TROUBLESHOOTING GUIDE
(for all Gen II units)

This guide contains information for identifying and correcting any issues that may arise.

Product Support/Warranty
If the water heater requires additional service, please use one of the following options for contacting Intellihot Technical Support:
- Call: 309-473-8040 (toll-free 1-877-835-1705), press 1
- Email: support@intellihot.com

When contacting Technical Support, please have the following information ready:
- Model Number
- Serial Number
- Date Purchased/Installed
- Installation location & application
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Suggested Tool List

- Digital Manometer
- Electrical Multimeter
- Flue Gas Analyzer (for NOx & CO₂)
- 7mm Socket/Ratchet
- #1 & #2 Phillips Screwdrivers
- Instrument Flat Blade Screwdriver
- Pliers
- Adjustable Wrench
Air Filter Blocked Alert

Is the Intake air ducted from the outside?

Is there a blockage at the intake termination?

Inspect intake air filter

Is there debris/dirt?

Is the filter damaged?

Clean filter per the manual

Replace Filter

Contact Authorized Service Personnel

Remove blockage and install screens
Blocked Flue Fault

Blockage Fault

Check exhaust termination. Is it blocked?

Yes → Remove blockage and install screens if not installed

No → Turn off gas and remove condensate line. Remove the condensate tube/input trap. Is it blocked?

Yes → Are the drain hoses sloped away from unit?

No → Slope drain per Manual

Yes → Check for double loops, air locks or debris in loop

Check Air switch wiring (green/black). Is it loose?

No → Repair faulty wiring at air switch

Yes → Is vent piping sized (diameter & total length and installed per manual?)

No → Correct piping per manual specs

Yes → Contact Authorized Service Personnel
Blower Fault / Blower Speed Fault

E1 Blower Speed Fault

- Reboot the unit.
- Does the blower run on Start-up?
  - Yes: In Floor models, unplug the 5 pin connector from the blower. In wall hung models, unplug the J18 connector from the Control board.
  - No: Measure the voltage at the Control board’s J15 connector.
    - Measures 120V AC?
      - Yes: Replace the blower
      - No: Check fuse. Is it blown?
        - Yes: Replace the fuse
        - No: Replace the Control board.

- Does the blower speed ramp up?
  - Yes: Is the blower noisy?
    - Yes: Replace the control board.
    - No: Shut down the unit and disconnect the J18 connector. Power cycle the unit. At startup, use a multimeter to measure the voltage at Control board’s J18, pin 2 & 4.
      - Is the voltage reads between 10-90% of 24V DC?
        - Yes: At the blower, is blower signal (5PIN Connector) PIN 3 is connected to PIN 5 (black wire)?
          - Yes: Please check the blower signal wiring connections. Please contact intellihot support team.
          - No: Replace the blower signal jumper package.
        - No: Replace the control board.
  - No: Check the blower for damages, broken vanes etc. Replace the blower.
Blower Speed Signal Fault

At the blower, is blower signal (5 PIN connector) PIN 3 is connected to PIN 5 (black wire)?

Yes

Please check the blower signal wiring connections. Please contact intellihot support team.

No

Please contact intellihot support team and request ECL0305 blower signal jumper package.
Breaker Tripped (Over-Load)

1. Breaker Tripped
2. Review manual for breaker sizes. Are they size appropriately? → Yes/No
   - Yes: Power down the unit. Unplug transformer, pump and blower. (J12, J7, J18)
   - No: Appropriately size the breakers per the manual
3. Plug in transformer (J12), and power up unit did breaker trip? → Yes/No
   - Yes: Replace transformer
   - No: Plug in Pump (if present) (J7), Did breaker trip? → Yes/No
     - Yes: Replace pump
     - No: Plug in blower, (J18), Did Breaker trip? → Yes/No
       - Yes: Replace blower
       - No: Contact Authorized Service Personnel
Cascading Alert

Any cascaded model is iQ751, iQ1001, or iQ1501?

Yes

Does ALL (in all the units) the blower's signal (5 PIN connector) PIN 3 is connected to PIN 5 (black wire)?

No

Please contact intellihot support team and request ECL0305 blower signal jumper package.

No

Yes

Cables connected first?

1. Turn OFF each units. Disconnect cascading cables.
2. Turn ON each unit to make sure no errors.

Yes

No

Setup Cascading ID First

Any units show cascading error (standalone, without cascading cables connected)?

No

Yes, Errors

Please contact intellihot support team.

Did you connect cascading cable first prior to changing the cascading ID?

Yes

No

Check connection data cables. Are they damaged or unplugged?

