



Universal H Series Heaters[®]

Consumer Troubleshooting Guide



HxxxFD(N/P)



HxxxFD(N/P)ASME

Safety Precautions



High Voltage Electrocution Hazard

Hazardous voltage can shock, burn, cause serious injury and or death. To reduce the risk of electrocution and or electric shock hazards:

- Only qualified technicians should remove the panel
- Replace damaged wiring immediately
- Insure panel is properly grounded and bonded

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UHS Sequence of Operation: Normal

The control continually compares the set temp to the actual water temp. When the water temp is 1° below the set point the following sequence starts:

1. The control checks for open blower vacuum switch
2. Blower starts pre-purge cycle as the ignitor heats up (20 Sec).
3. The control checks for a closed blower vacuum switch.
4. At proper ignitor temp, a 4 second trial begins. Gas valve opens and monitors flame sense. The blower will turn off for one second. The ignitor is de-energized at flame sense or at completion of 4 sec trial. If the flame is sensed, The blower vacuum switch, control loop, temp sensor & flame sensor are constantly monitored during call for heat.
5. When set temp is reached, the control ends the call for heat. The gas valve is de-energized, and the flame is extinguished.
6. The blower will operate for a 30 second post purge.

NOTE: If during step four, the heater fails to fire, please proceed to the next page for more details outlining failure to light operations.

UHS Sequence of Operation: Failure to Light

If trial fails:

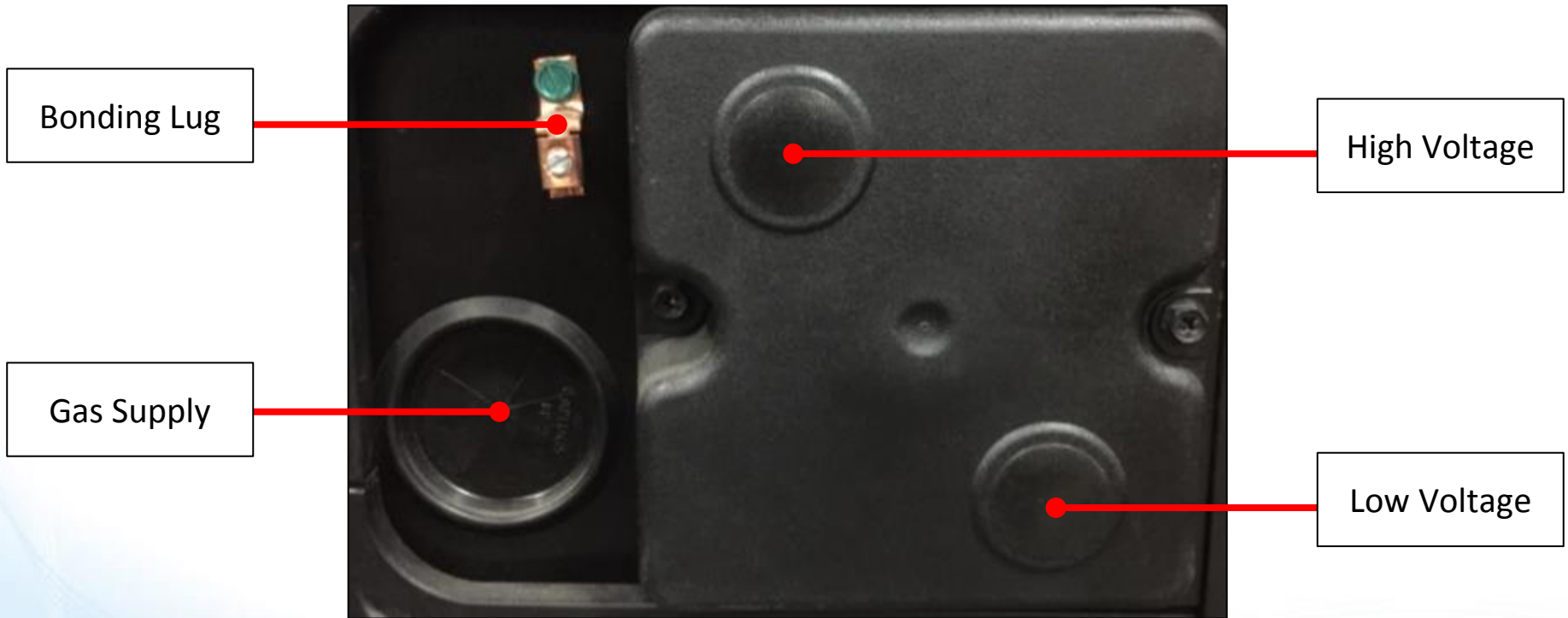
1. Gas valve de-energizes (for 30 second, blower post purge).
2. Starts over at #2 of heating mode sequence.
3. Retries 3 times until lockout (IF code).
4. Waits 60 minutes then retries 3 more times.
5. Will continue to retry every 60 minutes, until demand for heat is stopped.

