

SERVICEMAN'S TROUBLESHOOTING INFORMATION
for the
RINNAI “CONTINUUM REU2020-W/WC” WATER HEATERS

IMPORTANT SAFETY NOTES:

There are a number of (live) tests that are required when fault finding this product. Extreme care should be used at all times to avoid contact with energized components inside the water heater. **Only trained and qualified service agencies should attempt to repair this product.** Remember; before checking for resistance readings you should disconnect the power source to the unit and isolate the item to be checked from the circuit (unplug it).

(TR) Transformer:

Wire color	Voltage	Resistance	Connector #	Pin #'s
Blue ~ Brown (Secondary)	100 ~ 120 VAC	51 ~ 63 ohms	F3	1 ~ 3
Blue ~ Brown (Primary)	110 ~ 120 VAC	51 ~ 63 ohms	F4	1 ~ 2

(SV0, SV1, SV2, and POV) Gas valve and Modulating solenoids: (Set meter above 2K)

(SV0) Pink ~ Black	80 ~ 100 VDC	1.7K ~ 2.1K ohms	E1	1 ~ 2
(SV1) Black ~ Yellow	80 ~ 100 VDC	1.7K ~ 2.1K ohms	E2	2 ~ 3
(SV2) Black ~ Blue	80 ~ 100 VDC	1,7K ~ 2.1K ohms	E3	2 ~ 4
(POV) Pink ~ Pink	2 ~ 15 VDC	67 ~ 81 ohms	C2	3 ~ 4

(M) Water Flow Control Device Servo or Geared Motor:

Red ~ Blue	11 ~ 13 VDC When operating	21 ~ 29 ohms	B1	9 ~ 10
Grey or Black ~ Brown	4 ~ 6 VDC limiter off Below 1 VDC limiter on	N/A	B1	5 ~ 7
Grey or Black ~ Yellow	4 ~ 6 VDC limiter off Below 1 VDC limiter on	N/A	B1	5 ~ 8
Grey or Black ~ Orange or Red	11 ~ 14 VDC	5 ~ 6K ohms	B1	5 ~ 6

NOTE: The grey wire above turns black at connector B and the orange wire turns red at connector B on the PCB.

(QS) Water Flow Sensor:

Black ~ Red	11 ~ 13 VDC	5.5K ~ 6.2K	B3	5 ~ 6
Yellow ~ Black	4 ~ 7 VDC (Pulse 20 – 230 Hz.)	N/A	B3	1 ~ 5

(IG) Ignition System:

Grey ~ Grey	90 ~ 100 VAC	N/A	F1	2 ~ 3
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(FM) Combustion Fan Motor:

Red ~ Black	6 ~ 45 VDC	N/A	A1	1 ~ 2
White ~ Black	5 ~ 10 VDC (20 – 400 hertz)	7.8 ~ 8.8K ohms	A1	2 ~ 4
Yellow ~ Black	11 ~ 13 VDC	2.1 ~ 2.8K ohms	A1	2 ~ 3

Thermal Fuse:

Red ~ Red	100 VAC	Below 1 ohm	B2 ~ C3	B6 ~ C1
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Overheat Switch:

Red ~ Red	100 VAC	Below 1 ohm	B2 ~ C3	B6 ~ C1
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Flame Rod:

Place one lead of your meter to the flame rod and the other to earth or ground. With the unit running you should read between 5 ~ 150 VAC. Set your meter to the μ amp scale, series your meter in line with the flame rod. You should read 1 μ A DC or greater for proper flame circuit. In the event of low flame circuit remove the flame rod and check for carbon and/or damage.

Heat Exchanger and Outgoing Water Temperature Thermistors:

Check all thermistors by inserting meter leads into each end of the thermistor plug. Set your meter to the 20K scale and read resistance. You should be able to apply heat to the thermistor bulb and see the resistance decrease. Then apply some ice to the thermistor and the resistance should increase. See below for examples of temperatures and resistance reading at those temperatures.

Example:	59°F = 11.4 ~ 14K
	86°F = 6.4 ~ 7.8K
	113°F = 3.6 ~ 4.5K
	140°F = 2.2 ~ 2.7K
	221°F = 0.6 ~ 0.8K

Outgoing Water Thermistor:

White ~ White	100 VAC	See example above	B4	B3 ~ B4
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Heat Exchanger Temperature Thermistor:

White ~ Pink	100 VAC	See example above	B5	B3 ~ B12
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Surge Protector:

Black ~ White (Primary)	108 ~ 132 VAC	N/A	Surge Protector F ₃	1 ~ 3
Blue ~ Brown (Secondary)	108 ~ 132 VAC	N/A	Surge Protector F ₄	1 ~ 2

Remote Controls:

Terminals D ₁	10 ~ 13 VDC digital	N/A	D ₁	1 ~ 3
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Frost Protection:

This unit has four frost protection heaters mounted at different points inside the unit, to protect the water heater from freeze ups. There are two heaters located on the outlet hot water line next to the thermistor. Using a voltage meter set on the 200 ohm scale, you should have a resistance reading of 26 ~ 30 ohms through each of these heaters. The heater located on the heat exchanger piping should have a resistance reading of 81 ~ 86 ohms and the one located in the water flow sensor valve has a resistance reading of 16 ~ 19 ohms. Voltage throughout this circuit should be 120 VAC.