No

Yes

Replace any damaged/broken cables.

Does any of the units have any other errors?

No

Yes

Resolve the unit's error. Any other error would induce cascading error.

In each unit, go to settings, and cascading. Does each unit has a unique cascading ID?

No

Yes

Are the DIP SW3 setup correctly as per the manual?

No

Yes

1. Turn OFF each unit. Disconnect cascading cables.
2. Turn ON each unit and set unique cascading ID.
3. Turn OFF all units.
4. Connect cascading cables.
5. Turn ON units sequentially from 1,2,etc.

Does ALL (in all the units) the blower's signal (5 PIN connector) PIN 3 is connected to PIN 5 (black wire)?

Yes

No

Any units show cascading error (standalone, without cascading cables connected)?

1. In each unit, set Cascading ID.
2. Turn OFF all units.
3. Set DIP SW3 as per the manual.
4. Connect cascading cables.
5. Turn ON units sequentially from 1,2,etc.

Please contact intellihot support team and request ECL0305 blower signal jumper package.
Dead Unit - No Power Up

Unit is Dead - No Power Up

Is Unit plugged in? Yes → Check the power connection to the controller (J14). Is it loose or damaged? Yes → Correct or replace power connection No → Replace with appropriate fuse

No → Check the fuses on controller. Are they rated at 10A / 250V? Yes → Are the fuses blown or damaged? Yes → Replace Fuse and see Breaker Tripped page. No → Contact Authorized Service Personnel

No → See Breaker tripped page

Yes → Is corresponding breaker tripped? No → Plug in Unit(s)

Yes →
Flue Overheat Fault

1. Flue overheating fault

   2. Is the Inlet/return temp >157°F?
      - Yes
      - No

   3. Is the venting material CPVC, PP, or SS?
      - Yes
      - No

      b2. Install proper approved venting material

4. Is unit set for proper venting material?
   - Yes
   - No

   b4. Change Flue material setting on units per manual (PVC, CPVC, etc.)

   b3. Ensure inlet temperature is lower than 150°F if vent pipe material is PVC or lower than 190°F if vent pipe material is CPVC or Polypropylene.

5. Check resistance of appropriate temperature sensor. Is it faulty?
   - Yes
   - No

   b5. Refer to Flue Sensor fault for guidance

6. Contact Authorized service personnel
Heat Exchanger Overheat

- On a well water system?
  - Yes
    - Wallhung model or floor model?
      - No
        - Install external recirculation pump
        - Replace the Overheat sensor.
      - Yes
        - Wallhung
          - Is there an external recirculation pump?
            - No
              - Correct well water system
            - Yes
              - Check the temperature before and after the external recirculation pump.
              - Replace the pump.
    - No
      - Is pressure within 30 - 150 psi?
        - Yes
          - Wallhung model or floor model?
            - No
              - Install external recirculation pump
            - Yes
              - Check the internal and external pumps. Check the temperature before and after the pumps.
              - Is the pump working? Temperature is same before and after the pump?
                - Yes
                  - Is there air in the system?
                    - Yes
                      - Turn off the unit. By using T&P valve, bleed out the air in the unit.
                    - No
                      - In the control board, disconnect the J3 connector. Check the orange wires for damage, corrosion and perform continuity from the orange wire to sensor.
                - No
                  - Disconnect the harness at J3 connector from the control board. Check resistance between the two orange wires
                  - Wires damaged / corroded or no continuity?
                    - Yes
                      - Replace the wiring harness
                    - No
                      - Resistance is as per the table?
                        - Yes
                          - Check for scale buildup. Contact authorized service personnel
                        - No
                          - Replace the Overheat sensor.

Outlet water Temperature (°F) | Sensor Resistance KΩ
---|---
50 | 18
77 | 10
140 | 3
E7 Ignition Failure

If wall-hung model, turn off the unit and reset the overheat limit switch. If floor model, press the overheat limit switch to reset it.

Still E7/Ignition Fault?

Yes

New Install or existing install for more than 6 months?

Yes

Natural Gas (NG) or Liquid Propane (LP)?

Natural Gas

Are the regulators & gas lines sized for loads?

Yes

Check the static gas pressure at the gas valve. Is it within specs?

Yes

Check internal & external re-circulation pump.

No

No

Liquid Propane

LP Conversion completed?

Yes

Complete the conversion as per the manual

No

Size gas lines and regulators for max BTU/h requirements

No

Size gas lines and regulators for max BTU/h requirements

Existing Install

By using the display, restart the unit.

