

# MVK-EIMC-EIHC KITS

(UNASSEMBLED)

## INSTRUCTIONS

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# HONEYWELL

## APPLICATION

These ignition modules provide ignition sequence, flame monitoring and safety shutoff for intermittent pilot central furnaces and heating appliances. S8600 module provides up to 1.0 A pilot and 1.0 A main valve current rating. Minimum ambient temperature rating is -40 F [-40C]. Maximum ambient rating is +175 F [+79 C] for S8600 used with 1.0 A or less main valve.

## IMPORTANT: INSTALLATION

### **WHEN INSTALLING THIS IGNITION SYSTEM...**

1. Read these instructions carefully. Failure to follow them could damage the components or cause a hazardous condition.
2. Check the ratings given in the instructions and on the components to make sure they are suitable for your application.
3. Installer must be a trained, experienced service technician.
4. After installation is complete, check out component operation as provided in these instructions.
5. Fireplace installation- do NOT close doors to fireplace at any time during use- will result in damage to components.

## **WARNING**

### **FIRE OR EXPLOSION HAZARD.**

#### **CAN CAUSE SERIOUS INJURY OR DEATH.**

1. The ignition module can malfunction if it gets wet, leading to accumulation of explosive gas.
  - Never install where water can flood, drip or condense on module.
  - Never try to use a module that has been wet- replace it.
2. Liquefied petroleum (LP) gas is heavier than air and will not vent upward naturally.
  - Do not light pilot or operate electric switches, lights, or appliances until you are sure the appliance area is free of gas.

## **CAUTION**

1. Disconnect power supply before beginning wiring to prevent electrical shock or equipment damage.
2. If a new gas control is to be installed, turn off gas supply before starting installation. Conduct Gas Leak Test according to gas control manufacturer's instructions after the gas control is installed.
3. If module must be mounted near moisture or water, provide suitable waterproof enclosure.



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**We recommend that our products be installed and serviced by professionals who are certified in the U.S. by NFI (National Fireplace Institute) or in Canada by WETT (Wood Energy Technical Training). Installer must follow all instructions carefully to ensure proper performance and safety.**

### **MOUNT IGNITION MODULE**

Select a location close enough to the burner to allow a short (3ft), direct cable route to the igniter. Ambient temperature at the module must be within the range listed under APPLICATION. The module must be protected from water, moisture, corrosive chemicals and excessive dust and grease.

We recommend mounting the module with the terminals down to protect them from dripping water and dust. It can also be mounted with the terminals on either side. **DO NOT MOUNT** with terminals pointing up. Fasten securely with four No. 6-32 machine or No.8 sheet metal screws.

### **MOUNT THE SYSTEM CONTROLS**

Mount any required controls, such as the gas control, spark igniter, flame sensor, thermostat, limit and transformer according to manufacturer's instructions. Seal all electrical connections (terminals, connectors, & wire nuts) with electrical silicone to prevent shorting.

## **CAUTION**

1. Check the wiring diagram furnished by the appliance manufacturer, for circuits differing from the wiring hookups shown.
2. Disconnect the power supply before making wiring connections to prevent electrical shock or equipment damage.

## Parts List:

115	Pilot Assembly (1)
210-EI	Gas Valve (1)
210-EI-Mod	Module (1)
212	Switch (1)
213	Wires for switch (1)
256/241	Heat Shield / Insulation for valve (1)
270/271	Heat Shield / Insulation for module (1)
274	Female Connector (12)
279	Ground Connector (1)
576-40VA	Transformer (24V)
579	Power Cord (1)
616	High Temp Wire (8)
617	Wire Nut (6)
649	Pilot Tube (1)
SSC-HC24	Flex Line (2)

## CHECKOUT

Check out the gas control system:

- At initial installation of the appliance.
- As part of regular maintenance procedures. Maintenance intervals are determined by the application.
- As the first step in troubleshooting.
- Any time work is done on the system.

### Perform Visual Inspection.

- With power off, make sure all wiring connections are clean and tight.
- Turn on power to appliance and ignition module.
- Open manual shutoff valves in the gas line to the appliance.
- Do gas leak test ahead of gas control if piping has been disturbed.

