

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 a direct replacement for circuit boards Part No. HK42FZ004, HK42FZ007, HK42FZ008, HK42FZ009, HK42FZ011, HK42FZ013 and HK42FZ016. Changes to the operation of this control include:

1. The blower off delay selections are: 90, 120, 150 and 180 seconds.
2. A COOLING OFF DELAY DEFEAT JUMBER "J2" is provided. It is located in the upper left corner of control board. See Fig. 2. When cut, this permanently reduces the

90 second blower-off delay in the cooling mode, to 5 seconds.

- All 115-volt neutrals are grouped together in one location of board. See Fig. 2.
- Humidifier connection is removed from thermostat terminal block. It is now a 1/4-in. spade terminal, next to the thermostat terminal block. See Fig. 2.

Kit Contains:	Part Number
Control board	HK42FZ034
Wire harness adapter	328151-701
Non-condensing furnace (80% wiring diagram)	328251-101 Rev. A
Condensing furnace (90% wiring diagram)	328218-101 Rev. B
Service label	327596-101 Rev. B

TWINNING

The control board in this kit **CANNOT** be twinned with any of the following circuit boards:

HK42FZ004, HK42FZ007, HK42FZ008, HK42FZ009,
HK42FZ011, HK42FZ016

In twinned installations, another kit will be required for the twin furnace.

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

Step 1 — Removal of Existing Control

⚠ CAUTION

ELECTRICAL OPERATION HAZARD

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

Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation.

- Turn thermostat to OFF or set temperature to the lowest setting.
- Turn off electrical supply to furnace.
- Turn off gas supply to furnace.

⚠ 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.

- For 80% furnaces** remove control access and blower door. **For 90% furnaces** remove outer door assembly and remove the two screws from blower access panel and set aside.
- Disconnect thermostat and humidifier wires (if equipped).
- Disconnect line voltage, blower, EAC, (if equipped) and transformer wires.
- For 80% furnaces** remove retaining screws and remove furnace control board from bracket. **For 90% furnaces** remove two screws from blower deck that hold the control box assembly. Lower control box assembly. Remove retaining screw(s) from board and remove board from control box assembly.
- Remove wiring harness connectors from furnace control board.
- Inspect control and control box for evidence of water staining.
- Correct any sources of water leakage (humidifier, evaporator coil, vent system) into the control area.

Step 2 — Installing the New Control

- Ground yourself! Handle furnace control board by edges.
- Insert tab(s) of board into slots of control box (if required).
- Install furnace control board retaining screw(s). Install wiring harness adapter (part# 328151-701) to three connections of the existing furnace wiring harness. See Fig. 3.
 - The furnace harness 9-pin connector plugs into the mating 9-pin adapter harness connector.
 - The furnace harness 2-pin connector plugs into the mating 2-pin adapter harness connector.
 - The furnace harness 3-pin connector plugs into the mating 3-pin adapter harness connector.
- Connect the other end of the adapter harness (part number 328151-701) to the new furnace control board.

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 power on and manually close blower door switch. With a short piece of wire, briefly short TEST/TWIN terminal to Com/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 is not energized during self-test.

3. Turn power off.

4. Release blower door switch.

NOTE: Current status code will be erased when blower door is removed.

5. Connect thermostat wires.

6. Install blower and access doors.

7. Turn power back on.

8. Turn on gas supply to furnace.

Step 2 — Flame Sensor Operation

Connect a DC microammeter in series with flame sensor. Initiate a call for heat. After burners ignite and stabilize, measure flame current. Nominal flame current is between 4.0 and 6.0 micro amps DC. If flame current is below 4.0 microamps DC, remove and clean flame sensor with fine steel wool, or replace flame sensor.

The furnace control will lock-out when flame current falls to 0.5 micro amps DC.

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.

