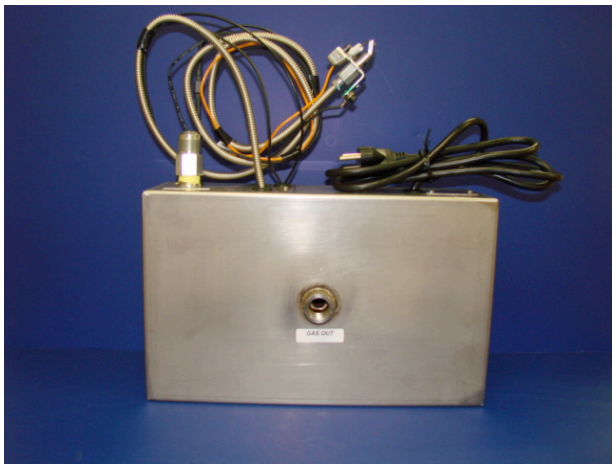
Moderustic Inc

MVK EI415-5

Intermittent Pilot / Spark Ignition System

Installation Instructions



We suggest that our gas hearth products be installed and serviced by professionals who are certified in the U.S. by the National Fireplace Institute® (NFI) as NFI Gas Specialists.

WARNING: If the information in this manual is not followed, an explosion or fire could result causing property damage, personal injury, or loss of life.

WARNING: REMOTE CONTROL USE: TO PREVENT ACCIDENTAL START UP FROM UNWANTED RF SIGNALS, IT IS THE RESPONSIBILITY OF THE END USER TO TURN OFF POWER TO ELECTRICAL OUTLET FOR THE REMOTE CONTROL RECEIVER WHEN SYSTEM IS NOT IN USE. THIS SHOULD BE DONE VIA WALL SWITCH OR BREAKER.

WARNING: PLEASE NOTE THE GAS TYPE INDICATED ON VALVE BOX LABEL- NATURAL GAS OR LIQUID PROPANE. IF LABEL READS INCORRECT GAS TYPE DO NOT USE.

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.

INSTALLATION PREPARATION

Please carefully follow the steps below when: 1) Selecting the Location. 2) Construction of the Enclosure. 3) Installation of the system**.** 4) System operation. **It is the responsibility of the installer to follow all local and State Codes concerning the installation and operation of the fire pit.**

The steps listed as **WARRANTY REQUIREMENT** must be strictly followed to qualify for product 3 year warranty**. Warranty will be void if not followed.**

1) SELECTING THE OUTDOOR LOCATION:

WARNING: MVK EI CONTROL SYSTEMS CAN BE USED INDOORS OR OUTDOORS FOR DECORATIVE FIRE**.** INDOORS REQUIRES ADEQUATE VENTING BY CERTIFIED INSTALLER.
WARNING: DECORATIVE FIRE CREATES VERY HIGH TEMPERATURES- IT IS VERY IMPORTANT THAT COMBUSTIBLES BE KEPT AT SAFE DISTANCES.

- **WARRANTY REQUIREMENT**: For installation of 110vac powered control systems, it is required to install a wall switch or breaker for the system electrical outlet away from the enclosure to prevent unauthorized ignition of the fire pit.
- **WARRANTY REQUIREMENT**: The system location must accommodate a gas shut off outside of fire pit enclosure. The gas line should be a minimum of 3/4" or larger based on fire pit size.
- To enjoy your fire pit, select a well drained location that allows for sufficient clearance from combustible materials.
- Choose a location that allows easy access for installation and maintenance of the system. Make sure that trees and shrubbery are well clear around and above the fire pit.
- Pick a location that allows sufficient horizontal room to enjoy the fire pit while allowing a safe distance from the heat and flame.
- Select a location where the fire pit can be attended during operation. Never leave an operating fire pit unattended or by someone not familiar with its operation or emergency shut off locations.

  Wooden or solid surfaces such as granite or marble must be located far enough away that they do not reach a temperature of more than 100 degrees F plus ambient air temperature. **Example**: If surrounding air temperature is 70, the wood surface temperature must stay at or below 170° F.

