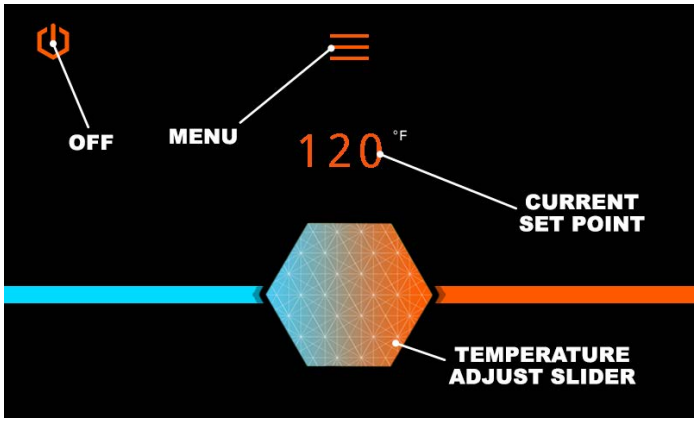
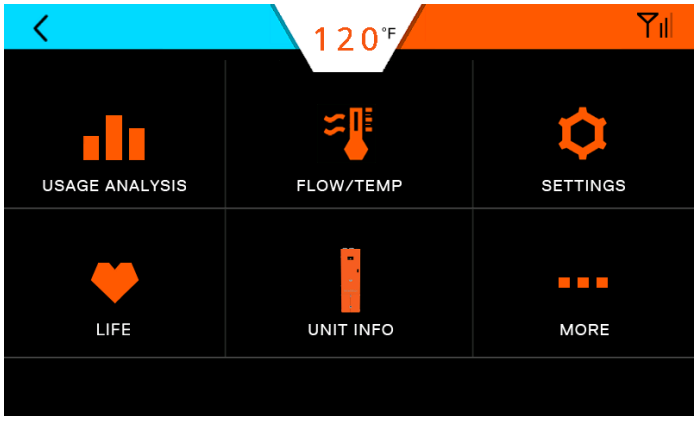
12. Operation

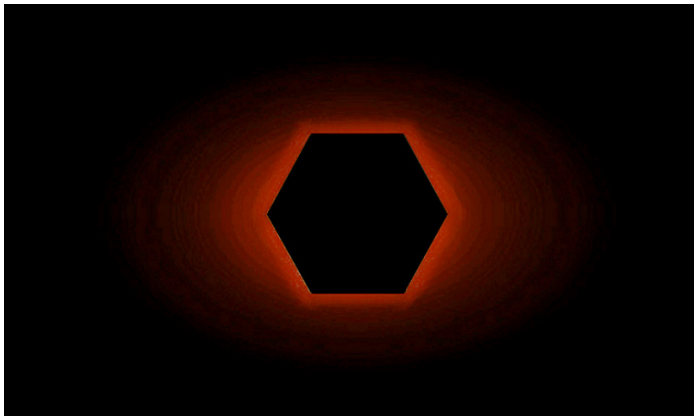
12.1 Control Panel



Main Menu Screen



Selecting the Menu button brings up this screen.

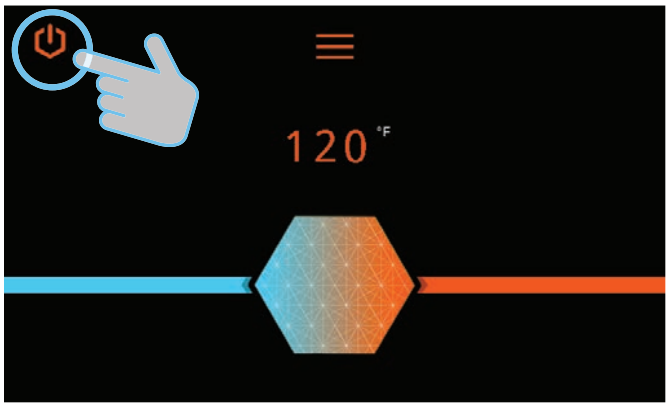


A sleep mode screen will appear after a period of inactivity.

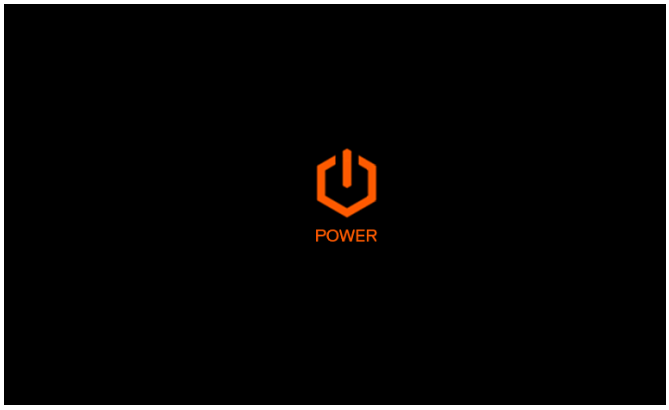
12.2 Turning Water Heater ON and OFF

1. When power is applied to the water heater or the electrical switch is turned ON, the Main Menu screen will automatically appear.

2. To turn the water heater OFF, press and hold the Power button in the upper left of the screen.



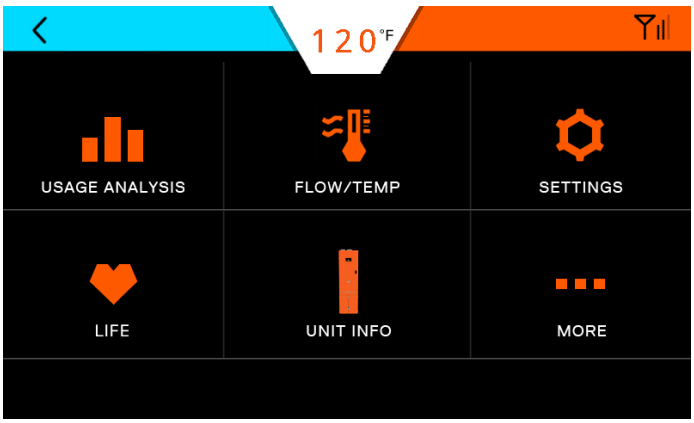
3. Press the Power button to turn the unit ON.

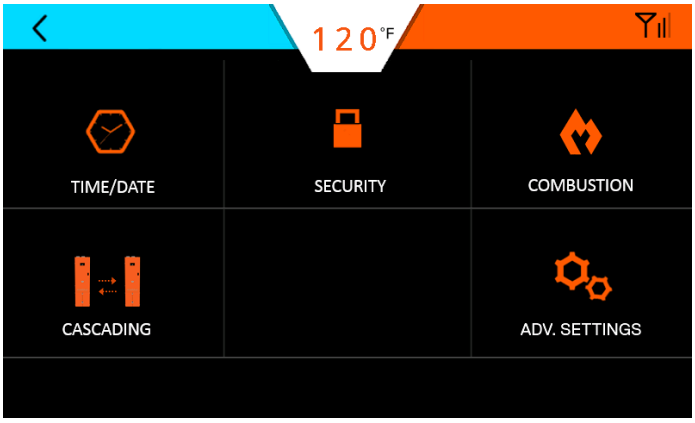


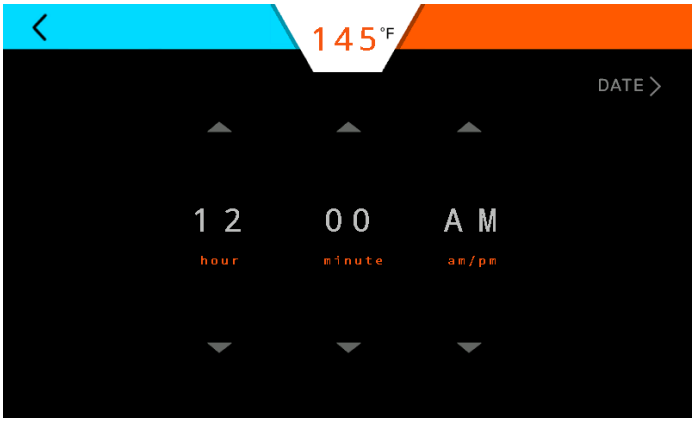
⚠ WARNING

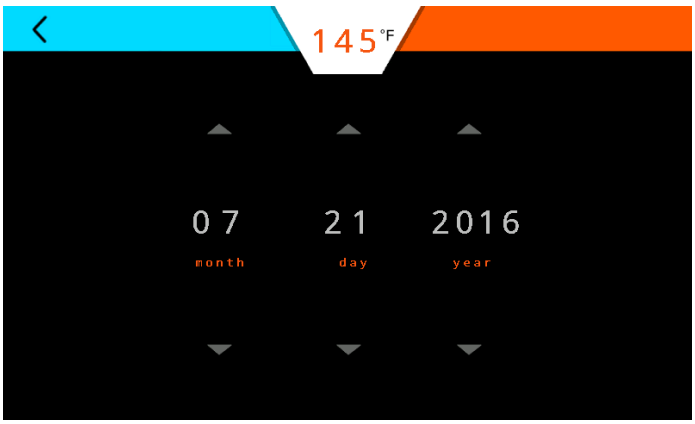
Turning the unit OFF does not disconnect it from the power source. Whenever working around electrical components within the water heater, turn off the power at its source. Touching live electrical components can cause serious injury or death.

