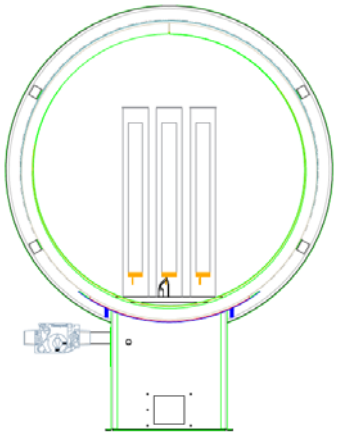
TECHNICAL SERVICE DEPARTMENT
Technical Service Bulletin
1-800-432-8373

GNU Commercial Troubleshooting

All voltages are AC and can be measured to ground.



Rheem has two water heaters with GNU. This documents serves water heaters shown to the left. They have the Honeywell gas valve like this:

Basic installation specs:	Min gas pressure Natural 4.5” Max gas pressure Natural 10.5” Manifold pressure 1.2~3.2 (typical is 2.5”) Common venting is allowed Should use double wall vent materials Flex pipe from fuel train to gas valve is allowed if internal diameter meets or exceed BTU input rate	
 Heater is in stand by mode	The GREEN LED indicates there is power to the water heater. 1. Verify switch is ON 2. Verify breaker is not tripped 3. Verify 120V to the heater	

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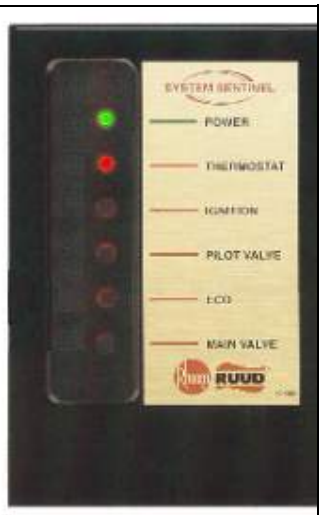
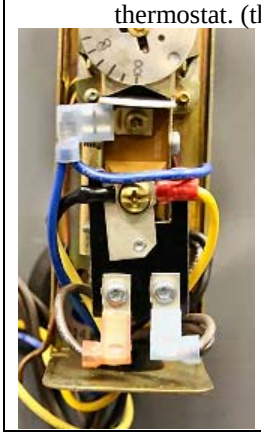


The THERMOSTAT LED light means the thermostat is demanding heat; and 24 VAC is being sent thru the thermostat to the damper motor. It also indicates the 120VAC to 24 VAC transformer is working properly.

1. Measure 24VAC on the yellow wire of the thermostat. (transformer works)
2. Measure 24VAC on the blue wire of the thermostat. (thermostat works)

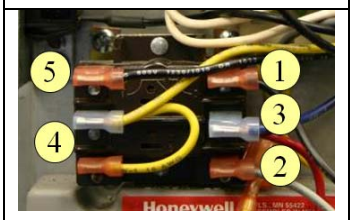


1. Replace transformer
2. Replace thermostat

The IGNITION light means the damper has opened passing 24VAC to the relay switch. The relay switch has responded and the blower is ON. The pressure switch (proof of fan) has closed and sent 24VAC to the control module.

1. Measure 24VAC on the blue wire to the damper.
2. Verify blower is ON.
3. Measure 24VAC on the red wire to control module.

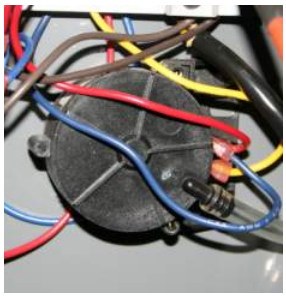
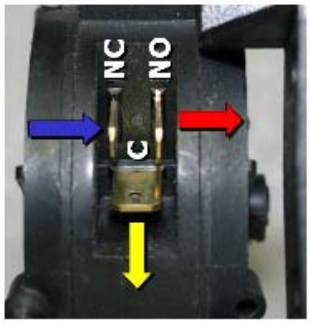
1. Check for binding or obstruction on damper blade.
2. Replace damper
3. Replace relay
4. Replace blower
5. Replace pressure switch



Damper opens. 24V is extended through the red wire to the relay. Check for 24V at the “24V” and “24V GND” terminals of the ignition control module.

