Control Replacement Kit
Ultra Low NOx, Non-Condensing
Fixed Speed Furnace
346083-751, 346083-752, 346083-753

Installation Instructions

NOTE: Read the entire instruction manual before starting the installation.

SAFETY CONSIDERATIONS

Improper installation, adjustment, alteration, service, maintenance, or use can cause explosion, fire, electrical shock, or other conditions which may cause death, personal injury, or property damage. Consult a qualified installer, service agency, or your distributor or branch for information or assistance. The qualified installer or agency must use factory-authorized kits or accessories when modifying this product. Refer to the individual instructions packaged with the kits or accessories when installing.

Follow all safety codes. Wear safety glasses, protective clothing, and work gloves. Have a fire extinguisher available. Read these instructions thoroughly and follow all warnings or cautions include in literature and attached to the unit. Consult local building codes, the current editions of the National Fuel Gas Code (NFGC) NFPA 54/ANSI Z223.1 and the National Electrical Code (NEC) NFPA 70.

In Canada, refer to the current editions of the National Standards of Canada CAN/CSA- B149.1 and .2 Natural Gas and Propane Installation Codes, and Canadian Electrical Code CSA C22.1.

⚠Recognize safety information. This is the safety-alert symbol.

When you see this symbol on the unit and in instructions or manuals, be alert to the potential for personal injury.

Understand the signal words DANGER, WARNING, and CAUTION. These words are used with the safety- alert symbol. DANGER identifies the most serious hazards which will result in severe personal injury or death. WARNING signifies hazards which could result in personal injury or death. CAUTION is used to identify unsafe practices which may result in minor personal injury or product and property damage. NOTE is used to highlight suggestions which will result in enhanced installation, reliability, or operation

⚠ WARNING

FIRE, EXPLOSION, ELECTRICAL SHOCK HAZARD

Failure to follow this warning could result in personal injury, death and/or property damage.

The ability to properly perform maintenance on this equipment requires certain knowledge, mechanical skills, tools, and equipment. If you do not possess these, do not attempt to perform any maintenance on this equipment other than those procedures recommended in the Owner's Manual.

⚠ WARNING

FIRE, EXPLOSION, ELECTRICAL SHOCK AND CARBON MONOXIDE POISONING HAZARD

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

Improper installation, adjustment, alteration, service, maintenance, or use can cause carbon monoxide poisoning, explosion, fire, electrical shock, or other conditions, which could result in personal injury or death. Consult your distributor or branch for information or assistance. The qualified installer or agency must use only factory- authorized kits or accessories when servicing this product.

⚠ WARNING

ELECTRICAL SHOCK HAZARD

Failure to follow this warning could result in personal injury or death.

Before installing, modifying, or servicing system, main electrical disconnect switch must be in the OFF position and install a lockout tag. There may be more than one electrical supply to the furnace. Check accessories and cooling unit for additional electrical supplies that must be shut off during furnace servicing. Lockout and tag switch with a suitable warning label. Verify proper operation after servicing.

INTRODUCTION

⚠ CAUTION

CUT HAZARD

Failure to follow this caution may result in personal injury.

Sheet metal parts may have sharp edges or burrs. Use care and wear appropriate protective clothing, safety glasses and gloves when handling parts, and servicing furnaces.

This kit is used to replace furnace control HK42EB001 on Series 1 Ultra Low NOx non-condensing, non-communicating furnaces. This kit contains all components required to update to the newer control and requires replacement of the furnace main wiring harness, pressure transducer and several additional components to successfully complete the installation.

Table 1 – Kit Components

Kit Contents
Control Board
Control Board Bracket
Transducer
Model Plug(s)
Wire Harness
Service Label
Connection Diagram
Screws

ELECTROSTATIC DISCHARGE (ESD)

⚠ CAUTION

FURNACE RELIABILITY HAZARD

Failure to follow this caution may result in unit component damage.

Electrostatic discharge can affect electronic components. Take precautions during furnace installation and servicing to protect the furnace electronic control. Precautions will prevent electrostatic discharges from personnel and hand tools which are held during the procedure. These precautions will help to avoid exposing the control to electrostatic discharge by putting the furnace, the control, and the person at the same electrostatic potential.

Disconnect all power to the furnace. **DO NOT TOUCH THE CONTROL OR ANY WIRE CONNECTED TO THE CONTROL PRIOR TO DISCHARGING YOUR BODY'S ELECTROSTATIC CHARGE TO GROUND.**

Ground yourself by touching your hand and tools to clean, unpainted, metal surface of furnace close to control.