12.3 Setting the Time









Press the Up/Down arrows to make adjustments. Press the Back button to return to the main screen.

12.4 Adjusting the Water Temperature

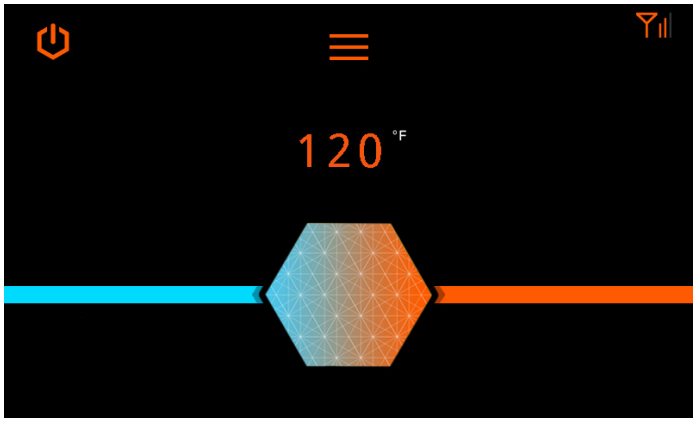
Note: The outlet water temperature is factory preset to 120°F, however these commercial water heaters are capable of heating water to 190°F.

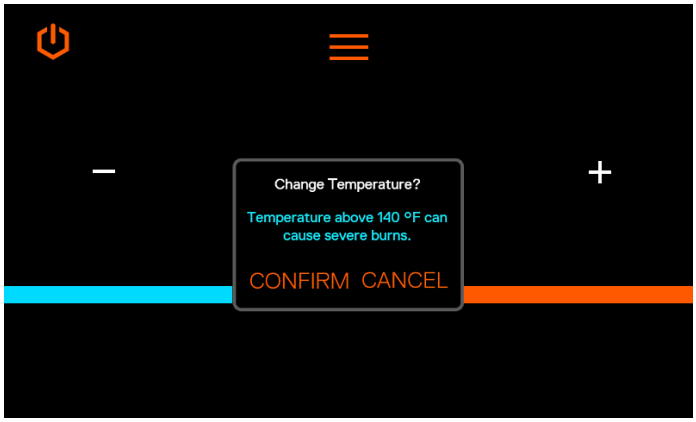
⚠ DANGER

Hot water temperature over 125°F (52°C) can cause severe burns instantly or death from scalding. Children, the disabled, and the elderly are at the highest risk of being scalded. Do not leave children or the infirm unsupervised. Check temperature of hot water before taking a shower or bath. To control water temperature to a particular faucet, temperature limiting valves can be installed by your service professional.

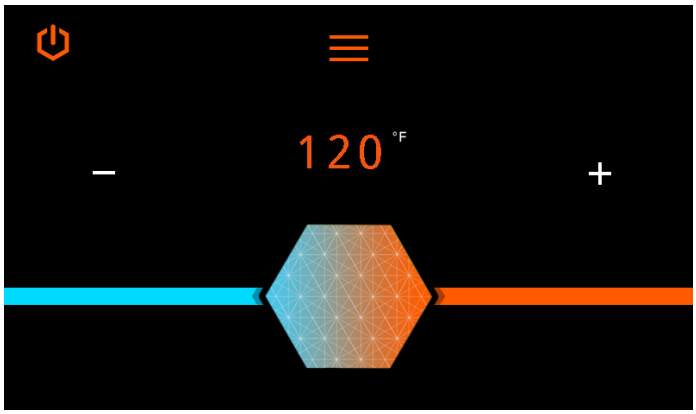
All water faucets must be closed before changing the temperature setting. The unit must not be operating.

1. Firmly press the (+) and (–) to increase or decrease the temperature by 5°F. Firmly hold the icon until the display reaches the desired temperature.





2. For finer temperature adjustments, tap the (+) and (–) icons to change the temperature by 1ºF.



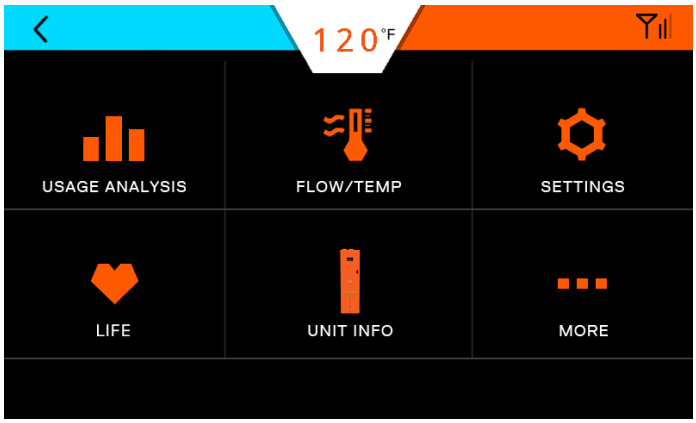
3. Follow any prompts shown on the screen.

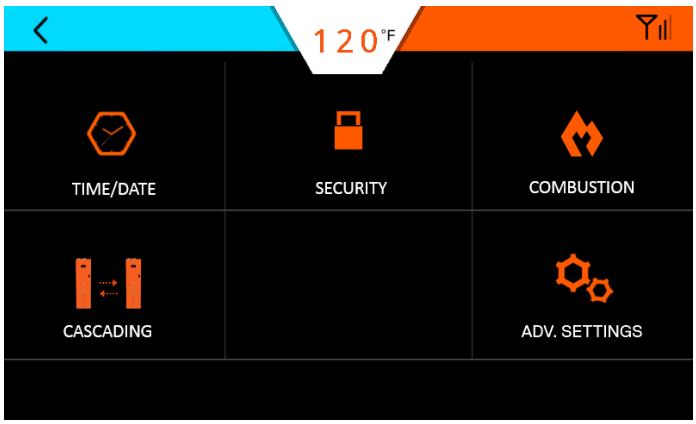
12.5 Security

12.5.1 Setting Passcode Protection

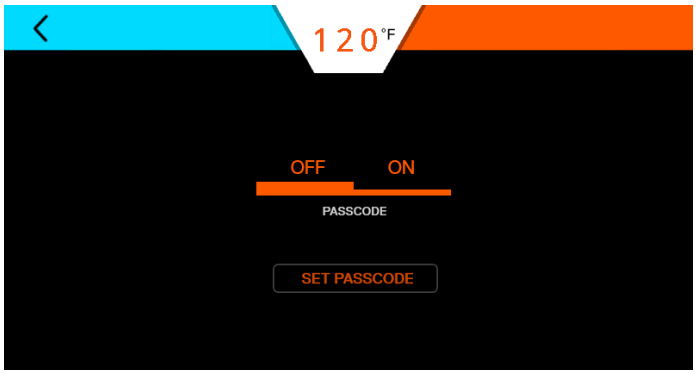
It is not necessary to set a passcode for the water heater to function properly. This feature is available to help prevent unauthorized access to the unit.

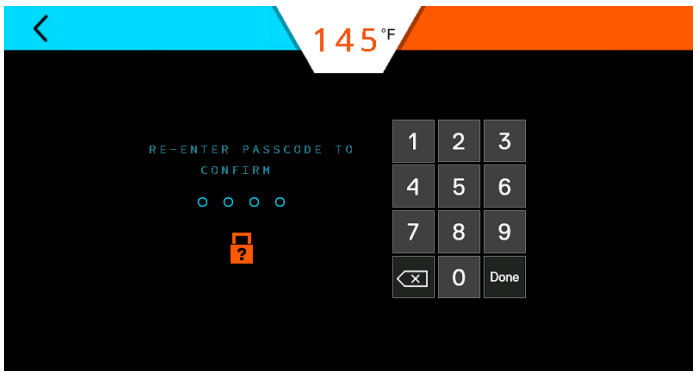
If a passcode is set, it must be entered prior to accessing the main screen.

