracket



28. Install the Neutral voltage wire (120V-N) and the Line voltage wire (120V-H) to the primary side of the transformer as shown.

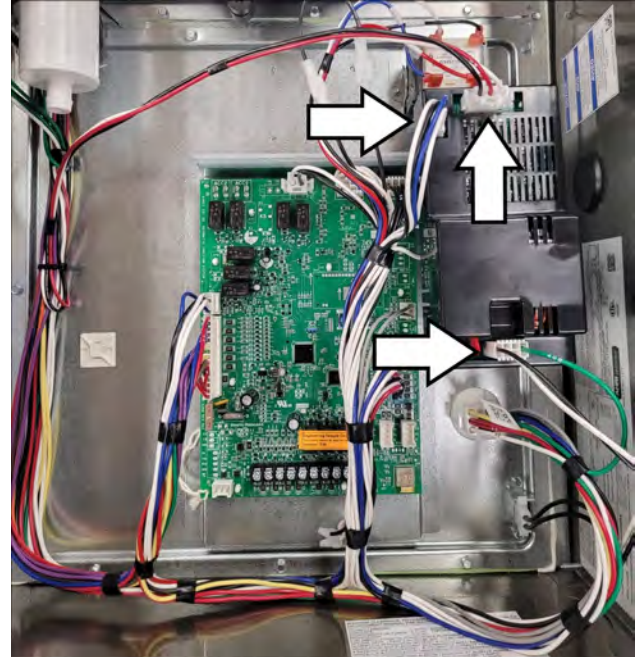
Install the Common Low voltage wire (24V-C) and the Hot Low voltage wire (24V-H) to the secondary side of the transformer as shown below.

Figure 45. Install wiring



29. Plug the Inducer, VSIM communication, and high voltage connectors onto the VSIM control. Dress wiring for a neat installation.

Figure 46. Install wiring and dress



30. Furnaces with a line choke will use the two connectors below. If the furnace does not have a line choke, connect the two together with the supplied jumper.

Figure 47. Furnaces without a choke line



31. Re-install condensate tubing and condensate pressure switch tubing.

- Confirm condensate pressure switch tubing is cut to length. The furnace should look like the picture below for upflow with top venting.
- Dress wiring as needed for a neat installation.

Figure 48. Complete hardware conversion



After completing the hardware conversion of the BACS9V2CA22MUAA link conversion kit, install the furnace per the furnace installation, operation, and maintenance literature. When the unit is ready to start up, follow the instructions in [“Programming the Integrated Furnace Control \(IFC\),”](#) p. 26.

Field Wiring — Link Communicating Mode

Low Voltage Maximum Wire Length

The Table 4, p. 20 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.

Table 4. Low voltage maximum wire length

Control Wire - Communicating	
Wire size	Max. wire length
18 AWG	500 feet combined
Control Wire - 24 Volt	
Wire size	Max. wire length
18 AWG	100 feet combined

Link Communicating Low Voltage Wire Connectors

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

Table 5. 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 inch.
2. Insert the wires into the connector in the correctly colored locations.

3. When it releases, 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 to be replaced.
6. Wire colors are for illustration purposes only. If using a different color, confirm it lands at the correct terminal throughout all of the communicating control wiring.

Connect the CAN connector into the corresponding 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.

Figure 49. CAN connector

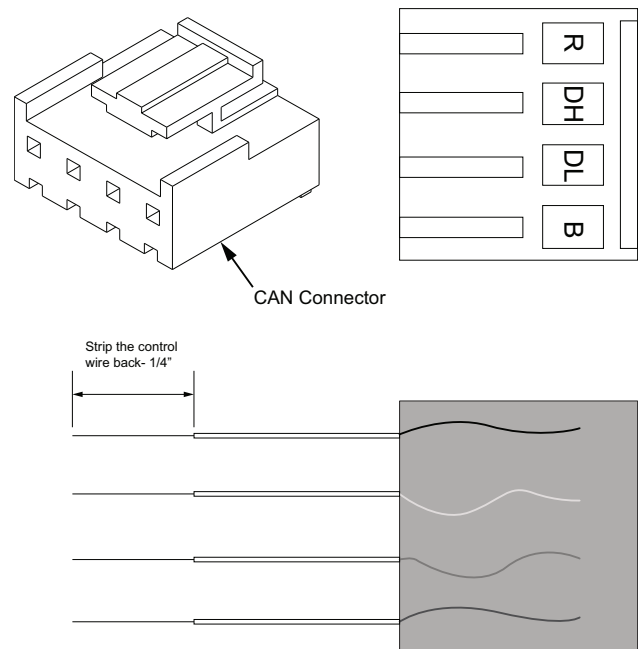
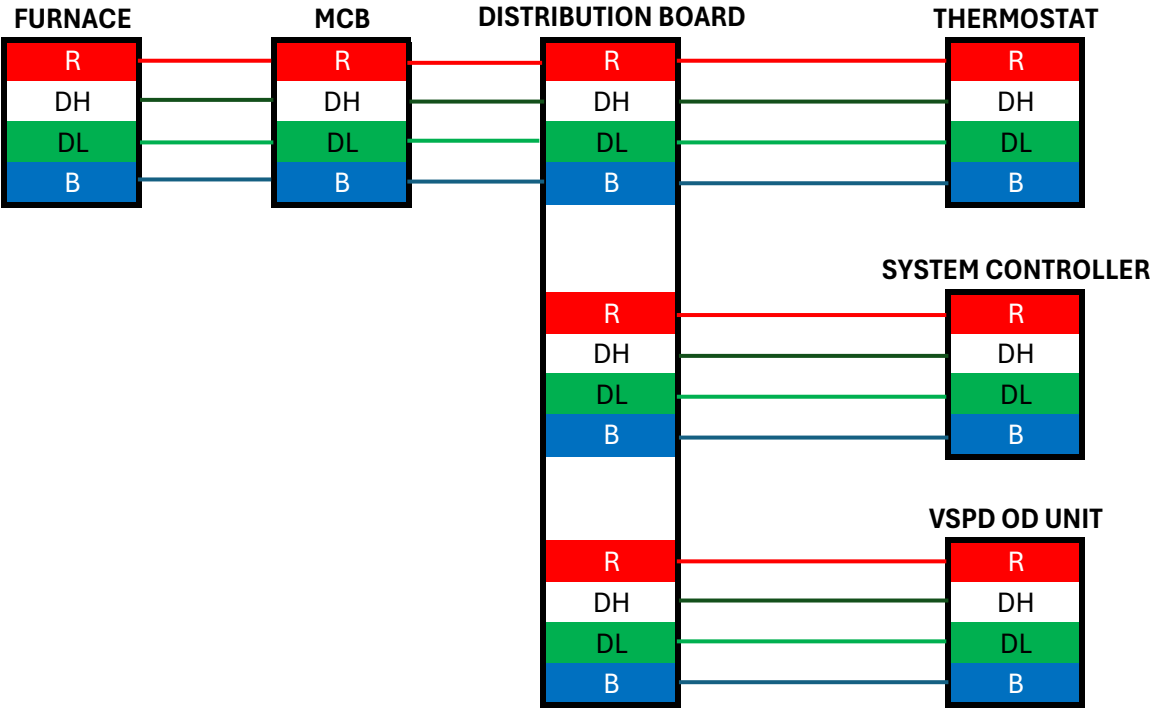


Figure 50. Link communicating VS heat pump or AC with communicating S9V2-VC furnace

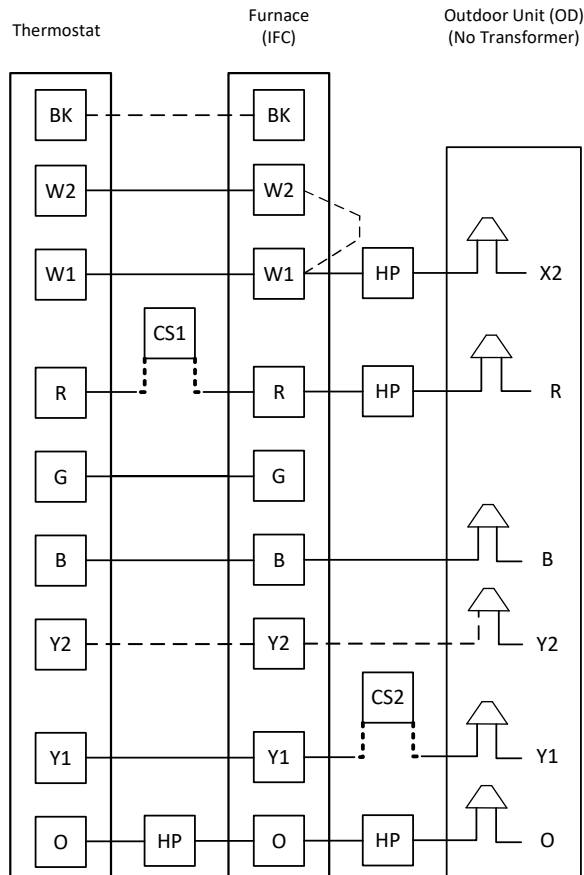


Note: Condensate switch should be connected to one of the external switches. Setup must be done using the technician app or UX360 thermostat.

Field Wiring — 24V Mode (Non A2L)

Note: A2L field wiring must follow the instructions provided in the cased cooling coil installation guide.

Figure 51. Field wiring diagram for S9V2-vc in 24-volt mode with one / two stage AC or heat pump



NOTES:

- 1) HP = Wiring used for Heat Pump System.
- 2) CS = wiring used for Condensate Switch (2 Options).
- 3) Y1 and/or Y2 must be connected from the thermostat to the IFC for proper airflow.
- 4) Remove Y1-O jumper for HP systems. O terminal must be connected as shown for gas heating operation during defrost.
- 5) If the thermostat does not have a W2, or there are not enough conductors, jumper W1 to W2 at the IFC.
- 6) A/TCONT824 thermostats do not require the use of X2.
- 7) For PWM (BK) enabled thermostats, enable BK mode via the Menu-Option buttons on the IFC and connect wiring.

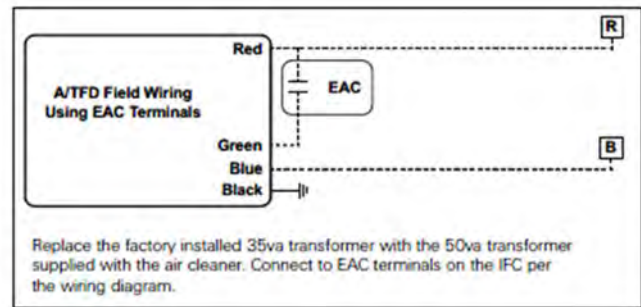
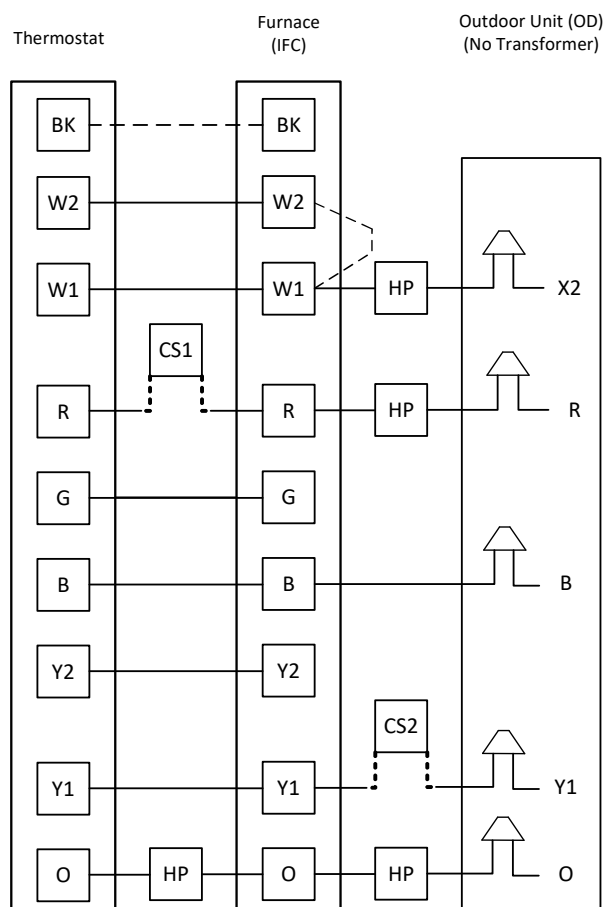
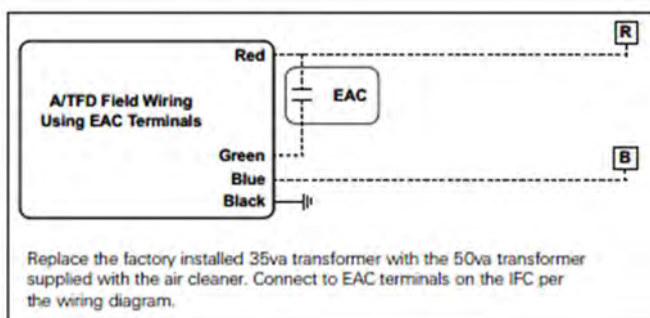


Figure 52. Field wiring diagram for S9V2-vc in 24-volt mode with single stage AC or heat pump with two-stage airflow



NOTES:

- 1) HP = Wiring used for Heat Pump System.
- 2) CS = wiring used for Condensate Switch (2 Options).
- 3) Y1 and Y2 must be connected from the thermostat to the IFC for proper airflow.
- 4) Thermostat must be setup for 2 stage OD.
- 5) IFC Must be setup for 2 stage OD using the Menu/Option Buttons.
- 6) Remove Y1-O jumper for HP systems. O terminal must be connected as shown for gas heating operation during defrost.
- 7) If the thermostat does not have a W2, or there are not enough conductors, jumper W1 to W2 at the IFC.
- 8) A/TCONT824 thermostats do not require the use of X2.
- 9) For PWM (BK) enabled thermostats, enable the BK mode via the Menu-Option buttons on the IFC and connect wiring.



Unit Wiring

Figure 53. Unit wiring diagram

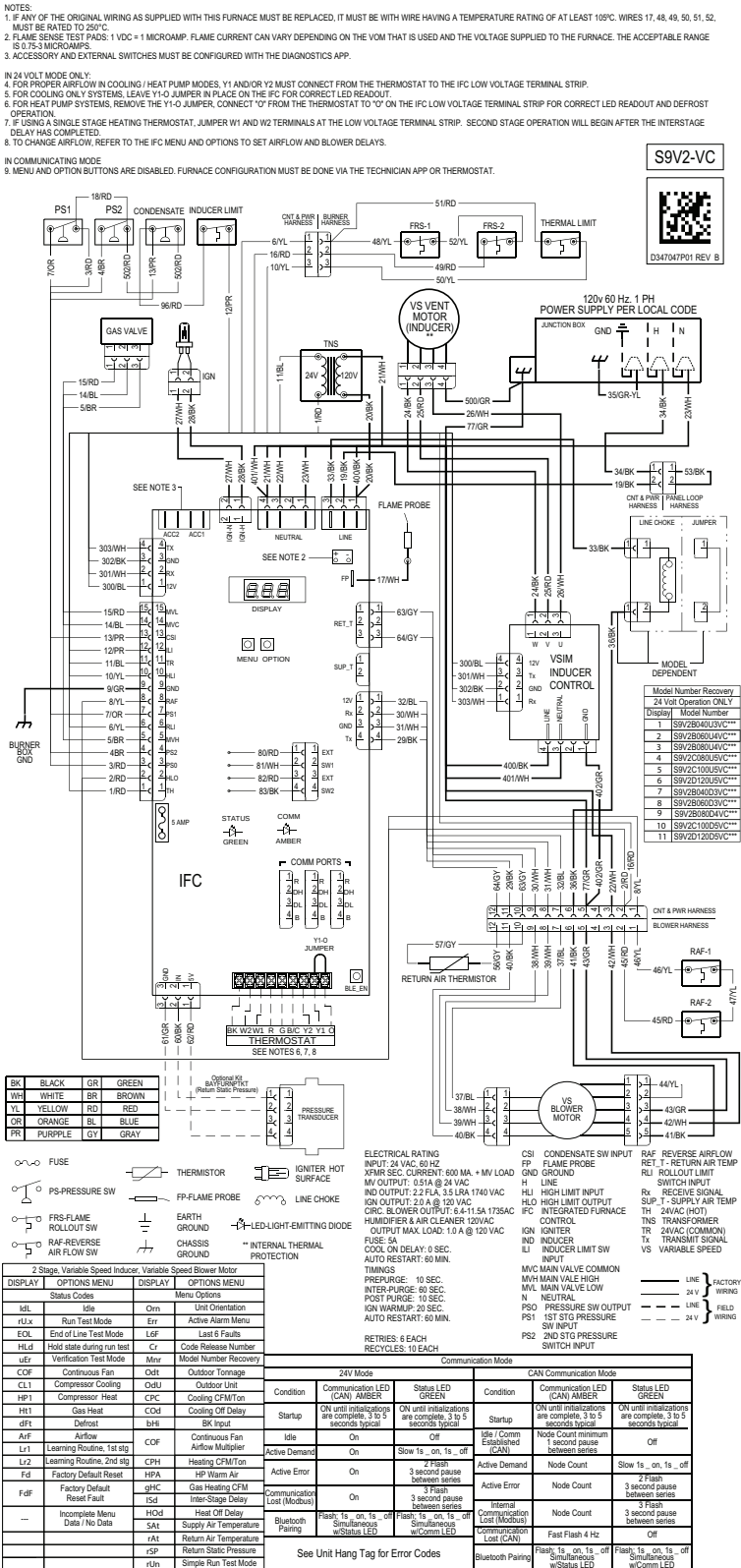
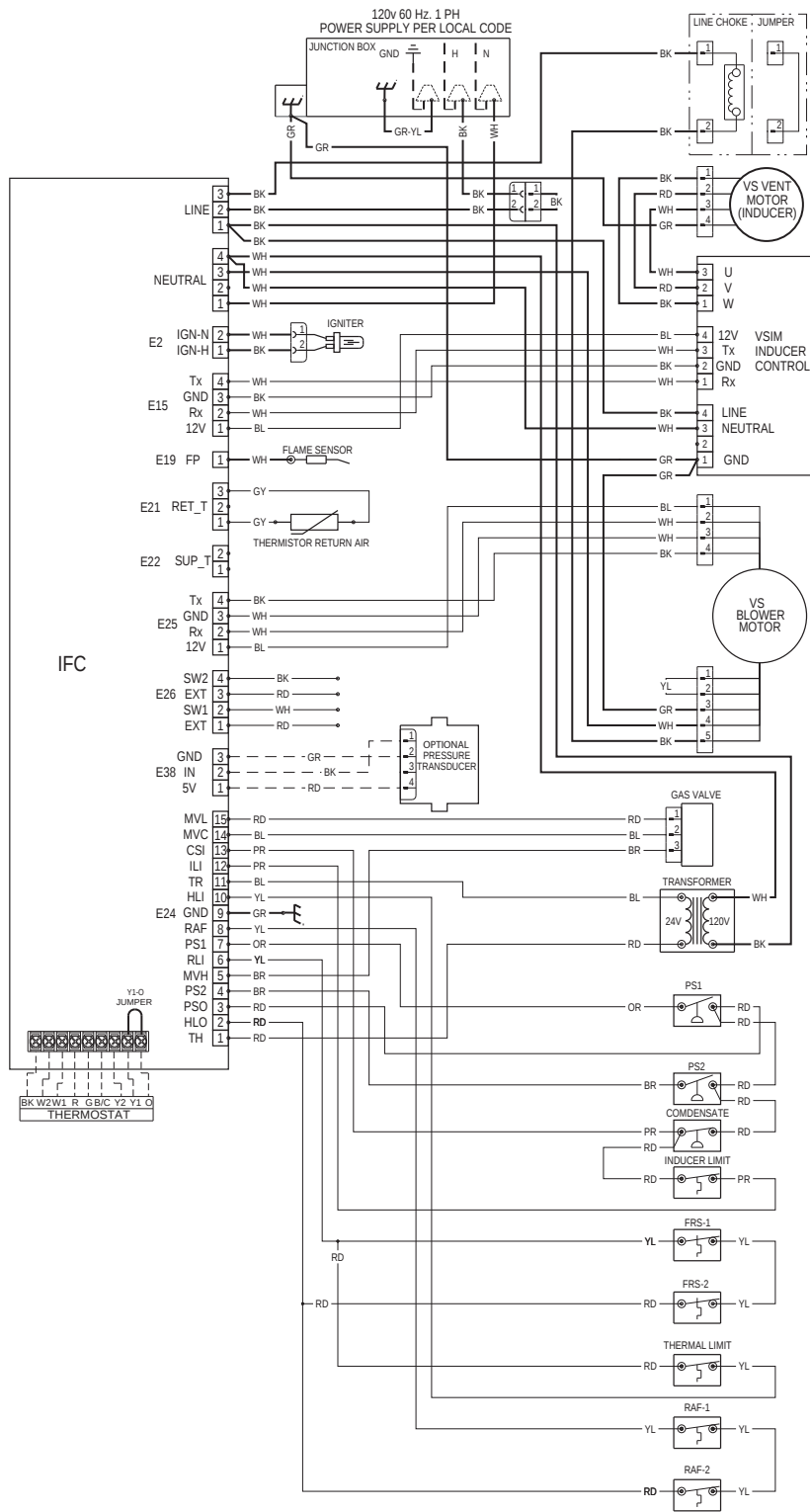


Figure 54. Unit wiring diagram



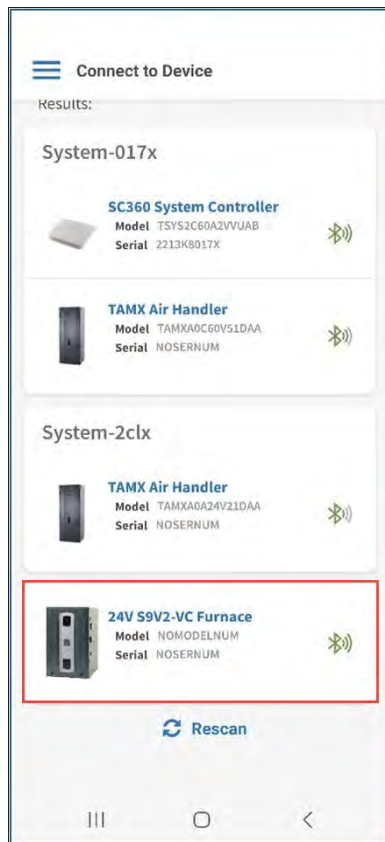
Programming the Integrated Furnace Control (IFC)

Note: Connect to Link communicating systems via Bluetooth requires log in credentials provided by the installing dealer. Access through the UX360 thermostat can also be used.