After touching chassis, you may proceed to service the furnace. You will recharge your body with static electricity by moving about or shuffling your feet. Reground yourself.

If you touch ungrounded objects (recharge your body with static electricity), reground yourself. Use this procedure for installed and uninstalled (ungrounded) furnaces.

Ground yourself again before handling a new control to protect control from damage. If control is to be installed in furnace, follow items 1 through 5 again before installing control. Put all used AND new controls into containers before touching ungrounded objects.

An ESD service kit (available from commercial sources) may also be used to prevent ESD damage.

INSTALLATION

⚠ CAUTION

ELECTRICAL OPERATION HAZARD

Failure to follow this caution may result in improper furnaces operation or failure of furnace.

Note all wire connections prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation

⚠ WARNING

ELECTRICAL SHOCK AND FIRE HAZARD

Failure to follow this warning could result in personal injury, death, and/or property damage.

Turn off the gas and electrical supplies to the furnace and install lockout tag before performing any maintenance or service. Follow the operating instructions on the label attached to the furnace.

Step 1 – Removal of existing components

NOTE: For plug locations, refer to existing wiring connection diagram located on furnace.

1. Turn thermostat to OFF or set temperature to the lowest setting.
2. Turn off electrical supply to furnace.
3. Turn off gas supply to furnace.
4. Remove outer and control access/blower door.
5. Disconnect thermostat wires.
6. Remove HUM and EAC connections, (if equipped).
7. Disconnect the blower line voltage BL and Neutral and speed tap leads from the furnace control, making note of motor lead orientation being used for heating, cooling, and constant fan demands.
8. Disconnect the blower auxiliary limit switches from the main furnace harness at plug J17.
9. Remove primary and secondary transformer wire connections from the furnace control.
10. Disconnect Hot Surface Ignitor (HSI) connections from the existing harness at plug J14. Removal of the HSI from the burner assembly is NOT necessary.
11. Disconnect the Burner Thermal Switch from the main harness by unplugging the two-pin connector. Removal of the burner thermal switch is NOT necessary.
12. Remove the wire harness connection to the Flame sensor at connector J18. Removal of flame sensor from Burner assembly is NOT necessary.
13. Disconnect the Inducer assembly from the existing harness at plug J13.
14. Disconnect the blue and green main harness connections at the gas valve.
15. Remove the manifold mounting screw containing the green grounding loop. Remove the ground loop connector and reinstall the burner manifold mounting screw.
16. Remove the pressure hose from the existing pressure transducer. The existing pressure transducer will be replaced with one contained in the kit, so removal from the harness is not necessary.
17. Remove the wires from the draft safeguard switch at the vent outlet elbow.
18. Remove the two red wires from the main limit switch.
19. Remove the junction box cover, and disconnect the L1 and L2 connection from the incoming electrical supply.
20. Remove wire strain reflief by squeezing head of plastic wire tie and lifting the wire, or by using diagonal cutters to snip and remove the top of the wire tie.
21. Remove the blower door switch mounting screw. Remove the blower door switch from its mounting location. Carefully remove the wire connections from the switch and set switch aside for use during reassembly.

22. Remove the furnace control and complete wiring harness from the furnace, including existing pressure transducer, taking note of wire harness routing. New wiring harness routing will be similar.
23. Remove the furnace control mounting bracket from the blower housing making special note of the location and length of the screws. Retain the mounting screws for use with the replacement furnace control bracket included in this kit.
24. Remove transformer assembly from furnace control mounting bracket, and retain screws for reuse.
25. Remove the plastic wire retainer clip from the control mounting bracket for reuse on the new bracket.

Step 2 — Installing the New Components

1. Install the transformer assembly onto the new furnace control bracket from the kit using the screws removed previously.
2. Install the new furnace control mounting bracket onto the blower housing using the mounting screws from the previously removed control mounting bracket.
3. Install the new furnace control onto the furnace control mounting bracket using the screws provided in the kit.
4. Install the plastic wire retainer clip onto the new control mounting bracket.
5. Route new wiring harness into furnace.
   a. Assuring the long 11 pin connector of the harness is oriented toward the blower compartment, place the molded harness grommet into the groove at the blower door switch mounting location.
   b. Route burner compartment section of wire harness in the same orientation as the previously removed harness.
6. Install the blower door switch.
   a. Locate the two black wires with female flag terminals near the blower door switch mounting location. Attach these two terminals to the previously removed door switch.
   b. Install the blower door switch using the previously removed screw.