Recommended Clearances:

Under Valve Box	6"
Sides Surrounding Fire	14"
Above Fire	96"

2) CONSTRUCTION OF THE ENCLOSURE:

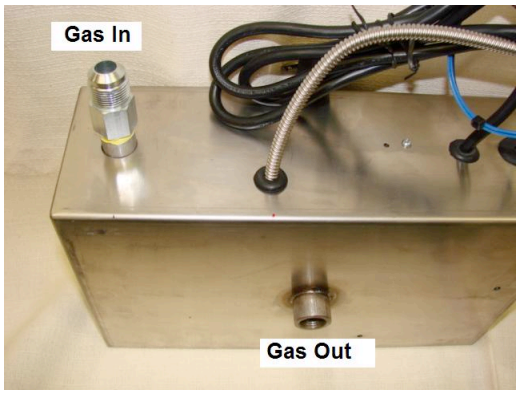
WARNING: THERE MUST BE AN ELECTRICAL (WALL SWITCH OR BREAKER) SHUTOFF AND GAS SHUTOFF ON THE EXTERIOR OF THE FIRE PIT TO ALLOW FOR EASY ACCESS FOR SHUTDOWN OR IN THE CASE OF AN EMERGENCY.
WARNING: ALWAYS USE PROPER MATERIALS AND CONSTRUCTION FOR GAS SUPPLY, POWER, AND ENCLOSURE.

- **WARRANTY REQUIREMENT**: The enclosure must be constructed on a stable surface. Make sure that the system is high enough that the control box is above the grade to prevent water damage to the controls inside the box. **NEVER** install a system below ground level unless drainage is provided for the enclosure to prevent water accumulation leading to damage to components in the valve box.
- **WARRANTY REQUIREMENT**: The enclosure must incorporate a vent on at least one side at a minimum size of **18 sq. inches** (Example: 3"x 6" or larger) to allow heat within the enclosure to escape from void around valve box. Failure to do so will result in the system automatically shutting down when internal valve box temperature reaches 175º F. This could lead to heat damage to internal components. **Some enclosures may require more ventilation based on material, size, and extended use.** This vent may work as a drain as well to prevent water build up in enclosure.
- **WARRANTY REQUIREMENT**: The interior void space of the enclosure surrounding the system cannot be filled with any material (gravel, crushed rock, concrete, etc.)- It is a requirement to have a **minimum of 6"** under the valve box for proper ventilation.
- Select materials that are non-combustible in both initial installation as well as over time.

3) INSTALLATION OF THE CONTROL SYSTEM:

- **Gas Pressure Input: The input should be: Natural Gas- 5~7" W/C; LP Gas- 13 ~ 15" W/C. Anything above this could damage unit.**
- The main gas should already be plumbed to the location of the system area. Hard pipe or flex line coming from the system should be connected to the main gas line. Tighten the flex line fittings to the gas supply stub and to the system. **If use flex line avoid sharp bends with flex line to prevent whistling.**

- Turn on main gas supply and check all fittings in and around fire pit for leaks using a leak reactant, leak detector or soapy water. If leaks are found, shut off gas supply repair leaks and retest. **IMPORTANT: DO NOT APPLY GREATER THAN ½ lbs. PRESSURE TO VALVE- WILL DAMAGE VALVE. ISOLATE VALVE FROM GAS LINE.**
- The 3' power cord can be either tied into the main power supply for use with wall switch or or plugged into remote receiver to use remotely. **POWER MUST BE TURNED OFF TO OUTLET WHEN NOT IN USE.**



The above picture shows "Gas In" & "Gas Out" to main burner.

Pilot Assembly Mounting:

The pilot burner assembly should be mounted next to the main burner for proper ignition- please note important points below.

Location

1. Position the pilot burner for easy access and observation. In replacement applications, replace the pilot burner with an identical unit and position the new pilot burner in the same location and orientation as the original pilot burner.
2. Mount the pilot burner on the main burner. Mounting surfaces other than the main burner can shift, bend, or warp as the furnace expands and contracts while operating. See Fig. 5.

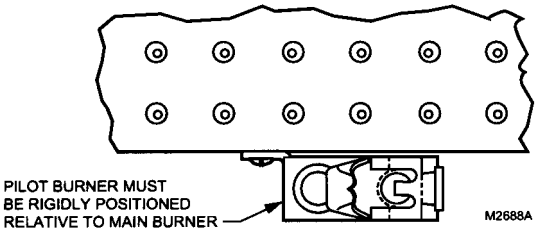


Fig. 5. Mount pilot burner on main burner.