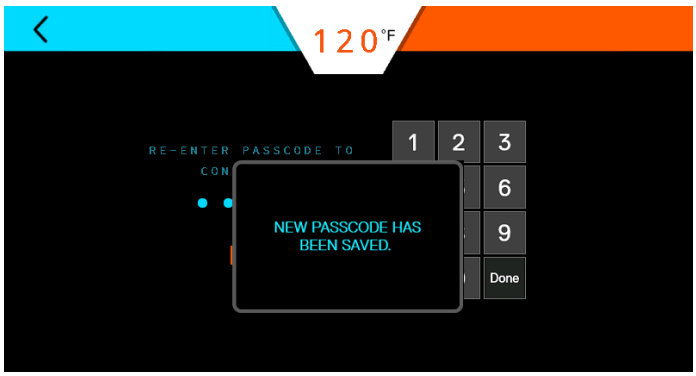


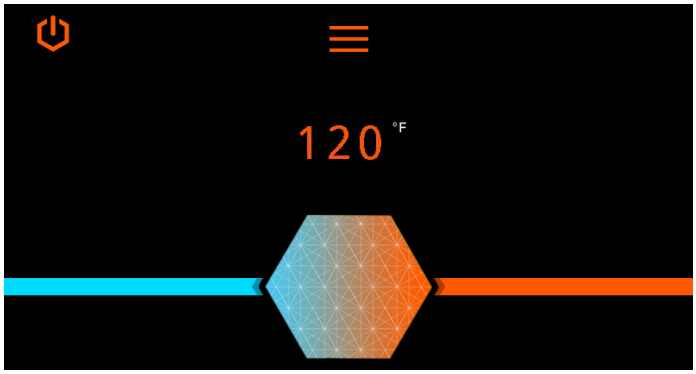


Press ON/OFF and follow the prompts.