No

If wall-hung model, turn off the unit and reset the overheat limit switch. If floor model, press the overheat limit switch to reset it.

Yes

E7/Ignition Failure
Page 2 of 3 Ignition Fault

Do you see flame in the glass window?

Yes, flame visible

Yes

Replace the wiring.

No

Check wiring DSI (brown/blue) to gas valve. Is it damaged?

Yes

Replace the control board.

No

Check for AC voltage at the J23 of the control board. Do you get 120V AC?

Yes

Do you get 120 V AC at the wire going from the DSI (brown/blue) to gas valve?

Yes

No

Replace the wiring.

No flame

Check the static gas pressure at the gas valve. Is it within specs as per manual?

Yes

Put unit at maximum firing value. Check the dynamic pressure. Is it changing from negative to +ve?

Yes

No

Clean the air filter, swirl plate and gas valve. Remove burner, inspect and clean it. If burner damaged, replace it.

Check the gas regulator size or gas line is inadequate.

Size gas lines and regulators for max BTU/h requirements

No Voltage

By using multimeter, do you see continuity between the two connections at the High limit switch?

Yes

By using multimeter, do you see continuity between the two connections at the over heat limit switch?

Yes

Replace the gas valve

Replace DSI & high voltage cable

No

If wall-hung model, turn off the unit and reset the overheat limit switch. If floor model, press the overheat limit switch to reset it.

Replace the high limit switch

After resetting, still no continuity replace the overheat limit switch

No Spark

Leave the electrode outside and try to spark by firing the unit. Do you see a spark?

Yes

Not good

Replace electrode

Good

Remove and inspect water valve. Clean it and retry. If still no flow, replace the water valve.

By using the display screens, check the flow into the unit. Do you see flow?

Yes

No

Remove Electrode and inspect. (Gap and cleanliness). Is it Good?

Check the static gas pressure at the gas valve. Is it within specs as per manual?

Yes

No

Check the gas regulator size or gas line is inadequate.

Size gas lines and regulators for max BTU/h requirements

By using multimeter, do you see continuity between the two connections at the High limit switch?

Yes

No

Replace the high limit switch

By using multimeter, do you see continuity between the two connections at the over heat limit switch?

Replace the control board.

No

Check wiring DSI (brown/blue) to gas valve. Is it damaged?

Yes

Replace the wiring.

No

Check for AC voltage at the J23 of the control board. Do you get 120V AC?
Page 3 of 3 Ignition Fault

Yes, flame visible

Is the flame visible for 5 seconds or less?

No, flame stays 7 to 10 seconds

For floor models, perform continuity test on the (white color) flame sensor wire (that goes between the electrode and the control board). For wall hung, check the continuity and damages on the electrode white wire.

Damaged flame sensor wire?

Yes

For wall hung, replace electrode. For floor model, replace the flame sensor wire.

No

Is the Control Board RED LED

Yes

Replace the DSI and High Voltage cable

No

Replace the control board

Yes flame stays less than 5 seconds

Is the flame orange in color?

By using the high fire adjustment (flat screw), richen the gas until the color changes to orange 80% & blue 20%. Quarter turn at a time, but please do not go more than 3 full turns.

Does the flame stay lit?

Yes

By using recommended gas analyzer, perform combustion and adjustment CO2. For Natural Gas CO2 is 9.1% - 9.3% and for Liquid Propane CO2 is 10.1% - 10.3%.

No

Replace DSI & high voltage cable

Yes

Replace the DSI and High Voltage cable
Pump Alert

Is there a GREEN LED on the

Fix wiring or replace the fuse.

Check to see if the pump is rotating by using Grundfos pump checker or by

Bad pump?

Replace the pump.

No

Is there air in the system?

Bleed the air by using the Pump Bleed Screw.

No

Check the flow rate at the unit. Open faucets & showers to increase the flow.

Is the flow rate less than 2 gpm?

Contact Authorized Service Personnel

No

Set staging OFF (Settings->cascading)

Close the hot water outlet to the unit. Wait for 2 minutes. Check Flow rate at each HEX. Normally, the flow rate is more than 4 gpm.

Any HEX with less than 3 GPM flow

Contact Authorized Service Personnel

Yes

Blockage inside the Heat exchanger such as scale buildup.

For each HEX, connect a garden hose to the cold water connection at the bottom and make sure the other end of the hose goes to drain.

3 GPM or more flow going through the hose?

No

Blockage in the Silver cold water pipe. Drain the unit

Yes

Close the drain ball valve. Remove the garden hose. Close the hot water outlet ball valve at the top of the HEX. Open the T&P valve.