Make harness connections in burner compartment

1. Route the black L1 and white L2 wires into the junction box, and reconnect them to the incoming electrical supply. Reinstall the junction box cover.
2. Press strain relief wire tie into hole in junction box.
3. Locate the two red wires with female flag terminals, and connect to the main limit switch.

NOTE: Do not connect the wires labeled DSS to the main limit switch.

4. Locate the remaining two red wires with flag terminals (labeled as DSS) and connect to the draft safeguard switch at the vent outlet elbow.
5. Remove the burner manifold mounting screw that previously held the grounding loop. Locate the green/yellow ground wire and attach the ground loop connector by reinstalling the burner manifold mounting screw.
6. Locate and connect the blue and green wires in the main harness to the gas valve.
7. Connect the inducer assembly to the main harness inducer plug PL13.
8. Connect the flame sensor to the main harness at PL18 by locating the white wire with the single pin connector, and connecting to the Flame sensor connector.
9. Connect the Burner Thermal switch to the main harness by locating and plugging in the two-pin, red wires connector.
10. Connect the Hot surface Ignitor (HSI) by locating the 2 pin connector containing black and white wires, and connecting it to the HSI at PL14.
11. Attach the pressure hose to the new transducer from the kit. Plug the 3 pin connector (black, gray, red) into the new pressure transducer and use the included wire tie to affix the transducer to the new harness.

Make harness connection in Blower compartment

1. Attach the flat 11-pin main connector to PL1 of the furnace control.
2. Locate and attach the 2 pin connector (black, black) to PL2 of the furnace control.
3. Locate and attach the 3 pin connector (red, gray, black) to PL3 of the furnace control.
4. Connect the transformer to the new furnace control.
   a. Red wire to SEC- 1 terminal. SEC- 1 terminal is located adjacent to the 3 amp fuse.
   b. Blue wire to SEC- 2 terminal. SEC- 2 terminal is located adjacent to the 3 amp fuse.
   c. Black wire to PR terminal.
   d. White wire to one of the 115- volt Neutral-L2 spade connections.
5. Locate the black wire with female spade connector and attach to L1 of the new furnace control.
6. Locate three remaining white leads with female spade connections, and attach them to Neutral-L2 spade connections.
7. Locate the 2 pin (red, red) connector and route and connect to the blower auxiliary limit switch connector.
8. Connect the blower to the furnace control.
   a. Attach the black blower line voltage lead to the BL spade connector of the furnace control.
   b. Connect the white blower neutral lead to a Neutral-L2 spade connector on the furnace control.
   c. Connect the green speed tap lead to the COM terminal of the furnace control.
   d. Connect the remaining speed tap leads to the appropriate 24V motor tap connections based on the previously noted locations for heating, cooling, and constant fan demands.
9. Reattach HUM and EAC connections, (if originally equipped).

NOTE: This replacement control offers both a 24VAC and a 115VAC output for use with humidifiers. Check humidifier solenoid voltage requirements and assure that humidifier solenoid is connected to the proper output terminal.

10. Dress excess wire harness length in retainer clip on control bracket.
11. Set the blower off delay. Blower Off Delay Jumper Select is located near the thermostat connection terminal. It is factory set at 120 seconds.
12. Install model plug, based on unit model size.

Table 2 – Model Plugs

Input BTU/h	Model Plug		
	58SB(0,1)/58SC(0,1) 80(0,1)SA PG80ES(A,L)	WFE(R,L) R80ES(R,L)	N80ES(N,L)
40K	HK70EZ024	1191587 (HK70EZ024)	1184941 (HK10EZ040)
60K	HK70EZ026	1191588 (HK70EZ026)	1184943 (HK70EZ042)
80K	HK70EZ028	1191589) (HK70EZ028)	1184945 (HK70EZ044)
100K	HK70EZ029	1191590 (HK70EZ029)	1184946 (HK70EZ045)

13. Install new connection diagram over existing connection diagram.
14. Install new service label over existing service label.
15. Do not connect thermostat wires to control board until Start- up and System Check- out is complete.

SYSTEM CHECK-OUT

Step 1 — Component Self-Test

1. To initiate component test sequence, ensure thermostat is turned OFF or thermostat wires are disconnected. Turn incoming power on and manually close blower door switch. With a short piece of wire, briefly short TEST/TWIN terminal to Common/24V terminal.

