



TROUBLESHOOTING GUIDE

780-704/780-705
MODERNIZATION KITS

SEQUENCE OF OPERATION AND SYSTEM CHECKOUT PROCEDURES

The initial installation portion is now complete and ready for final system checkout. The checkout procedures listed below must be followed. While there are redundant safety features built into the system, it is imperative that you follow the steps outlined below to ensure proper and safe operation. If you encounter any irregularities, refer to the **TROUBLESHOOTING GUIDE**

1. ☐ Check all wiring connections.
2. ☐ Turn on main gas supply and manual valve on the gas valve.
3. ☐ Turn on electrical power.
4. ☐ Thermostat set high.
5. ☐ Sparking begins, pilot gas ignites.
6. ☐ Pilot flame on sensor, main burner on.
7. ☐ With main burner on, cycle thermostat OFF then ON.
 - A. Nonlockout system will turn off and immediately on again.
 - B. Lockout system will turn off. Sparking will not begin for 5 seconds.
8. ☐ With the main burner on, turn the manual gas valve to OFF position. Wait until all flame is out. Turn manual gas valve on again.
 - A. Sparking will begin as soon as the pilot flame is out.
 - B. Pilot ignition takes place when gas flow is restored.
9. ☐ If this is a lockout system, with main burner on, turn manual gas valve off. Sparking will begin when the pilot flame goes out. After 60 seconds the system will lockout and sparking will cease.
10. ☐ To restart the system turn thermostat low for 5 seconds. Then set high again. Sparking will begin in 5 seconds.
11. ☐ It is absolutely necessary that the system be cycled normally (thermostatically controlled) through at least three complete heating cycles. Set thermostat to a temperature slightly higher than the existing ambient. Allow appliance to cycle ON and run through a normal cycle. Do not manually shorten the cycle.
12. ☐ The initial checkout procedures have been completed. If the system has functioned normally, return thermostat setting to its normal setting. The qualified installing agency must completely fill out and apply the yellow appliance conversion sticker to the front of the appliance. Leave these and all other instructions with the homeowner.

TROUBLESHOOTING GUIDE

FLAME RECTIFICATION IGNITION CONTROL UNITS SP715/SP735

THERE ARE FIVE POTENTIAL PROBLEM CONDITIONS WITH THE THERMOSTAT SET HIGH:

1. Thermostat on, no spark, no pilot gas.
2. Have spark, no pilot gas flow.
3. Have pilot gas, no spark.
4. Have pilot flame, main burner does not turn on.
5. Short-cycling of main burner. Main burner turns off before the thermostat is satisfied.

TO PERFORM THE FOLLOWING TEST YOU WILL NEED A VOLT OHM METER.

PROBLEM #1: Thermostat on, no spark, no pilot gas.

Possible Causes

- A. No main power
- B. Faulty transformer
- C. Faulty thermostat
- D. Faulty limit
- E. Faulty ignition control unit

SOLUTION:

1. With power on and thermostat set high, set your test meter to the 24 volt scale. Probe terminals TH and TR. If you do not read 24 volts, the problem is not in the ignition system. Perform normal system checks of main power, transformer, thermostat and the limit control. If you do read 24 volts at TH and TR the problem is in the ignition system. Check for loose or defective wiring. If wiring is good replace the ignition control unit. See your Uni-Line wholesaler for order numbers.

PROBLEM #2: Have spark, no pilot gas flow.

Possible Causes

- A. Main gas supply turned off
- B. Manual valve on gas valve turned off
- C. Faulty primary valve in the gas valve
- D. Faulty wire connection
- E. Faulty ignition unit

SOLUTION: Set test meter to 24 volt scale.

1. Be sure main gas valve and manual valve are turned on.
2. With gas on and the system sparking probe terminal TR and the blue wire terminal on the solenoid on the 7000 gas valve. With 24 volts at these terminals and pilot gas does not flow, replace the solenoid in the 7000 gas valve.
3. If you do not read 24 volts at the solenoid valve terminals, probe terminals PV and MV/PV on the ignition control unit. If you read 24 volts here but not at the gas valve, there is a loose wire connection in the blue or white wire. Repair the wire connection.
4. If you do not read 24 volts at terminals PV and MV/PV replace the ignition control unit.

PROBLEM #3: No spark, have pilot gas.**Possible Causes**

- A Defective electrode or wire
- B. Faulty ignition control unit

SOLUTION: Set test meter to ohm scale.

1. Disconnect the orange wire from the IGN terminal on the ignition control unit.
2. Touch one meter probe to the tip of the electrode in the pilot. Touch the other probe to the quick-connect at the other end of the orange wire.
3. If you have continuity from the tip of the electrode to the connector and no spark, replace the ignition control unit.
4. If you do not have continuity through the wire and the electrode, check for loose wire connection in the wire. Repair as needed.

PROBLEM #4: Have pilot flame, main burner will not turn on.**Possible Causes**

- A Faulty main valve coil in the gas valve
- B. Faulty sensor or wire connection
- C. Ground wire not attached to furnace chassis
- D. Faulty ignition control unit

SOLUTION: Set test meter to 24 volt scale.

1. With pilot flame on sensor - probe terminals TH and TR on 7000 gas valve. If you read 24 volts and the main burner does not turn on, replace the valve operator on the 7000 gas valve.
2. If you do not read 24 volts at the gas valve terminals probe terminals MV and MV/PV on the ignition control unit. If you read 24 volts here, but not at the gas valve, there is a loose wiring connection. Repair or replace as needed.
3. If you do read 24 volts at MV and MV/PV and the pilot flame is impinging on the sensor, the problem may be:
 - A. Faulty sensor or sensor wire connection
 - B. Faulty ignition unit
4. Set test meter to the ohm scale. Set thermostat low - system off.
5. Disconnect the white sensor wire from the SENSE terminal and the green wire from the GND terminal on the ignition control unit.
6. Touch meter probe to the tip of the sensor at the pilot. Touch the other probe to the connector at the other end of the wire.
 - A. If you have continuity the sensor is good.
 - B. If there is no continuity check wire connection. Repair as needed.
7. Check continuity through the green ground wire connections.
8. Reconnect the sensor wire and the ground wire.
9. Set thermostat high. With the pilot burning and the flame on the sensor and the main burner does not turn on - replace the ignition control unit.

PROBLEM #5: Short-cycling of main burner. Main burner turns off before the thermostat is satisfied.**Possible Causes**

- A. Draft condition pulls pilot flame away from sensor
- B. Incorrect thermostat anticipator setting
- C. Faulty limit control

SOLUTION:

1. Check the thermostat anticipator setting. Set to .67 amp. A lower setting will cause short-cycling.
2. Set thermostat high, with main burner on, observe the pilot flame impingement on the flame sensor wire.
 - A. If pilot flame is small and draft condition pulls flame from the sensor the burner will turn off and then on again.
 - B. Adjust pilot flame higher or clean pilot orifice.
 - C. Bend sensor wire closer to pilot flame.

CAUTION: Do not allow electrode to spark to the sensor.

3. If flame impingement on the sensor is stable and the system short-cycles, check the limit switch.
4. Set test meter to 110 volt scale.
 - A. When the system cycles off, probe the switch terminals of the limit switch.
 - B. If you read 110V or 24V across the switch terminals the limit switch is open. Replace the limit switch.



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