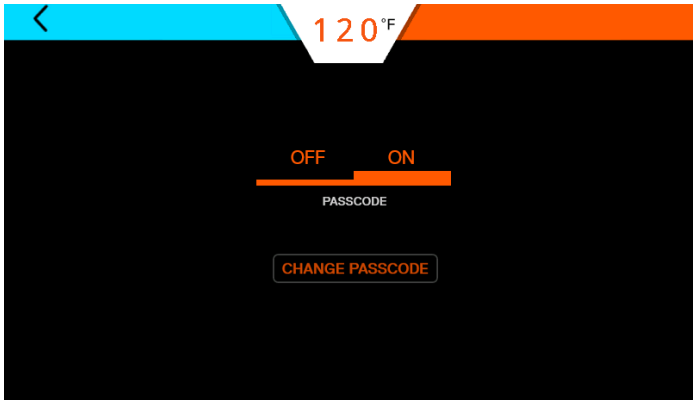


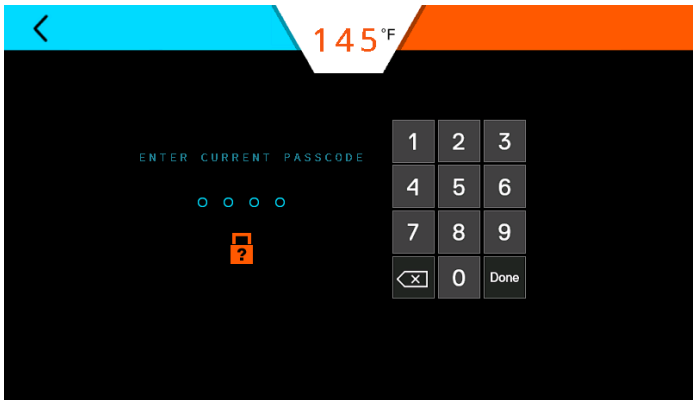


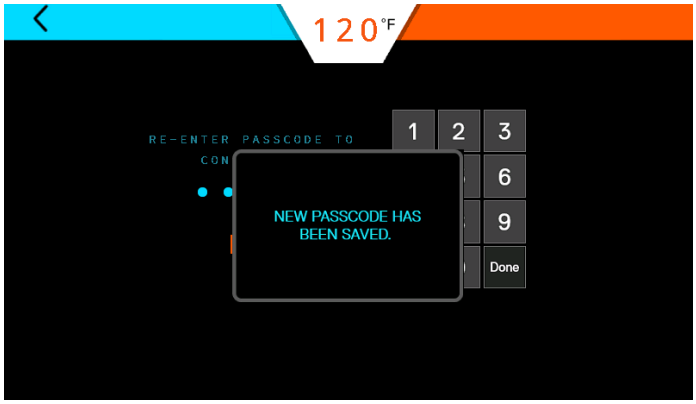


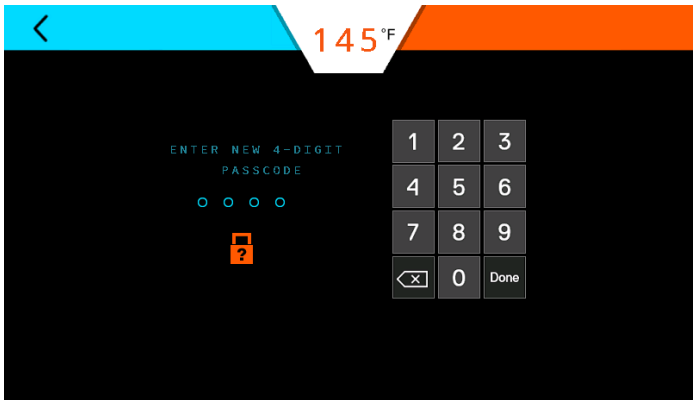


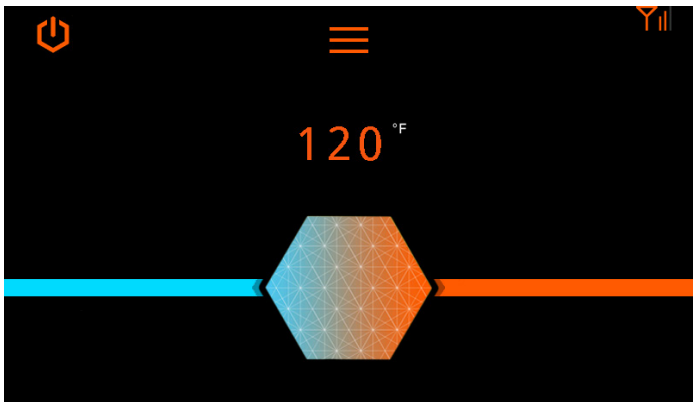
12.5.2 Changing Passcode

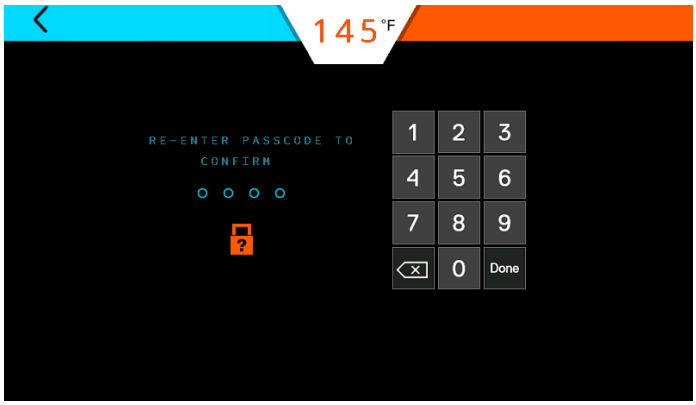






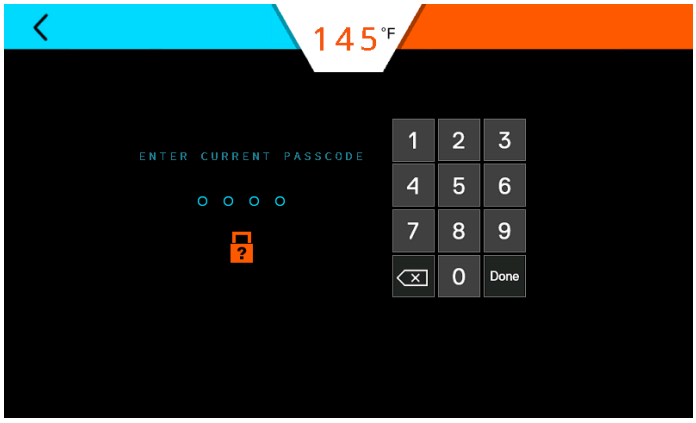


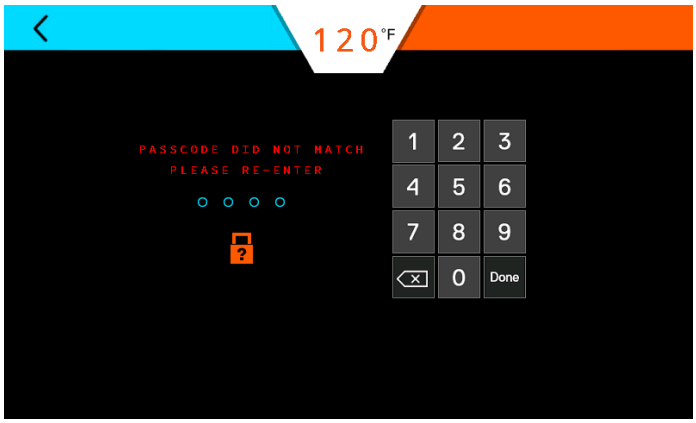




12.5.3 Forgot Passcode

If the unit passcode is lost or forgotten, press the "?" icon and call technical support.

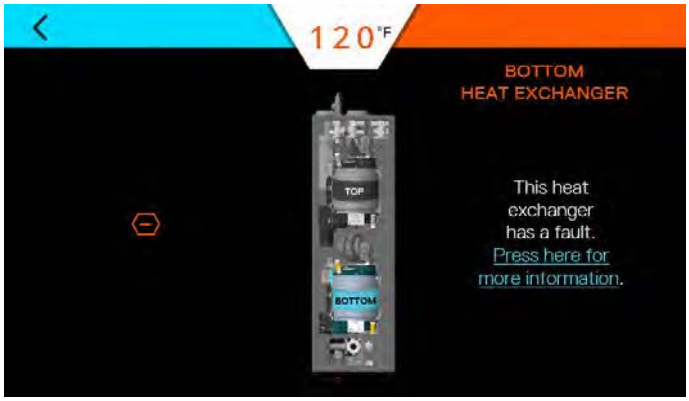




12.6 NOT USED

12.7 Temp / Flow

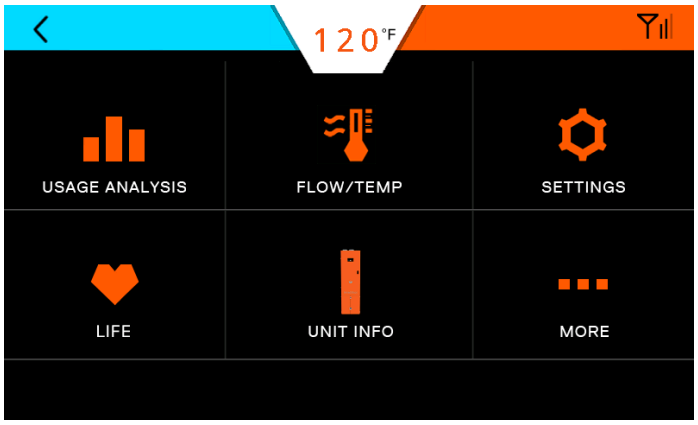
Provides the general operating parameters of each heat engine.

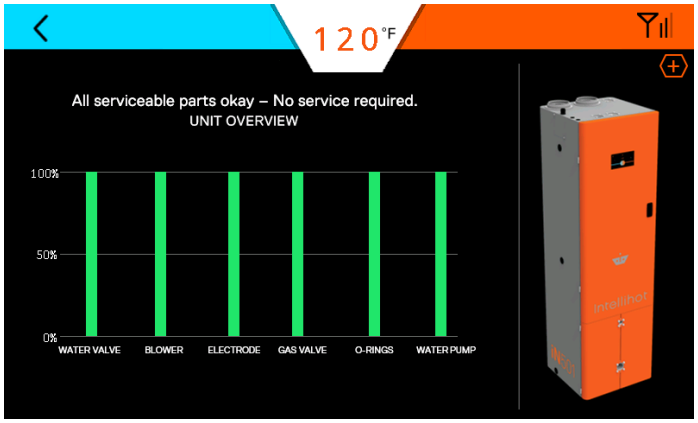


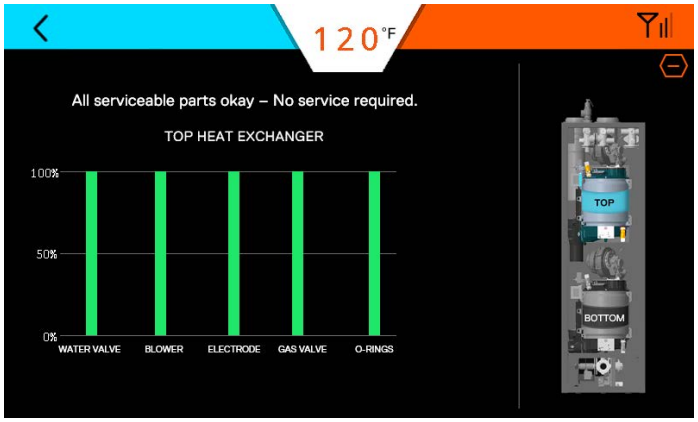
12.8 Life Screen

These screens provide a visual indication of the remaining life of various components.

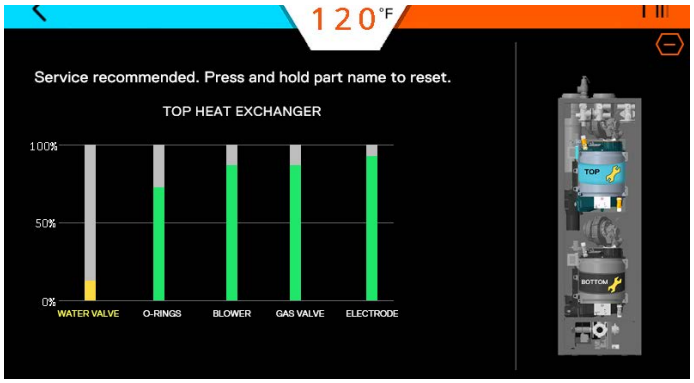
Note: Parts can be ordered by contacting technical support.



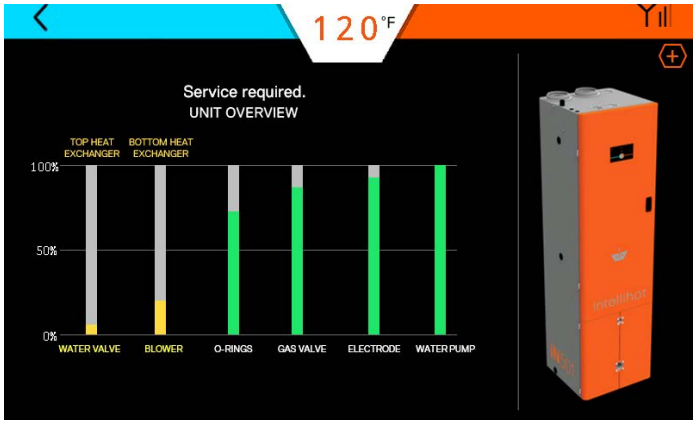


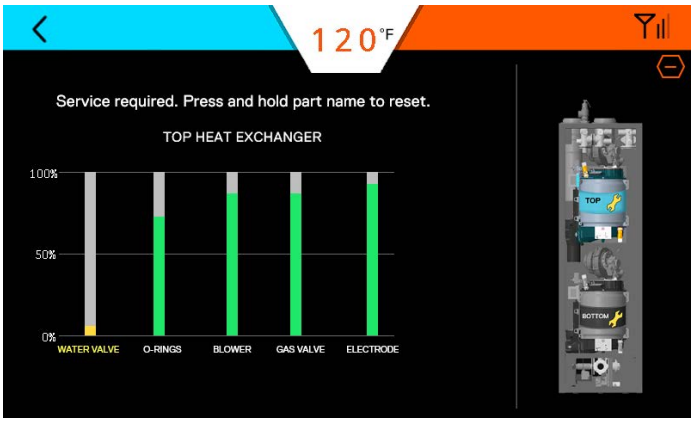


Press the (+) button to show the details of the various heat engines.



