SAMM INDUCER MOTOR CONTROL KIT

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 included 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/CGA−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 Home Owner's Information Manual.

⚠ WARNING

FIRE, EXPLOSION, ELECTRICAL SHOCK AND CARBON MONOXIDE POISONING HAZARD

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

Improper installation, adjustment, alteration, service, maintenance, or use can cause carbon monoxide poisoning, explosion, fire, electrical shock, 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, FIRE OR EXPLOSION HAZARD

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

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.

⚠ 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 and gloves when handling parts.

INTRODUCTION

Before you begin, verify Inducer Control Module is non−functional using the unit troubleshooting information.

This instruction covers installation of the replacement Inducer Control Module for the inducer assembly used on 35−inch tall, high efficiency modulating furnaces.

The Inducer Control Module is only used on the inducer assembly shown in **Figure 1** below. If the modulating furnace has a different style inducer installed, it will be necessary to replace the entire inducer assembly. Contact your Distributor for the correct replacement inducer assembly.

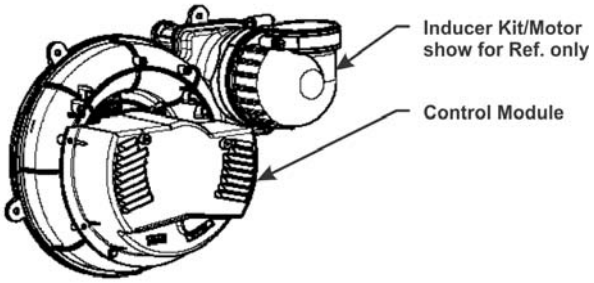


Figure 1 – Modulating Inducer Assembly

DESCRIPTION AND USAGE

Use this Inducer Control Module kit to replace a failed Inducer Control Module. There is only replacement Inducer Control Module for use on all modulating furnace inputs.

Table 1	Kit Contents
QUANTITY	DESCRIPTION
1	Inducer Control Module
1	Installation Instructions
4	½–in. #8 Hex Head Screws

INSTALLATION

Unit Shut Down

1. Set room thermostat to lowest setting or “OFF.”
2. Disconnect power at external disconnect, fuse or circuit breaker.
3. Turn off gas at external shut–off or gas meter.
4. Remove outer doors and set aside.
5. Slide electric switch on gas valve to OFF.

Disconnect Wiring Harness

NOTE: There are two connectors plugged into the Inducer Control Module. The 3–circuit Inducer Control Connector PL16 has the BROWN, YELLOW, and ORANGE leads which supply the inducer PWM signal and the RPM feedback signal to/from the Inducer Control Module. The 3–circuit Inducer Power Connector PL11 has the BLACK, WHITE, and GREEN leads which supply 115 VAC to the Inducer Control Module. See Fig. 2.

1. Depress the one lock tab on the Inducer Control Connector PL–16 and disconnect it from the Inducer Control Module.
2. Depress the two lock tabs on the Inducer Power Connector PL–11 and disconnect it from the Inducer Control Module.
3. Remove the two screws that secure the pressure switch assembly to the inducer housing and set aside.
4. Remove the two remaining screws that secure the Inducer Control Module to the Inducer Housing and set aside.

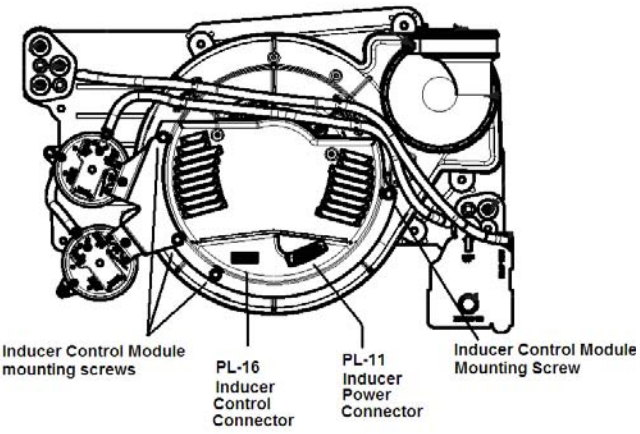


Figure 2 – Inducer and Pressure Switch Assembly

Remove the Inducer Control Module

⚠ WARNING

ELECTRICAL SHOCK HAZARD

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

The Inducer Control Module contains capacitors which store potentially dangerous amounts of electricity. Allow 5 minutes after disconnecting electrical power from the furnace before disconnecting the Inducer Control Module from the Inducer Motor.