**GAS LEAK TEST:** Paint pipe joints with rich soap and water solution. Bubbles indicate gas leak. Tighten joints to stop leak. Recheck with soap and water.

### Check Safety Shutoff Operation

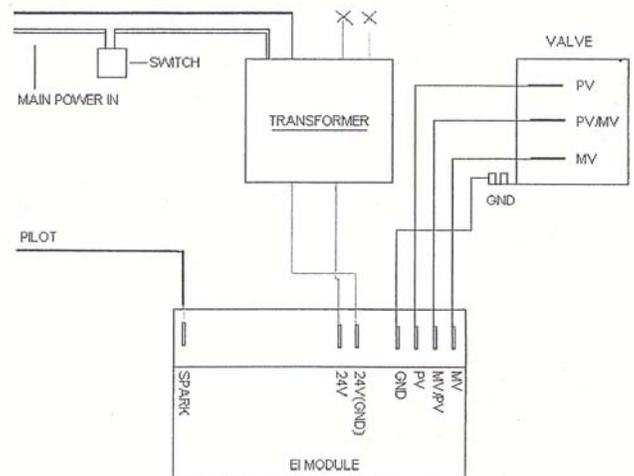
This step applies to lockout and continuous retry modules only.

- Turn gas supply off.
- Set thermostat or controller above room temperature to call for heat.
- Watch for spark at pilot burner either immediately or following pre-purge. See device label.
- Open manual gas cock and make sure no gas is flowing to pilot or main burner.

### Safety Lockout

These modules provide 100 percent shutoff and safety lockout. A timer in these models starts timing the moment the trial for ignition starts. Ignition spark continues only until the timed trial for ignition period ends. Then the module goes into safety lockout. Lockout de-energizes the first main valve operator and closes the first valve in the gas control, stopping pilot gas flow. The control system must be reset by setting the thermostat below room temperature for one minute or by turning off power to the module for one minute.

## MVK WIRING SUPPLEMENT



## OPERATION

Module operation can be divided into two phases for the S8600. The phases are

- Trial for ignition
- Main burner operation

### TRIAL FOR IGNITION

**Pilot Ignition**

On the call for heat, the module energizes the first main valve operator. The first main valve opens, which allows gas to flow to the pilot burner. At the same time, the electronic spark generator in the module produces an over 10k volt spark pulse output. The voltage generates a spark at the igniter or igniter-sensor that lights the pilot.

If the pilot does not light, or the pilot flame current is not at least 1.0 A and steady, the module will not energize the second valve and the main burner will not light.

### MAIN BURNER OPERATION

When the pilot flame is established, a flame rectification circuit is completed between the sensor and burner ground. The flame sensing circuit in the module detects the flame current, shuts off the spark generator and energizes the second main valve operator. The second main valve opens and gas flows to the main burner, where it is ignited by the pilot burner. On lockout models, the flame current also holds the safety lockout timer in the reset operating condition.

When the call for heat ends, both valve operators are de-energized, and both valves in the gas control close.

## TROUBLESHOOTING

1. The following service procedures are provided as a general guide. Follow appliance manufacturer's service instructions if available.
2. On lockout and retry models, meter readings between gas control and ignition module must be taken within the trial for ignition period. Once the ignition module shuts off, lockout models must be reset by setting the thermostat down for at least one minute before continuing. On retry models, wait for retry or reset at the thermostat.
3. If any component does not function properly, make sure it is correctly installed and wired before replacing.
4. The ignition module cannot be repaired. If it malfunctions, it must be replaced.
5. Only trained, experienced service technicians should service intermittent pilot systems.

## IGNITION SYSTEM CHECKS

Step 1: Check ignition cable

Make sure:

- Ignition cable does not run in contact with any metal surfaces.
- Ignition cable is no more than 36 in. long.
- Connections to the ignition module and to the igniter or igniter-sensor are clean and tight.
- Ignition cable provides good electrical continuity.

