

Section VII. Troubleshooting

General:

▲ NOTE: These instructions are intended for the use of qualified personnel trained and experienced in the installation and servicing of this type of heating equipment and its related system components. Some states may require installation and service personnel to be licensed. Persons not qualified should not attempt to repair this equipment according to these instructions.

▲ WARNING: Never leave a jumper wire connected to keep a heater running. A jumper wire should be used as a test device only, as it is not a cure for a defective control.

▲ CAUTION: Never allow the main burner to operate more than five seconds with the filter system shut off. Serious damage to the heater will result. Anytime the heater bangs or knocks, it indicates a water void or lack of water flow. Shut off heater immediately if this occurs.

▲ Wiring:

As a preliminary check, make sure that all wire connections are clean and tight and that all wiring conforms to the wiring diagrams See Figures 35 and 36.

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Troubleshooting Chart

IDL Heater Diagnostic Guide

Code	Fault	Diagnosis Step	Remedy
BO	Bypass operation.	1. Check state of #2 dip switch on back of control module.	This is a normal display when heater is being controlled by a remote thermostat. No service is required. If heater is not being controlled by remote thermostat, change setting of #2 dip switch to "Off" position.
LO	Water pressure switch fault.	1. Verify that pump is running.	This is a normal display when the pump is off. Turn pump on. LO code should clear. If LO does not clear, proceed to step 2.
		2. Check for faulty wiring or connection.	Inspect water pressure switch wiring. Ensure wire harness terminals are securely fastened to spade terminals on water pressure switch. If OK, proceed to step 3.
		3. Verify state of water pressure switch contacts.	Remove wire leads from water pressure switch and jumper leads. Measure continuity across water pressure switch with pump on. If closed, LO code is not caused by water pressure switch fault. If open, proceed to step 4. Remove jumper from wire leads and reconnect wire leads to water pressure switch.
		4. Ensure that low pump pressure does not exist.	Clean filter or clear blockages. Check position of valves in plumbing system. If OK, proceed to step 5.
		5. Check for correct water pressure switch setting.	Adjust water pressure switch setting per installation manual. If LO does not clear, proceed to step 6.
		6. Water pressure switch is defective.	Replace water pressure switch.
	Terminal block fault.	1. Check if a remote on/off device connected to terminal block is open.	This is a normal display when a remote on/off device operates to shut the heater off. Turn remote device on. LO code should clear. If LO does not clear proceed to step 3. If a remote on/off device is not connected to heater proceed to step 2.
		2. Check if jumper has been removed.	If remote on/off control is not used, the two far-right terminals of terminal block should be jumpered. Verify jumper is present. If not, add jumper. If LO code does not clear, proceed to step 3.
		3. Check for faulty wiring or connection.	Inspect terminal block wiring. Ensure wire harness terminals are securely fastened to terminal block. If OK, proceed to step 4.
		4. Terminal block is defective.	Replace terminal block.
	Vent pressure switch fault.	1. Check for faulty wiring or connection.	Inspect vent pressure switch wiring. Ensure wire harness terminals are securely fastened to spade terminals on vent pressure switch. If OK, proceed to step 2.
		2. Verify state of vent pressure switch contacts.	Remove wire leads from vent pressure switch and jumper leads. Operate heater. Measure continuity across vent pressure switch. If closed, LO code is not caused by vent pressure switch fault. If open, proceed to step 3. Remove jumper from wire leads and reconnect wire leads to vent pressure switch.
		3. Check for restricted or blocked flue.	Ensure that flue is not blocked or restricted. See indoor vent sizing requirements in installation manual. If OK, proceed to step 4.
		4. Vent pressure switch is defective.	Replace vent pressure switch.
	Temperature limit switch fault.	1. Check for faulty wiring or connection.	Inspect temperature limit switch wiring. Ensure wire harness terminals are securely fastened to spade terminals on temperature limit switches. If OK, proceed to step 2.
		2. Verify state of temperature limits' contacts.	Remove wire leads from limit switch and jumper leads. Operate heater. Measure continuity across limit switches. If closed, LO code is not caused by temperature limit switch fault. If open, proceed to step 3. Remove jumper from leads and reconnect leads to temperature limits.
3. Verify that water flow is adequate.		Verify that water flow rate to heater is above minimum required (25 GPM for H250IDL, & 40 GPM for H400IDL). If OK, proceed to step 4.	
4. Temperature limit switch is defective.		Replace temperature limit switch.	