- a. The 11-pin connector connects to PL1 on the furnace control board. See Fig. 2 and 3.
 - b. The 2-pin connector which has 2 black wires connects to PL2 on the furnace control board. See Fig. 2 and 3.
 - c. The 2 white wires connect to the 115-volt Neutral spade connections, located in front of PL1 on the new furnace control board. See Fig. 2 and 3.
5. Connect the transformer to the new furnace control board. See Fig. 2.
 - a. Blue wire to SEC-2 terminal. SEC-2 terminal is located adjacent to the 3 amp fuse.
 - b. Red wire to SEC-1 terminal. SEC-1 terminal is located adjacent to the 3 amp fuse.
 - c. Black wire to PR-1 terminal. PR-1 terminal is located adjacent to PL2.
 - d. White wire to one of the 115-volt Neutral spade connections located in front of PL1.
 6. Connect black wire from furnace auxiliary junction box to L1 on the new furnace control board. L1 is located on the blower enable relay. See Fig. 2.
 7. Connect white wire from furnace auxiliary junction box to one of the 115-volt Neutral spade connections located in front of PL1. See Fig. 2.
 8. Connect the blower motor leads to the new furnace control board. See Fig. 2.
 - a. Connect the white blower motor lead to the BLW connection within the group of 115-volt Neutral spade connections.
 - b. Connect the blower motor heat tap to the blower relay connection marked HEAT.
 - c. Connect the blower motor cool tap to the blower relay connection marked COOL.
 - d. Connect the remaining blower motor leads to SPARE-1 and SPARE-2.
 9. Connect all accessory wires.
 10. For 90% furnaces reinstall control box assembly to blower deck, by installing the two screws previously removed from the blower deck.
 11. Set blower off delay. **Blower Off Delay Jumper Select** is located on the top-center portion of board. See Fig. 2. It is factory set at 120 seconds.
 12. Install new wiring diagram over existing wiring diagram.
 - a. **For 80% furnaces**, apply label # 328251-101, Rev A
 - b. **For 90% furnaces**, apply label # 328218-101, Rev A
 13. Do not connect thermostat wires to control board until **Start-up and System Check-out** is complete.

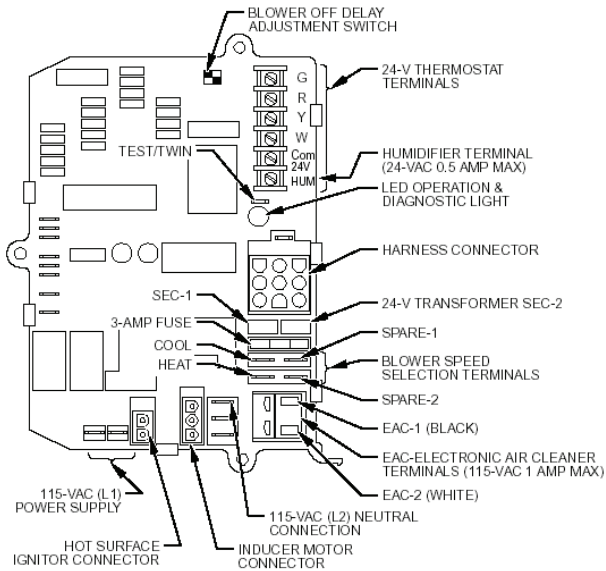


Fig. 1 - Old Style Furnace Control Board

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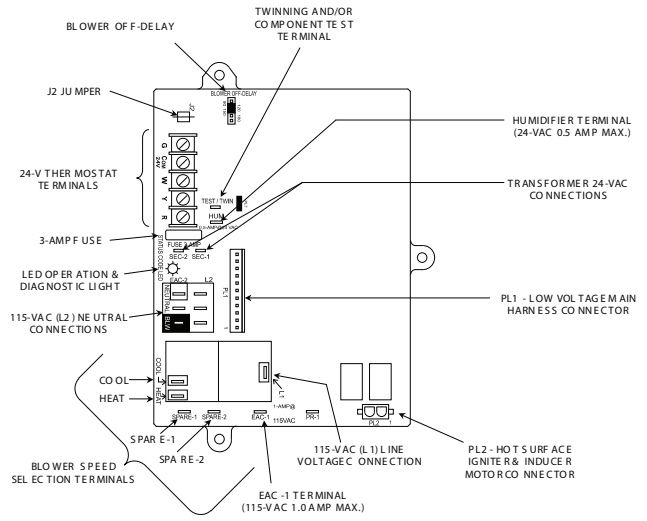


