SECTION 8: DIESEL-BURNER COMPONENTS/TROUBLESHOOTING

Turn the Control Switch ON.

Is the indicator light illuminated?

1. Check indicator light bulb. Replace if necessary.
2. Remove the Aqua-Hot’s ACCESS COVER.
3. Check Aqua-Hot fuses (E & F) for continuity.
4. Check DC power supply at the “Power Post” and “Ground Post”.
5. Attempt heater restart.

NO

Is the Diesel Burner’s “MOTOR” operating?

1. Remove the Aqua-Hot’s Access Cover
2. Remove the “Thermostat Access Panel”
3. Check the Diesel Burner’s “VDC High-Limit Thermostat” for continuity

NOTE: This thermostat protects against overheating temperatures.

NO

Check the Diesel Burner’s “VDC Control Thermostat” for continuity.

Is there continuity across the thermostat?

1. Replace Thermostat.

NOTE: Aqua-Hot operating temperature must be below 175°F when checking the “VDC Control Thermostat” for continuity.
2. Attempt Heater Restart

NO

Is there continuity across the thermostat?

1. Replace the Thermostat.
2. Attempt Heater Restart

YES

YES

NO
SECTION 8: DIESEL-BURNER COMPONENTS/TROUBLE SHOOTING

1. Turn the Control Switch Off.
2. Remove the fuel-line from the Aqua-Hot’s “Diesel Fuel Return” and place a short piece of fuel line in its place.
3. Put the opposite end of the fuel line in a container.
4. Place the probes of a DC Multi meter into plug locations, B-1(+) and B-2(-), of the Diesel Burner’s “Control Unit”. Also, measure the voltage across B-2 (-) and B-4 (+)
5. Turn the Control Switch ON.
6. Observe the fuel flow. Flow should be consistent without air bubbles.

Is the fuel flow consistent without air bubbles?

Yes

1. Check the voltage level of the DC-multi meter.  
NOTE: Voltage level should be within 0.5 volts of the system’s DC batter voltage.

Does the DC multi meter indicate acceptable system voltage?

Yes

1. Check the Control Switch’s:  
   A. Wire connections
   B. Fuse (E) for continuity.
2. Check DC power supply wires and connections.
4. Attempt heater restart.

NO

2. Check the Aqua-Hot’s “Fuel Filter” for clogging. Replace if necessary.
4. Attempt heater restart.

1. Inspect ch “Flame Detection Photocell” for dust and/or sooty carbon deposits. Clean if necessary.
2. Completely cover the “Flame Detection Photocell” with a shop rag.
3. Turn the Control Switch ON. After approx. 20 seconds of operation a bright blue arc (spark) should appear across the “Ignition Electrodes”.

NOTE: Do not remove or cut any of the external wires attached to the “Diesel Burner Head”.

1. Turn the Control Switch OFF.
3. Detach the “Diesel-Burner Head” from the Aqua Hot.
4. Disconnect one of the wires from the “Fuel Solenoid Valve”

1. Do not attempt to restart the Aqua Hot when the “Diesel Burner Head” is detached. An open flame can result and cause serious personal injury.
2. To prevent a fire hazard, be sure to disconnect one of the “Fuel Solenoid Valve” wires.
**SECTION 8: DIESEL-BURNER COMPONENTS/TROUBLE SHOOTING**

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**Does a spark appear across the Ignition Electrodes?**

**NO**

Does a spark appear across the Ignition Electrodes?

**Yes**

Remove shop rag from the “Flame Detection Photocell”, exposing it to a light source. The spark should disappear.

---

**Does a spark disappear after the Photocell is exposed to**

**NO**

Does the Photocell operate Properly?

**NO**

1. Replace the “Flame Detection Photocell.”
2. Reconnect “Fuel Solenoid Valve”.
3. Reattach “Diesel Burner Head” and attempt heater restart.

---

**Yes**

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**1. Turn the Control Switch OFF.**

**2. Check “Flame Detection Photocell” for proper operation by: Removing both wires from the Photocell and covering with a shop rag. When dark, Photocell wire leads should read 300,000 ohms, or greater, of electrical resistance. Remove shop rag and expose to light; electrical resistance should be 300 ohms or less.**

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**Does the Ignition Coil operate Properly?**

**NO**

1. Replace “Ignition Coil”.
2. Reconnect “Flame Detection Photocell” wires and “Fuel Solenoid Valve” wire.
3. Reattach “Diesel Burner Head” and attempt heater restart.