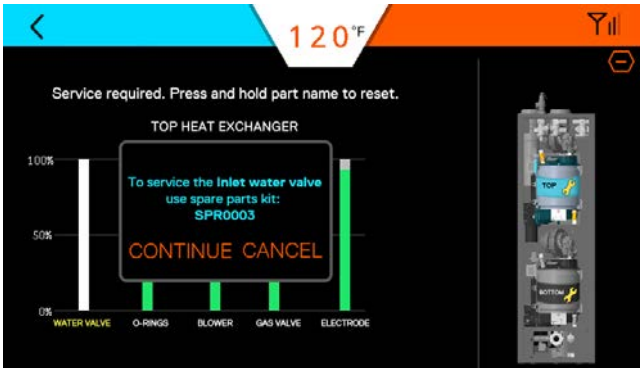
Service recommended: Order appropriate replacement part as soon as possible. To reset life, press and hold the appropriate bar and follow the prompts.

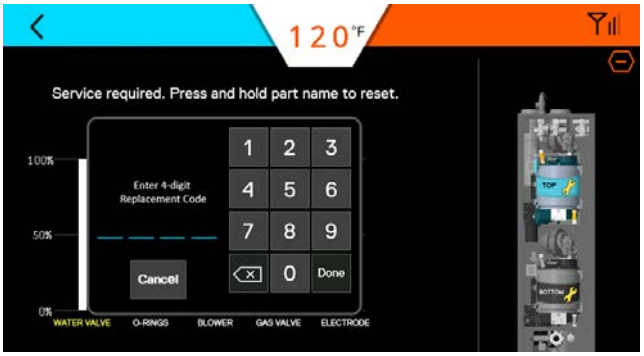


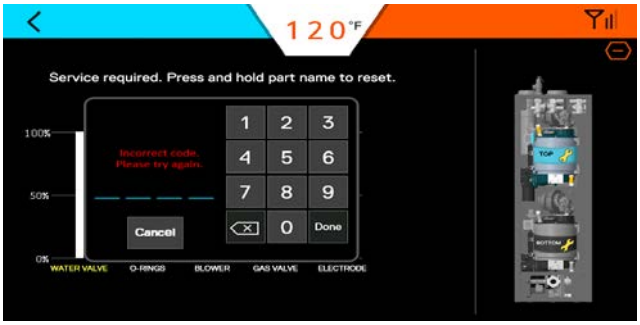


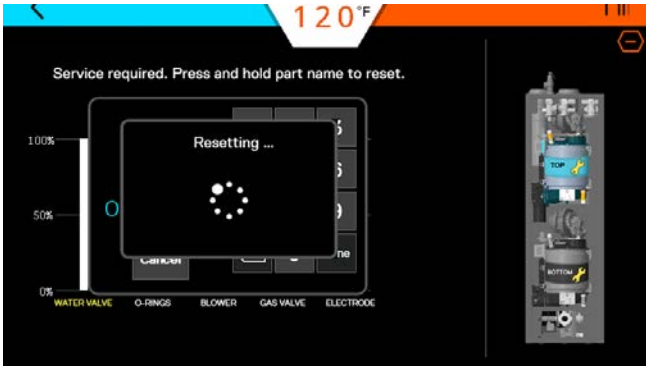
Service required: Take IMMEDIATE action when this screen appears because the part life is critical. To reset life, press and hold the appropriate bar and follow the prompts.

When a part is replaced, the screens will provide replacement part information and a screen to reset the service meter for the part being replaced.





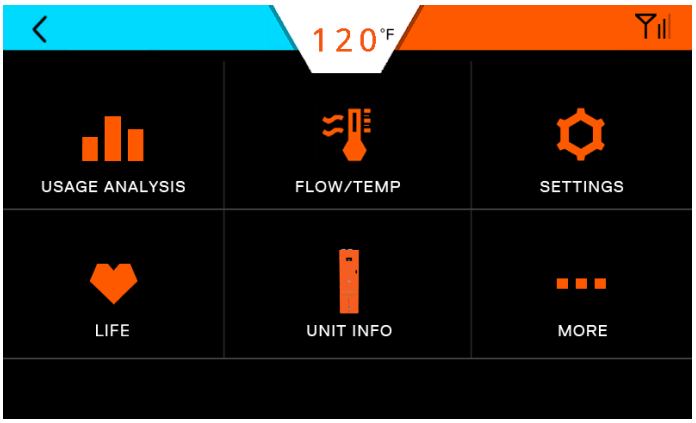


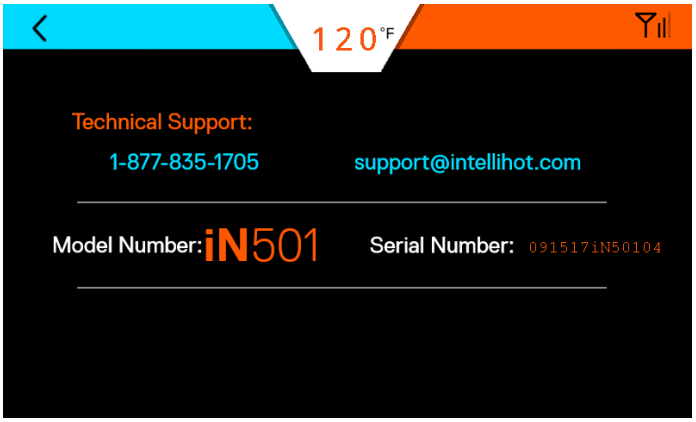


Service Alert	Reset Code
Electrode	0836
Blower	2009
Time Valve (Water Valve)	0721
Gas Valve	0682
O-Ring (at the HEX inlet & HEX outlet)	0310
Internal Pump	6452

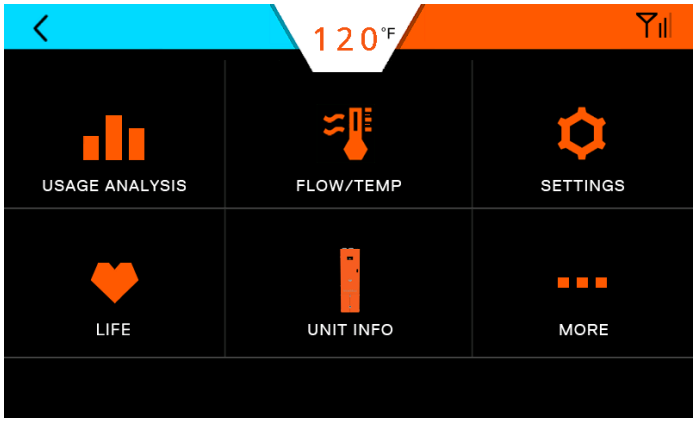
12.9 Unit Information

This screen provides the model, software version, serial number, and a link to the contact us screen for the water heater.



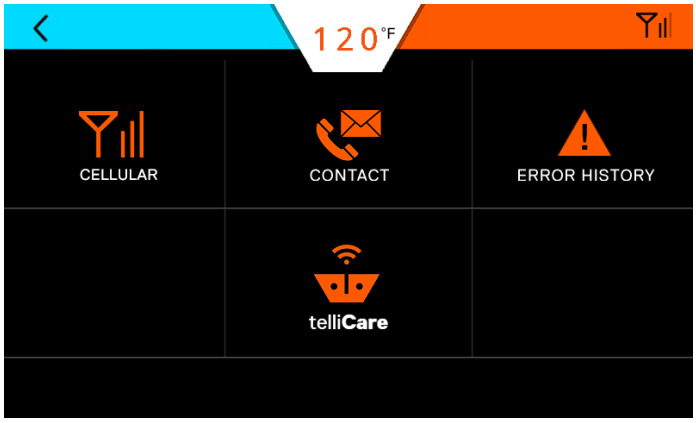


12.10 More Screens



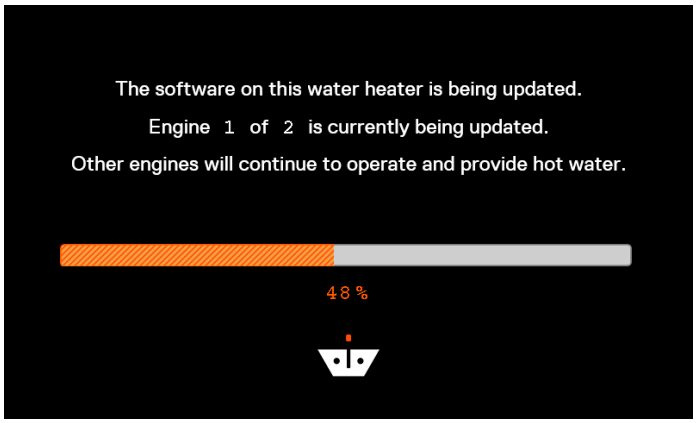
12.10.1 Cellular

Intellihot Gen II water heaters are cellular capable. This feature also allows the units to be monitored and controlled from a mobile device.