NOTE: When making keypad entries of any type there may be a 5-10 sec delay for certain situations.

UHS Electrical & Gas Connection

Electrical & Gas connections as of September of 2008 (Newer Style)

Connections located on both the left & right side of heater cabinet





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How To:



How To: Program Heater Bypass Operation

Follow the included steps to place the heater in bypass mode for external control.

Step 1



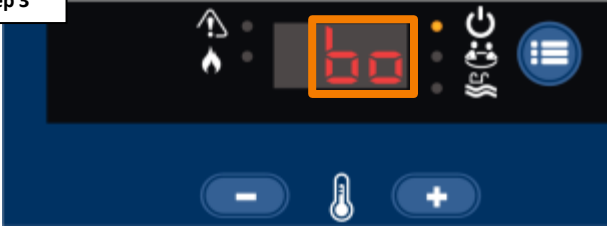
Press the 'MENU ICON' button to place the heater in 'STANDBY'.

Step 2



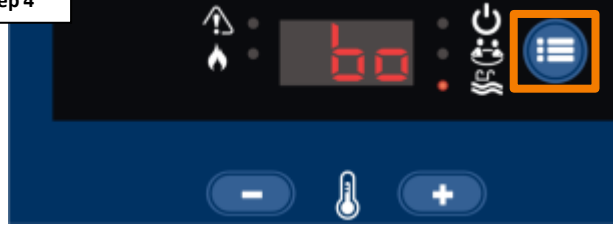
Press and hold the minus button and 'MENU ICON' button for 3 seconds.

Step 3



'bo' should appear on the display when the heater has successfully entered bypass mode.

Step 4




Once in bypass, press the 'MENU ICON' button until 'POOL' or 'SPA' is illuminated.

NOTE: the maximum temperature set point is 104° F.

How To: Program Temperature Lock-Out


Follow the included steps to place the heater in bypass mode for external control.

Step 1




Press the 'MENU ICON' button to place the heater in 'STANDBY' mode.

Step 2




Press and hold the minus & plus buttons for 3 seconds.

Step 3



The 'SPA' indicator should illuminate & the display should show the Max Temp set point.

Step 4



Raise or lower the temperature displayed using the minus or plus button.

NOTE: The default Max temp lock-out set points are 90°F (Pool) 104°F (Spa).

How To: Program Temperature Lock-Out (cont.)

This feature is available on heaters manufactured after February 25th 2011.



Press the 'MENU ICON' button to toggle to the 'POOL' now that the 'SPA' is set.



Raise or lower the temperature displayed using the minus or plus button.



To finalize, press the 'MENU ICON' button until the heater goes back into 'STANDBY'.

NOTE: When setting the max temp lock-out set point, the LEDs & display should flash rapidly.



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Troubleshooting:



Diagnostic Codes

Below is a list of all Diagnostic Codes for the UHS Heater.