Verify 24V at red wire on the relay #3
Verify 120V to ground at #1 on relay; then on #5 on relay. (blower power)

The blower should be ON.

	At the same time, 24V is passes via the blue pigtail at the relay from damper to the pressure switch along the blue wire. Verify 24V at the blue wire NC terminal of the pressure switch.	The positive pressure switch should be closing. Pressure switch verifies the blower is on before main burner.
	The yellow spade terminal on the pressure switch is the largest of three terminals. Connection only fit one way. The red and the blue wires spade terminals are the same size and must be positioned on the relay as follows: Blue wire: NC (normally closed) Red wire: NO (normally open)	**NOTE:** The yellow wire on the pressure switch is a common wire. It does not have any power to ground.
	If the blue wire is not connected to the pressure switch, the safety check fails and the blower will not come on. If the pressure switch is damaged and stuck closed, the safety check fails and the blower motor will not come on.	Relay circuit performs safety check on pressure switch. Verifies the pressure switch is open thru 24V blue wire and yellow wire.
	The PILOT VALVE light signals the attempt to light the pilot. 24V is extended from the ignition control to the pilot electrode. You should hear it sparking. 24V is extended through the ECO to the pilot side PV terminal of the gas valve. Check for 24V at the PV and GND terminal of the ignition module 	Replace control module Replace pilot electrode

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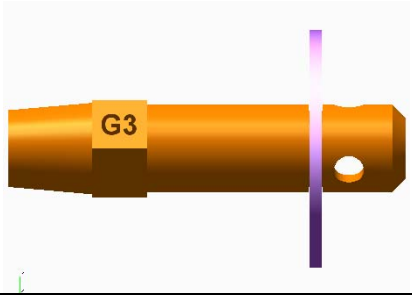
	The ECO light means the energy cut off (water too hot) has not been activated. Make sure the gas control is in the ON position. Pilot should now be lit. Measure for 24V on the brown wire of the gas valve. 	Replace controller if you do not have 24V at the brown wire of the gas valve. Replace the gas valve if you do have 24V and there is no pilot flame.
	Verify minimum gas pressure at the inlet and outlet sides of the gas valve. Check grounding of pilot electrode assembly Check pilot electrode for cracks Check gap of pilot electrode Pilot flame is rectified by the ignition control module	Check gas pressure Check pilot burner for obstructions Replace gas valve Tighten pilot electrode assembly Replace pilot electrode Gap to 1/8” Replace ignition module
	24V is extended to the MV terminal (blue wire) of the gas valve. Main burner ignites. Check for 24V at the MV terminal of the ignition control module Verify minimum gas pressure at the inlet and outlet sides of the gas valve. Check main burner supply tube and burner tray for obstructions Check for 24V at the MV terminal of the gas valve	Replace ignition module Adjust gas pressure Replace gas valve

		Main burner is ON and will reheat the water to thermostat setting. When satisfied, unit goes into standby mode.	

Other Powered Burner Issues

Cycling – can be caused by a poor ground to the controller for flame rectification; excessive gas pressure; burner assembly problems like burner tube upside down.		To verify electric ground: Remove blue wire to gas valve (no main burner). Recycle heater and verify pilot light is ON. If yes, then run for two minutes. IF pilot light stays on, the electrical grounding and flame rectification circuit of good. Assuming you have verified inlet gas pressure and manifold gas pressure, then you will need to remove and inspect the burner assembly and burner tubes.	
Main burner orifice check 		To verify the main burner orifice size, you will need to remove the gas valve and main burner supply tube. Compare orifice size to BTU input. 	G3 = 100-200 H3 = 72&100-250 J3 = 100-270 K3 = 76-200; 91-200 L3 = 75-125 M3 = 82-156 N3 = 37-200
Skirt ring		Check skirt ring for malformed metal. To do this, you must remove the entire blower and plenum box.	

"GNU" Connection Diagram