

Millivolt Troubleshooting Guide

Gas Products

NOVA SIT Valves

- 1) Thermocouple Millivolt Check**
- 2) Safety Magnet Testing**
- 3) Thermopile Millivolt Check**
- 4) Circuit Millivolt Check**
- 5) Valve Operating Head Test**





Thermocouple Millivolt Check

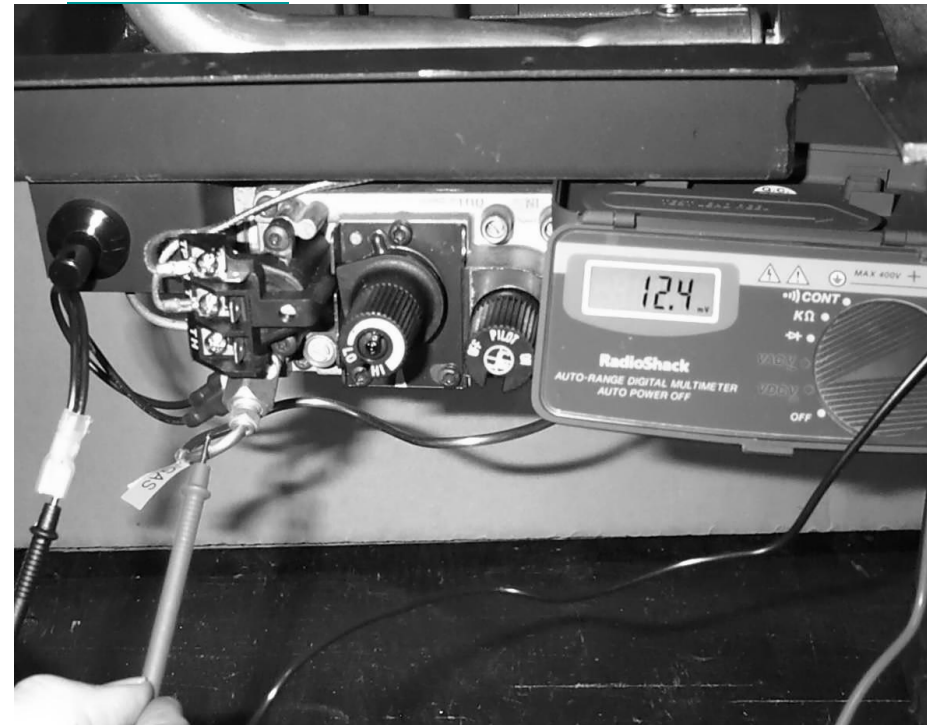
Symptom - Pilot light will not hold

Thermocouples have a maximum output of 25 to 30 millivolts

Millivolt reading for thermocouple ***Pilot On:*** 8 to 30 mv

Set meter to MV or Volts DC

Place one lead to wire (supplied)
place one lead to outer casing



- If the millivolt reading is less than 7 mv then **change the thermocouple**
- Shutdown time for thermocouple after flame failure is up to 90 sec.
- The drop out range for thermocouple magnet is 6 to 2 mv.
- If thermocouple reading is good, proceed to safety magnet test. (Next Page)