3 GPM or more flow going through?

End

No

Any more HEX with low flow

Yes

3 GPM or more flow going through?

No

Blockage or scale buildup in the heat exchanger.
Rough Ignition

Check HV cable. Is it unplugged or damaged?

Check the emissions. Are they within specs?

Check the static gas pressure. Is it within specs?

Check with gas company about the caloric value of gas value is within limit (975-1050)?

Contact Authorized Service Personnel

Nat. Gas or LP?

Has unit been converted to LP per manual?

Replace or plug in HV cable

Gas lines and/or regulators inadequate. Please correct.

Retune gas valve to set emissions to specs.

See manual and convert.
Rumbling

Unit is Rumbling

Verify the intake & exhaust is installed per specification?

Yes

Is the vent length less than 5 ft?

Yes

Add an elbow or reducer to bring effective length to over 10 ft.

No

No

Install according to manual instructions

Check the CO₂ is within specs.

Yes

Set the CO₂ level within table below

No

Contact Authorized Service Personnel
Inlet, Outlet, Heat Exchanger or Flue Sensor Open/Fault

In the control board, disconnect the J3 connector. Check the corresponding color wire for damage, corrosion and perform continuity from the corresponding color wires to sensor.

Wires damaged / corroded or no continuity?

No

Disconnect the harness at J3 connector from the control board. Check resistance between the two respective color wires.

Resistance as per the table?

No

Replace the Overheat sensor.

Yes

Contact authorized service personnel

Yes

Replace the wiring harness

Sensor | Resistance depends on temperature of
--- | ---
Overheat (orange wires) | hot water at the outlet
Flue (gray wires) | Flue gas
Inlet (blue wires) | inlet cold water
Outlet (green wire) | hot water outlet

Wire color table:
- Heat Exchanger - Heat exchanger water outlet temperature sensor (orange wire)
- Flue Sensor - Flue temperature sensor (gray wire)
- Inlet Sensor - Inlet water temperature sensor (blue wire)
- Outlet Sensor - Hot water outlet temperature sensor (green wire)

Temperature (°F) | Sensor Resistance (KΩ)
--- | ---
50 | 18
77 | 10
140 | 3

E9/EA - Temperature Sensor Open/Fault
Water Valve Fault

If floor model, are all HEXes giving water valve alert?

No

Set staging OFF (Settings->cascading)

Shut down the unit by using touch screen. Power down the unit using the power switch (or unplug power cable), wait for 15 seconds and reboot again.

Is the water valve alert back within 15 minutes of reboot?

No, error is random

Check the total flow rate to the HEX (floor mount) or to the unit (wall-hung). Increase the flow by opening showers, faucets etc.

Is flow less than 1 gpm?

Yes

Contact Authorized Service Personnel

Check the silver cold water inlet pipe for blockage or ice buildup.

Found issues with Silver cold water inlet pipe?

Yes

Clear the silver cold water pipe blockage.

No

For wall-hung, close the hot water ball-valve outside the unit. For floor units, close the hot water outlet valve at the HEX.

Open the T&P valve. Check the flow rate at the drain outlet as well as on the display screen.

Do you see flow of more than 3 gpm steadily?

Yes

Blockage inside the Heat exchanger such as scale buildup.

No

Contact Authorized Service Personnel

No

Contact Authorized Service Personnel

Yes

Replace the water valve

Blow on the water valve inlet side. Do you to hear the movement of the turbine?

Yes

Inspect wiring for valve and flow sensor.

Is wiring damaged or loose?

Yes

Replace appropriate wiring harness

No

No, error is random

Power down the unit by using the power switch or unplugging the power cable (this will ensure the water valve open). Close the outlet & inlet water to the unit. Drain the water out of the unit. Check and Clean the Y-strainer

Replace or reconnect appropriate wiring harness

Error on the same HEX?

Floor Model or Wall-hung?

Floor

Check and Clean the Y-strainer

Wall

Same HEX

Different HEX

Replace the water valve

Error on the same HEX?

Yes

Blow on the water valve inlet side. Do you to hear the movement of the turbine?

No

Inspect wiring for valve and flow sensor.

Is wiring damaged or loose?

Yes

Replace appropriate wiring harness

Contact Authorized Service Personnel

Yes

Check blockages at the Y-strainer and at each water valve. Check internal and external recirculation pumps are working.

Blockage inside the Heat exchanger such as scale buildup.

Yes

Contact Authorized Service Personnel

No

Set staging OFF (Settings->cascading)

Shut down the unit by using touch screen. Power down the unit using the power switch (or unplug power cable), wait for 15 seconds and reboot again.