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IF	Ignition failure.	1. Ensure gas supply shutoff valves are open.	Ensure that main gas shutoff installed adjacent to heater is open. Ensure that knob on gas valve inside unit is in on position. If OK, proceed to step 2.
		2. Check for low gas supply pressure.	Ensure inlet gas supply pressure exceeds minimum value indicated on rating plate. If OK, proceed to step 3.
		3. Check for faulty flame sense wiring or connection.	Inspect flame sense wiring. Ensure wire harness terminals are securely fastened to flame sense and to control module. If OK, proceed to step 4.
		4. Check for faulty igniter wiring or connection.	Inspect igniter wiring. Ensure igniter plug is securely fastened to wire harness plug. Ensure plug on wire harness is plugged into back of control module. If OK, proceed to step 5.
		5. Check for faulty gas valve wiring or connection.	Inspect gas valve wiring. Ensure wire harness terminals are securely fastened to spade terminals on gas valve. If OK, proceed to step 6.
		6. Check for igniter failure.	Disconnect igniter plug from harness. Measure continuity across igniter. If open, igniter is broken or defective. Replace igniter. Otherwise, proceed to step 7. Reconnect igniter plug to harness.
		7. Check for aged igniter.	Measure igniter amp draw with clamp-on amp meter during igniter warm-up period. Igniter should draw a minimum of 2.0 amps at 240 vac. If not, replace igniter. If OK, proceed to step 8.
		8. Check for failed igniter relay.	Disconnect igniter plug from receptacle in control module. Measure voltage across receptacle pins during igniter warm-up. If 240 vac is not present, igniter relay on control module is defective. Replace control module. If OK, proceed to step 9.
		9. Check for gas valve failure or gas valve relay failure.	1. Measure voltage across gas valve during trial for ignition. If 24 vac is present and gas valve does not open, gas valve is defective. Replace gas valve. 2. If 24 vac is not present, gas valve relay on control module is defective. Replace control module.
SF	Temperature sensor input failure.	1. Check for faulty wiring or connection.	Inspect sensor wiring. Ensure sensor is plugged into back of control module. If OK, proceed to step 2.
		2. Sensor is defective.	Replace temperature sensor.
AC	Blower vacuum switch closed.	1. Check for defective blower on relay on control module.	Disconnect high voltage plug from harness. With heater off, measure continuity across L1 and IND LO and across L1 and IND HI pins on control module. If either pair is closed, control module relay is defective. Replace control module. If OK, proceed to step 2.
		2. Vacuum switch is defective.	Replace blower vacuum switch.

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Code	Fault	Diagnosis Step	Remedy
AO	Blower vacuum switch open	1. Check for faulty vacuum switch tubing.	Check tubing and replace if necessary. If OK, proceed to step 2.
		2. Check for faulty vacuum switch wiring or connection.	Inspect vacuum switch wiring. Ensure wire harness terminals are securely fastened to spade terminals on vacuum switch. If OK, proceed to step 3.
		3. Check for faulty blower wiring or connection.	Inspect blower wiring. Ensure plug on blower is securely fastened to wire harness plug. Ensure high voltage plug on wire harness is plugged into back of control module. If OK, proceed to step 4.
		4. Check for defective vacuum switch.	Disconnect leads from blower vacuum switch. Check for continuity across switch with blower operating. If open, vacuum switch is defective. Replace. If OK, proceed to step 5. Reconnect leads to blower vacuum switch.
		5. Check for defective blower or blower relay.	<p>Check for defective blower:</p> <p>Disconnect blower plug from harness. Measure resistance across blower windings. Winding resistance across leads should be within the following range: Black-to-White: 30-45 ohms, Red-to-White: 90-130 ohms. If measured values differ substantially from these values, blower is defective. Replace.</p> <p>Check for defective blower relay:</p> <p>Disconnect high voltage plug from harness. Place heater in Pool or Spa mode. Lower set point temperature to generate call for heat. During pre-purge period, measure continuity across L1 and IND LO pins on control module. If open, blower relay on control module is defective. Replace control module.</p>
HS	Maximum return water temperature exceeded.	1. Pool water temperature exceeds 108° F.	Verify set point setting of remote thermostat is below 108° F. If set point setting of remote thermostat is OK, or if heater is not configured for remote thermostat proceed to step 2.
		2. Verify that water flow is adequate.	Verify that water flow rate to heater is above minimum required (25 GPM for H250IDL, & 40 GPM for H400IDL).
HF	Flame sense fault.	1. Flame sense failure.	Replace flame sense.



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