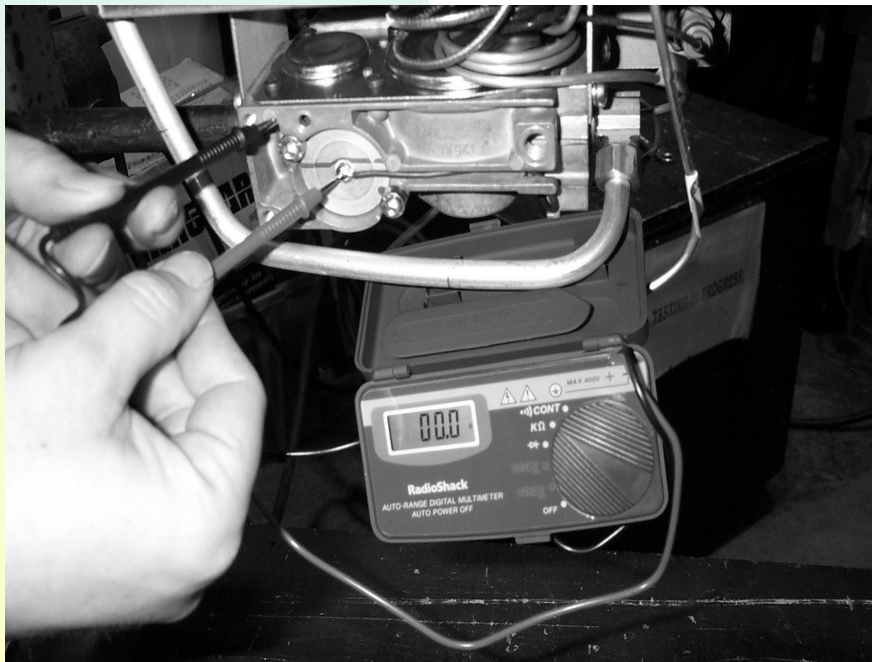


Safety Magnet Testing (pilot flame magnet)

Set meter to Ohms for this test

While taking a Millivolt reading on a safety magnet, ***disconnect thermocouple & wires from the valve.***

Place one meter lead to soldered point on back of valve and one to ground. Good reading is **0 to 0.2 Ohms**. If the reading is higher, magnet is defective therefore ***Change the Valve - Do not try to repair.***



Good Reading



Bad Reading

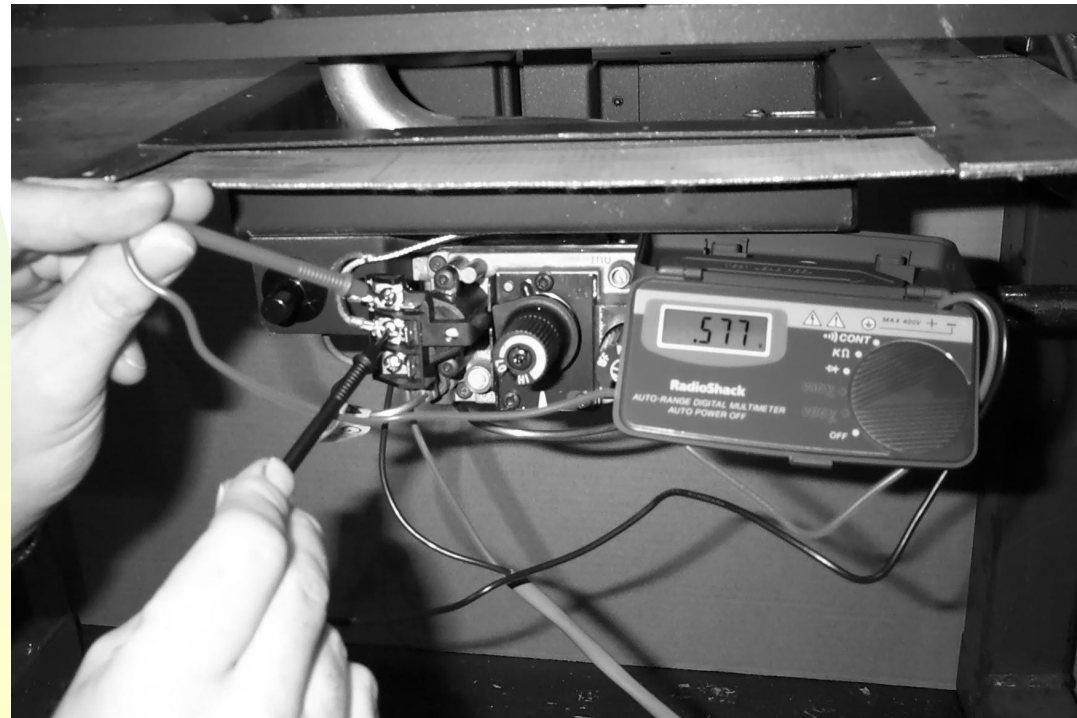


Thermopile Millivolt Check

Symptom - Intermittent shutdown or main burner will not light with on/off switch.