Is the water valve alert back within 15 minutes of reboot?

Power down the unit by using touch screen. Power down the unit using the power switch (or unplug power cable), wait for 15 seconds and reboot again.

Is the water valve alert back within 15 minutes of reboot?

Power down the unit by using touch screen. Power down the unit using the power switch (or unplug power cable), wait for 15 seconds and reboot again.

Is the water valve alert back within 15 minutes of reboot?
BLOWER REPLACEMENT (See Diagram, page 20)

The blower is located on the top of the heat exchanger
- Shut off the gas to the heater
- Shut off power to the heater by unplugging the unit from the 120 VAC outlet
- remove the front panel (three screws at top and three at bottom)
- Unplug the display cable from the pcb (press plastic tab and pull)
- lift up and remove the front display bracket
- Unplug all the wiring connections from the blower (press the tabs and pull)
- remove the gas valve wiring located behind the blower
- Unplug the HV cable from the DSI
- Remove the gas connection at the top isolating the unit's gas supply from the building
- remove phillips screws to remove the aluminum gas fitting at the top the unit
- remove 4 allen screws to remove the aluminum gas adapter fitting
- remove two plastic taps on top of the cabinet to access the screws securing the blower
- remove 4 screws securing the blower from the top using a long screwdriver
- remove the entire blower gas valve assembly from the unit
- remove the gas valve 3 torx screws
- install the gas valve on the new blower
- reverse process to assemble the blower back to the heater
- ensure the gasket is installed between the blower and the top housing
- Install the blower gas valve using 4 screws and a long screw driver
- Install the aluminum gas adapter on top of the gas valve
- Install the gas fitting and secure it using 4 screws to the cabinet
- Install the building gas supply
- Install the blower wiring, HV cable and gas valve wiring
- turn gas supply back on and check for any gas leaks
- turn water on and plug the heater to the outlet
The blower gas valve assembly is located on the top of the heat exchanger
- Shut off the gas to the heater
- Shut off power to the heater by unplugging the unit from the 120 VAC outlet
- remove the front panel (three screws at top and three at bottom)
- Unplug the display cable from the pcb (press plastic tab and pull)
- lift up and remove the front display bracket
- Unplug all the wiring connections from the blower (press the tabs and pull)
- remove the gas valve wiring located behind the blower
- Unplug the HV cable from the DSI
- Remove the gas connection at the top isolating the unit's gas supply from the building
- remove phillips screws to remove the aluminum gas fitting at the top the unit
- remove 4 allen screws to remove the aluminum gas adapter fitting
- remove two plastic taps on top of the cabinet to access the screws securing the blower
- remove 4 screws securing the blower from the top using a long screwdriver
- remove the entire blower gas valve assembly from the unit
- remove the gas valve 3 torx screws
- reverse process to assemble the blower back to the heater
- ensure the gasket is installed between the blower and the top housing
- Install the blower gas valve using 4 screws and a long screw driver
- Install the aluminum gas adapter on top of the gas valve (ensure the o-ring is in place)
- Install the gas fitting and secure it using 4 screws to the cabinet
- Install the building gas supply
- Install the blower wiring, HV cable and gas valve wiring
- turn gas supply back on and check for any gas leaks
- turn water on and plug the heater to the outlet
Blower/Gas Valve Exploded View

Gas Valve

Blower
ELECTRODE REPLACEMENT

The electrode is located on the top of the heat exchanger
- Shut off the gas to the heater
- Shut off power to the heater by unplugging the unit from the 120 VAC outlet
- remove the front panel (three screws at top and three at bottom)
- Unplug the display cable from the pcb (press plastic tab and pull)
- lift up and remove the front display bracket
- Unplug the HV cable from the electrode
- Unplug the electrode connection from the controller at connection E12
- Remove the 2 screws & washers securing the electrode
- Remove electrode from HEX assembly.
- Insert new electrode into the HEX assembly, careful to use new probe hole seal
- Fasten the electrode with the 2 screws with washers. Verify that the yellow/green wire is attached beneath the right hand screw.
- Connect the electrode to the controller at connection E12
- Connect the HV cable to the electrode
- turn gas supply back on
- turn water on and plug the heater to the outlet
Controller Pin Layout

Wiring Diagram (all wall-hung units)
Wiring Diagram (all floor-standing units)
Gas Valve

Blue Gray 120V AC
Hi-Fire uses flat screwdriver. Low-fire uses T20 Torx screwdriver.
Resettable overheat switch
Resettable overheat switch