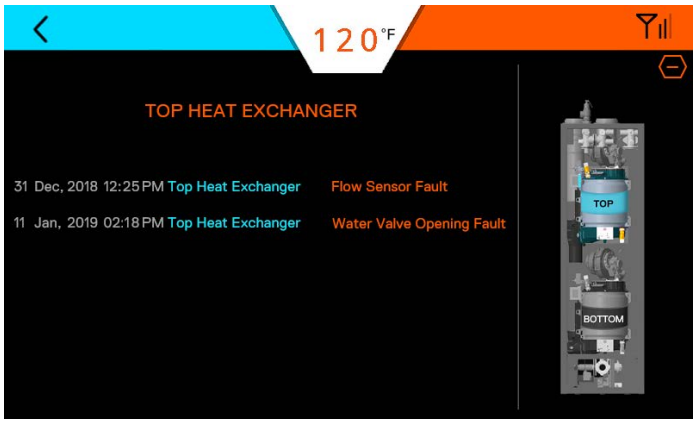
Status of cellular connection screens.

Whenever software updates are being made the following screens will appear.



12.10.2 Error History

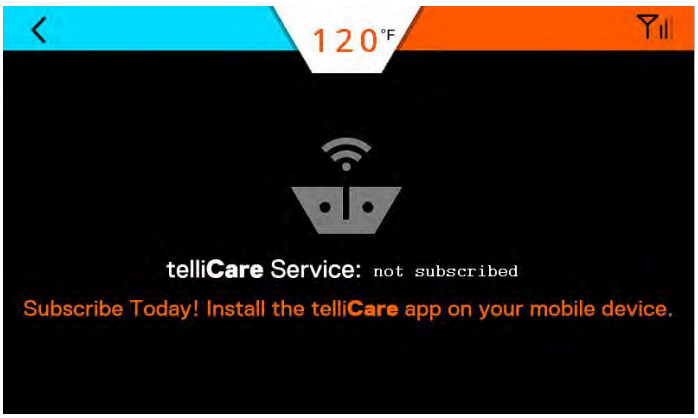
There are two error history screens. One screen provides an overview of the entire unit. Pressing the (+) icon provides more detailed error information.



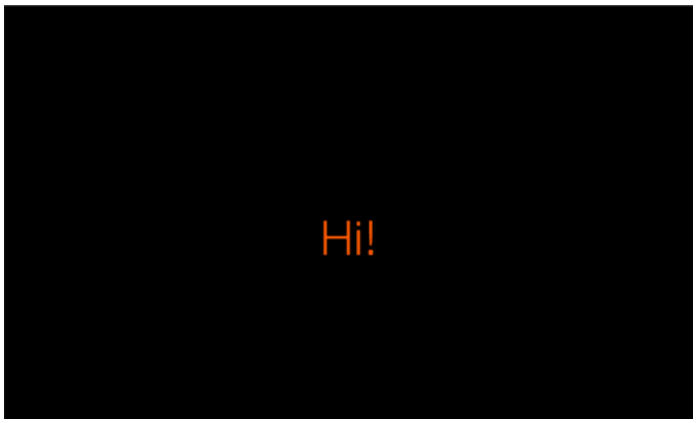
12.10.3 telliCare Service (Subscribe at Startup)

telliCare is a cellular enabled, prognostics and predictive maintenance service for Gen II water heaters. This service allows water heaters to be monitored and controlled remotely via an app on a mobile device.

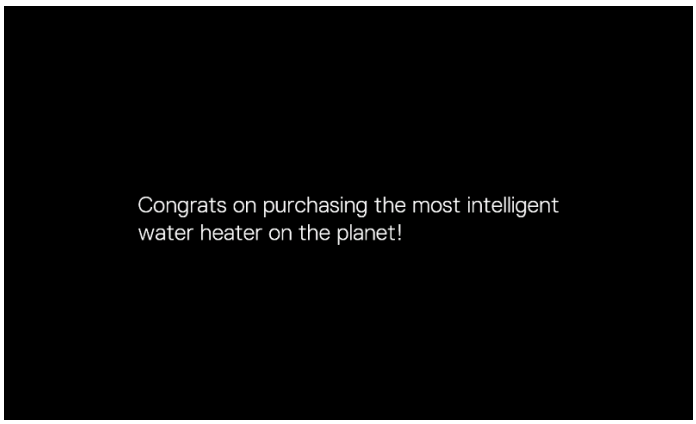
Subscribe to this service by downloading the telliCare app from iTunes App Store and following the prompts on the app.

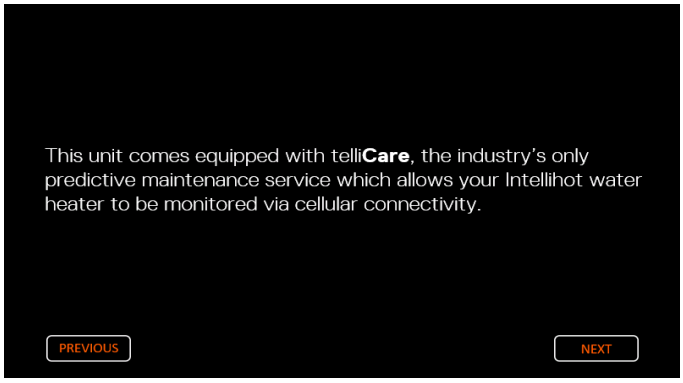


Upon startup the following screens appear.

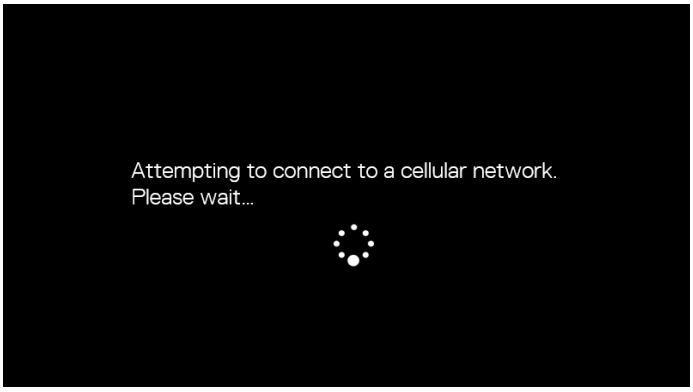


1. Tap anywhere on the screen to continue.

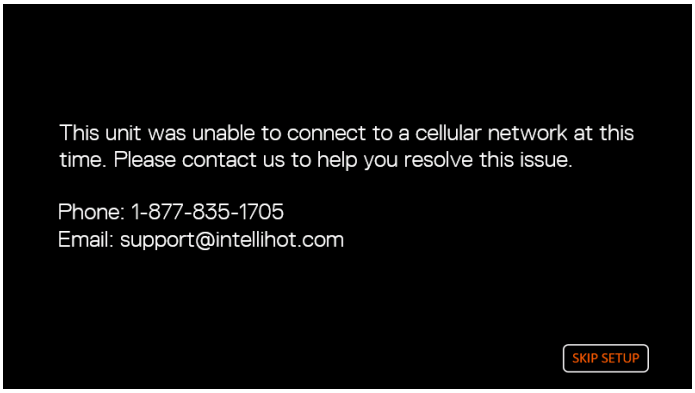




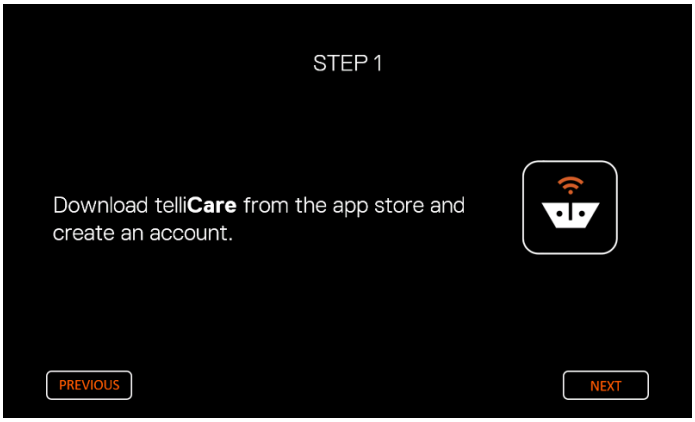
2. This screen appears as the unit is trying to find a cellular connection.