1. Pull the Inducer Control Module straight back from the Inducer assembly.
2. Locate the Motor Output Connector on the back of the Inducer Control Module and connected to the Inducer Motor. See **Figure 3**.
3. Depress the lock tab on the Inducer Motor connector and disconnect the Inducer Motor Controller from the Inducer Motor. See **Figure 4**.
4. Set the failed Inducer Control Module aside.

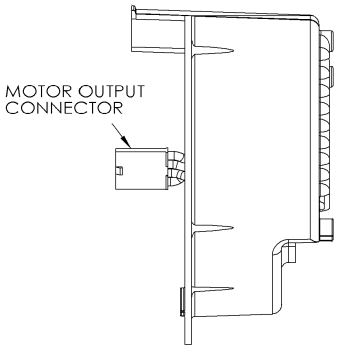


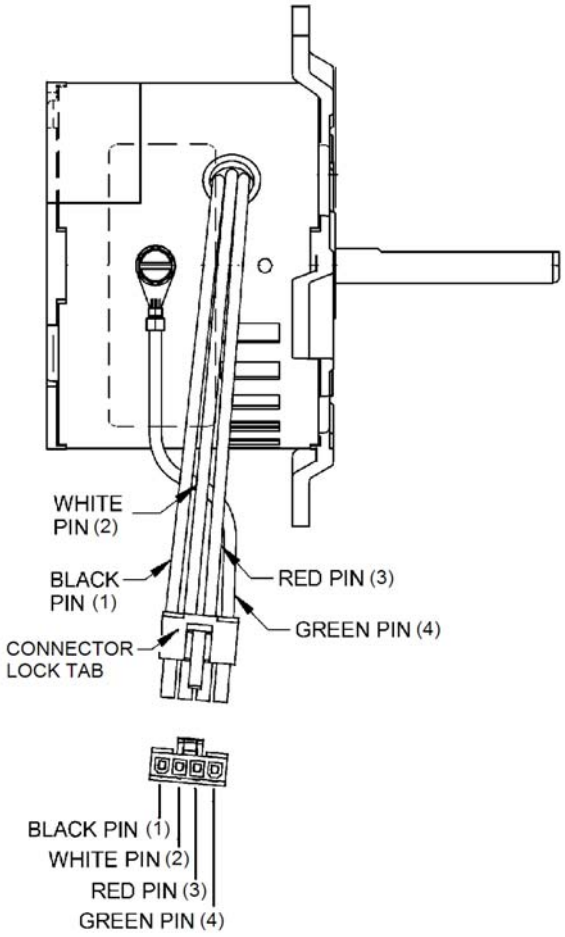
Figure 3 – Motor Output Connector

Check Motor Winding Resistance

1. Measure resistance between each of the BLACK, RED, and WHITE Inducer Motor leads to the GREEN Inducer Motor lead. Do not force meter leads into the terminals. Be careful not to damage the terminals in the connector. The resistance between each individual lead to the GREEN lead should be infinite (at least 100K) ohms. See Fig. 4.

NOTE: The Inducer Motor has been shown by itself in Fig. 4 for clarity. The Inducer Motor should not be disassembled from the housing in the field.

2. Measure resistance between each of the BLACK, RED, and WHITE Inducer Motor leads. Do not force meter leads into the terminals. Be careful not to damage the terminals in the connector. The resistance across any 2 leads should be less than 15 ohms AND each lead to lead resistance should be the same resistance within +/– 10% of each other.
3. If Inducer Motor fails either test, replace entire inducer assembly. If Inducer Motor passes both tests, continue.



(FERRITE CORE ON LEADS NOT SHOWN)

Figure 4 – Inducer Motor

ELECTROSTATIC DISCHARGE (ESD) PRECAUTION

⚠ CAUTION

UNIT DAMAGE HAZARD

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

Failure to follow this caution could result in unit and 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.