Set meter to Volts DC / Millivolts

Thermopile Output- **MAIN BURNER OFF** : 325 mv minimum required for system to operate consistently. If lower than 325 mv, ***change the thermopile.***

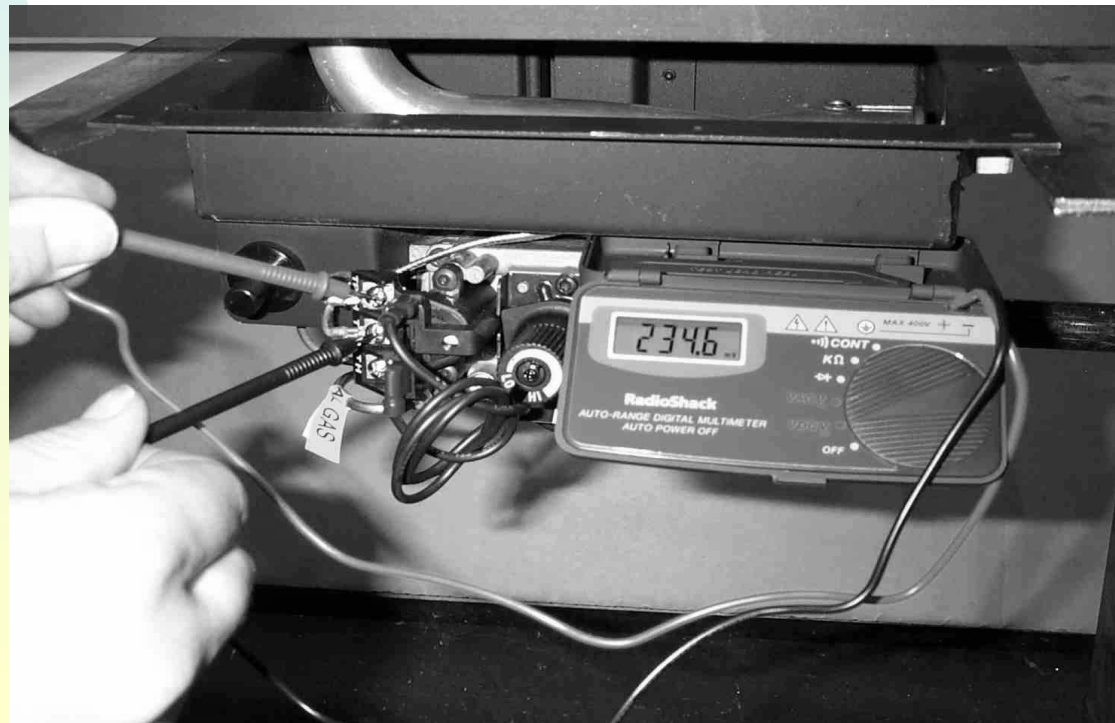




Thermopile Millivolt Check

Symptom - Intermittent shutdown or main burner will not light with on/off switch.

Thermopile Output- **MAIN BURNER ON:** 110 mv minimum required for system to operate consistently. If lower than 110 mv, conduct valve operating head test. If valve proves good, ***change the thermopile.***





Circuit Millivolt Check

Symptom - Intermittent shutdown or main burner will not light with on/off switch.

The Thermopile, energized by the pilot flame, generates sufficient power to operate the gas valve and on/off switch.

Voltage drop across the switch terminals **Burner on:** 35 mv or less.

Set meter to MV or Volts DC

Place one lead to TP/TH and
place one lead to TH



*If higher than 35mv
check connections
and switch.



Circuit Millivolt Check

Symptom - Intermittent shutdown or main burner will not light with on/off switch.

