

# Rinnai

## TECHNICIAN'S TROUBLESHOOTING INFORMATION RCE606-A

### 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	1.5 ~ 2.0 ohms	35 ~ 38
Blue ~ Blue	8 ~ 11 VAC	11 ~ 12 ohms	36 ~ 39
Black ~ White	105 ~ 120 VAC	82 ~ 87 ohms	37 ~ 40

#### ***(IG) Igniter:***

White ~ Red	100 ~ 106 VAC	N/A	43 ~ 45
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#### ***(SV1, SV2, and POV) Gas valve solenoids:***

SV1 = Blue ~ Blue	85 ~ 95 VDC	1,400 ~ 2,000 ohms	44 ~ 46
SV2 = Yellow ~ Yellow	85 ~ 95 VDC	1,400 ~ 2,000 ohms	@ SV2
POV = White ~ Red	Lo. fire 2 ~ 3 VDC	80 ~ 100 Ohms	28 ~ 29
	Hi. fire 13 ~15 VDC		

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

Blue ~ Yellow	Lo. fire 58 ~ 62 VAC	99 ~ 110 ohms	41 ~ 42
	Hi. fire 95 ~ 100 VAC		

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

White ~ Ground	24 ~ 28 VDC	0 ohms (as if meter leads were touching)	30 ~ 32
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#### ***(TH) Thermistor:***

Check thermistor by inserting meter leads into each end of the thermistor plug (yellow to yellow). 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 on the **RCE606A** is plugged into pins 26 and 27 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

#### ***(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 33 and 34 with (1) yellow and (1) blue wire. About six inches out from the board, there is a Molex connector in this harness. The wires in this harness change to white wires at this 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:***

Read resistance across the red wire at pin #14, and white wire at pin #16 on the P.C. board. In order to check the on/off switch operation you must connect your meter to the above terminals, as indicated for each model unit you are servicing. There should be no reading until you press the on/off button, and then you should read continuity through this part of the circuit.

**IMPORTANT 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, or oversized units for the room size, 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.

**(dB) Decibels:**

Low fire 26

High fire 42

**Wattage:**

Low fire 28

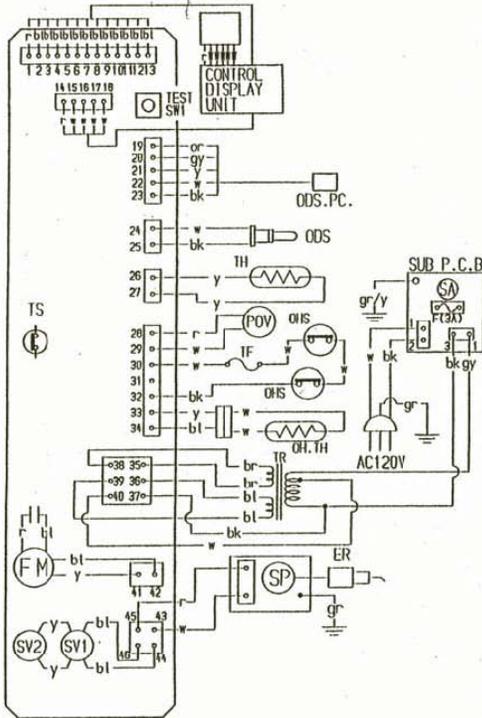
High fire 40

**Fan CFM's:**

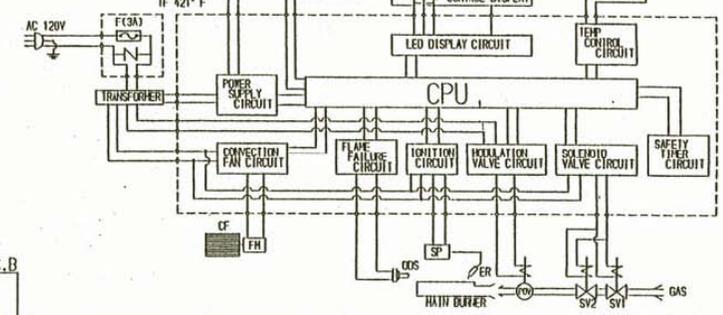
Low fire 99

High fire 198

**WIRING DIAGRAM**



**BLOCK DIAGRAM**



MARK	PARTS NAME	MARK	PARTS NAME
POV	MODULATING SOLENOID VALVE	TH	THERMISTOR
TR	TRANSFORMER	TF	THERMAL FUSE
SA	SURGE ABSORBER	F	FUSE
OH, TH	OVER HEAT THERMISTOR	ER	ELECTRODE
OHS	OVER HEAT SWITCH	TS	TILT SWITCH
SV1~2	MAIN SOLENOID VALVE 1~2	FM	FAN MOTOR
ODS	OXYGEN DEPLETION SENSOR	SP	SPARKER

CODE	COLOR	CODE	COLOR
bk	black	o	orange
bl	blue	gr	grey
br	brown	r	red
gr	green	v	white
gr/y	green/yellow	y	yellow

If any of the original wire as supplied with the appliance must be replaced, it must be replaced with a wire of a least a 194°F temperature rating and number 18AWG or its equivalent.

**CAUTION:** Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation.

Verify operation after servicing.