After installing the furnace, program the integrated furnace control (IFC) for the model number of the furnace using the technician app.

1. Confirm the CAN field wiring is disconnected from the IFC.
2. Open the technician app and apply power to the furnace.
3. When the furnace control LED display shows IDL (Idle), momentarily push the BLE button to activate Bluetooth communication.
4. Connect the furnace to the technician app and follow the prompts. The serial number will have to be manually entered.
 - a. Select the correct system.

Figure 55. Select system



- b. Tap **Set Model Number**.

Figure 56. Set model number



- c. Tap **Model Number**.

Figure 57. Model number



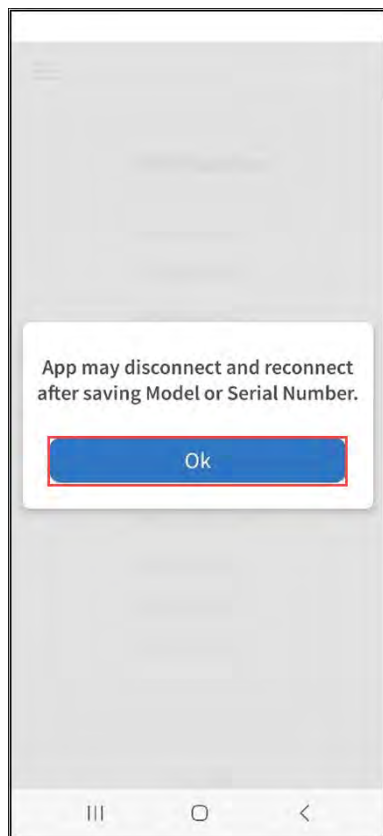
d. Select the correct model number sequence.

Figure 58. Model number



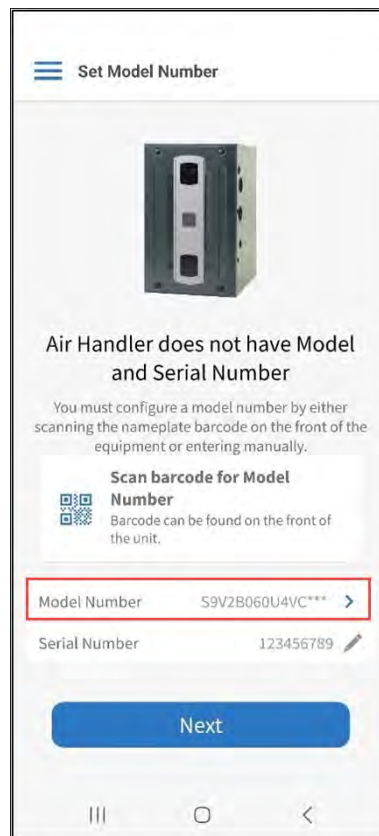
e. Tap **OK**.

Figure 59. App may disconnect



- f. Tap the pencil next to **Serial Number** to manually enter the serial number.

Figure 60. Serial number



- g. Verify the information is correct for the furnace.

Figure 61. Verify information



5. Connect the CAN field wiring to the furnace. The LED display will change from IDL to COM when the furnace starts to communicate to the thermostat (UX360) and the system controller (SC360).

Note: In communicating mode, the MENU and OPTION buttons are disabled.

6. Set up external switches and accessories.

Note: Set up of External and Accessory switches must be made through the Technician App or the UX360 thermostat. There are no default configurations.

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 24 vac source voltage and are to be connected to Normally Closed (NC) contacts on the device, i.e smoke detector.

Notes:

- In Link Communicating mode, accessories and external switches can be configured in the UX360 user interface or diagnostics mobile app.
- In 24V mode, accessories and external switches must be configured in the diagnostics mobile app.
- Do not use the condensate cooling option in 24V mode of operation. See the 24V Field Wiring Diagram section.

Figure 62. Accessory

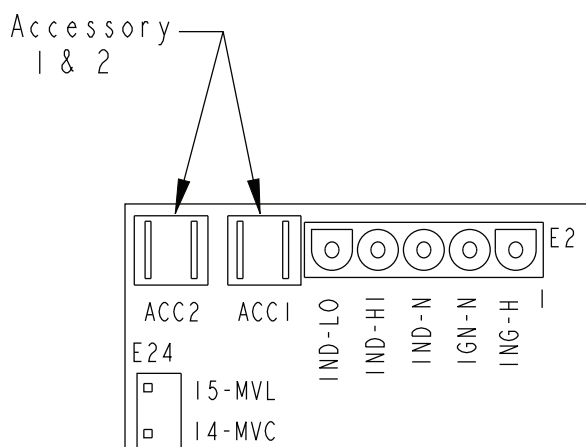
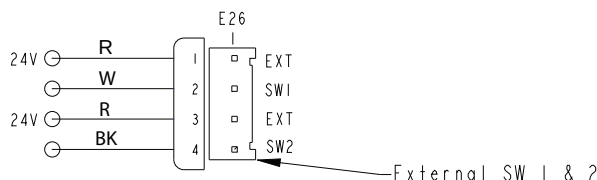


Figure 63. External switch



Labeling and Warranty

Labeling

1. After programming the IFC, locate the supplied conversion and serial number label , and place it on the front panel of the unit as shown.

Figure 64. Label



2. Locate the new unit wiring diagram, and place it over the existing diagram inside the front panel.
3. Locate and affix the error code hang tag to the low voltage wiring using one of the supplied wire ties.

Warranty

The BACS9V2CA22MUA* kit must be registered as a separate component/accessory to receive the 10 year limited warranty. See the Limited Warranty document accompanying the literature pack.

Heating Airflow

Heating airflow tables include six options. Airflow can be changed during gas heating operation. 2nd stage airflows are adjustable. 1st stage airflow is approximately 72% of 2nd stage.

Cooling and Heat Pump airflow tables have not changed. Refer to the Installation, Operations, and Maintenance manual provided with the unit.

Upflow

Table 6. S9V2B040U3VC heating airflow

Furnace heating airflow (CFM), power (watts), and temp. rise (°F) vs. external static pressure with filter (iwc)								
Airflow setting	Heating stage	Target airflow		External static pressure (in. w. c.)				
				0.1	0.3	0.5	0.7	0.9
650	1st Stage	468	CFM / Watts	474 / 28	489 / 61	504 / 94	519 / 127	534 / 160
			Temp. Rise	50	48	46	44	42
	2nd Stage	650	CFM / Watts	644 / 45	662 / 89	680 / 134	699 / 178	717 / 222
			Temp. Rise	56	54	53	51	50
690	1st Stage	497	CFM / Watts	490 / 31	509 / 65	529 / 98	548 / 131	568 / 165
			Temp. Rise	48	46	44	42	40
	2nd Stage	690	CFM / Watts	686 / 50	700 / 97	714 / 143	727 / 190	741 / 237
			Temp. Rise	52	51	50	49	49
830	1st Stage	598	CFM / Watts	584 / 41	601 / 80	619 / 119	636 / 157	654 / 196
			Temp. Rise	40	39	38	36	35
	2nd Stage	830	CFM / Watts	816 / 81	828 / 135	840 / 190	852 / 244	864 / 298
			Temp. Rise	44	43	43	42	42
880 ^(a)	1st Stage	634	CFM / Watts	613 / 46	633 / 88	653 / 131	674 / 174	694 / 217
			Temp. Rise	38	37	36	35	34
	2nd Stage	880	CFM / Watts	876 / 91	885 / 148	893 / 205	902 / 262	911 / 319
			Temp. Rise	41	41	40	40	40
1040	1st Stage	749	CFM / Watts	727 / 68	742 / 113	758 / 157	774 / 202	790 / 246
			Temp. Rise	32	32	31	30	30
	2nd Stage	1040	CFM / Watts	1025 / 145	1032 / 207	1039 / 269	1046 / 331	1053 / 393
			Temp. Rise	35	35	35	35	34
1200	1st Stage	864	CFM / Watts	832 / 92	849 / 142	866 / 191	883 / 240	900 / 290
			Temp. Rise	28	28	27	27	26
	2nd Stage	1200	CFM / Watts	1186 / 218	1182 / 285	1177 / 352	1172 / 420	1167 / 487
			Temp. Rise	30	31	31	31	31

^(a) Factory setting

Heating Airflow

Table 7. S9V2B060U4VC heating airflow

Furnace heating airflow (CFM), power (watts), and temp. rise (°F) vs. external static pressure with filter (iwc)								
Airflow setting	Heating stage	Target airflow		External static pressure (in. w. c.)				
				0.1	0.3	0.5	0.7	0.9
990	1st Stage	782	CFM / Watts	797 / 79	804 / 121	811 / 162	818 / 204	825 / 246
			Temp. Rise	44	44	43	43	42
	2nd Stage	990	CFM / Watts	1017 / 132	1028 / 186	1039 / 241	1050 / 295	1060 / 350
			Temp. Rise	53	52	52	51	51
1040	1st Stage	822	CFM / Watts	825 / 85	830 / 129	836 / 174	841 / 218	847 / 262
			Temp. Rise	42	42	42	42	41
	2nd Stage	1040	CFM / Watts	1068 / 147	1077 / 206	1085 / 266	1093 / 325	1102 / 385
			Temp. Rise	50	50	50	49	49
1090	1st Stage	861	CFM / Watts	859 / 98	866 / 142	874 / 186	882 / 229	890 / 273
			Temp. Rise	41	40	40	40	39
	2nd Stage	1090	CFM / Watts	1104 / 173	1115 / 231	1127 / 289	1138 / 347	1150 / 405
			Temp. Rise	49	48	48	47	47
1160 ^(a)	1st Stage	916	CFM / Watts	900 / 113	916 / 160	933 / 207	950 / 254	966 / 301
			Temp. Rise	39	38	37	37	36
	2nd Stage	1160	CFM / Watts	1154 / 201	1171 / 262	1189 / 322	1206 / 382	1223 / 442
			Temp. Rise	47	46	45	45	44
1230	1st Stage	972	CFM / Watts	962 / 128	973 / 178	984 / 228	996 / 278	1007 / 327
			Temp. Rise	37	36	36	35	34
	2nd Stage	1230	CFM / Watts	1241 / 224	1248 / 290	1255 / 356	1262 / 422	1269 / 487
			Temp. Rise	44	43	43	43	42
1300	1st Stage	1027	CFM / Watts	1010 / 147	1028 / 200	1045 / 253	1063 / 307	1081 / 360
			Temp. Rise	35	34	34	33	32
	2nd Stage	1300	CFM / Watts	1301 / 300	1309 / 361	1317 / 421	1325 / 482	1333 / 542
			Temp. Rise	41	41	41	41	40

^(a) Factory setting

Table 8. S9V2B080U4VC heating airflow

Furnace heating airflow (CFM), power (watts), and temp. rise (°F) vs. external static pressure with filter (iwc)								
Airflow setting	Heating stage	Target airflow		External static pressure (in. w. c.)				
				0.1	0.3	0.5	0.7	0.9
1200	1st Stage	864	CFM / Watts	882 / 93	890 / 137	898 / 182	906 / 227	914 / 271
			Temp. Rise	53	53	52	52	51
	2nd Stage	1200	CFM / Watts	1228 / 212	1233 / 274	1237 / 336	1241 / 398	1246 / 460
			Temp. Rise	58	58	58	58	58
1260 ^(a)	1st Stage	907	CFM / Watts	937 / 110	937 / 156	938 / 203	938 / 249	938 / 295
			Temp. Rise	50	50	50	50	50
	2nd Stage	1260	CFM / Watts	1287 / 242	1291 / 300	1294 / 359	1297 / 418	1300 / 476
			Temp. Rise	55	55	55	55	56
1300	1st Stage	936	CFM / Watts	959 / 116	958 / 158	958 / 200	958 / 242	958 / 284
			Temp. Rise	49	49	49	49	49
	2nd Stage	1300	CFM / Watts	1325 / 263	1329 / 321	1332 / 379	1336 / 437	1339 / 494
			Temp. Rise	54	54	54	54	54
1330	1st Stage	958	CFM / Watts	983 / 124	985 / 170	987 / 215	989 / 261	990 / 306
			Temp. Rise	48	48	47	47	47
	2nd Stage	1330	CFM / Watts	1365 / 287	1372 / 349	1378 / 411	1384 / 473	1390 / 534
			Temp. Rise	52	52	52	52	52
1390	1st Stage	1001	CFM / Watts	1036 / 136	1021 / 183	1007 / 230	993 / 276	978 / 323
			Temp. Rise	46	46	46	47	47
	2nd Stage	1390	CFM / Watts	1417 / 303	1424 / 375	1431 / 447	1437 / 519	1444 / 591
			Temp. Rise	51	51	50	50	50
1460	1st Stage	1051	CFM / Watts	1084 / 150	1083 / 198	1082 / 246	1080 / 294	1079 / 343
			Temp. Rise	43	44	44	44	44
	2nd Stage	1460	CFM / Watts	1489 / 349	1488 / 415	1487 / 482	1485 / 548	1484 / 614
			Temp. Rise	48	48	48	48	48

^(a) Factory setting

Table 9. S9V2C080U5VC heating airflow

Furnace heating airflow (CFM), power (watts), and temp. rise (°F) vs. external static pressure with filter (iwc)								
Airflow setting	Heating stage	Target airflow		External static pressure (in. w. c.)				
				0.1	0.3	0.5	0.7	0.9
1190	1st Stage	857	CFM / Watts	949 / 78	952 / 125	956 / 172	959 / 219	962 / 266
			Temp. Rise	50	49	49	48	48
	2nd Stage	1190	CFM / Watts	1320 / 155	1325 / 222	1330 / 288	1334 / 355	1339 / 422
			Temp. Rise	54	54	54	54	53
1300 ^(a)	1st Stage	936	CFM / Watts	1019 / 95	1025 / 143	1032 / 191	1038 / 239	1045 / 287
			Temp. Rise	46	46	46	45	45
	2nd Stage	1300	CFM / Watts	1425 / 190	1426 / 258	1427 / 327	1428 / 395	1428 / 463
			Temp. Rise	51	51	50	50	50
1450	1st Stage	1044	CFM / Watts	1120 / 115	1122 / 171	1125 / 226	1128 / 282	1130 / 338
			Temp. Rise	41	41	41	41	41
	2nd Stage	1450	CFM / Watts	1556 / 261	1555 / 334	1555 / 406	1554 / 478	1554 / 550
			Temp. Rise	47	46	46	46	46
1560	1st Stage	1123	CFM / Watts	1182 / 139	1190 / 194	1199 / 249	1207 / 305	1216 / 360
			Temp. Rise	40	40	39	39	39
	2nd Stage	1560	CFM / Watts	1660 / 312	1658 / 391	1656 / 470	1654 / 549	1652 / 628
			Temp. Rise	44	44	44	44	44
1630	1st Stage	1174	CFM / Watts	1233 / 151	1238 / 213	1244 / 275	1249 / 337	1255 / 399
			Temp. Rise	38	38	38	38	37
	2nd Stage	1630	CFM / Watts	1693 / 356	1698 / 436	1704 / 517	1709 / 597	1714 / 677
			Temp. Rise	43	43	42	42	42
1700	1st Stage	1224	CFM / Watts	1282 / 171	1285 / 231	1287 / 290	1290 / 349	1292 / 408
			Temp. Rise	37	36	36	36	36
	2nd Stage	1700	CFM / Watts	1763 / 389	1773 / 482	1782 / 574	1792 / 667	1801 / 759
			Temp. Rise	41	41	41	40	40

^(a) Factory setting

Table 10. S9V2C100U5VC heating airflow

Furnace heating airflow (CFM), power (watts), and temp. rise (°F) vs. external static pressure with filter (iwc)								
Airflow setting	Heating stage	Target airflow		External static pressure (in. w. c.)				
				0.1	0.3	0.5	0.7	0.9
1450	1st Stage	1146	CFM / Watts	1150 / 137	1146 / 196	1141 / 255	1136 / 313	1132 / 372
			Temp. Rise	51	51	51	51	51
	2nd Stage	1450	CFM / Watts	1487 / 262	1486 / 335	1486 / 408	1485 / 482	1485 / 555
			Temp. Rise	60	60	60	60	60
1530	1st Stage	1209	CFM / Watts	1201 / 156	1195 / 215	1189 / 275	1183 / 334	1178 / 394
			Temp. Rise	49	49	48	48	48
	2nd Stage	1530	CFM / Watts	1564 / 302	1567 / 376	1569 / 449	1572 / 523	1575 / 597
			Temp. Rise	57	57	57	57	57
1620	1st Stage	1280	CFM / Watts	1286 / 183	1277 / 242	1268 / 300	1260 / 359	1251 / 418
			Temp. Rise	45	46	46	46	47
	2nd Stage	1620	CFM / Watts	1668 / 358	1654 / 435	1641 / 511	1627 / 588	1613 / 665
			Temp. Rise	54	54	55	55	56
1720	1st Stage	1359	CFM / Watts	1347 / 208	1335 / 277	1324 / 345	1312 / 414	1300 / 482
			Temp. Rise	43	44	44	44	45
	2nd Stage	1720	CFM / Watts	1750 / 407	1739 / 499	1728 / 591	1717 / 683	1707 / 775
			Temp. Rise	51	51	52	52	52
1770 ^(a)	1st Stage	1398	CFM / Watts	1399 / 226	1379 / 297	1358 / 367	1338 / 438	1317 / 509
			Temp. Rise	41	42	43	43	44
	2nd Stage	1770	CFM / Watts	1801 / 441	1792 / 535	1782 / 629	1773 / 723	1764 / 817
			Temp. Rise	50	50	50	51	51
1830	1st Stage	1446	CFM / Watts	1424 / 255	1416 / 321	1408 / 387	1399 / 453	1391 / 520
			Temp. Rise	41	41	42	42	42
	2nd Stage	1830	CFM / Watts	1855 / 502	1840 / 598	1824 / 693	1809 / 789	1794 / 884
			Temp. Rise	48	49	49	50	50

^(a) Factory setting

Table 11. S9V2D120U5VC heating airflow

Furnace heating airflow (CFM), power (watts), and temp. rise (°F) vs. external static pressure with filter (iwc)								
Airflow setting	Heating stage	Target airflow		External static pressure (in. w. c.)				
				0.1	0.3	0.5	0.7	0.9
1560	1st Stage	1123	CFM / Watts	1182 / 122	1168 / 178	1155 / 234	1142 / 291	1128 / 347
			Temp. Rise	59	60	61	61	62
	2nd Stage	1560	CFM / Watts	1633 / 286	1658 / 357	1683 / 429	1707 / 500	1732 / 571
			Temp. Rise	66	65	64	63	62
1700	1st Stage	1224	CFM / Watts	1314 / 151	1305 / 208	1295 / 265	1286 / 321	1276 / 378
			Temp. Rise	54	53	53	53	53
	2nd Stage	1700	CFM / Watts	1814 / 355	1823 / 433	1833 / 511	1842 / 588	1852 / 666
			Temp. Rise	59	59	59	59	58
1850 ^(a)	1st Stage	1332	CFM / Watts	1427 / 196	1413 / 249	1400 / 302	1386 / 355	1372 / 408
			Temp. Rise	49	50	50	51	52
	2nd Stage	1850	CFM / Watts	1965 / 473	1975 / 539	1985 / 604	1995 / 670	2005 / 736
			Temp. Rise	55	55	54	54	54
1950	1st Stage	1404	CFM / Watts	1511 / 223	1491 / 283	1471 / 342	1451 / 401	1431 / 460
			Temp. Rise	46	47	48	48	49
	2nd Stage	1950	CFM / Watts	2076 / 545	2085 / 628	2095 / 710	2104 / 793	2113 / 875
			Temp. Rise	52	52	51	51	51
2150	1st Stage	1548	CFM / Watts	1644 / 285	1638 / 354	1632 / 422	1625 / 491	1619 / 560
			Temp. Rise	43	43	43	43	44
	2nd Stage	2150	CFM / Watts	2288 / 701	2286 / 792	2285 / 883	2283 / 974	2281 / 1065
			Temp. Rise	47	47	47	47	47
2250	1st Stage	1620	CFM / Watts	1699 / 317	1698 / 384	1697 / 451	1696 / 518	1694 / 585
			Temp. Rise	41	41	41	41	42
	2nd Stage	2250	CFM / Watts	2380 / 828	2347 / 881	2313 / 934	2279 / 987	2245 / 1040
			Temp. Rise	45	46	47	47	48