The Thermopile, energized by the pilot flame, generates sufficient power to operate the gas valve and on/off switch.

Set meter to Ohms

Place one lead to each spade switch in on position



*If higher than 0.3 ohms
replace switch



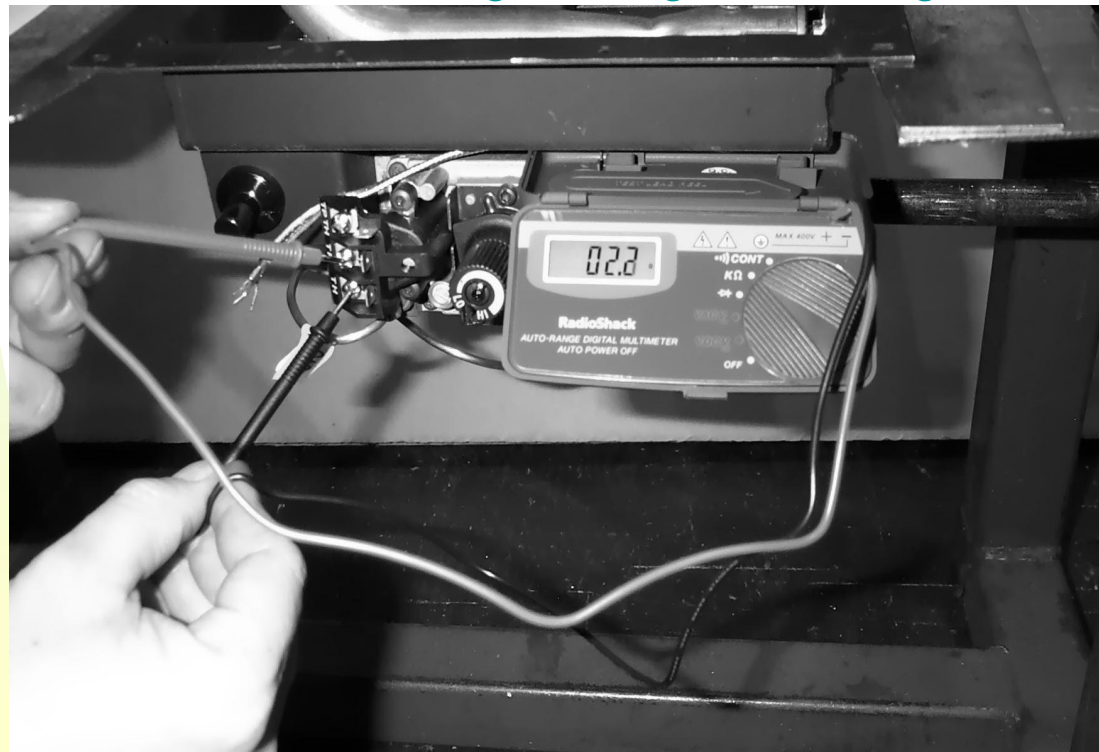
Valve Operating Head Test

- *Symptom - Intermittent shutdown or main burner fails when burner switch or thermostat is turned on.*
- *Before conducting this test, disconnect all leads from valve.*

Set meter to **Ohms** for this test.

One lead goes to **TP**, One lead goes to **TH**

Good reading is 0 to 2.6 ohms, if reading are higher, change the valve.





Carbon Build up

- ***Symptom - carbon build up on glass and/or logs.***
- This is the result of incomplete combustion.
- Insufficient primary air - Check primary air shutter is set to manufactures setting.
- Incorrectly set logs - Check that log positioning is as installation manual specifies.
- Oversized orifice (burner & pilot) - Check orifice size to rating plate attached to the appliance.
- Too high pressure - Check inlet & manifold pressure for possible overfiring.
- Incorrect or impure fuel.
- Other possible causes - Too much ember material and/or rockwool, dirty primary air shutter inlet, un-serviced appliance.