

# Rinnai

## SERVICEMAN TROUBLESHOOTING INFORMATION

*RCE-506A*

### **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 power switch off, and isolate item to be checked from circuit (unplug it).

#### **(TR) Transformer:**

Wire colors	Voltage readings	Resistance readings	Pin #'s
Brown ~ Brown	15 ~ 24 VAC	3.4 ~ 4.0 ohms	41 ~ 45
Purple ~ Purple	10 ~ 14 VAC	2.2 ~ 2.7 ohms	46 ~ 47
Blue ~ Blue	8 ~ 11 VAC	7 ~ 9 ohms	48 ~ 49
Red ~ Greg	100 ~ 106 VAC	35 ~ 41 ohms	52 ~ 53
Black ~ Black	110 ~ 120 VAC	39 ~ 42 ohms	52 ~ 53

#### **(IG) Ignitor:**

Red ~ White	100 ~ 106 VAC	6.4 ~ 6.9 mega ohms	58 ~ 60
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#### **(SV1, SV2, and POV) Gas valve solenoids:**

SV1 = Yellow ~ Yellow	85 ~ 95 VDC	1,400 ~ 2,000 ohms	56 ~ 57
SV2 = Blue ~ Blue	85 ~ 95 VDC	1,400 ~ 2,000 ohms	56 ~ 57
POV = White ~ White	Lo. fire 2 ~ 3 VDC	80 ~ 100 Ohms	30 ~ 31
	Hi. fire 10 ~ 12 VDC		

#### **(FM) Convection Fan Motor:**

Blue ~ yellow	Lo. fire 58 ~ 62 VAC	110 ~ 180 ohms	54 ~ 55
	Hi. fire 95 ~ 100 VAC		

#### **(TF) Thermal Fuse:**

White ~ Ground	12 ~ 15 VAC	0 ohms (as if meter leads were touching)	32 ~ 33
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#### **(TH) Thermistor:**

Check thermistor by inserting meter leads into each end of the thermistor plug, pins 28 - 29 yellow to yellow wires. Set your meter to the 200 k ohm scale and read resistance across the thermistor bulb. You should be able to apply some ice to the thermistor bulb and the resistance should increase. When heat is applied to the bulb the resistance decreases. See example resistance readings and temperature readings for several different temperatures below. The thermistor is plugged into pins 31 and 32 on the P.C. board.

Example:

41 degrees = 91 k ohms  
50 degrees = 65 k ohms  
68 degrees = 39 k ohms  
86 degrees = 23 k ohms

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## **(TC) Thermocouple:**

Connect your meter leads to the thermocouple output terminals at the back of the appliance. This terminal is on the right side of the unit directly under the electrical compartment air filter. The round plug slot is the negative lead and the square slot is for the positive lead. Normal milli-voltage output on low fire is above 18 milli-volts. High fire is normally above 16 milli-volts. Minimal output is 16 milli-volts, maximum is 35 milli-volts.

## **(OH. TH.) Overheat thermistor:**

The overheat thermistor is located just under the front panel attached to the burner housing. This unit connects to the P.C. board at pins 36 and 37 with two yellow wires. About six inches out from the board, there is a plug in this harness. The wires on this harness turn white at that point. See example below for resistance and temperature readings.

Example:

61 degrees = 114 k ohms

64 degrees = 105 k ohms

68 degrees = 98 k ohms

72 degrees = 91 k ohms

75 degrees = 84 k ohms

79 degrees = 79 k ohms

## **ON/OFF Switch for both the RCE506A:**

On the RCE506A, read resistance across the red wire at pin #17, and white wire at pin #19 at terminal A on the P.C. In order to check the on/off switch operation you must unplug this terminal. Then connect your meter to the red and white wires in as indicated above. There should be no reading until you press the on/off button, then you should read continuity through this circuit.

## **INFORMATION CONCERNING LOCKOUTS:**

There are several factors that can cause units to shut off for no reason, that are not a fault of the appliance. Check for improper line sizing, supply regulators freezing up or defective, low pressure or pressure drops due to other appliances on the system, improper or no ground at the receptacle, voltage drops or bad receptacles, high altitude applications, etc. The best way to eliminate any of these items as the source, is to remove the appliance and take it back to your shop where it can be connected to a known gas and electrical source. If you do this and the problem goes away, you know then the problem is in the gas or electrical supply at the customer's home.

## **Items to check for in odor complaints:**

New carpet, drapes, furniture, paint, chemical treatments of any kind, spraying of aerosols, pets, smoking, burning of candles and potpourri, excessive dust/lint inside the casing, contaminated ambient air, etc.