^(a) Factory setting

Downflow

Table 12. S9V2B040D3VC heating airflow

Furnace heating airflow (CFM), power (watts), and temp. rise (°F) vs. external static pressure with filter (iwc)								
Airflow setting	Heating stage	Target airflow		External static pressure (in. w. c.)				
				0.1	0.3	0.5	0.7	0.9
650	1st Stage	468	CFM / Watts	503 / 29	520 / 61	537 / 94	554 / 127	571 / 160
			Temp. Rise	47	45	44	43	42
	2nd Stage	650	CFM / Watts	674 / 48	686 / 90	698 / 131	710 / 173	723 / 214
			Temp. Rise	53	53	52	51	50
760	1st Stage	547	CFM / Watts	564 / 37	585 / 72	606 / 107	627 / 142	647 / 176
			Temp. Rise	41	40	39	38	37
	2nd Stage	760	CFM / Watts	758 / 62	774 / 111	790 / 160	805 / 209	821 / 258
			Temp. Rise	47	46	46	45	44
820 ^(a)	1st Stage	590	CFM / Watts	600 / 42	620 / 79	640 / 115	660 / 151	680 / 188
			Temp. Rise	40	38	37	35	34
	2nd Stage	820	CFM / Watts	799 / 69	821 / 123	843 / 176	865 / 230	887 / 283
			Temp. Rise	45	44	43	42	40
950	1st Stage	684	CFM / Watts	682 / 54	697 / 95	713 / 136	728 / 177	744 / 218
			Temp. Rise	34	33	33	32	31
	2nd Stage	950	CFM / Watts	912 / 98	930 / 159	948 / 219	966 / 280	984 / 340
			Temp. Rise	39	39	38	37	37
1100	1st Stage	792	CFM / Watts	755 / 68	775 / 114	796 / 159	816 / 205	837 / 251
			Temp. Rise	31	30	30	29	28
	2nd Stage	1100	CFM / Watts	1045 / 145	1056 / 208	1067 / 271	1078 / 334	1089 / 397
			Temp. Rise	34	34	34	33	33
1250	1st Stage	900	CFM / Watts	845 / 92	863 / 140	881 / 188	898 / 237	916 / 285
			Temp. Rise	28	27	26	26	25
	2nd Stage	1250	CFM / Watts	1168 / 199	1171 / 270	1173 / 341	1176 / 412	1179 / 483
			Temp. Rise	31	31	30	30	30

^(a) Factory setting

Table 13. S9V2B060D3VC heating airflow

Furnace heating airflow (CFM), power (watts), and temp. rise (°F) vs. external static pressure with filter (iwc)								
Airflow setting	Heating stage	Target airflow		External static pressure (in. w. c.)				
				0.1	0.3	0.5	0.7	0.9
900	1st Stage	711	CFM / Watts	744 / 59	720 / 96	697 / 133	673 / 170	650 / 207
			Temp. Rise	47	48	50	51	53
	2nd Stage	900	CFM / Watts	936 / 89	920 / 138	904 / 187	888 / 235	873 / 284
			Temp. Rise	57	58	59	60	61
960	1st Stage	758	CFM / Watts	773 / 65	761 / 105	749 / 145	737 / 185	726 / 224
			Temp. Rise	45	46	47	47	48
	2nd Stage	960	CFM / Watts	984 / 105	975 / 157	966 / 210	957 / 262	948 / 314
			Temp. Rise	55	55	56	56	57
1030 ^(a)	1st Stage	814	CFM / Watts	831 / 76	819 / 116	806 / 157	794 / 198	781 / 239
			Temp. Rise	42	43	43	44	45
	2nd Stage	1030	CFM / Watts	1044 / 124	1034 / 175	1023 / 226	1012 / 277	1001 / 328
			Temp. Rise	52	52	53	53	54
1130	1st Stage	893	CFM / Watts	891 / 94	882 / 136	873 / 179	863 / 222	854 / 264
			Temp. Rise	39	40	40	41	41
	2nd Stage	1130	CFM / Watts	1120 / 153	1112 / 213	1104 / 273	1097 / 332	1089 / 392
			Temp. Rise	48	48	49	49	49
1200	1st Stage	948	CFM / Watts	942 / 104	931 / 149	920 / 195	909 / 240	898 / 286
			Temp. Rise	37	38	38	39	39
	2nd Stage	1200	CFM / Watts	1171 / 186	1167 / 246	1162 / 307	1158 / 367	1154 / 427
			Temp. Rise	46	46	46	47	47
1350	1st Stage	1067	CFM / Watts	1036 / 136	1026 / 188	1017 / 240	1007 / 292	997 / 343
			Temp. Rise	34	34	34	35	35
	2nd Stage	1350	CFM / Watts	1316 / 254	1290 / 312	1264 / 370	1238 / 428	1211 / 486
			Temp. Rise	41	42	43	44	44

^(a) Factory setting

Table 14. S9V2B080D4VC heating airflow

Furnace heating airflow (CFM), power (watts), and temp. rise (°F) vs. external static pressure with filter (iwc)								
Airflow setting	Heating stage	Target airflow		External static pressure (in. w. c.)				
				0.1	0.3	0.5	0.7	0.9
1200	1st Stage	864	CFM / Watts	902 / 87	901 / 130	900 / 172	899 / 215	898 / 258
			Temp. Rise	52	52	52	53	53
	2nd Stage	1200	CFM / Watts	1233 / 193	1248 / 250	1263 / 308	1278 / 366	1293 / 424
			Temp. Rise	58	57	57	56	56
1260	1st Stage	907	CFM / Watts	944 / 96	946 / 142	948 / 187	950 / 232	952 / 278
			Temp. Rise	50	49	49	49	49
	2nd Stage	1260	CFM / Watts	1297 / 211	1311 / 272	1326 / 333	1340 / 394	1355 / 455
			Temp. Rise	55	55	54	54	53
1330 ^(a)	1st Stage	958	CFM / Watts	981 / 111	996 / 157	1011 / 203	1026 / 249	1041 / 295
			Temp. Rise	48	47	46	46	45
	2nd Stage	1330	CFM / Watts	1378 / 251	1397 / 316	1415 / 380	1434 / 445	1452 / 509
			Temp. Rise	52	51	51	50	49
1380	1st Stage	994	CFM / Watts	1018 / 118	1048 / 172	1079 / 226	1110 / 280	1140 / 333
			Temp. Rise	46	45	44	43	42
	2nd Stage	1380	CFM / Watts	1411 / 269	1431 / 346	1452 / 424	1472 / 501	1493 / 579
			Temp. Rise	51	50	50	49	48
1430	1st Stage	1030	CFM / Watts	1042 / 130	1056 / 180	1070 / 230	1084 / 279	1098 / 329
			Temp. Rise	45	45	44	44	44
	2nd Stage	1430	CFM / Watts	1452 / 303	1463 / 372	1474 / 441	1486 / 510	1497 / 579
			Temp. Rise	50	50	49	49	48
1480	1st Stage	1066	CFM / Watts	1078 / 141	1095 / 191	1112 / 240	1130 / 290	1147 / 340
			Temp. Rise	43	43	43	42	42
	2nd Stage	1480	CFM / Watts	1529 / 342	1529 / 406	1528 / 469	1528 / 532	1527 / 595
			Temp. Rise	48	47	47	47	47

^(a) Factory setting

Heating Airflow

Table 15. S9V2C100D5VC heating airflow

Furnace heating airflow (CFM), power (watts), and temp. rise (°F) vs. external static pressure with filter (iwc)								
Airflow setting	Heating stage	Target airflow		External static pressure (in. w. c.)				
				0.1	0.3	0.5	0.7	0.9
1520	1st Stage	1094	CFM / Watts	1064 / 118	1054 / 168	1044 / 219	1035 / 269	1025 / 319
			Temp. Rise	55	55	56	56	56
	2nd Stage	1520	CFM / Watts	1473 / 264	1469 / 336	1465 / 407	1460 / 478	1456 / 550
			Temp. Rise	61	61	61	61	61
1610	1st Stage	1159	CFM / Watts	1109 / 134	1102 / 185	1096 / 237	1090 / 288	1083 / 340
			Temp. Rise	53	53	53	53	53
	2nd Stage	1610	CFM / Watts	1583 / 310	1570 / 383	1557 / 456	1544 / 529	1531 / 602
			Temp. Rise	56	57	57	58	59
1700	1st Stage	1224	CFM / Watts	1170 / 153	1167 / 210	1164 / 267	1161 / 324	1158 / 381
			Temp. Rise	50	50	50	51	51
	2nd Stage	1700	CFM / Watts	1647 / 364	1640 / 433	1633 / 503	1625 / 573	1618 / 643
			Temp. Rise	55	55	55	55	55
1800	1st Stage	1296	CFM / Watts	1234 / 175	1224 / 230	1214 / 284	1203 / 338	1193 / 392
			Temp. Rise	47	48	48	49	50
	2nd Stage	1800	CFM / Watts	1751 / 430	1727 / 505	1703 / 580	1679 / 655	1655 / 730
			Temp. Rise	51	52	53	53	54
1870 ^(a)	1st Stage	1346	CFM / Watts	1282 / 202	1255 / 253	1228 / 305	1201 / 356	1175 / 408
			Temp. Rise	46	47	48	48	49
	2nd Stage	1870	CFM / Watts	1833 / 485	1815 / 571	1797 / 657	1779 / 744	1761 / 830
			Temp. Rise	49	49	50	51	51
2100	1st Stage	1512	CFM / Watts	1434 / 262	1411 / 319	1387 / 377	1364 / 435	1340 / 492
			Temp. Rise	41	41	42	42	43
	2nd Stage	2100	CFM / Watts	2015 / 692	2000 / 775	1985 / 858	1970 / 941	1955 / 1024
			Temp. Rise	44	45	45	46	46

^(a) Factory setting

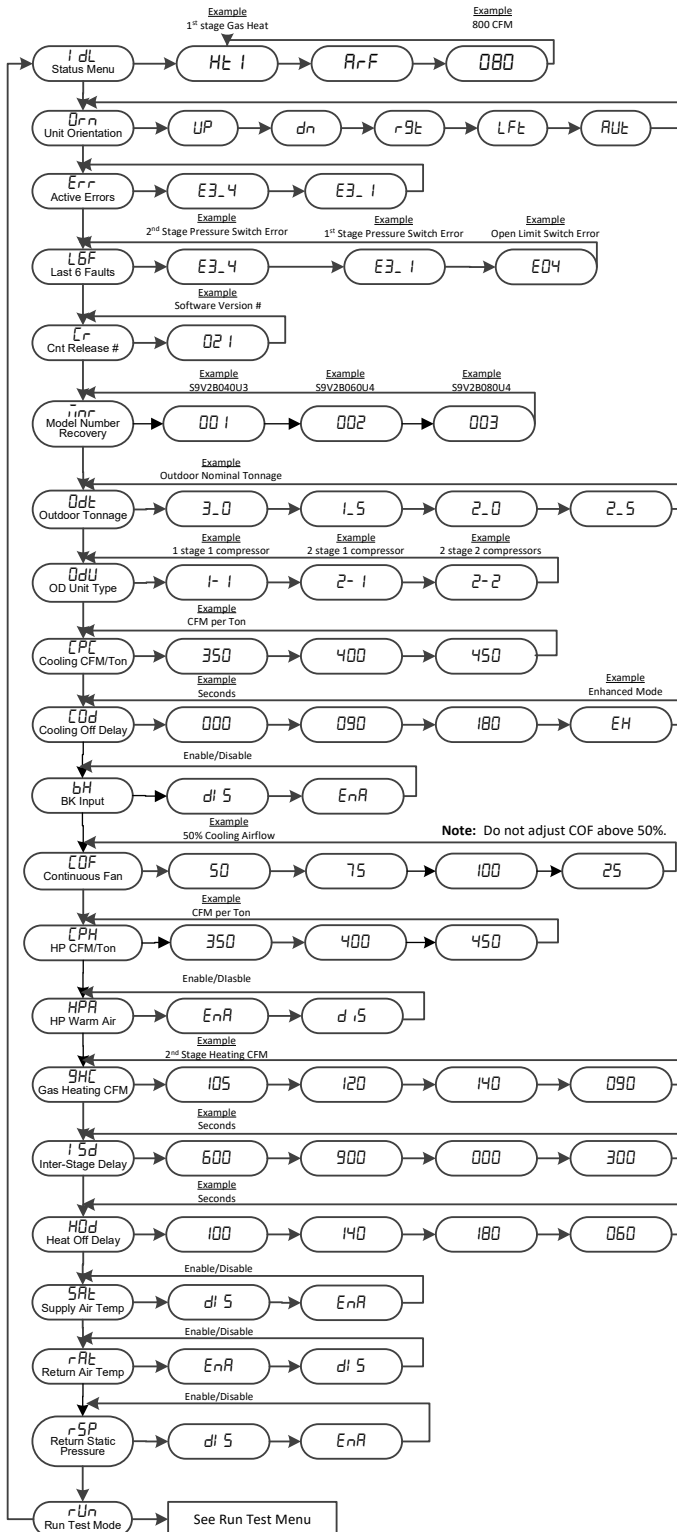
Table 16. S9V2D120D5VC heating airflow

Furnace heating airflow (CFM), power (watts), and temp. rise (°F) vs. external static pressure with filter (iwc)								
Airflow setting	Heating stage	Target airflow		External static pressure (in. w. c.)				
				0.1	0.3	0.5	0.7	0.9
1750	1st Stage	1260	CFM / Watts	1220 / 137	1209 / 195	1198 / 252	1187 / 310	1176 / 368
			Temp. Rise	58	58	58	58	59
	2nd Stage	1750	CFM / Watts	1846 / 347	1818 / 420	1790 / 492	1763 / 565	1735 / 637
			Temp. Rise	59	59	60	61	62
1850	1st Stage	1332	CFM / Watts	1316 / 163	1288 / 221	1260 / 279	1232 / 337	1203 / 396
			Temp. Rise	54	54	55	56	57
	2nd Stage	1850	CFM / Watts	1928 / 381	1896 / 466	1863 / 552	1830 / 638	1798 / 724
			Temp. Rise	56	57	58	59	60
1950	1st Stage	1404	CFM / Watts	1389 / 181	1358 / 243	1327 / 305	1296 / 367	1265 / 429
			Temp. Rise	51	52	53	54	55
	2nd Stage	1950	CFM / Watts	2033 / 455	2003 / 541	1974 / 626	1944 / 711	1914 / 796
			Temp. Rise	53	54	55	56	56
2050	1st Stage	1476	CFM / Watts	1477 / 210	1436 / 277	1394 / 344	1353 / 411	1312 / 478
			Temp. Rise	48	49	50	52	53
	2nd Stage	2050	CFM / Watts	2127 / 539	2090 / 624	2054 / 710	2017 / 795	1980 / 881
			Temp. Rise	51	52	53	53	54
2150 ^(a)	1st Stage	1548	CFM / Watts	1565 / 235	1524 / 303	1483 / 372	1443 / 440	1402 / 508
			Temp. Rise	45	46	47	49	50
	2nd Stage	2150	CFM / Watts	2262 / 605	2222 / 702	2183 / 799	2144 / 897	2105 / 994
			Temp. Rise	49	49	50	51	51
2250	1st Stage	1620	CFM / Watts	1622 / 269	1598 / 345	1573 / 421	1548 / 497	1523 / 573
			Temp. Rise	43	44	45	45	46
	2nd Stage	2250	CFM / Watts	2291 / 674	2262 / 765	2234 / 855	2206 / 945	2178 / 1036
			Temp. Rise	47	48	48	49	50

^(a) Factory setting

System Control Menu — 24V Mode

Figure 65. S9V2 24V control system menu



SETTING UP YOUR SYSTEM:

To change any factory default value, first remove any "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 (L6F), enter the menu by scrolling to the right and hold the "OPTION" key for at least 5 seconds. Release and a set of 3 dashes will be seen 3 times. This confirms the faults have been cleared.

Model Number Recovery

Model Number Recovery Digit

Upflow

S9V2B040U3VC	1
S9V2B060U4VC	2
S9V2B080U4VC	3
S9V2C080U5VC	4
S9V2C100U5VC	5
S9V2D120U5VC	6

Downflow

S9V2B040D3VC	7
S9V2B060D3VC	8
S9V2B080D4VC	9
S9V2C100D5VC	10
S9V2D120D5VC	11

Model ODT Options [= Default

Upflow

S9V2B040U3VC	3T[3T], 1.5T, 2T, 2.5T
S9V2B060U4VC	4T[4T], 2T, 2.5T, 3T, 3.5T
S9V2B080U4VC	4T[4T], 2T, 2.5T, 3T, 3.5T
S9V2C080U5VC	5T[5T], 3T, 3.5T, 4T, 4.5T
S9V2C100U5VC	5T[5T], 3T, 3.5T, 4T, 4.5T
S9V2D120U5VC	5T[5T], 3T, 3.5T, 4T, 4.5T

Downflow

S9V2B040D3VC	3T[3T], 1.5T, 2T, 2.5T
S9V2B060D3VC	3T[3T], 1.5T, 2T, 2.5T
S9V2B080D4VC	4T[4T], 2T, 2.5T, 3T, 3.5T
S9V2C100D5VC	5T[5T], 3T, 3.5T, 4T, 4.5T
S9V2D120D5VC	5T[5T], 3T, 3.5T, 4T, 4.5T

CFM per Ton selections range from 290 – 450

Important:

When applied with 24v zoning or Relay Panel with VSPD outdoor unit, the CFM/Ton must be set to 400

Gas heating CFM can be adjusted while the unit is operating in gas heat mode to enable the technician to quickly adjust to the manufacturer's suggest heat rise across the heat exchanger.

Multiply the value shown by 10 for actual airflow.