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**Yes**

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**1. Replace “Control Unit”.**

**2. Reconnect “Flame Detection Photocell” wires, “Fuel Solenoid Valve” wire and C-plug.**

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**Does the Photocell operate Properly?**

**NO**

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**1. Replace “Control Unit”.**

**2. Reconnect “Flame Detection Photocell” wires, “Fuel Solenoid Valve” wire and C-plug.**

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**Yes**

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**1. Replace “Control Unit”.**

**2. Reconnect “Flame Detection Photocell” wires, “Fuel Solenoid Valve” wire and C-plug.**

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**3. Reattach “Diesel Burner Head” and attempt heater restart.**

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Cover “Flame Detection Photocell” again with a shop rag. The spark should reappear and continue for approx. 15 seconds and then switch off.
1. Turn the Control Switch OFF.
2. Reconnect “Fuel Solenoid Valve” wire.
3. Remove both ignition wires from the “Ignition Electrodes” or connect a jumper wire across the Electrodes.

**DANGER!**

To prevent a HIGH VOLTAGE shock and or a fire hazard, be sure to remove both “Ignition Electrodes” (tape the ends and separate the wires) or connect a jumper wire across the Electrodes.

4. Turn the Control Switch ON. After approx 20 seconds the “Fuel Solenoid Valve” should receive power from the “Control Unit”. A fine mist of fuel should appear from the “Fuel Nozzle”.

---

1. Replace “Fuel Solenoid Valve”.
2. Retest fuel flow (without Fuel Nozzle).
3. Install “Fuel Nozzle”.
4. Retest Fuel Nozzle spray pattern (fine mist of fuel present?).
5. Reconnect Ignition wires to “Ignition Electrodes” or remove jumper wire.
6. Reattach “Diesel Burner Head” and attempt heater restart.

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Does the Solenoid Valve operate properly (click)?

- **Yes**
- **No**

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Does the spark reappear?

- **Yes**
- **No**

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Is a mist of fuel (Cone-Shaped) present?

- **Yes**
- **No**

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1. Turn the Control Switch Off.
2. Reconnect ignition wires to “Ignition Electrodes” or remove jumper wire.
3. Reattach “Diesel Burner Head” and attempt heater restart.

---

1. Turn the Control Switch Off.
2. Remove “Fuel Nozzle”.
3. Turn the Control Switch ON. After approx. 20 seconds fuel should flow freely from the fuel nozzle port.

---

Does fuel flow freely from the port?

- **Yes**
- **No**
1. Check “Fuel Solenoid Valve” wires for continuity. Replace wires if necessary.
2. Replace “Control Unit” if wires indicate continuity.
3. Retest fuel flow (without Fuel Nozzle)
4. Install “Fuel Nozzle”.
5. Retest Fuel Nozzle spray pattern (fine mist of fuel present?).
6. Reattach “Diesel Burner Head” and attempt heater restart.

1. Turn the Control Switch OFF.
2. Replace “Fuel Nozzle”.
3. Retest Fuel Nozzle spray pattern (fine mist of fuel present?).
4. Reconnect ignition wires to “Ignition Electrodes” or remove jumper wires.
5. Reattach “Diesel Burner Head” and attempt heater restart.

NOTE: If an improper fuel spray is still observed (a normal spray pattern should be observed as a coned-shaped mist) the Diesel Burner’s “Fuel Pump” should be calibrated for the proper fuel pressure setting.

End of Troubleshooting Flow Chart.
For additional troubleshooting information please contact:
Aqua Hot Heating System’s Service Department
at 303-659-8221
Mon-Fri
7:00 a.m. - 4:00 p.m.
Over the years of running a mobile RV repair service, having a dedicated place to access service manuals for all the different appliances and components found on RVs was something that I always had a desire to create.

I hope this resource makes your RV repairs easier, as it has mine, but please be careful and follow proper safety practices when attempting to repair your own RV.

If in doubt, please consult with a professional RV technician!

All service manuals provided on www.myrvworks.com are believed to be released for distribution and/or in the public domain.