Component test sequence is as follows:

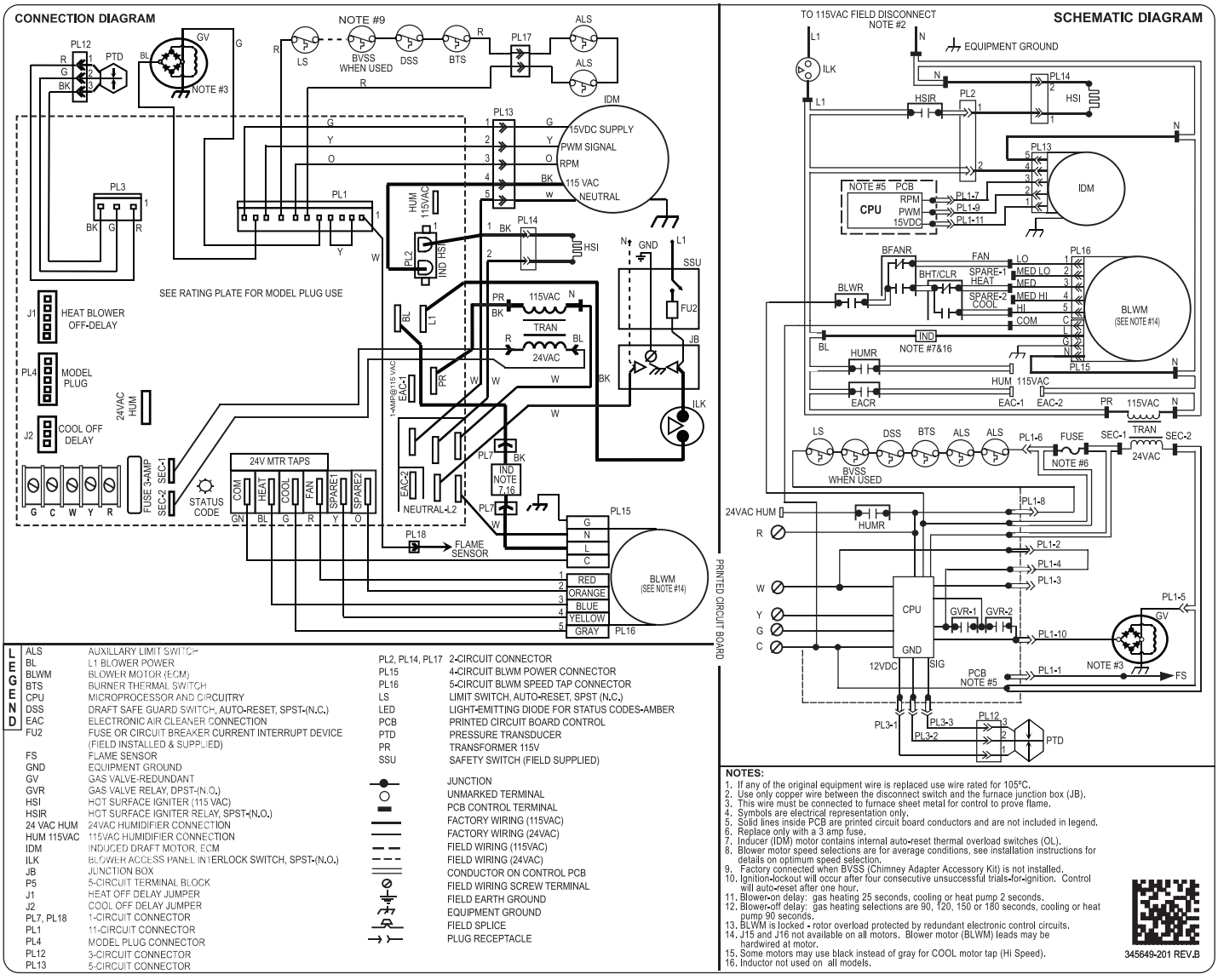
a. Status LED will flash 4 times then turn ON inducer motor.
b. Inducer motor will run for entire component test.
c. Hot surface igniter will be turned ON for 15 seconds, then OFF.
d. Blower motor–HEAT speed will be turned ON for 10 seconds.
e. Blower motor- COOL speed will be turned ON for 10 seconds.

2. Repair, replace or service any component that does not work properly during the self- test. The gas valve and humidifier are not energized during self- test.
3. Turn power off.
4. Release blower door switch.
5. Connect thermostat wires.
6. Install blower and access doors.
7. Turn power back on.
8. Turn on gas supply to furnace.

Step 3 — System Operation

1. Perform any other safety checks as deemed necessary (flame safety, limit switch, vent system etc.).
2. Run unit through one complete call for heat cycle.

Fig. 1 – Connection Diagram



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