Model Gas Heating CFM [=Default

Upflow

S9V2B040U3VC	088 [088], 104, 120, 065, 069, 083
S9V2B060U4VC	116 [116], 123, 130, 099, 104, 109
S9V2B080U4VC	126 [126], 120, 130, 133, 139, 146
S9V2C080U5VC	145 [145], 150, 156, 163, 170, 119
S9V2C100U5VC	183 [183], 145, 153, 162, 172, 177
S9V2D120U5VC	195 [195], 215, 225, 156, 170, 185

Downflow

S9V2B040D3VC	082 [082], 095, 110, 125, 065, 076
S9V2B060D3VC	103 [103], 113, 120, 135, 090, 096
S9V2B080D4VC	133 [133], 138, 143, 148, 120, 126
S9V2C100D5VC	187 [187], 210, 152, 161, 170, 180
S9V2D120D5VC	225 [225], 175, 185, 195, 205, 215

S9V2-VC IFC

Figure 66. IFC layout

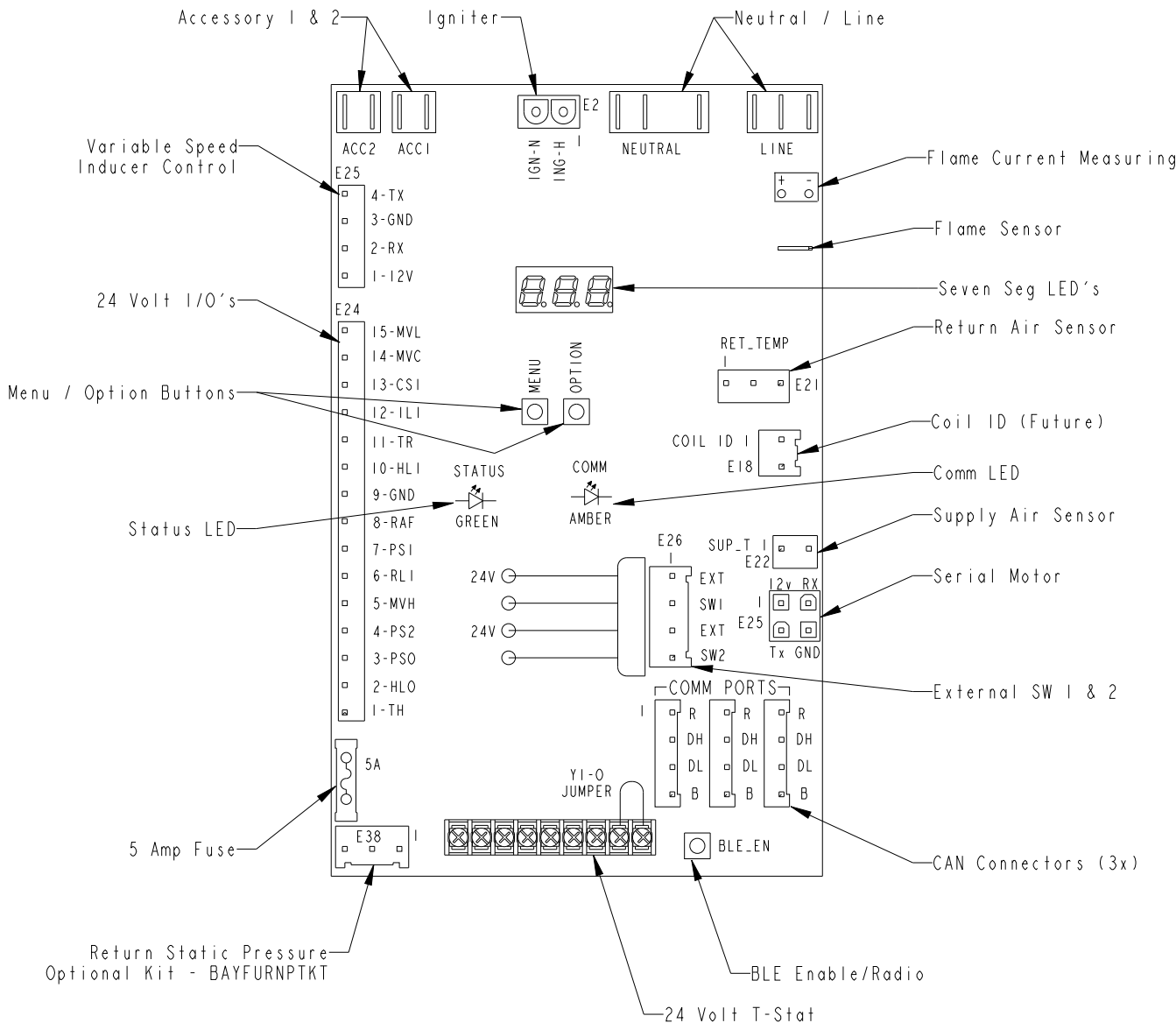


Table 17. Comm mode

Condition	Communication LED	Status LED
	(Amber)	(Green)
Power-up	Solid ON	Solid ON
Idle	Device count	OFF
Active demand	Device count	1 flash

Table 17. Comm mode (continued)

Condition	Communication LED	Status LED
	(Amber)	(Green)
Active error	Device count	2 flash
Internal comm error	Fast flash	OFF

Table 17. Comm mode (continued)

Condition	Communication LED	Status LED
	(Amber)	(Green)
CAN BUS error	Fast flash	3 flash
BLE pairing	ON-flashing	ON-flashing

Table 18. 24V mode

Condition	Communication LED	Status LED
	(Amber)	(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

Troubleshooting

Figure 67. Link control wire troubleshooting



Error Codes

Table 19. S9V2–VC operation alarms

Alarm	Alarm Explanation	24V Alarm Error Code	Comm Error Code
Internal Failure Error	Loss of the IRQ or other internal failures	E1.0	ERR 018.00
External Lockout	Retry exceeded	E2.1	ERR 022.01
	Recycles exceeded	E2.2	ERR 022.00
	1st Stage Gas Valve Not Energized When It Should Be exceeded after 10 times	E2.3	ERR.022.02
Pressure Switch Error	Shorted Pressure Switch, 1st Stage	E3.1	ERR 01.05
	Open Pressure Switch, 1st Stage	E3.2	ERR 01.04
	Shorted Pressure Switch, 2nd Stage	E3.3	ERR 01.03
	Open Pressure Switch, 2nd Stage	E3.4	ERR 01.02
	Open Pressure Switch, 2nd Stagewith 2nd Stage Gas Valve Energized without request	E3.5	ERR 022.04
Open Limit Switch Error	Open High Limit	E4.0	ERR 026.01
	Open Reverse Airflow Limit	E4.1	ERR 026.00
	Open Rollout Limit	E4.2	ERR 087.00
Flame Sensed when No Flame should Be Present (Internal Lockout)	Flame detected, should not be present	E5.0	ERR 034.00
Reversed Polarity/Grounding	Voltage reversed polarity	E6.1	ERR 033.00
	Bad Grounding	E6.2	ERR 088.00
Igniter Failure Error	1. Igniter relay fails	E6.3	ERR 010.01
	2. Igniter open		ERR 010.00
	3. Ignitor Lockout		
External Gas Valve Error (Internal Lockout)	Gas Valve Energized without Request, 1st Stage	E7.1	ERR 093.01
	Redundant Relay (HLO Output) Energized when it should be off	E7.2	ERR 093.03
Low Flame Sense	Flame current is low, but still strong enough to allow operation.	E8.0	ERR 04.00
Inducer Limit Switch	Open Inducer Limit Switch	E9.1	ERR 026.02
Condensate Switch	Open Condensate Pressure Switch	E9.2	ERR 026.06
Condensate Lockout	Condensate Lockout	E9.3	ERR 026.07

Table 19. S9V2–VC operation alarms (continued)

Alarm	Alarm Explanation	24V Alarm Error Code	Comm Error Code
Furnace Control Mismatch	24V detected on CSI or ILI when it should not be present (S8V2-PC control installed in S9V2-VC furnace)	E9.4	ERR 018.05
VSIM Motor Control Communication Error	Communication is lost between the VSIM Motor Control and the furnace control	E10.1	ERR 091.01
VSDI Control or Motor Failure	The variable speed inducer control board or inducer motor has failed.	E10.4	ERR 091.08
Internal Gas Valve Error	(1) 24V not detected on MVL when it should be present.	E11	ERR 093.00
	(2) 24V detected on MVH when it should not be present.		ERR.093.01
	(3) 24V not detected on MVH when it should be present.		ERR 093.00
	(4) 24V not detected on HLO when it should be present.		ERR.093.02
	(5) 24V detected on MVL when it should not be.		ERR.093.01
	(6) Gas valve relay stuck closed.		ERR.093.04
Open Fuse Error	Open fuse	E12	ERR 092.00
Blower HP/OEM ID	HP or OEM ID does not match furnace	E13	ERR 114.02
Configuration Data Error	Configuration File Error	E14	ERR 114.10
No Model Number	No model number has been programmed into the IFC		ERR 114.08
Invalid Model Number	Invalid Model Number		ERR 114.09
Blower Communication	Blower Communication Error on motor, no communication response	E17	ERR 091.00
Blower Communication	Blower Communication Error on control, communication lost with blower	E18	ERR 091.12
Incomplete Menu Data	Menu parameters not received by CCM	E23	
Communication Error	Communication lost between the ACM and CCM. (Modbus communication)	E24.1	ERR 091.07
Communication Error	CAN Communication Lost	E24.2	ERR 094.00
Accelerometer	Accelerometer Out of Bounds or not responsive	E25	ERR 161.04
Return Static Pressure Transducer	Static Pressure transducer out of range	E26	ERR 161.03
Return Thermistor	Return thermistor out of range	E27	SOP 004.52
Supply Thermistor	Supply thermistor out of range.	E28	SOP 004.50

Notes:

1. Due to the limitations of the 7-segment LED display, only two digits are displayed. To determine the sub-alarm, connect to the IFC via Bluetooth and the Technician app. Link enabled furnace error codes can also be accessed through the SC360 thermostat.
2. Error Codes 10.1 through 10.4 are displayed as E10.
3. Error codes 24.1 and 24.2 are displayed as E24.
4. When in downflow orientation, error code decimal points are at the top of the display.

Troubleshooting Workflow

Figure 68. Getting started

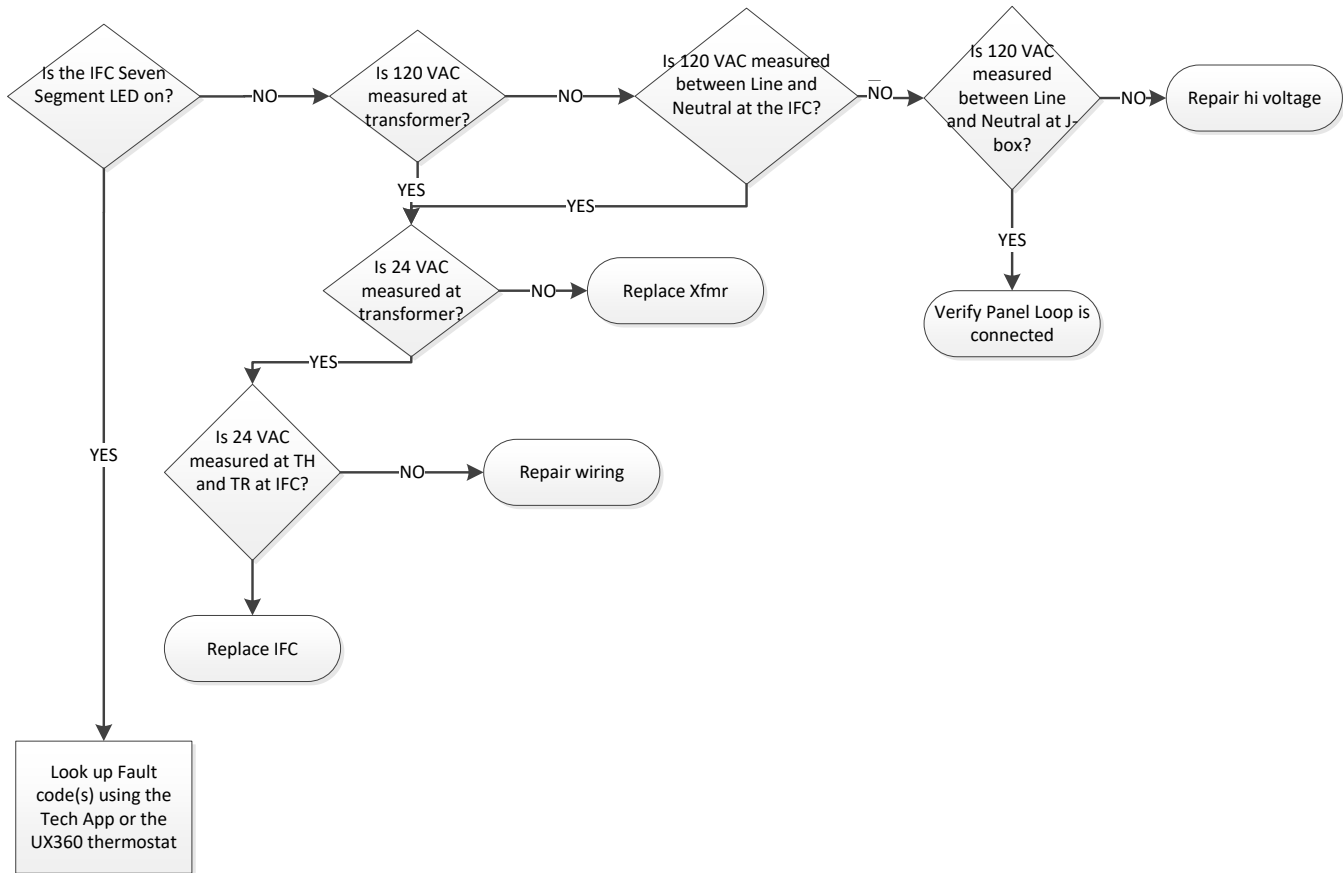


Figure 69. E1.0 fault code (ERR 018.00)

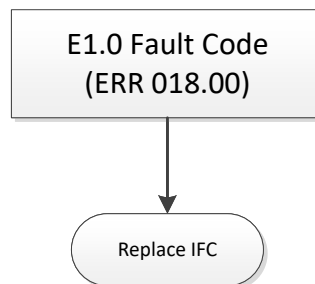
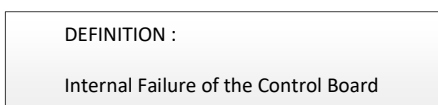
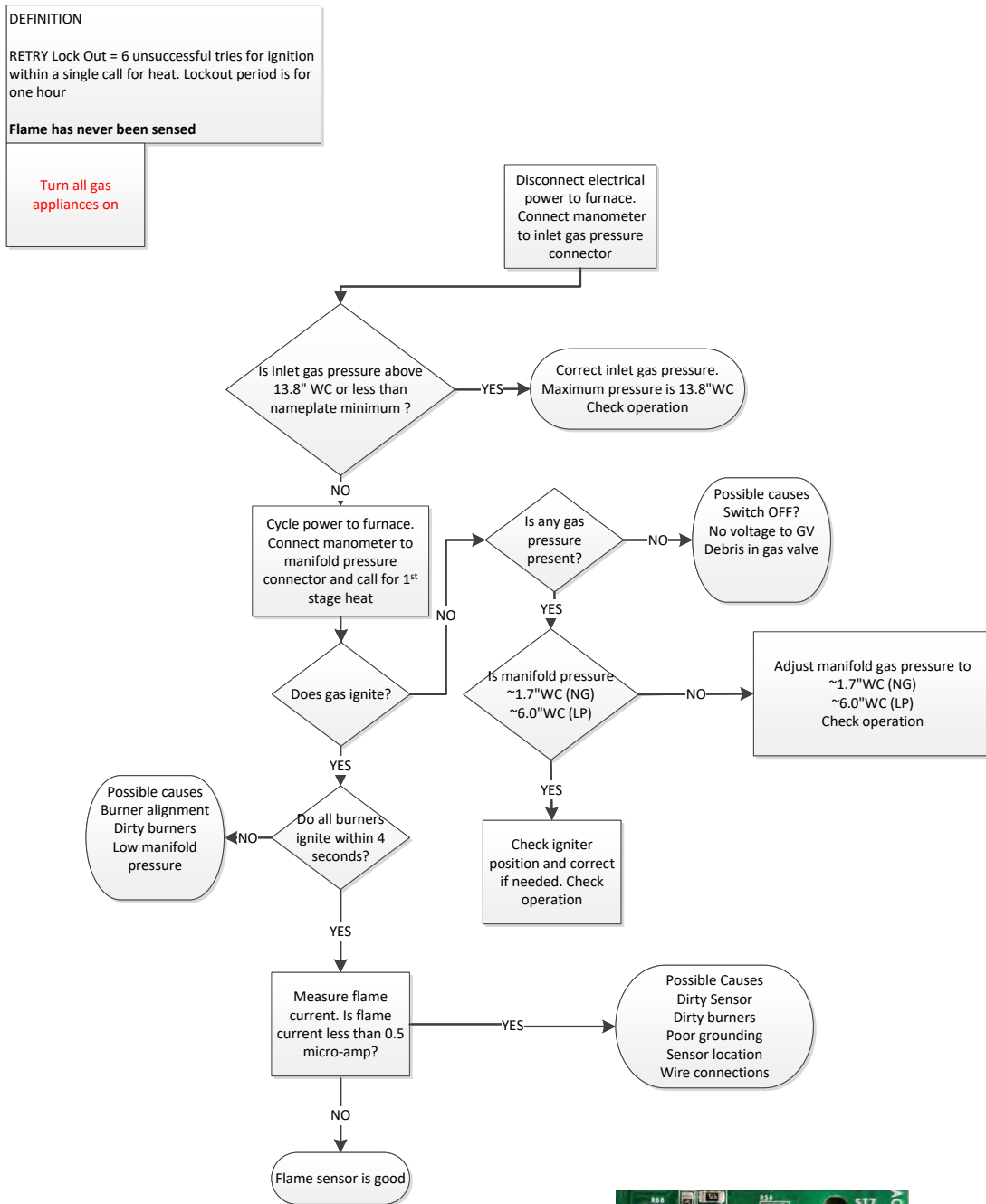


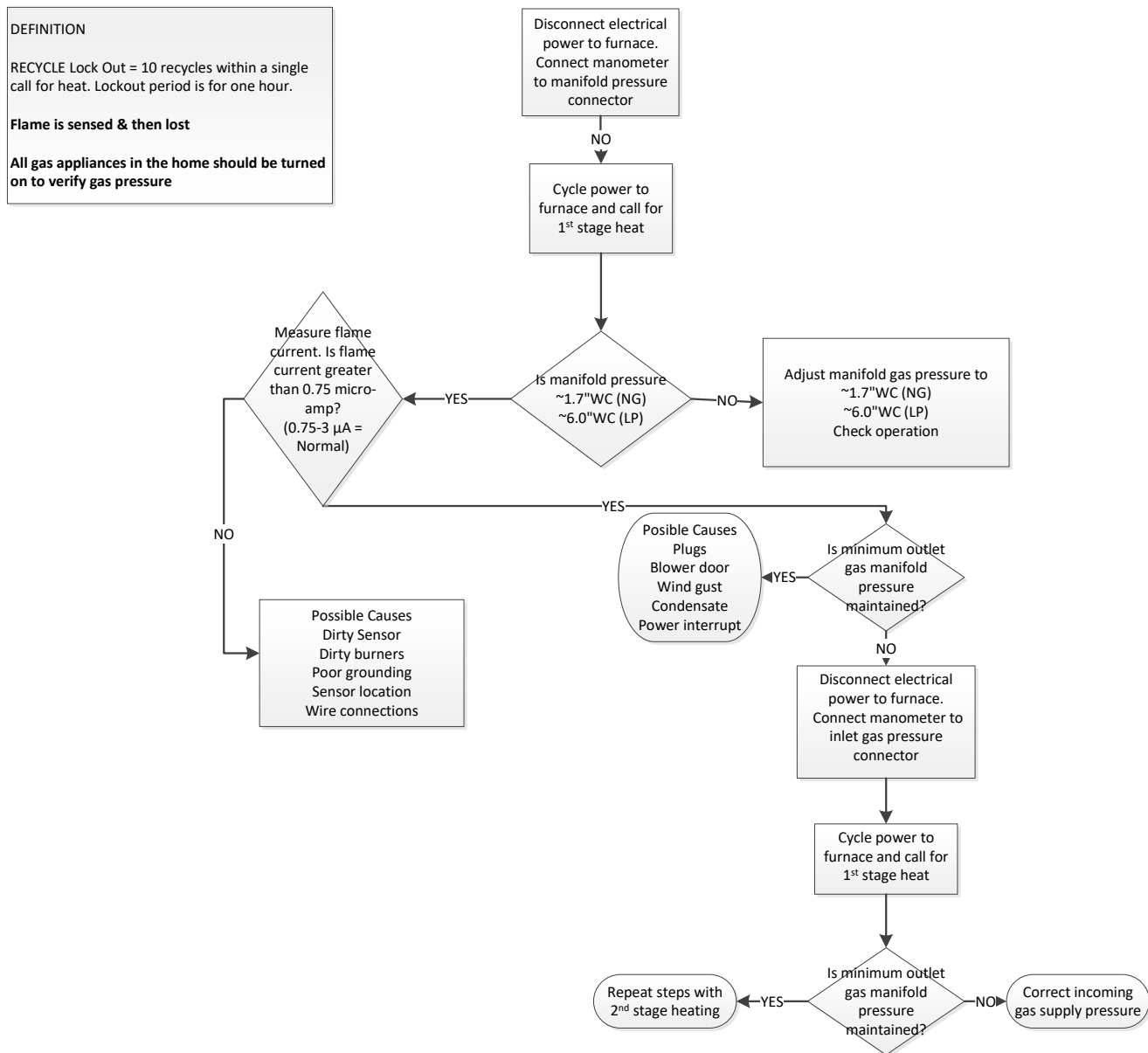
Figure 70. 2.1 fault code (ERR 022.01)



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)



Figure 71. 2.2 fault code (ERR 022.00)



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)

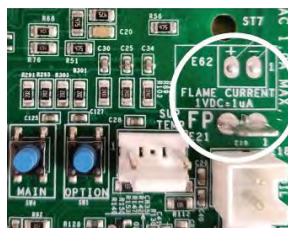


Figure 72. 2.3 fault code (ERR 022.02)

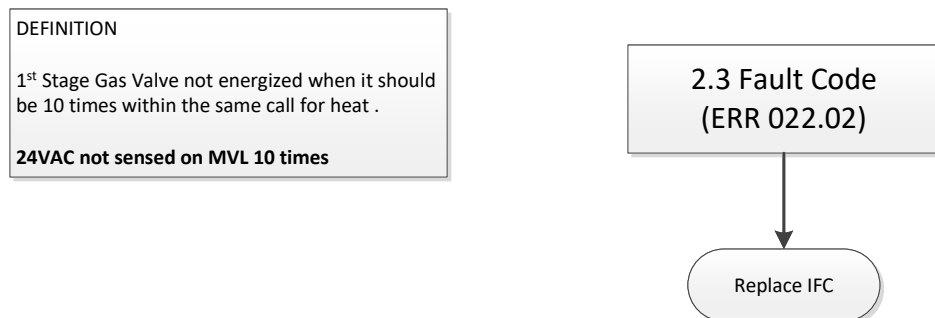


Figure 73. 3.1 fault code (ERR 01.05)

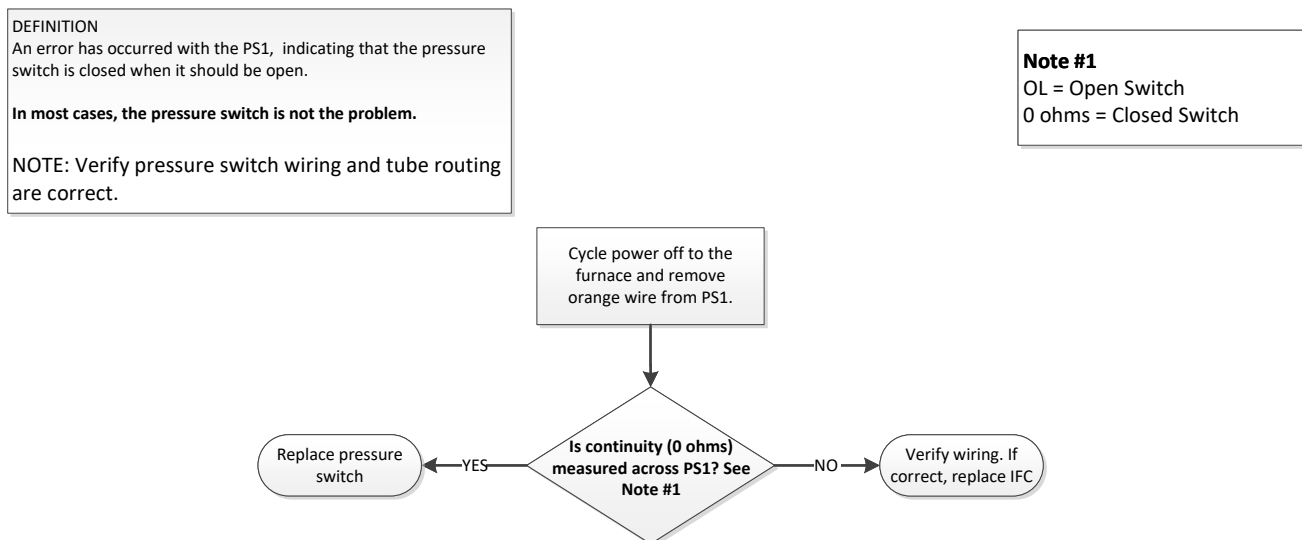


Figure 74. 3.2 fault code (ERR 001.04)

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.