Diagnostic Code	Description
AC	Blower Vacuum Switch closed
AO	Blower Vacuum Switch open
BD	Bad board or secondary high voltage fault
CE	Communication Error Between Control Module and Display Interface Assembly
EE	Bad board
HF	Flame present with Gas Valve not energized.
HS	Maximum return water temperature exceeded and / or rapid water temperature rise.
IF	Ignition Failure
IO	Ignitor Circuit Open
LO	Water Pressure Switch, Vent Pressure Switch, or Temperature Limit Switch Fault
PF	Voltage polarity reversed, low voltage detected
SB	Keypad failure
SF	Temperature Sensor (thermistor) input failure

*Please contact a local authorized service center for service.
go to: www.hayward.com and click on the “Dealer Locator”*

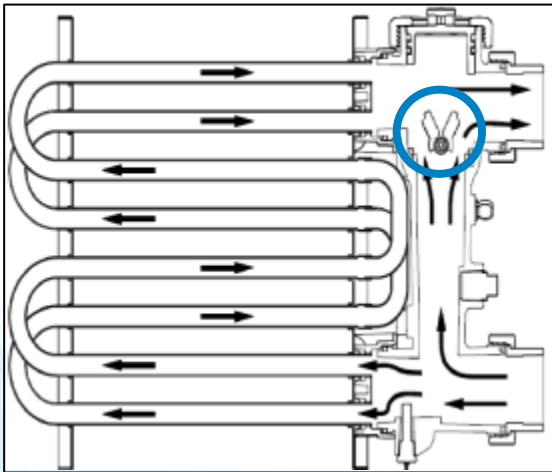
Heat Exchanger: Flow Requirements

Flow requirements should be checked to insure proper operation.

Never allow heater to operate below minimum flow requirements or damage may occur.

- Flow less than minimum could cause issues such as the heater dry firing or water to boil causing high limits to trip and possible damage to heat exchanger.
- Flow exceeding maximum flow could cause issues such as damage to the heat exchanger by thinning the tube walls.

Internal By-Pass



NOTE: Internal by-pass should be inspected periodically as it could be the cause of low or high water flow through the exchanger

Flow Requirements

Model	Min GPM
H150FD H200FD	20
H250FD H300FD	25
H350FD H400FD	30
H400FD	40
Maximum water flow 125 GPM	

Heat Exchanger: Inspection

The following steps should be done by an authorized service center.

1. Remove black metal Trim Plate (around water manifold, 5 Black screws)
2. Remove water connection side Upper End Cap (Black Polymer- 4 screws in rectangle holes marked with an arrow)
3. Disconnect Unions from plumbing (water connections, 1 inlet, 1 outlet.)
4. Remove (8) ½” hex head bolts (4 on each side-inlet and outlet)
5. Remove water manifold (also called the “Header”) and black polymer “Mounting Blocks” to expose the ends of the heat exchanger tubes.
6. If there is any doubt as to whether or not there is damage from aggressive water chemistry: take 3 pictures, 1 of each pair of tubes (inlet side and outlet side), as well as the Model & Serial number decal, and send to your local technical representative, or call (908) 355-7995 for further instructions.

Heat Exchanger tubes should look like this picture

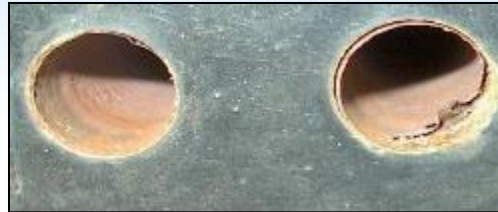


Heat Exchanger: Potential Failure Causes

New, Clean Exchanger



Low pH or High Water Flow



High Sanitizer Levels



Annealed Fins – Low Water Flow



Low pH



High Sanitizer Levels



High pH, Alkalinity or Calcium Hardness



Sooted – Improper Fuel and Air Mixture.



Freeze Damage