3. Mount the pilot burner so the pilot flame remains properly positioned with respect to the main burner flame. See Fig. 6.
4. Supply pilot flame with ample air which is free of combustion products.
5. Do not impinge pilot flame on adjacent parts. Do not impinge main burner flame on pilot burner.
6. Do not expose the pilot flame to falling scale that could impair the main burner ignition.

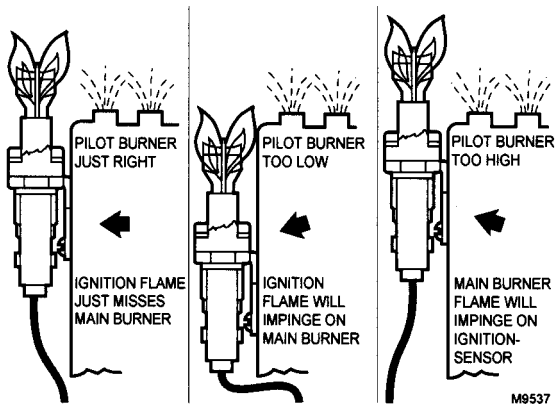


Fig. 6. Location of pilot burner.

7. Do not expose the pilot burner to main burner rollout while igniting or extinguishing.
8. Do not expose the pilot flame to drafts that push or pull the pilot flame away from the igniter-flame rod.

The pilot assembly can be mounted to a pan under your burner or directly to the burner using a U-bolt.

MVK EI415-5 OPERATION

WARNING: BEFORE USE, BE SURE TO TEST ALL GAS CONNECTIONS FOR LEAKS. DO NOT USE SYSTEM IF THERE IS ANY EVIDENCE OF LEAKING GAS. IF LEAKING GAS IS SUSPECTED, TURN OFF THE MAIN GAS SUPPLY AND REPAIR IMMEDIATELY.

IMPORTANT: DO NOT APPLY GREATER THAN ½ lbs. PRESSURE TO VALVE- WILL DAMAGE.

WARNING: WHEN SYSTEM IS NOT IN OPERATION, POWER TO ELECTRIC OUTLET MUST BE TURNED OFF VIA WALL SWITCH OR BREAKER.

WARNING: NEVER USE ANY MATERIAL THAT IS NON-POROUS AND HOLDS MOISTURE LIKE GRAVEL, PEBBLES, RIVER ROCK, ETC. THIS MATERIAL, WHEN HEATED WILL CAUSE THE TRAPPED MOISTURE TO BOIL, AND FRACTURE UNEXPECTEDLY. THIS MATERIAL IS NOT SUFFICIENTLY POROUS TO ALLOW HEATED STEAM TO READILY ESCAPE WHICH CAN BREAK AND CAUSE PERSONAL INJURY OR DAMAGE.

WARNING: LEAVES, STICKS, WOOD, PAPER, CLOTHING, FOOD MATERIAL, SHOULD ALWAYS BE KEPT AWAY FROM THE FIREPIT. MAKE SURE THAT THERE IS NO VEGITATION OR OTHER OBJECTS OVER THE TOP OR SIDES OF THE FIREPIT THAT COULD INTERFERE WITH SAFE & PROPER OPERATION.

Normal Operation:

1) Confirm there is no debris in burner area (as mentioned in warnings) including water.
2) Turn "on" electrical power to firepit outlet and gas to system.
3) Using wall switch or remote, turn "on" system- this may take a several cycles to purge any air.
4) Once fire pit has ignited, do NOT leave unattended.

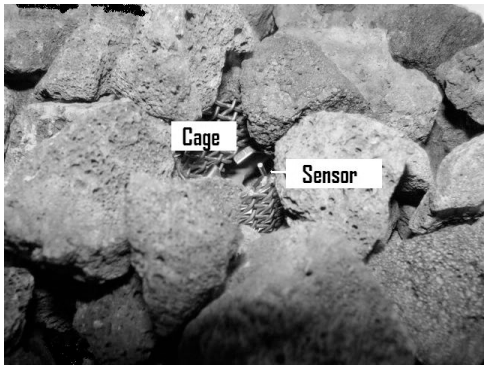
OVERHEATING: The system will automatically close gas valve if temperature exceeds 175º F inside valve box to prevent component damage. When unit cools below 175º F, the unit will automatically restart. To correct overheating, ensure enclosure has adequate ventilation- see "Construction of Enclosure".