Note #1

24 volts = Open Switch
0 volts = Closed Switch

Note #2

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

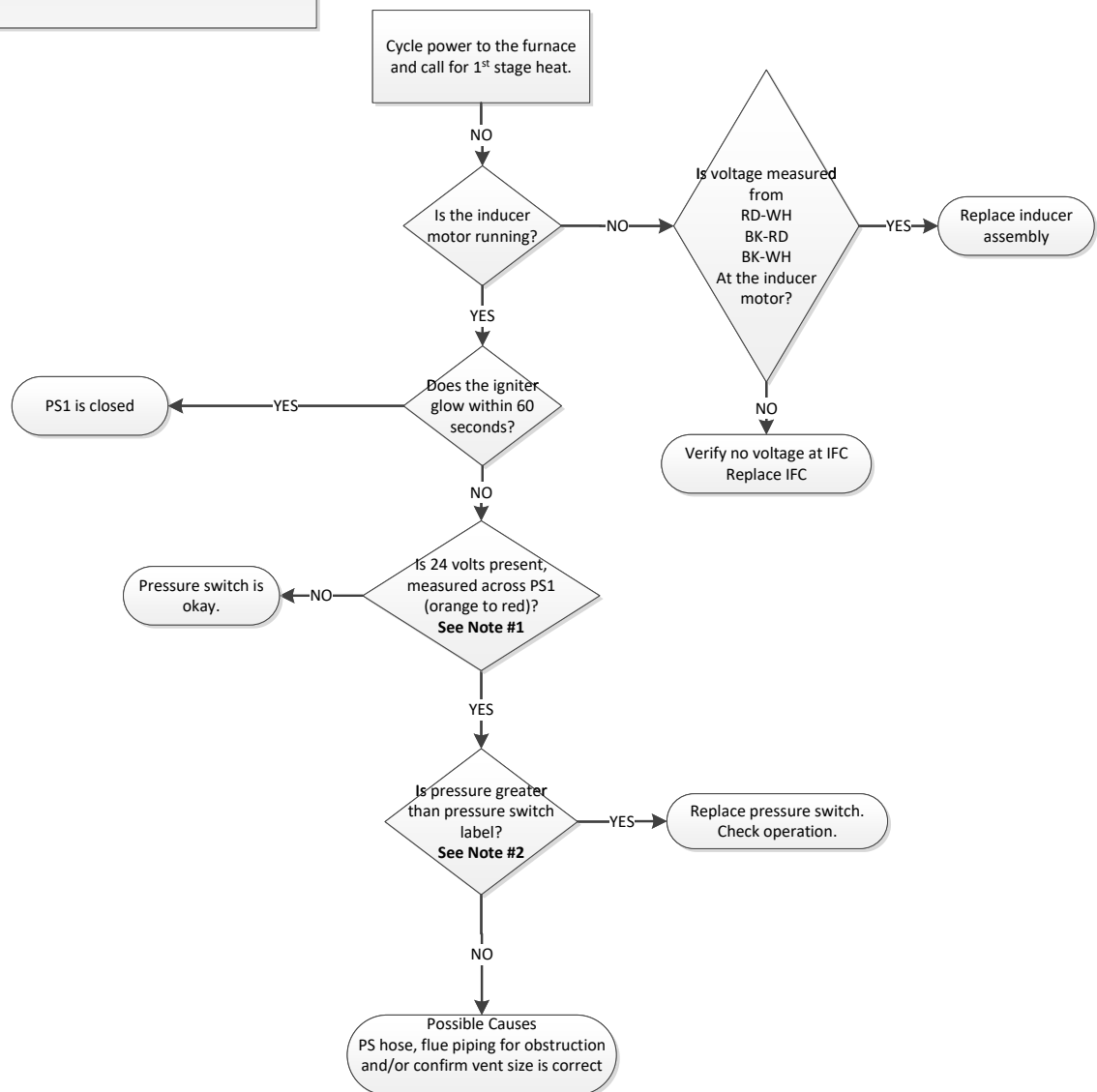


Figure 75. 3.3 fault code (ERR 001.03)

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.

Note #1

24 volts = Open Switch

0 volts = Closed Switch

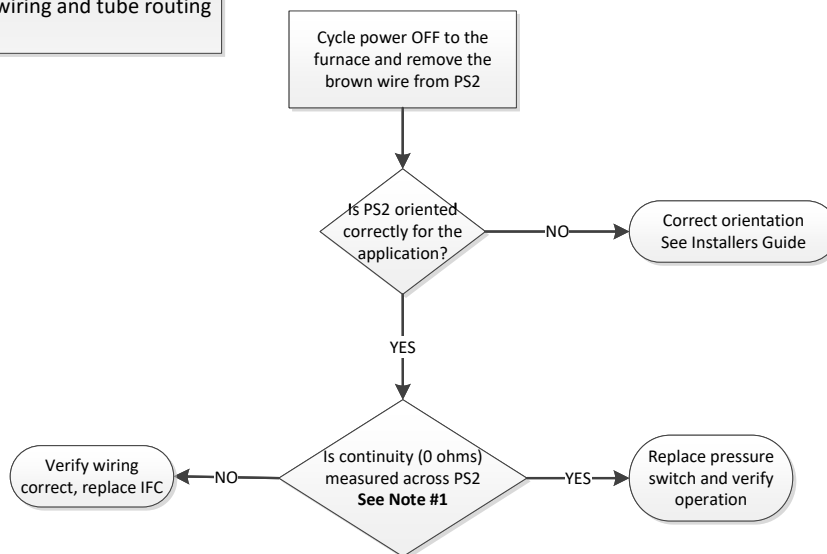


Figure 76. 3.4 fault code (ERR 001.02)

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.

Note #1

24 volts = Open Switch
0 volts = Closed Switch

Note #2

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

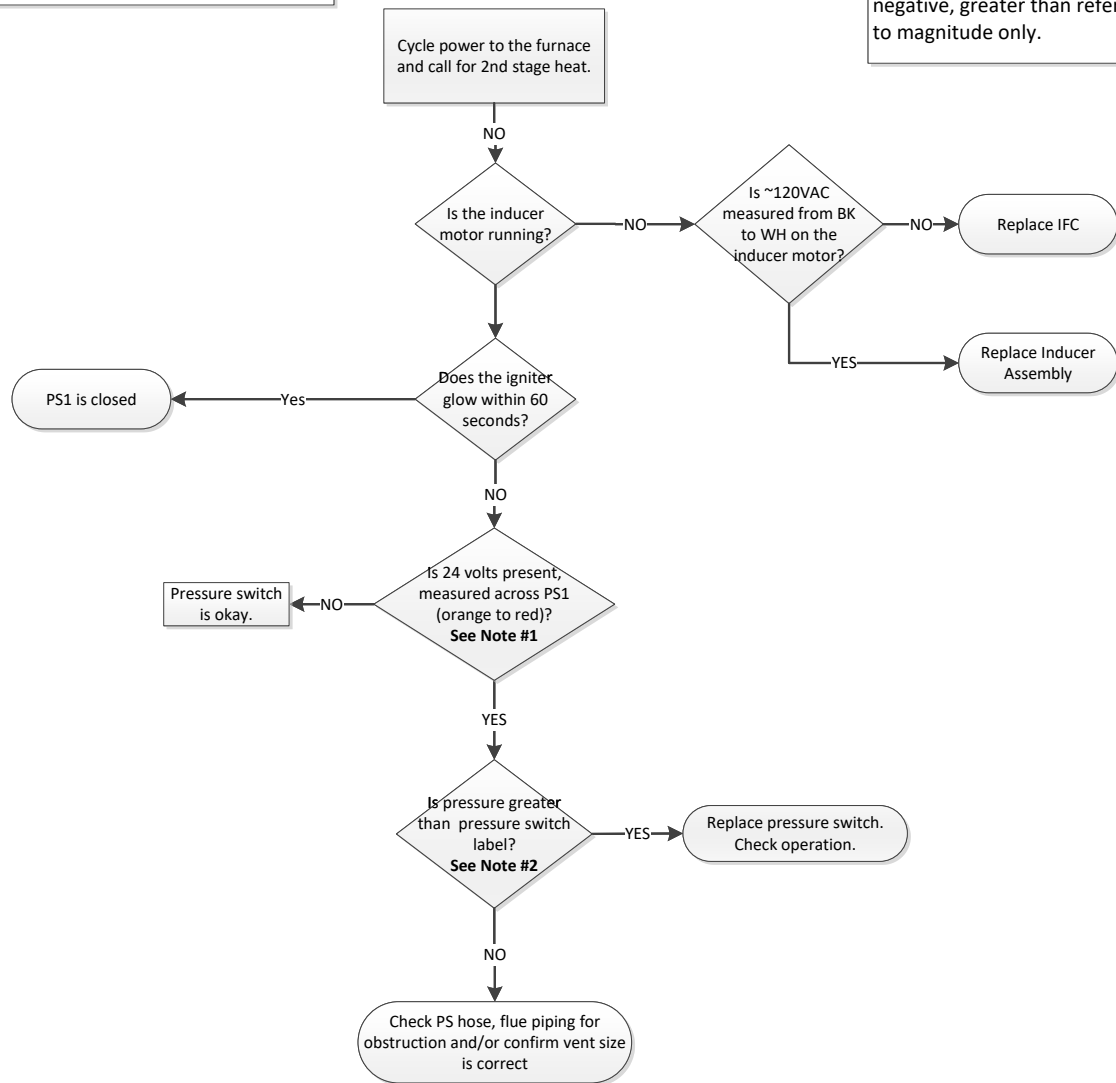


Figure 77. 4.0 fault code (ERR 026.01) — main thermal limit

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. Verify filters and blower wheels are clean

Note:

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

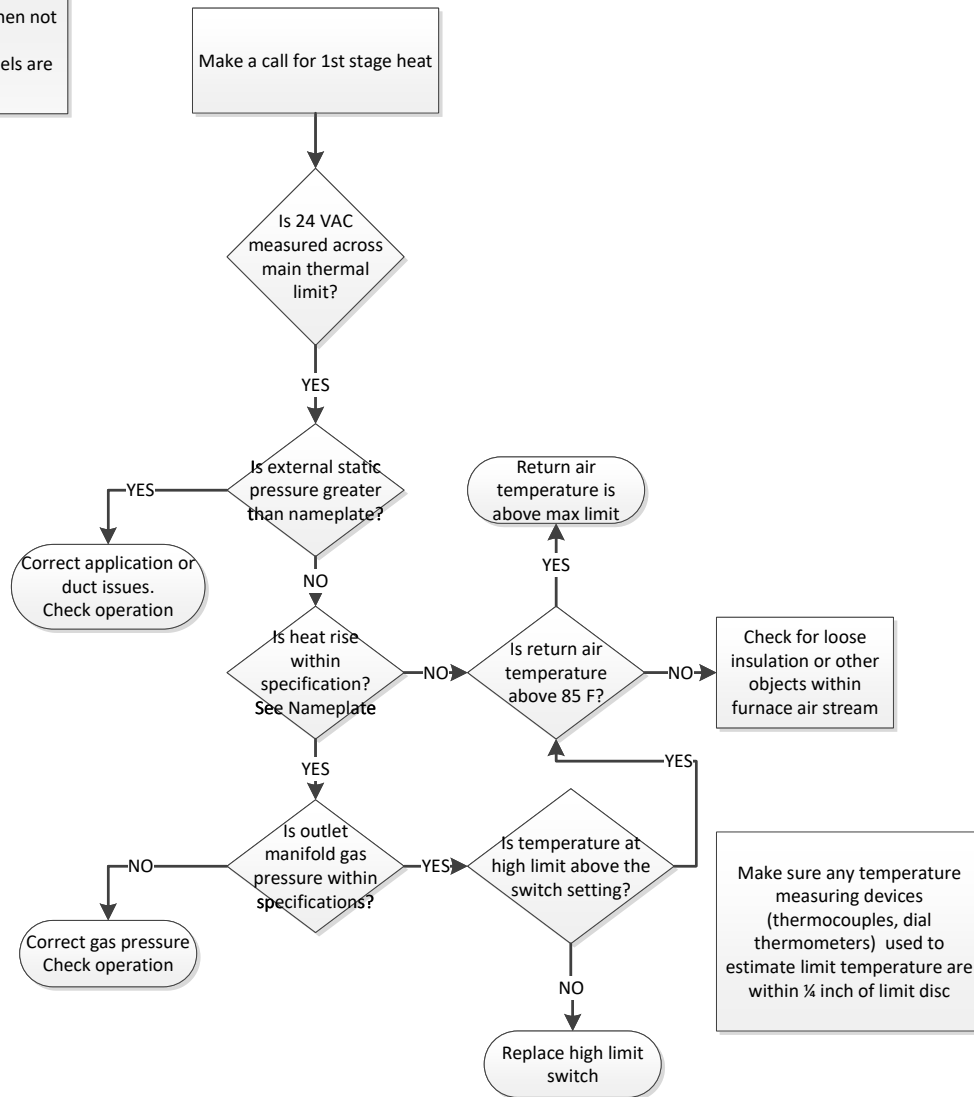


Figure 78. 4.1 fault code (ERR 026.00) — open reverse air flow

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

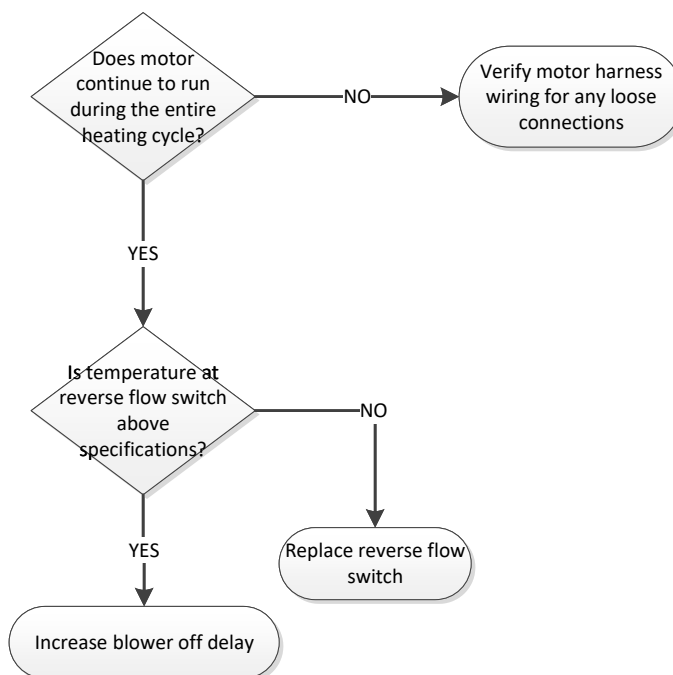


Figure 79. 4.2 fault code (ERR 087.00) — flame rollout

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.

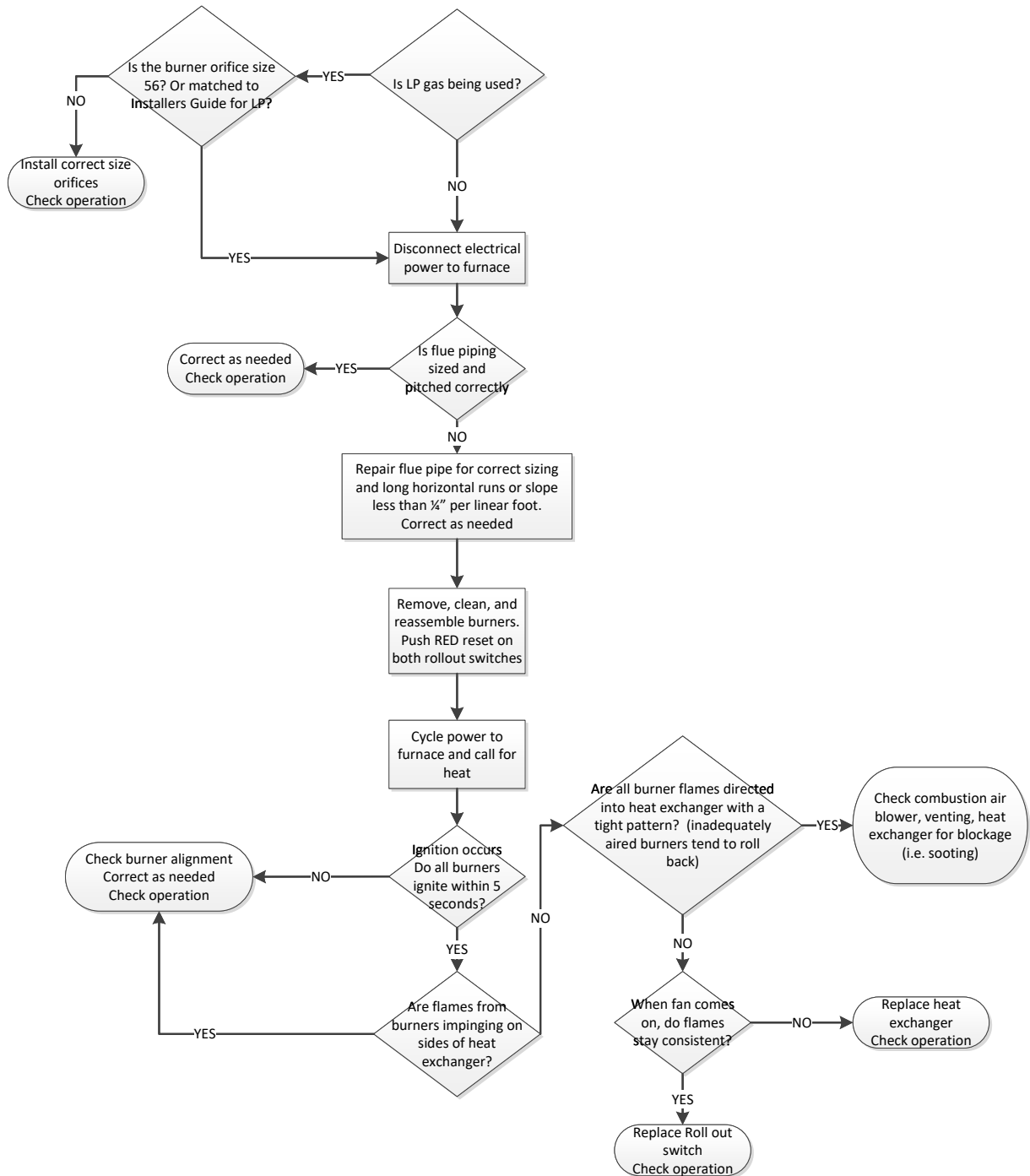


Figure 80. 5.0 fault code (ERR 034.00)

DEFINITION:

Flame is sensed when it should not be sensed.