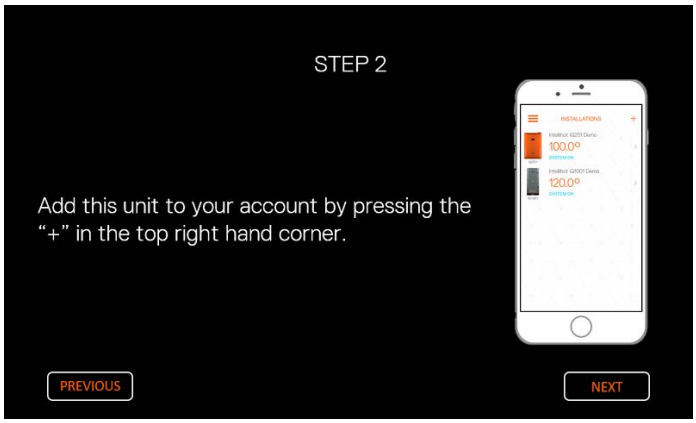


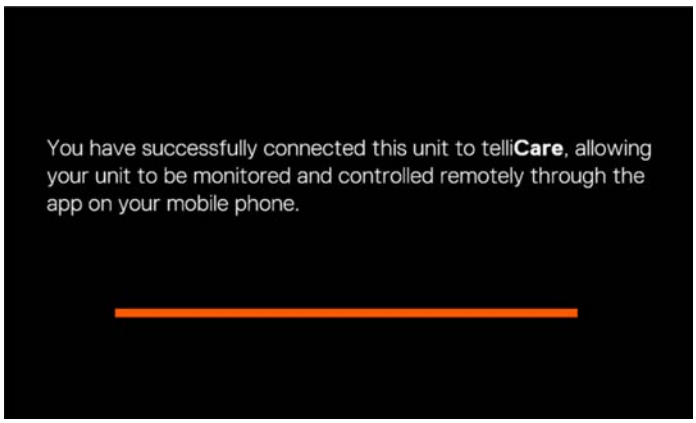
3. If the unit is unable to find a connection, this screen appears.



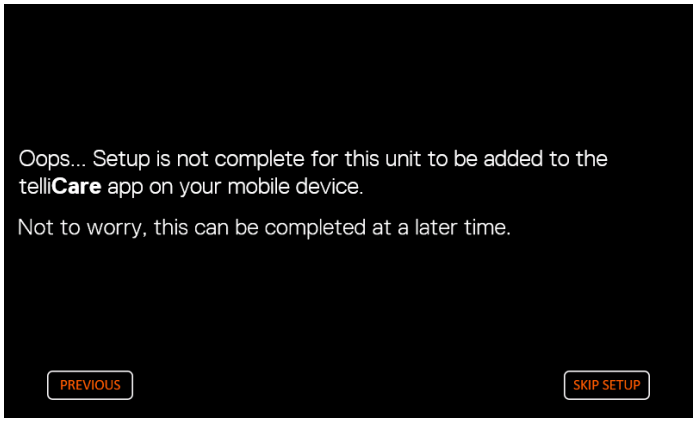
4. If the unit is able to find a connection, the following screens appear.



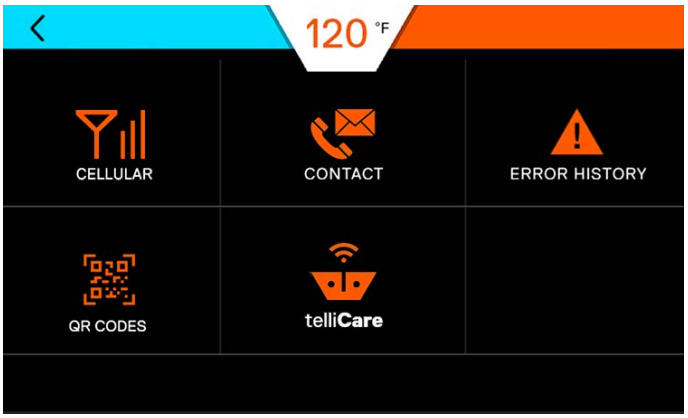




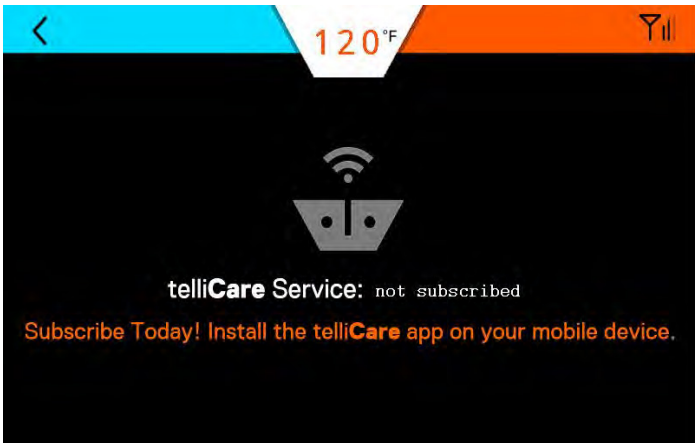
5. If for some reason the setup is not completed, the following screen appears:

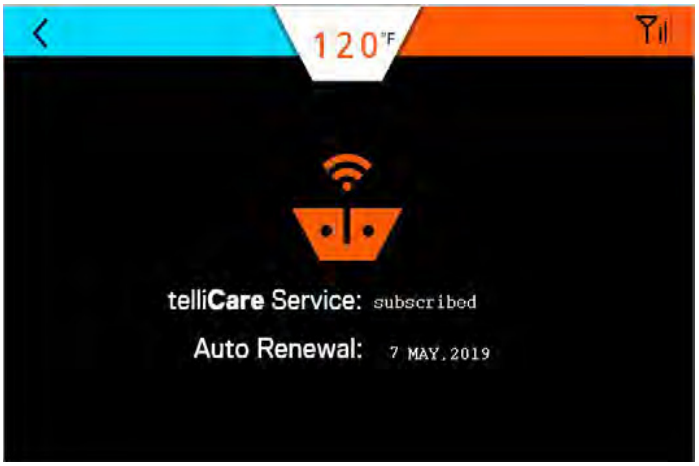


6. ***Note:*** Each individual unit must be registered and each unit can only be registered once.



7. Once the service is set up, various status screens provide the expiration date of the service and if it is on an auto renewal schedule.





13. Connecting Multiple Units

13.1 General Information

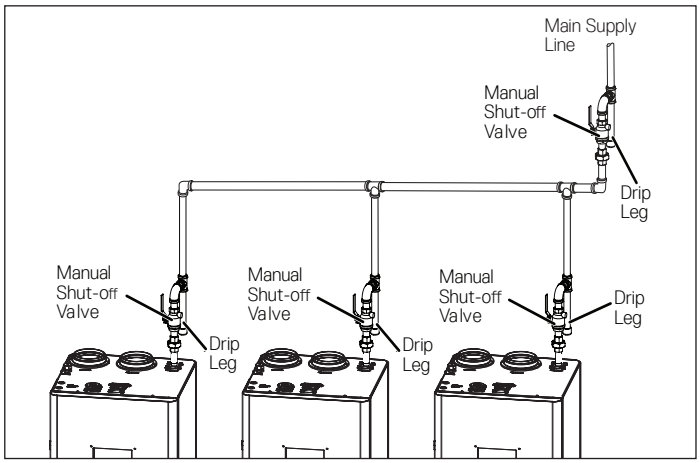
Multiple units can be connected together to supply large demands of hot water.