System Shutdown:

1) Turn "off" system using remote or wall switch.
2) **If using remote control, turn "off" electrical power or gas to system.**
3) Once fire pit has cooled completely, use appropriate cover to protect fire pit.

System Maintenance:

1) Outdoors: Keep fire pit covered at all times when not in use.
2) Keep any debris out of fire pit- clean as needed.
3) **Flame Sensor Cleaning of Soot:** Clean flame sensor / igniter any soot. Place lava rock or glass back.



Operating Sequence

The following describes the basic operating sequence of the MVK EI415-5 system.

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.

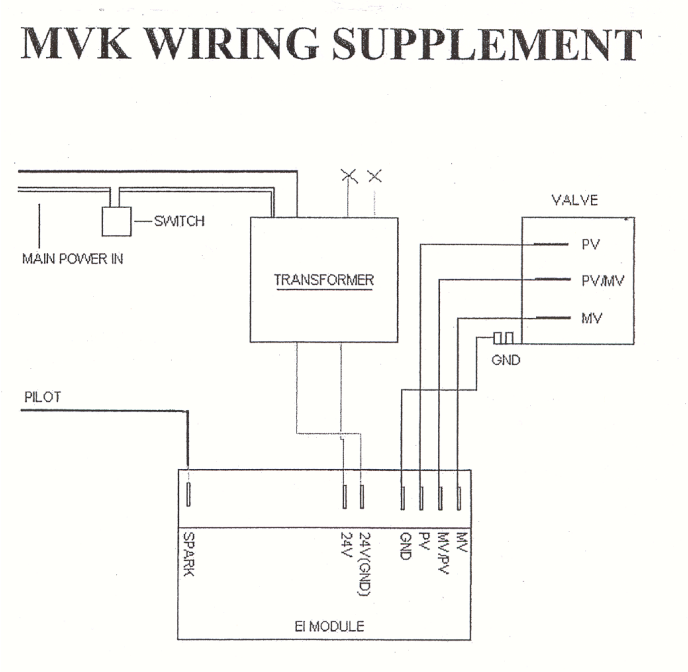
If the pilot does not light, or the pilot flame current is not at least 1.0 A and steady, the module will not energize the second valve and the main burner will not light.

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.

Simple wiring diagram for the MVK EI415-5 model.



Troubleshooting

The flowchart below provides specific troubleshooting information for the MVK EI415-5 system.

IGNITION SYSTEM CHECKS

Step 1: Check ignition cable

Make sure:

☐ Ignition cable does not run in contact with any metal surfaces.
☐ 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 clan 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.

- 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.

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.

- Turn on power to system. 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 ½ 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.
- Turn on power to system.
- 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.

☐ 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.

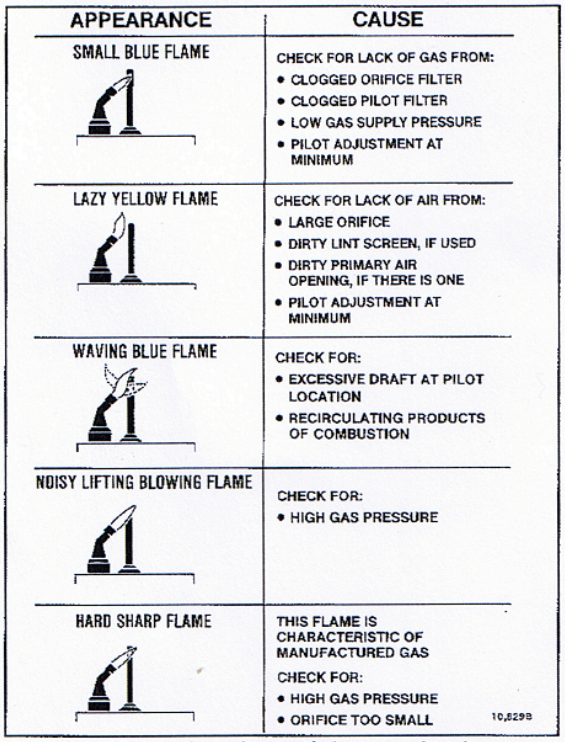


Fig. 13—Examples of unsatisfactory pilot flames.