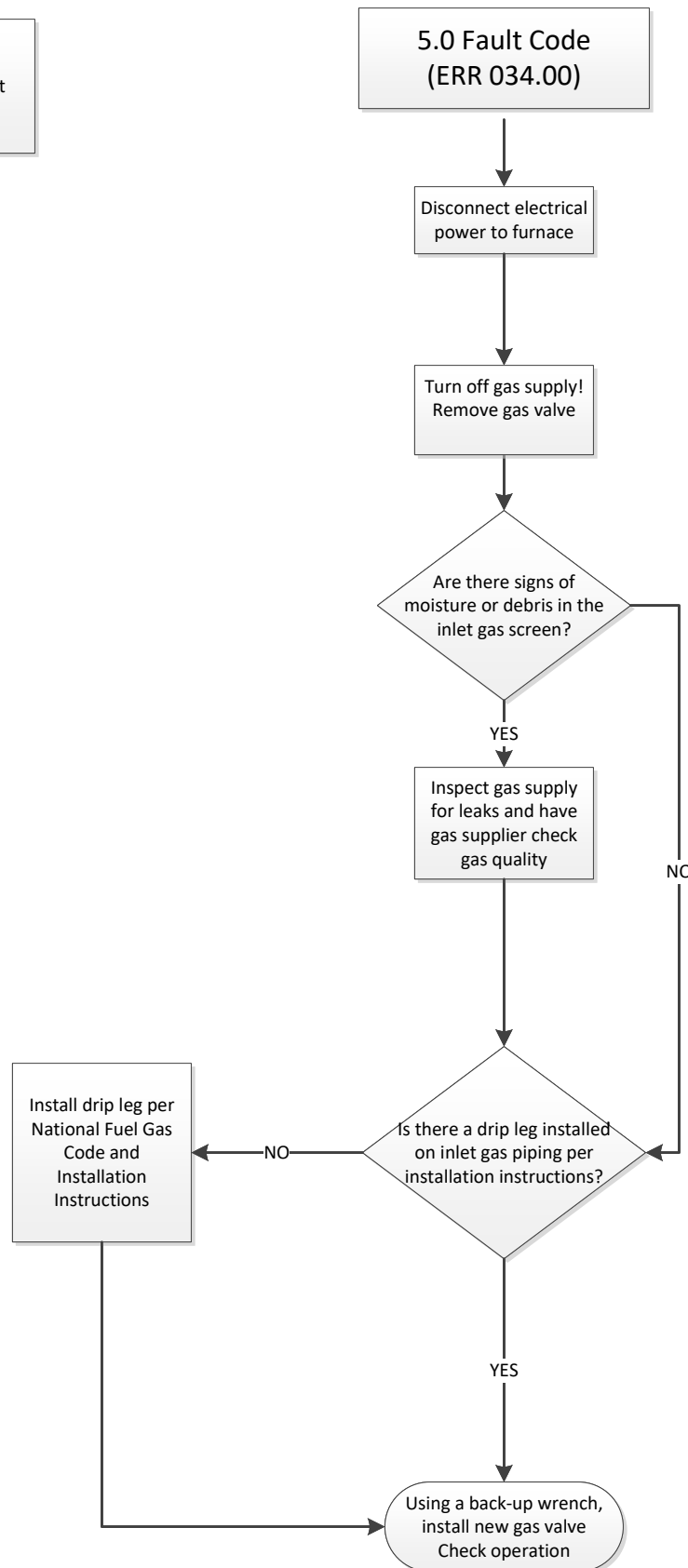


Figure 81. 6.1 fault code (ERR 034.00)

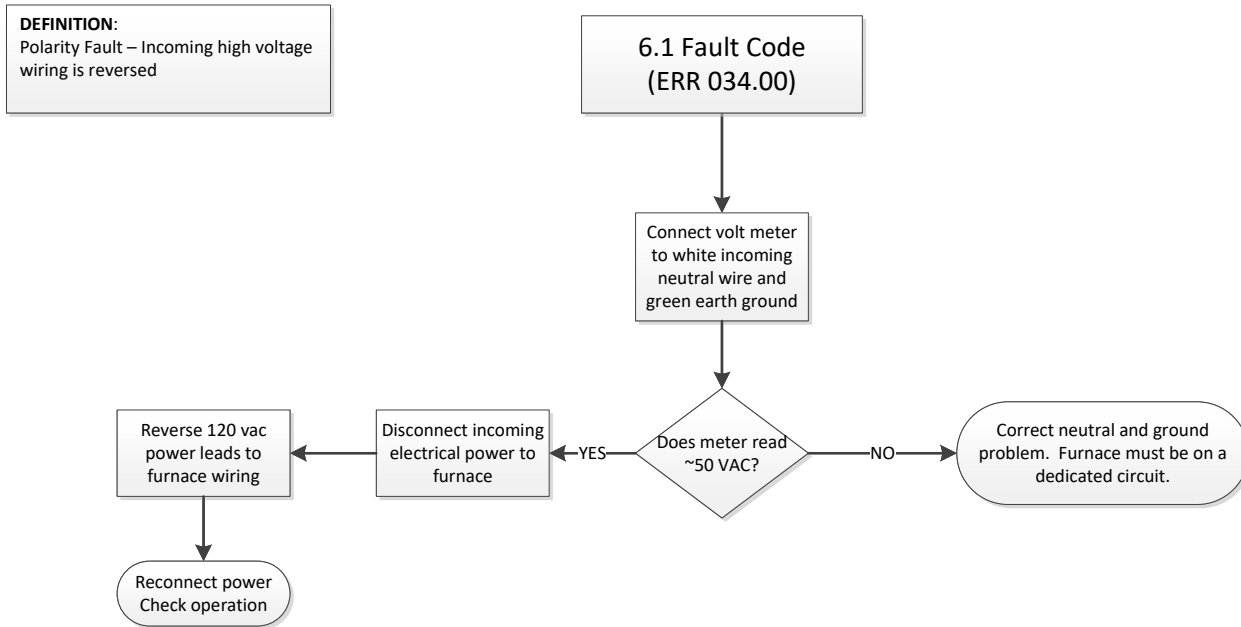


Figure 82. 6.2 fault code (ERR 088.00)

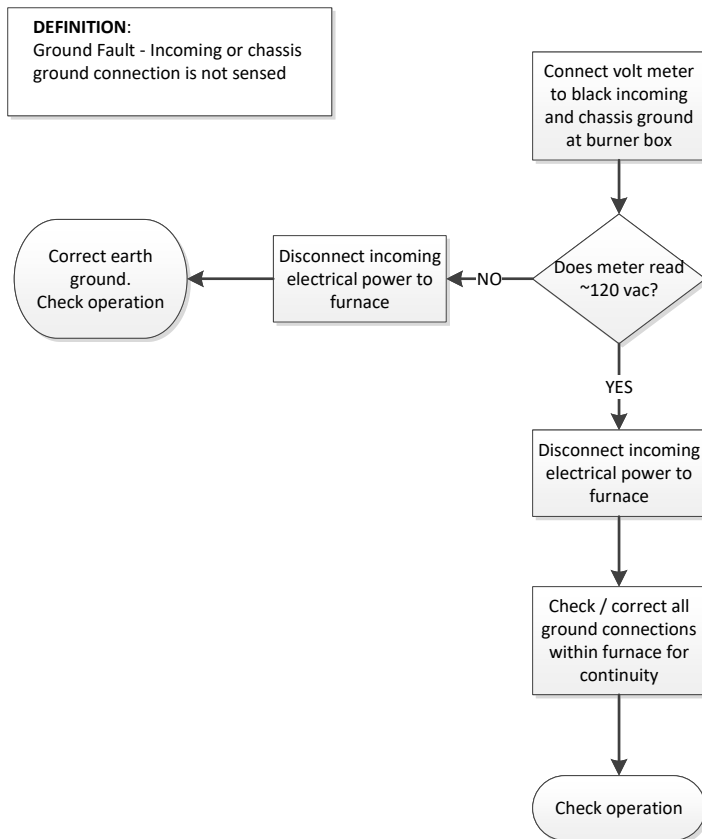


Figure 83. 6.3 fault code (ERR 010.00)

DEFINITION:

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

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

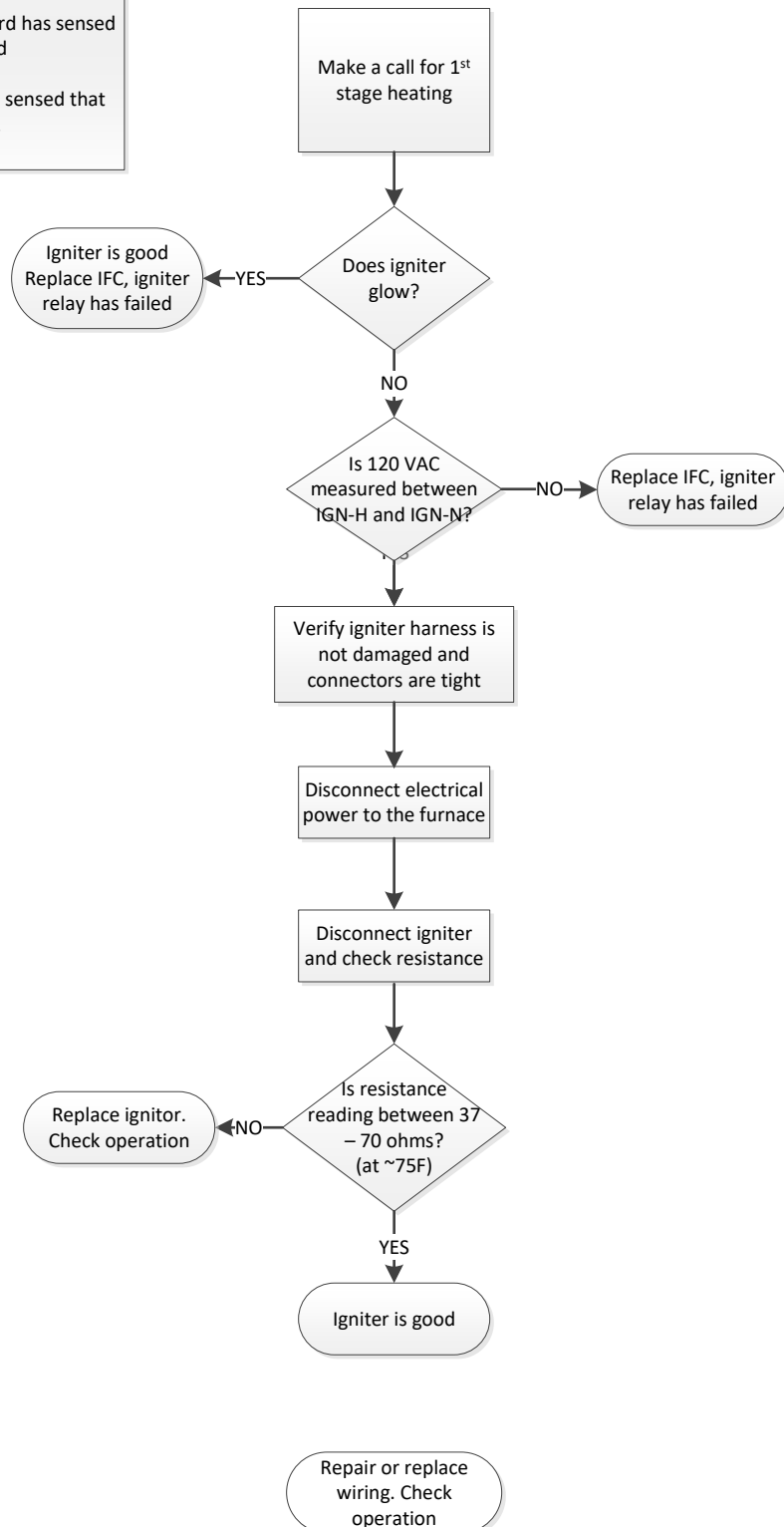


Figure 84. 7.1 fault code (ERR 093.01)

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

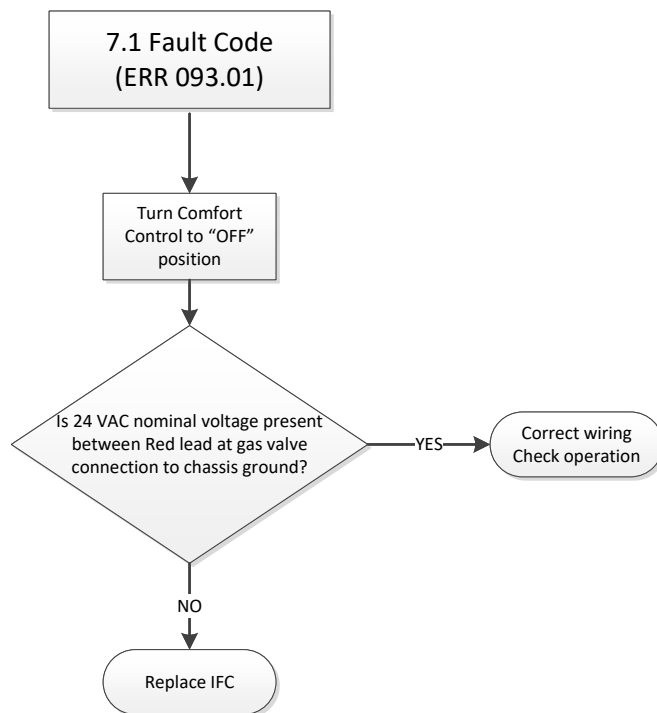


Figure 85. 7.2 fault code (ERR 093.03)

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

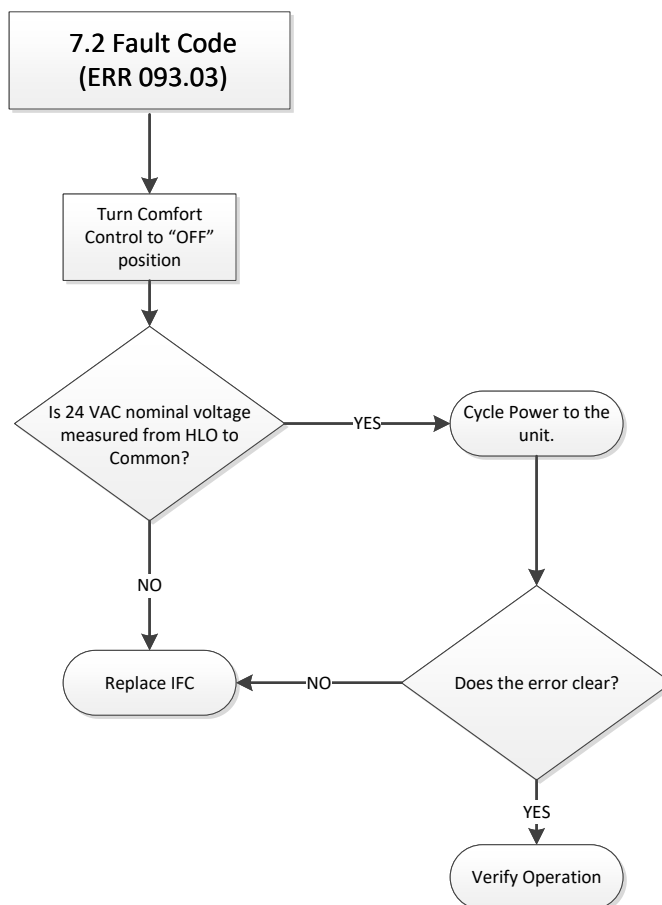


Figure 86. E8.0 fault code (ERR 004.00)

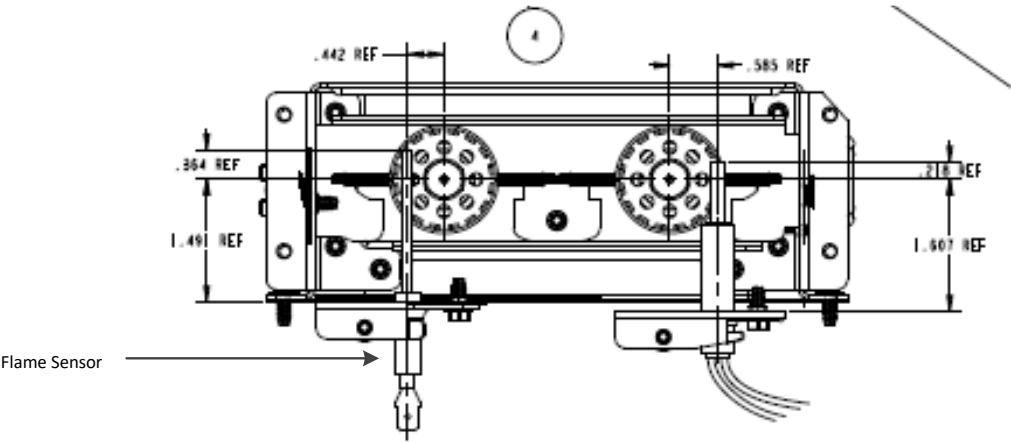
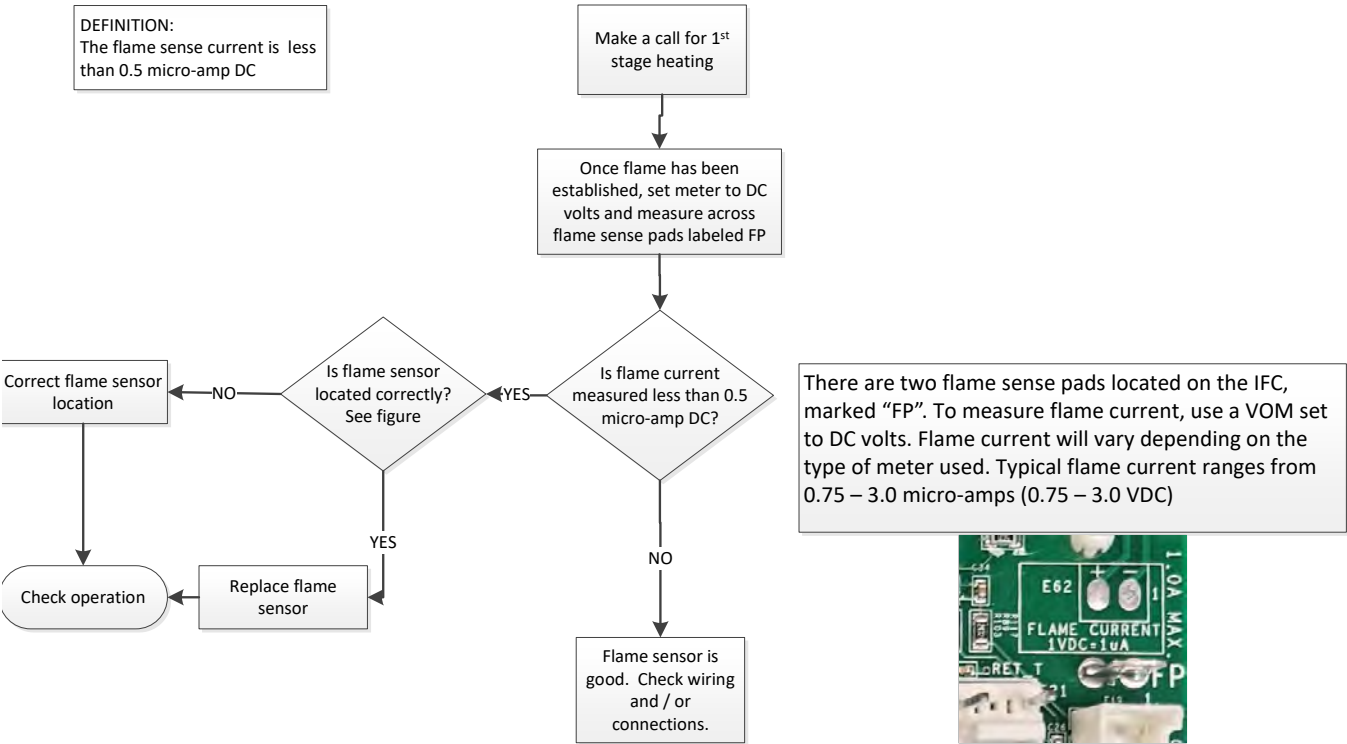


Figure 87. 9.1 fault code (ERR 026.02)