Fig. 2 - New Style Furnace Control Board

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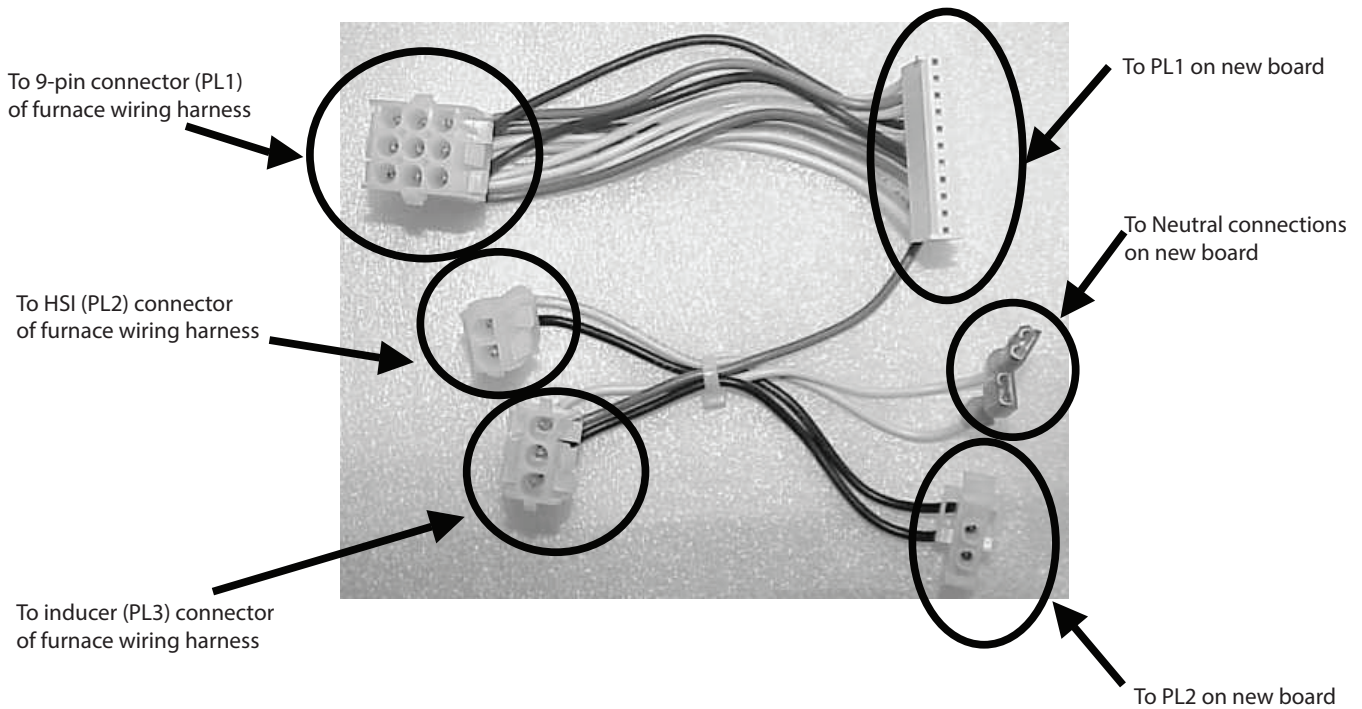


Fig. 3 - Wiring Harness Adapter

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