1. 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.
2. Firmly touch a clean, unpainted, metal surface of the furnace chassis which is close to the control. Tools held in a person's hand during grounding will be satisfactorily discharged.
3. After touching the chassis you may proceed to service the control or connecting wires as long as you do nothing that recharges your body with static electricity (for example; DO NOT move or shuffle your feet, DO NOT touch ungrounded objects, etc.).
4. If you touch ungrounded objects (recharge your body with static electricity), firmly touch furnace again before touching control or wires.
5. Use this procedure for installed and uninstalled (ungrounded) furnaces.
6. Before removing a new control from its container, discharge your body's electrostatic charge to ground to protect the control from damage. If the control is to be installed in a furnace, follow items 1 through 5 before bringing the control or yourself into contact with the furnace. Put all used AND new controls into containers before touching ungrounded objects.
7. An ESD service kit (available from commercial sources) may also be used to prevent ESD damage.

Install the Inducer Control Module

1. Connect the Inducer Motor leads to the Motor Output Connector on the Inducer Control Module.
2. Verify the lock tab on the Inducer Motor connector is engaged on the Motor Output Connector by gently pulling on the connectors. Do not pull on the wires of the harness.
3. Align the Inducer Control Module over the Inducer Motor. Verify that the cover of the Inducer Control Module does not pinch the harness wires. Also make sure that the ferrite core on the motor leads is properly located under the Inducer Control Module. DO NOT force it into place.

NOTE: To simplify aligning parts, the screws that attach the pressure switch mounting bracket to the Inducer Assembly should be installed last.

4. Insert a non–pressure switch assembly mounting screw through the Inducer Control Module into the mounting post on the Inducer Assembly and tighten the screw hand tight.
5. Insert the other non–pressure switch assembly mounting screw through the Inducer Control Module into the mounting post on the Inducer Assembly and tighten the screw hand tight.
6. Align the pressure switch assembly mounting screw holes with the remaining holes in the Inducer Control Module. Insert the 2 remaining screws and tignten the screw hand tight into the mounting posts on the Inducer Assembly.

Connect Wiring Harness

1. Reconnect 3–circuit Inducer Control Connector PL16 to the Inducer Control Module. DO NOT force. See Fig. 2.
2. Reconnect 3–circuit Inducer Power Connector PL11 to the Inducer Control Module. DO NOT force. See Fig. 2.
3. Verify the lock tabs on each connector are engaged properly on the Inducer Control Module. Gently pull on each connector. Do not pull on the wires.

Unit Checkout

1. Set thermostat to “OFF.”
2. Turn on power at external disconnect, fuse or circuit breaker.
3. Turn on gas at external shut−off or gas meter.
4. Manually close blower door switch.
5. Initiate component test through circuit board by referring to **“Component Test”** on status code label on furnace door for complete test sequence information.
6. If any status codes are flashed, refer to status code label on furnace door.
7. Release blower door switch.
8. Install blower door.
9. Set thermostat to call for heat.
10. Allow unit to initiate a complete call for heat cycle.

NOTE: NOTE: As part of the system check−out, verify that the following conditions are not affecting the operation of the furnace:

- Short Cycling−Defective thermostat: Incorrect thermostat anticipator setting, dirty filter or over−sized furnace.
- Incorrect BTU input: Set manifold pressure and verify firing rate as shown on rating plate by clocking the gas meter.
- Incorrect temperature rise: Set unit for correct temperature rise range as shown on unit rating plate.
- Contaminated combustion air: Remove contaminates or provide ample fresh air for combustion.
- Excessive amounts of outside ventilation air: Return air temperature cannot be below 60 degrees F for extended periods of time.
- Incorrect venting or termination: Recirculation of products of combustion into the combustion air pipe can damage the furnace. Verify proper venting and vent termination per installation instructions. For additional information, and a complete sequence of furnace operation, refer to furnace Installation, Start−Up and Operating Instructions.

11. After System Check−out is complete, set thermostat below room temperature.
12. Verify that burner shuts down and blower completes selected off delay time.
13. Verify furnace operates properly and set thermostat to desired room temperature.
14. Re−install furnace doors

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