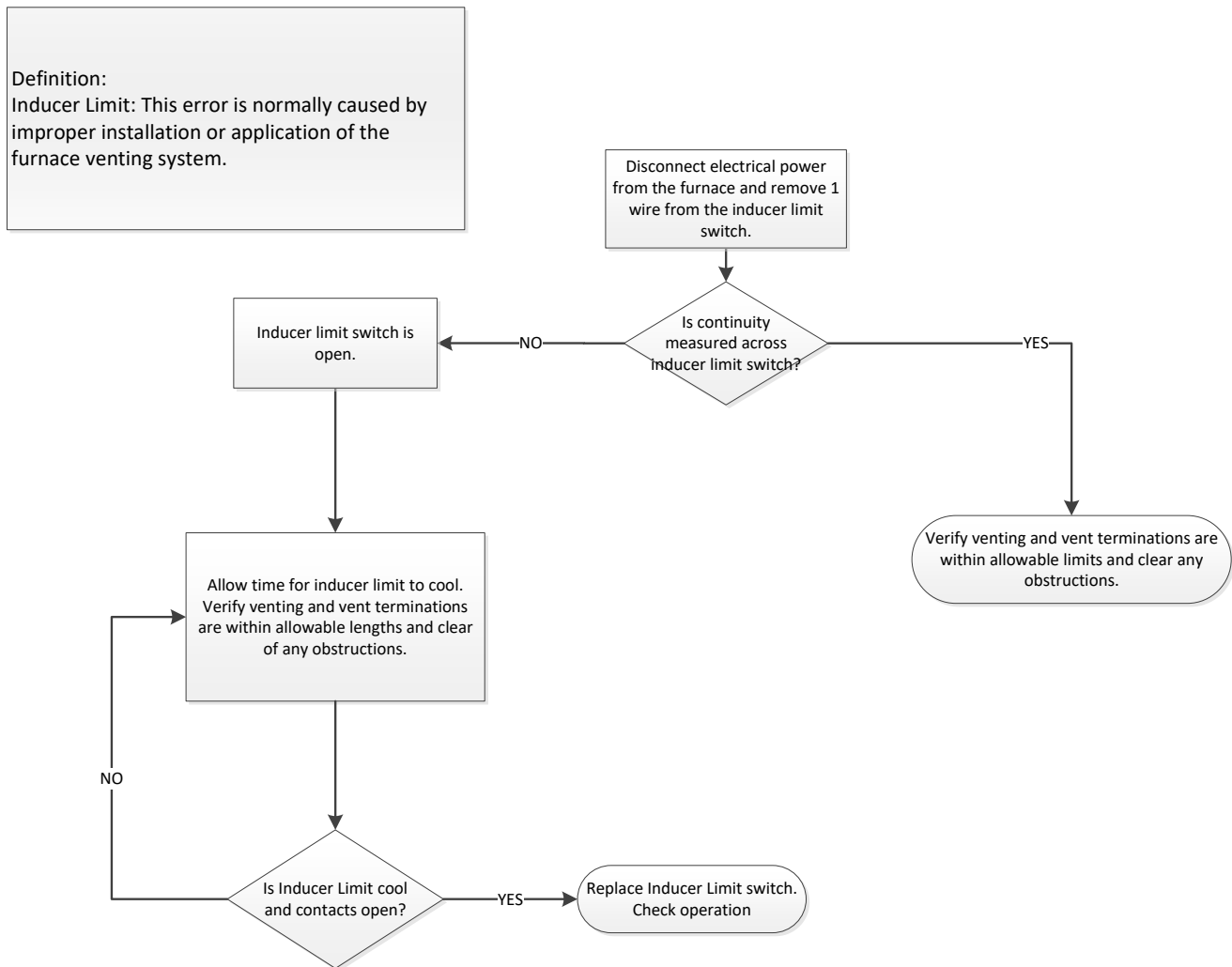


Figure 88. 9.2 fault code (ERR 026.06); 9.3 fault code (ERR 026.07)

Definition:
Open Condensate Pressure Switch: This error is normally caused by a stoppage of condensate outside of the furnace.

If the condensate opens 5 times within the same call for heat, E9.3 will occur and a one hour lockout will occur

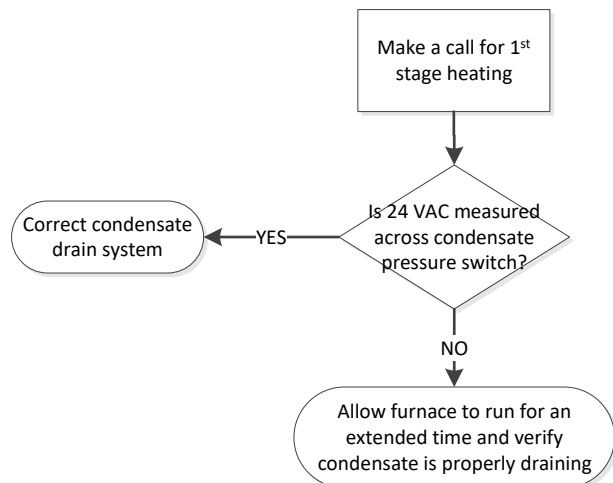


Figure 89. 9.4 fault code (ERR 018.05)

Definition:

An incorrect IFC has been installed. 24VAC has been detected on the CSI (Condensate Switch Input) and ILI (Inducer Limit Input) terminals when it should not be.

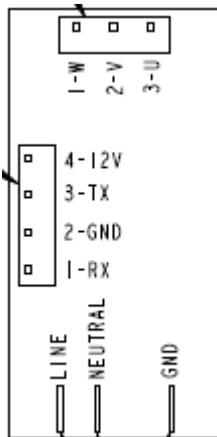
i.e an S8V2-PC control installed in the S9V2-VC furnace.

**9.4 Fault Code
(ERR 018.05)**

Figure 90. 10.1 fault code (ERR 091.01)

Definition:

The communication between the VSIM (Variable Speed Inducer Module) and the IFC has been lost.



Verify the harness between the IFC and VSIM is installed and fully seated.
Verify wire connections are good and not broken.

Measure voltage between pins 4 (12V) and 2 (GND). Voltage should be ~11-12vdc

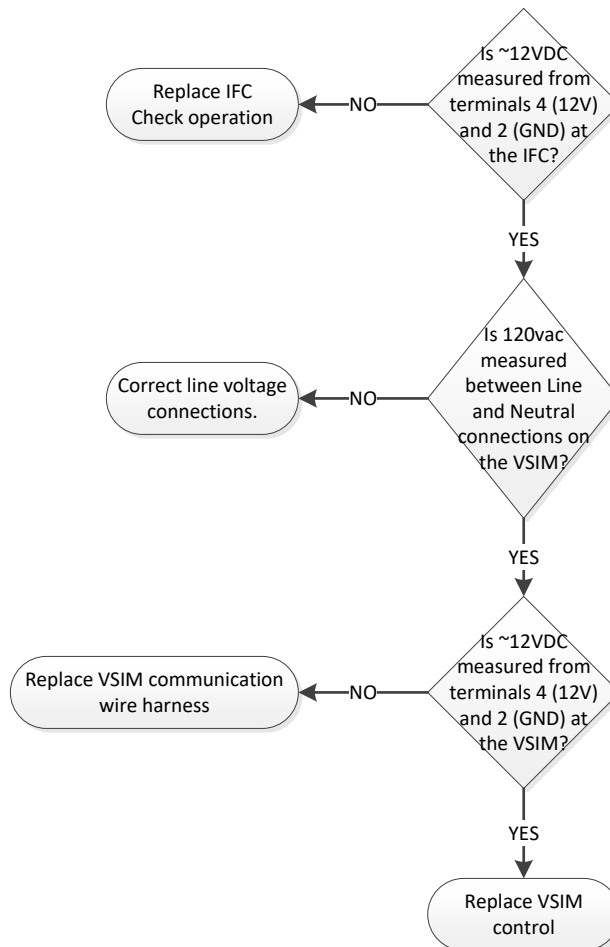


Figure 91. 10.4 fault code (ERR 091.08)

Definition:

The VSIM control has detected an error with the inducer motor or the output of the control itself.

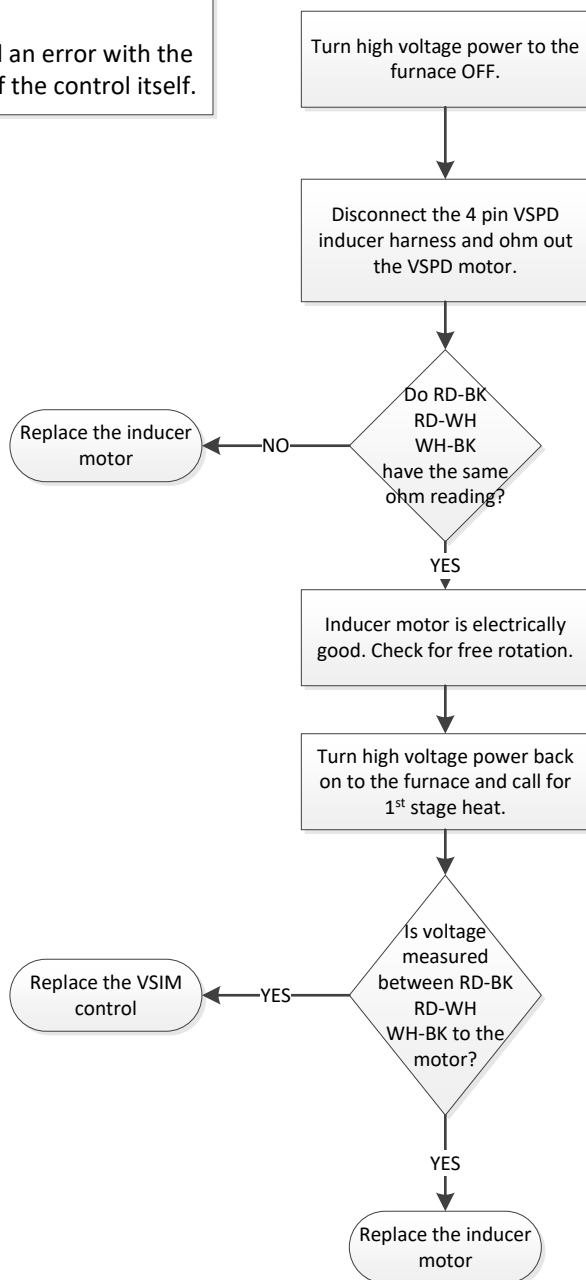


Figure 92. 11 fault code (ERR 093.04)

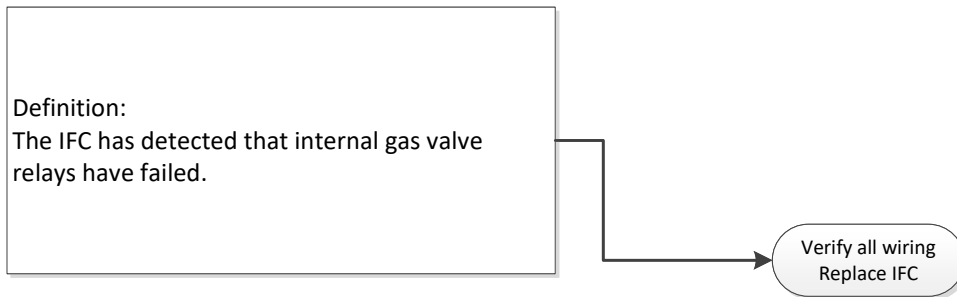


Figure 93. 12 fault code (ERR 092.00)

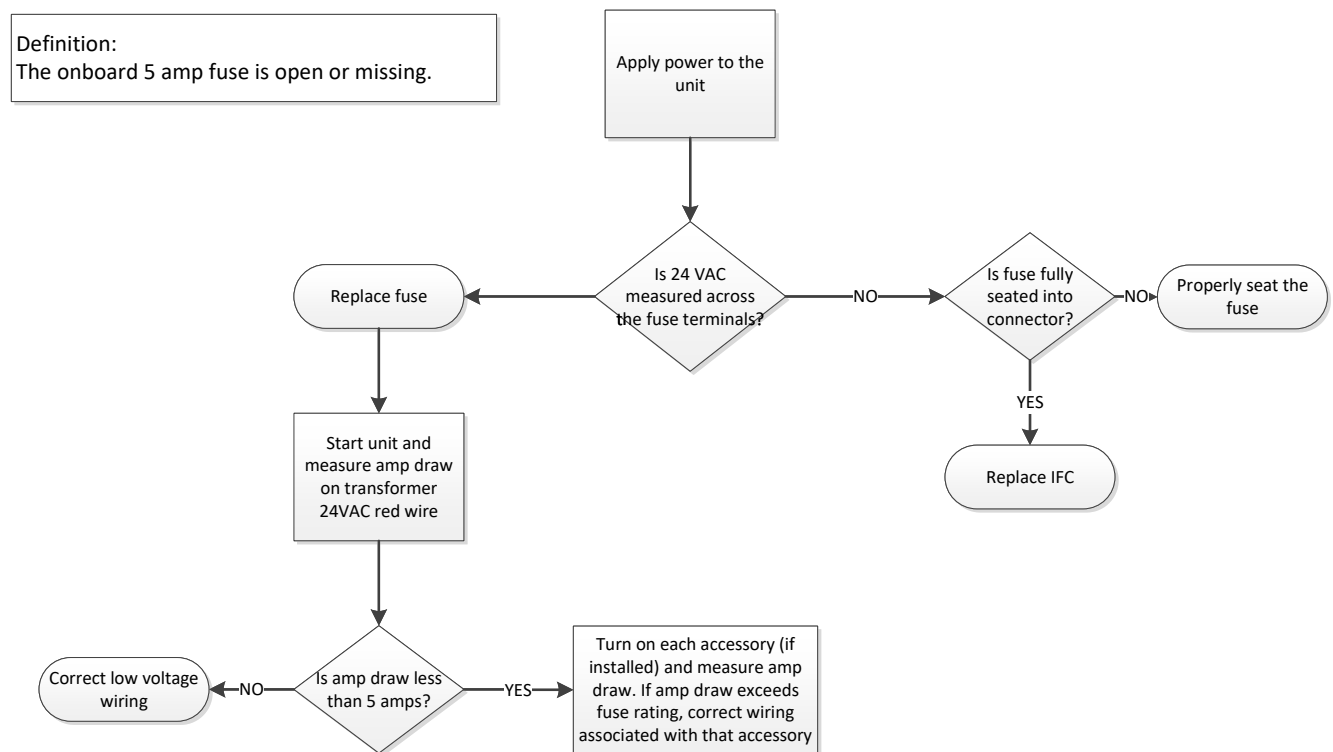


Figure 94. 13 fault code (ERR 114.02)

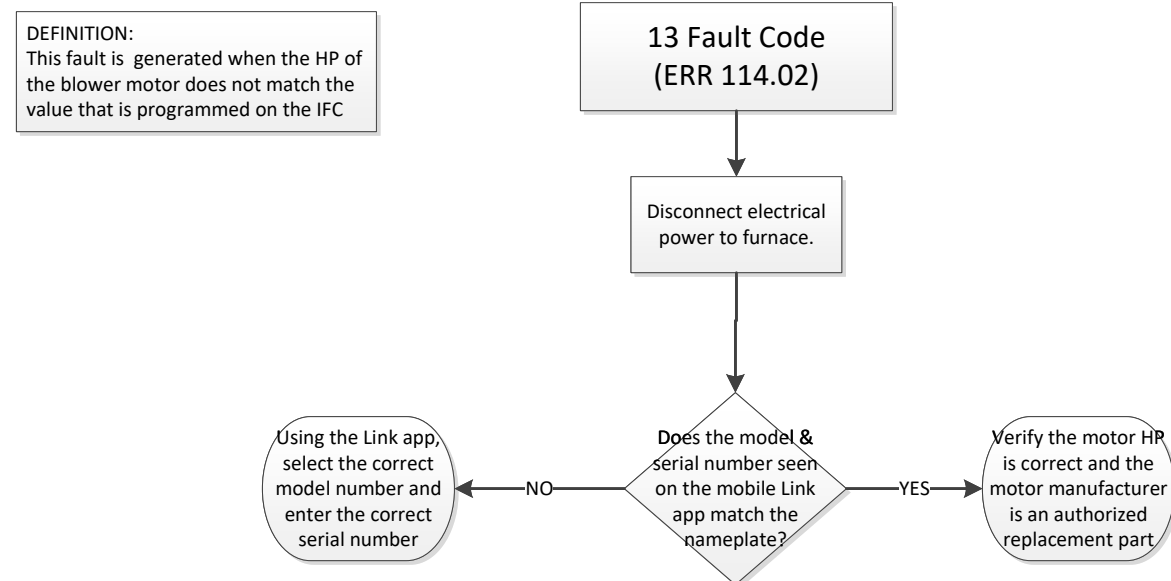


Figure 95. E14 fault code (ERR 114.10)

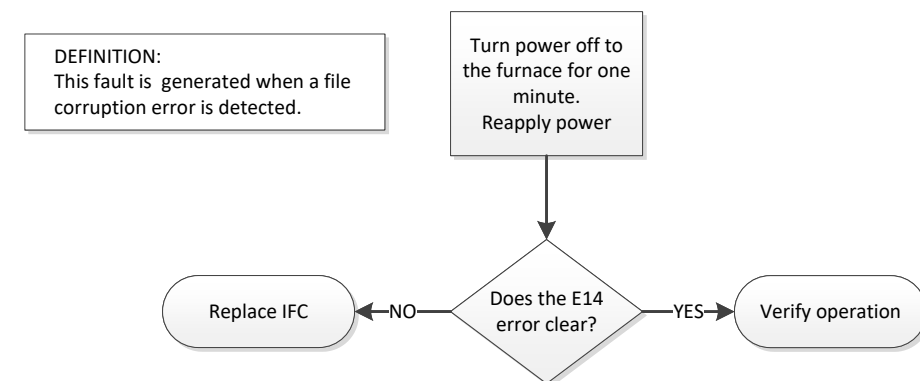


Figure 96. E17 fault code (ERR 091.00)

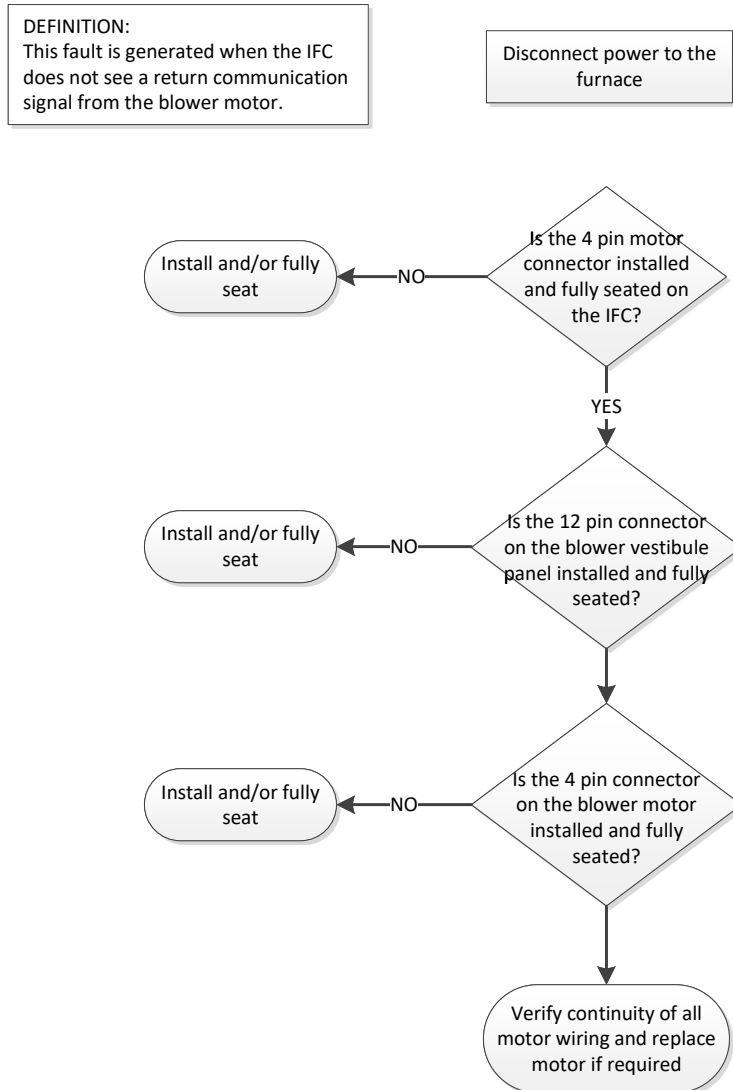


Figure 97. E18 fault code (ERR 091.12)

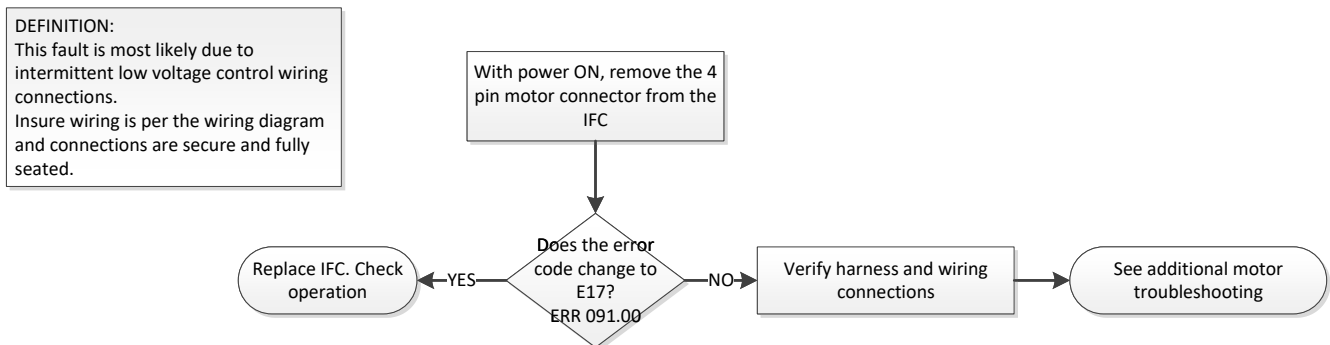


Figure 98. Serial motor troubleshooting

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.



