

# Rinnai

## SERVICEMAN TROUBLESHOOTING INFORMATION RINNAI ENERGYSAVER RHFE-1001FA

### IMPORTANT SAFETY NOTES:

There are a number of (live) tests that are required to be done in fault finding. Extreme care should be used at all times. You must be a qualified service person before proceeding with these test instructions.

Before checking resistance readings, turn off power switch and then isolate items to be checked from circuit (unplug it).

### (TR2) Transformer:

Read voltage across:		Read resistance	Pin #'s
Red - Red	98 - 105 VAC	39 - 44 ohms	N/A
Yellow - Yellow	208 - 224 VAC	1,325 - 1,390 ohms	14 - 17
White - White	10 - 15 VAC	2.0 - 2.5 ohms	15 - 16

### (SP) Sparker:

+ Red -----  
85 - 95 VDC    N/A    Pin # 28 - 29  
- White -----

### (SV1, SV2, SV3) Gas solenoids:

SV1 - White ~ Blue (redundant)	85 - 90 VDC	1,400 - 1,800 ohms	29 - 30
SV2 - White ~ Blue (lo fire)	85 - 90 VDC	1,200 - 1,600 ohms	29 - 30
SV3 - Black ~ White (hi fire)	85 - 90 VDC	1,200 - 1,600 ohms	29 - 31

### (BL) Combustion fan motor:

White - Orange = lo speed	95 - 105 VAC	200 - 300 ohms	18 - 20
White - Black = hi speed	95 - 105 VAC	120 - 180 ohms	18 - 21

### (FM) Convection fan motor:

White - Red = lo speed	95 - 105 VAC	100 - 140 ohms	18 - 26
White - black = hi speed	95 - 105 VAC	42 - 62 ohms	18 - 25

### (TR1) Transformer:

Black - White = primary	110 - 125 VAC	19 - 20 ohms	n/a
Grey - Grey = secondary	95 - 105 VAC	19 - 20 ohms	n/a

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(PS) Pressure switch:

White - Ground	9 - 12 VDC	n/a	4 - 5
Check from both white to ground to ensure circuit is complete.	In order to eliminate this switch as a cause of failure, shut the power off to the unit and jump out this switch. Restart unit if it functions, remove jumper and replace air pressure switch.		

(RT) Room temperature control:

To check the slide thermostat, set your meter to the 200k ohm scale. By reading across the white and black wires you should have an ohm reading from 0 to 30k ohms from low to high, after unplugging pin #9 and 10 from PCB.

(TH) Thermistor:

Check thermistor by inserting meter leads into each end of thermistor plug. Set your meter to the 200k scale and read resistance. You should be able to apply heat to the thermistor bulb and see resistance decrease. Then apply some ice to the thermistor and the resistance should increase. Pin # 6 and 7.

Examples: 41EF = 91k ohms  
50EF = 65k ohms  
68EF = 39k ohms  
86EF = 23k ohms

(FR1, FR2, and FR3) Flame Rods:

FR2 and FR3 are high fire flame rods = the left hand rod (FR3) is a white wire with a blue tracer and the right hand rod (FR2) is a white wire with a red tracer. Flame current through these rods should range from 4 to 8 micro amps depending on gas type being used. FR1 low fire flame rod = white wire with yellow tracer located on the front center of unit next to the electrode. Low fire flame current should be 1.2 to 2.0 micro amps. The micro symbol on your meter will look like this  $\mu$ .

Improperly setup and /or converted units can soot and cause hard lockouts. If carbon is found on any one flame rod, remove all three rods and clean carbon from them. Then you need to confirm your manifold gas pressure and air rod settings. Also, check to ensure proper orifices were placed in the unit.

**IMPORTANT INFORMATION CONCERNING HARD LOCKOUTS:**

Other items that can cause hard lockouts are: improper sized gas lines, low gas pressures or pressure drops due to other appliances on the gas system, spider webs in the burner and air intake of vent system, improper ground or no ground at receptacle, supply regulators freezing up or defective, voltage drops or bad receptacles, winds in excess of 40 mph causing turbulence inside the vent terminal, etc.

(OHS1, OHS2, TF1, TF2) Safety Circuit Check:

Check for continuity reading from pin #22 blue wire to pin# 27 orange wire. If you do not read continuity through this circuit, locate defective switch and replace that component.

(MS) Main Switch:

In the off position you should read continuity from the brown wire to the blue wire. In the on position you should read continuity from the brown wire to the red wire. If not, replace main switch.