STEP 4: Check pilot and main Burner light off.

☐ Turn on power to system.

☐ 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.

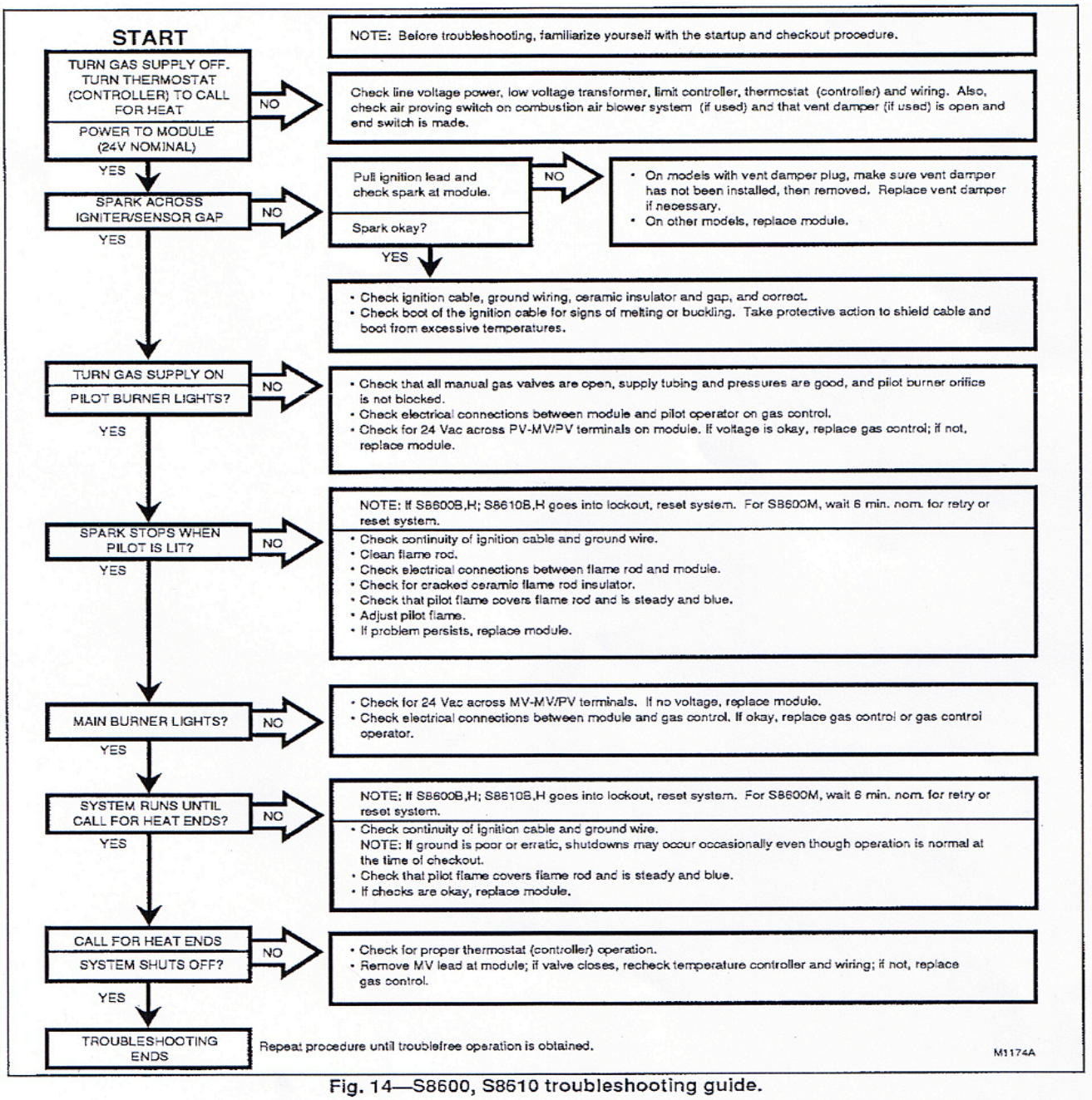


Fig. 14—S8600, S8610 troubleshooting guide.

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