Step 2: Check ignition system grounding. *Nuisance shut-downs are often caused by a poor or erratic ground.*

A common ground, usually supplied by the pilot burner bracket, is required for the module and the pilot burner/igniter-sensor.

- Check for good metal-to-metal contact between the pilot burner bracket and the main burner.

- Check the ground lead from the GND terminal on the module to the pilot burner. Make sure connections are clean and tight. If the wire is damaged or deteriorated, replace it.

-Check the ceramic flame rod insulator for cracks or evidence of exposure to extreme heat, which can permit leakage to ground. Replace pilot burner/igniter-sensor and provide a shield if necessary.

-If flame rod or bracket are bent out of position, restore to correct position.

Step 3: Check spark ignition circuit. You will need a short jumper wire made from ignition cable or other heavily insulated wire.

- Close the manual gas valve.
- Disconnect the ignition cable at the SPARK terminal on the module.
- Energized the module and immediately touch one end of the jumper firmly to the GND terminal on the module. Move the free end of the jumper slowly toward the SPARK terminal until a spark is established.
- Pull the jumper slowly away from the terminal and note the length of the gap when sparking stops. Check table below.

ARC LENGTH	ACTION
No arc or arc less than 1/8 in.	Check external fuse, if provided. Verify power at module input. Replace module if fuse and power ok.
Arc 1/8 in. or longer.	Voltage output is okay.

STEP 4: Check pilot and main Burner light off.

- Set the thermostat to call for heat.
- Watch the pilot burner during the ignition sequence. See if:
  - Ignition spark continues after the pilot is lit.
  - The pilot lights and the spark stops, but main burner does not light.
  - The pilot lights, the spark stops and main burner lights, but the system shuts down.
- If so. Ensure adequate flame current as follows.
  - Turn off at circuit breaker or fuse box.
  - Clean the flame rod with emery cloth.

APPEARANCE	CAUSE
<b>SMALL BLUE FLAME</b> 	CHECK FOR LACK OF GAS FROM: • CLOGGED ORIFICE FILTER • CLOGGED PILOT FILTER • LOW GAS SUPPLY PRESSURE • PILOT ADJUSTMENT AT MINIMUM
<b>LAZY YELLOW FLAME</b> 	CHECK FOR LACK OF AIR FROM: • LARGE ORIFICE • DIRTY LINT SCREEN, IF USED • DIRTY PRIMARY AIR OPENING, IF THERE IS ONE • PILOT ADJUSTMENT AT MINIMUM
<b>WAVING BLUE FLAME</b> 	CHECK FOR: • EXCESSIVE DRAFT AT PILOT LOCATION • RECIRCULATING PRODUCTS OF COMBUSTION
<b>NOISY LIFTING BLOWING FLAME</b> 	CHECK FOR: • HIGH GAS PRESSURE
<b>HARD SHARP FLAME</b> 	THIS FLAME IS CHARACTERISTIC OF MANUFACTURED GAS CHECK FOR: • HIGH GAS PRESSURE • ORIFICE TOO SMALL

Fig. 13—Examples of unsatisfactory pilot flames.

- Make sure electrical connections are clean and tight. Replace damaged wire with moisture-resistant.
- Check for cracked ceramic insulator, which can cause short to ground, and replace igniter-sensor if necessary.
- At the gas control, disconnect main valve wire from the TH or MV terminal.
- Turn on power and set thermostat to call for heat. The pilot should light but the main burner will remain off because the main valve actuator is disconnected.
- Check the pilot flame. Make sure it is blue, steady and envelops 3/8 to 1/2 in. of the flame rod.
- If necessary, adjust pilot flame by turning the pilot

Adjustment screw on the gas control clockwise to decrease or counterclockwise to increase pilot flame. Following adjustment, always replace pilot adjustment cover screw and tighten firmly to assure proper gas control operation.

☐ Recheck ignition sequence as follows.

- Reconnect main valve wire.
- Set thermostat to call for heat.
- Watch ignition sequence at burner.
- If spark still doesn't light or if main burner lights but system locks out, check module, ground wire and gas control as described in appropriate troubleshooting chart, Fig. 14.