FTH: VS Serial Port Motors

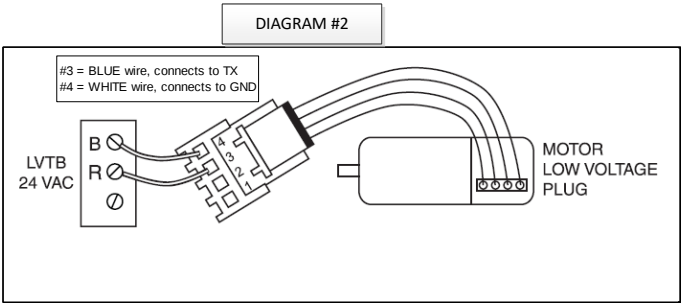
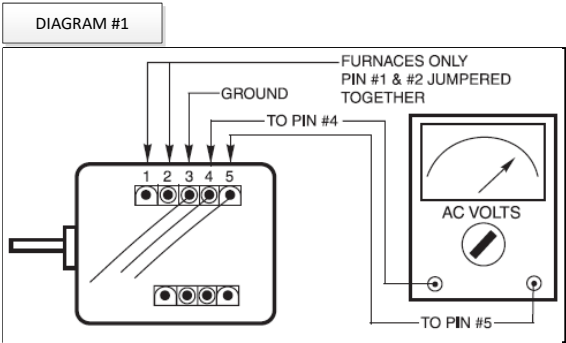
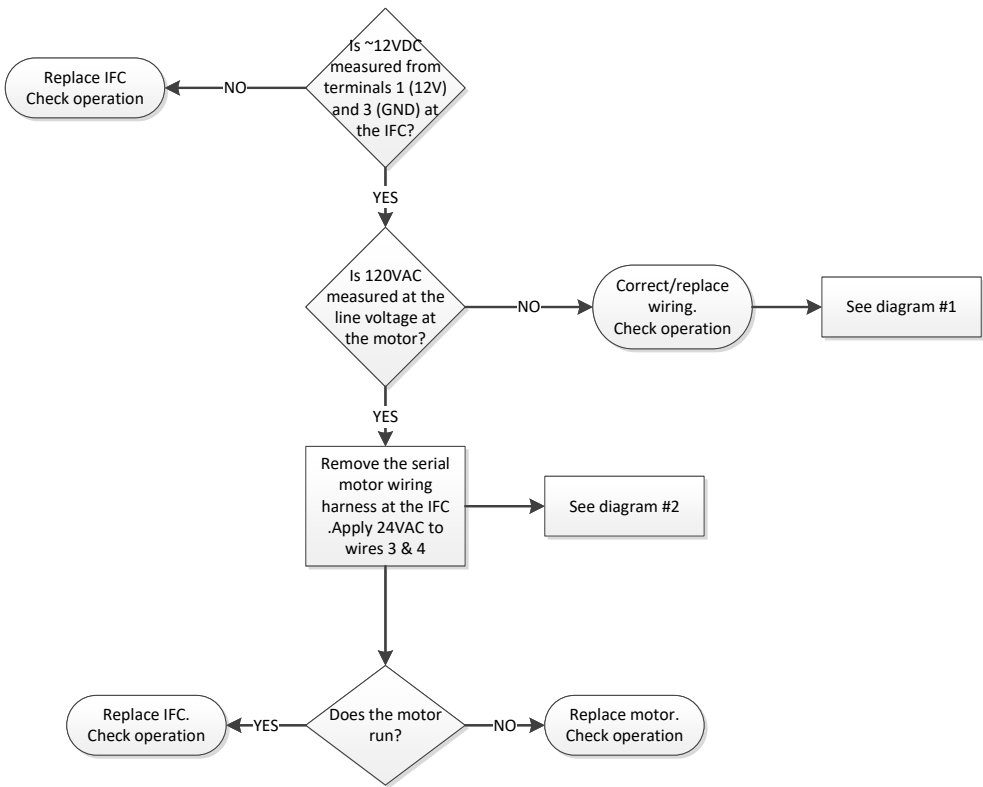


Figure 99. E24.1 fault code (ERR 091.07)

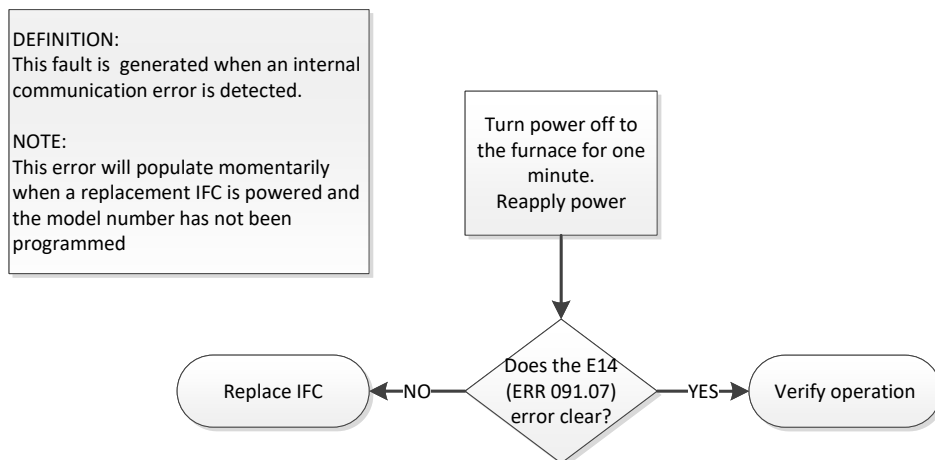


Figure 100. E24.2 fault code (ERR 094.00)



Link Control Wire Troubleshooting

Normal operation all components wired				
	SC360	UX360	OD unit	ID unit
Data high to common	2.5 VDC	2.5 VDC	2.5 VDC	2.5 VDC
Data low to common	2.5 VDC	2.5 VDC	2.5 VDC	2.5 VDC
Data high to data low	Fluctuating DC	Fluctuating DC	Fluctuating DC	Fluctuating DC
Normal voltages with 4 flash on Comm LED (4 devices on bus)				

Normal operation _ Components not wired				
	SC360	UX360	OD unit	ID unit
Data high to common	3.4 VDC	2.5 VDC	2.5 VDC	2.5 VDC
Data low to common	1.6 VDC	2.5 VDC	2.5 VDC	2.5 VDC
Data high to data low	1.8 VDC	0 VDC	0 VDC	0 VDC
Source voltage may vary a little based on meter being used				

Figure 101. E25 fault code (ERR 161.04)

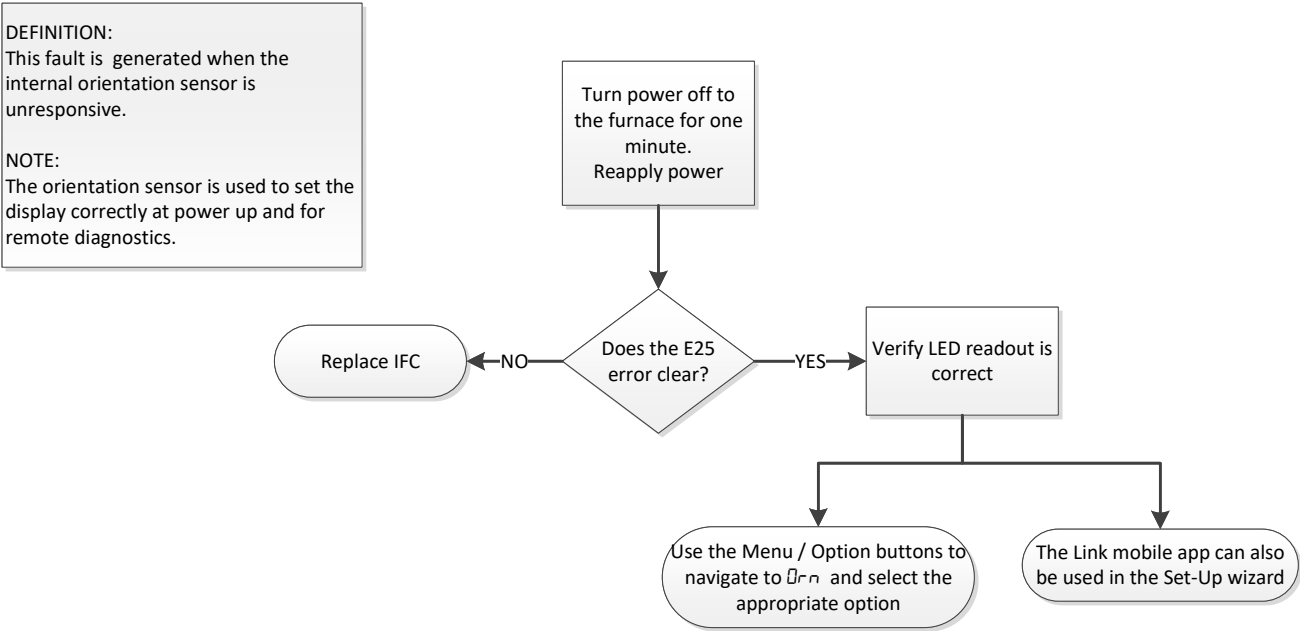


Figure 102. E26 fault code (ERR 161.03)

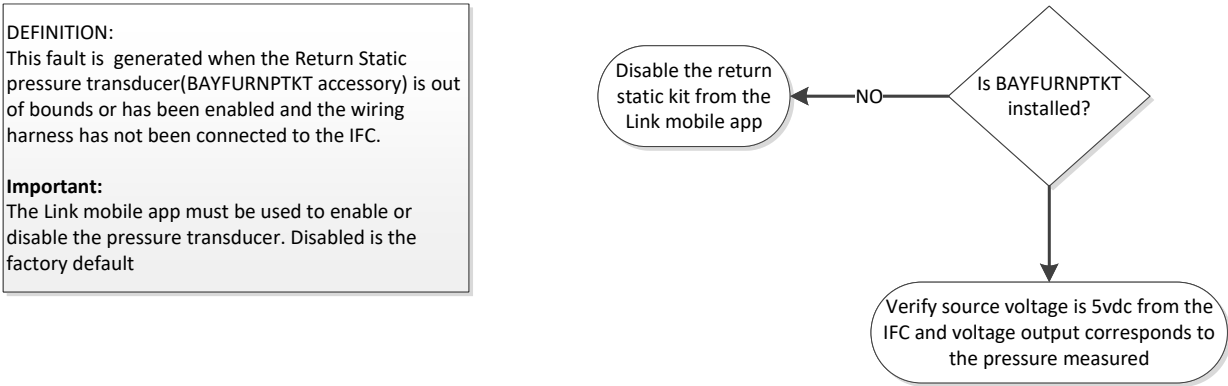


Figure 103. E27 fault code (SOP 004.52)

DEFINITION:

This fault is generated when the return air thermistor is out of range or has been enabled and the wiring harness has not been connected to the IFC.

The thermistor is part of the blower wiring harness.

Important:

The Technician app can be used to enable or disable the thermistor. Enabled is the factory default

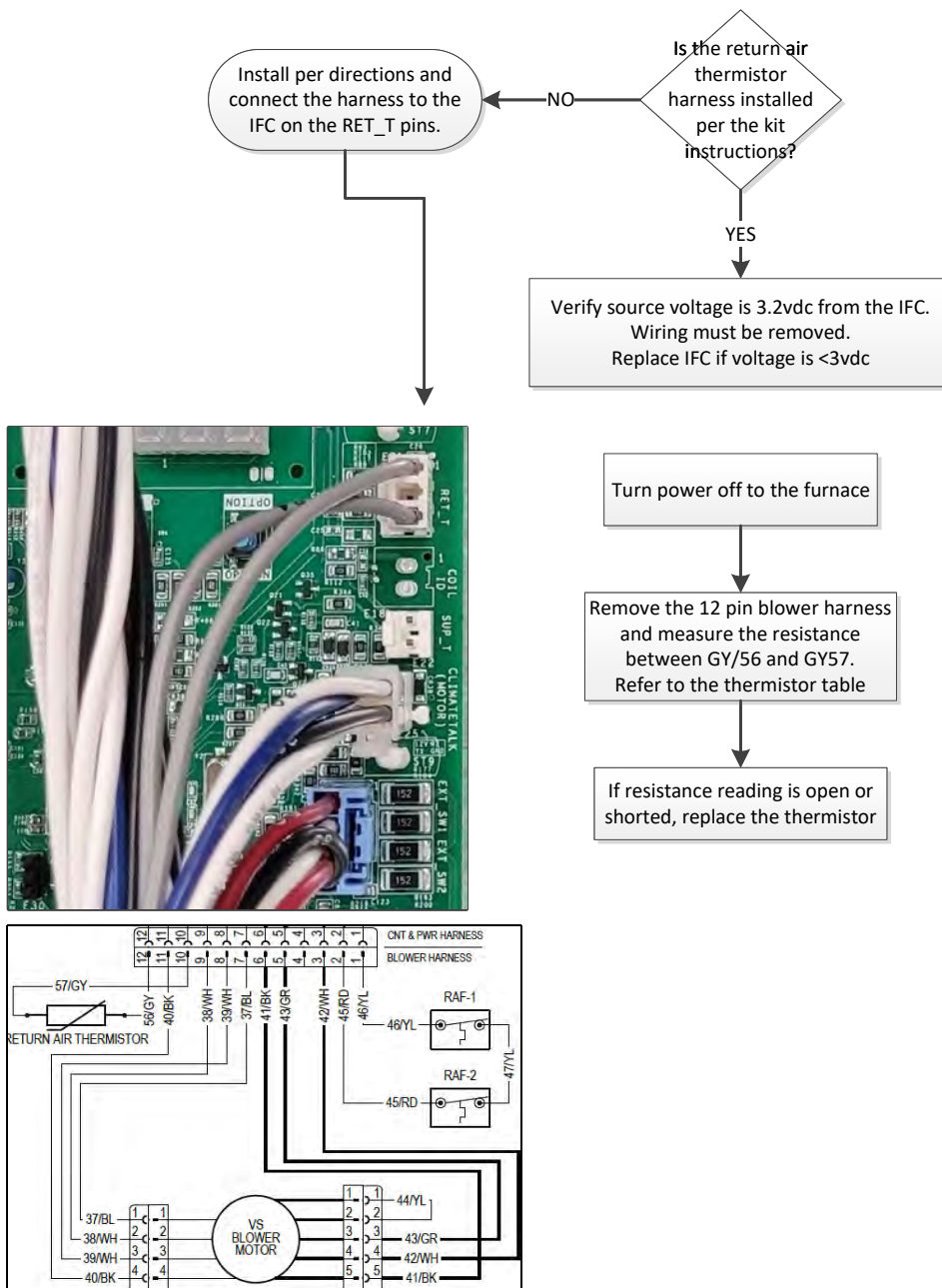


Figure 104. E28 fault code (SOP 004.50)

DEFINITION:

This fault is generated when the supply air thermistor is out of range or has been enabled and the wiring harness has not been connected to the IFC.

The thermistor is part of the A/TLink kit.

Important:

The Technician app can be used to enable or disable the thermistor. Disabled is the factory default

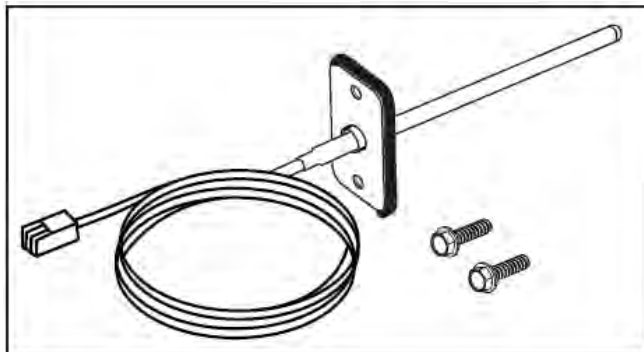
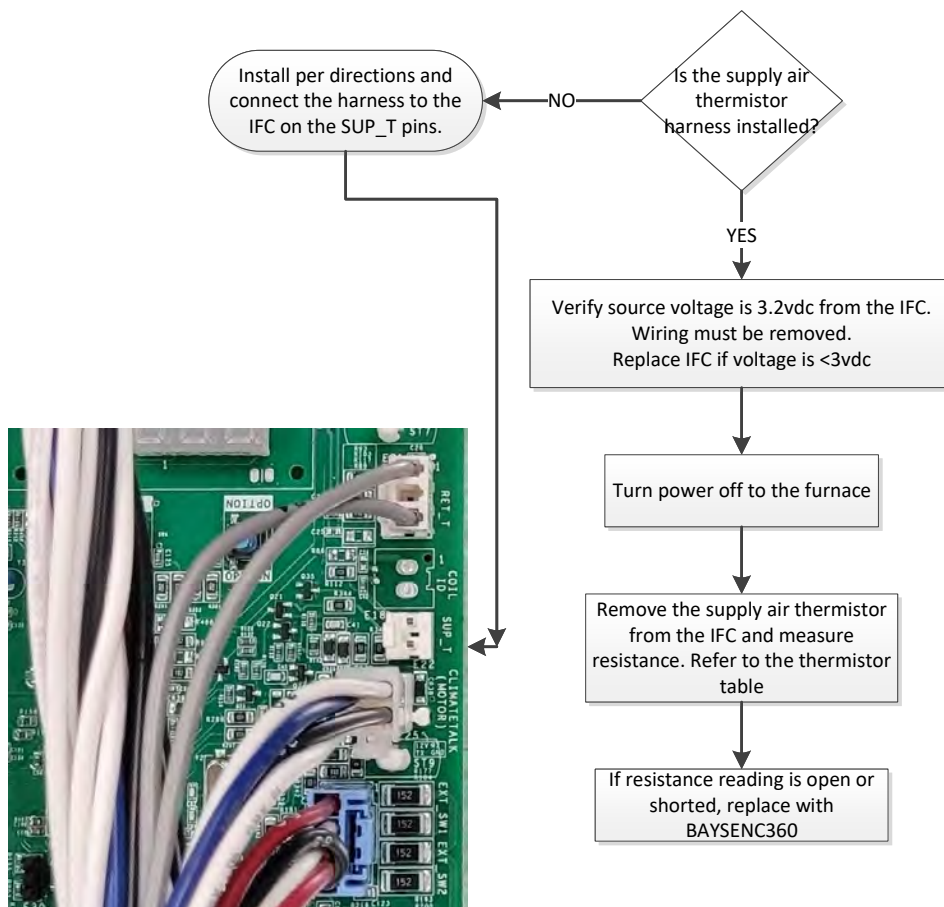


Table 20. Thermistor

T deg F	T deg C	Thermistor Resistance	VDC
40	4.4	25452	1.64
41	5.0	24761	1.62
42	5.6	24091)	11.61)
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	21031)	1.51
48	8.9	20472	1.49
49	9.4	199311	11.47
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	11.35
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	14931)	1.25
61	16.1	14550	1.23
62	16.7	14182	11.211
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	1111879	11.07
70	21.11	11586	1.06
71	21.7	1131)1	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	9991)	0.95
77	25.0	9749	0.93
78	25.6	9515	0.91

T deg F	T deg C	Thermistor Resistance	VDC
83	28.3	8435	0.83
84	28.9	8236	0.81
85	29..4	81)43	0.80
86	311.0	7855	0.78
87	31).6	76711	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	0.6 .9
93	33 ..9	6669	0.6 .8
94	34 ..4	6516	0.6 .7
95	35.0	6368	0.65
96	35.6	6.224	0.64
97	36..1	6003	0.63
98	36.7	5946	0.6 .1
99	37.2	5812	0.6 .0
100	37.8	8682	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	3005	0.39
122	50.0	3513	0.37
124	511..11	3368	0.36
126	52.2	3231)	0.34
128	53.3	31)98	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	2331)	0.25

Table 20. Thermistor (continued)

T deg F	T deg C	Thermistor Resistance	VDC
79	26.1	9287	0.89
00	26.7	9005	0.88
81	27..2	8849	0.86
82	27.8	8639	0.84

T deg F	T deg C	Thermistor Resistance	VDC
144	62.2	2239	0.24
146	63.3	2153	0.23
148	64 ..4	2070	0.22
1150	65 .6.	11991)	

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 présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne 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.

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