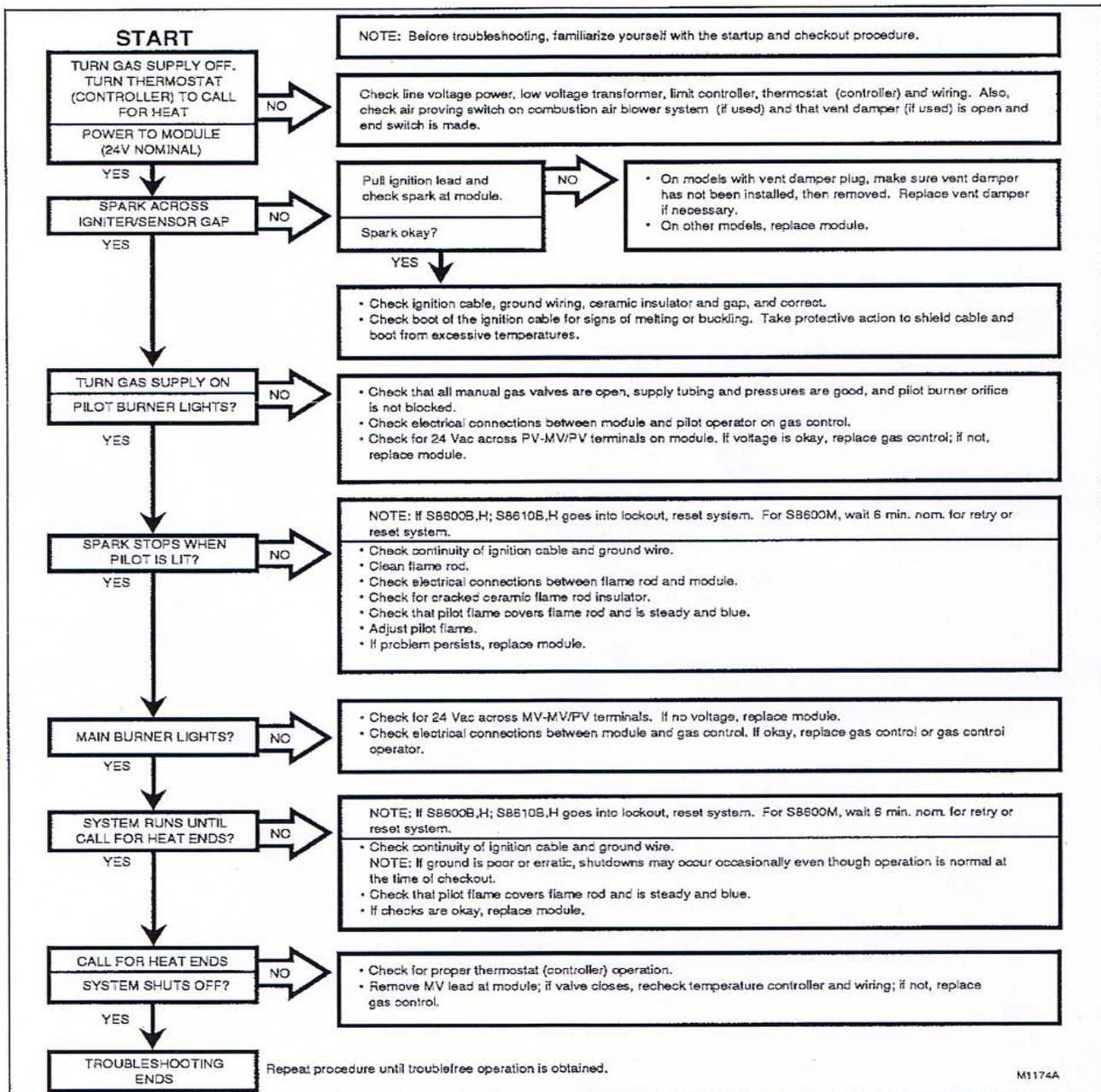


Fig. 14—S8600, S8510 troubleshooting guide.