The water heaters communicate through a cable connection between each water heater. The benefits of connecting the units are:

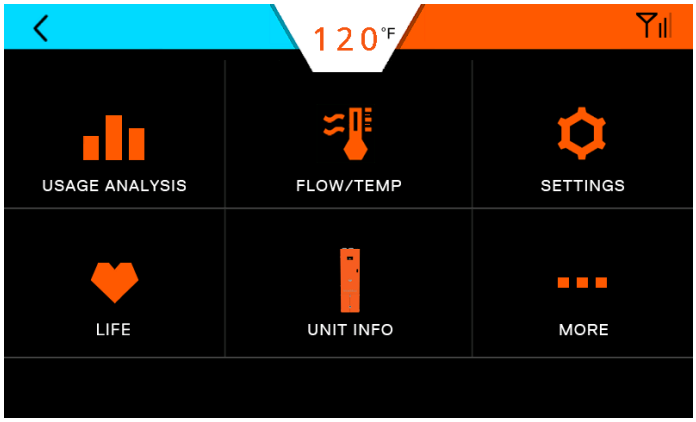
- When demand for hot water is low, fewer units will operate.
- If one unit has an error code, the others will continue to operate.
- Changing the settings (temperature, time, etc.) on one unit changes settings on all the units.
- It allows shut down of one unit for maintenance while the others continue to operate.

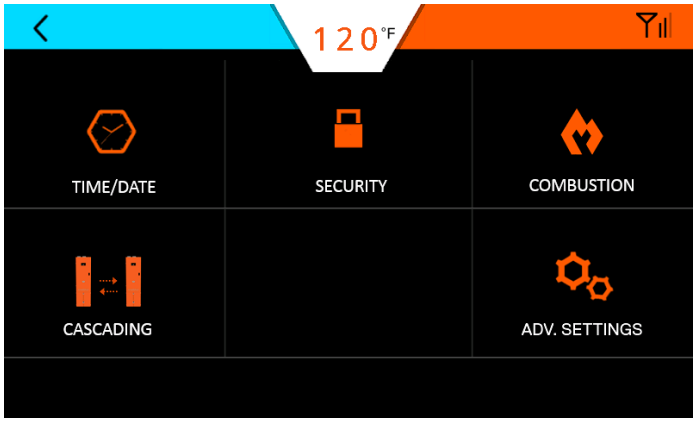
13.2 Installation Procedure

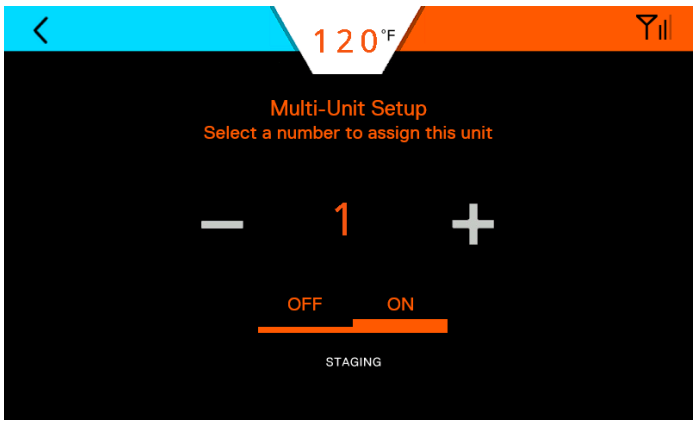
1. Connect all the units to a gas supply pipe. Make sure the pipe is properly sized in accordance with the BTU draw and number of units being operated. Refer to "6. Gas Connection" on page 14 for additional information.
2. Connect all the units to the power supply. Refer to "9. Electrical Power" on page 30 for additional information.



3. Install the combustion (fresh) air intake and exhaust outlet pipes. Refer to "7. Air Intake Inlet and Exhaust Gas Outlet Pipe Connections" on page 19 for additional information.
4. Install and connect the hot water lines. If an optional hot water storage tank is required, connect the hot water lines to this tank. Make sure the water pipe is properly sized in accordance with the number of units being operated.
5. Install and connect the cold water lines. Make sure the water line is properly sized in accordance with the number of units being operated.
6. Connect and route the condensate drain lines to a suitable discharge location. Refer to "8. Water Connections" on page 28 for additional information.
7. **Do Not** connect communication cables at this time.
8. Power up all the units and assign a unique number, one through four to each unit. Set the STAGING to ON.







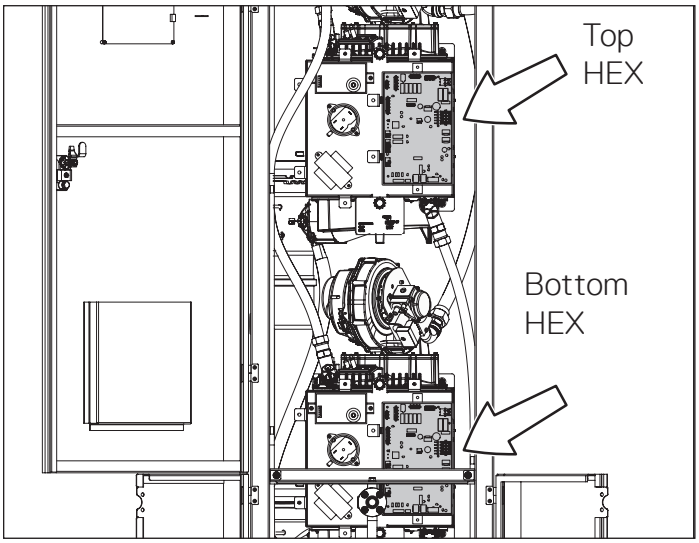
NOTE: It is necessary to wait a minimum of 30 seconds here

⚠ WARNING

Before making any adjustments or connections inside the water heater cabinet, make sure the power is disconnected. Unplug the water and/or turn the circuit breaker OFF.

9. If necessary, press the Power button to turn OFF each water heater in the system and disconnect power from all the units in the system.

10. Open the front door and locate the main circuit boards.



iN401/iN501 have 2 Circuit Boards.

Neuron Cascading		
Model (Max Number of Cascaded Units)	**iN401**	**iN501**
iN401	Yes (Max 4 units)	Yes (Max 4 units)
iN501	Yes (Max 4 units)	Yes (Max 4 units)
All other Models (i200, i250, iQ251, iQ251D, iQ751, iQ1001, iQ1501, iQ2001, and iQ3001)	Not supported	

11. Connect the included communication cable from an open jack on the circuit board in one unit to an open jack in the next unit. Repeat this step as required by the number of water heaters being connected.
12. On the first water heater, locate DIP Switch 3 on circuit board 1. Position the switch in the ON position (left) as shown in the table below.
13. Position all other switches on the circuit boards in the unit to the OFF position (right).
14. On any water heater unit between the first and last unit, Unit 2 and/or Unit 3, position all DIP SW3 switches in the OFF position (right).
15. On the last water heater, locate DIP Switch 3 as shown in the table below.
16. Once the communication cables are routed and connected and the DIP switches are correctly positioned, close and lock the front door.
17. Reconnect the power and turn the water heater ON. The water heaters, should now be ready to communicate with each other and operate as a single system.

Note: Whenever a change is made to any one water heater, all the other units in the system will be automatically updated to the new settings.

13.2.1 telliCare for Multiple Units

If cascading multiple units, if software version is 205 or earlier, the cellular module on all units shall be installed as it is. If software version is 205(iN501)/105(iN401) or earlier, please do not remove the cellular module. This step is different from our current Wi-Fi based models.

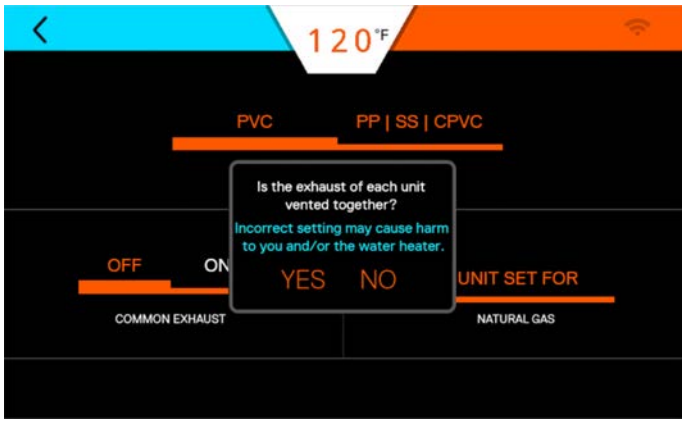
Cascade Termination DIPSW 3 Setting (2 units)			Cable Connection	Note
Model	**DIP SW 3 ON (up)**	**DIP SW 3 OFF (down)**	Cascade cable connects from Unit#1 Top HEX to Unit#2 Top HEX	If software version is 205/105 or earlier, please do not remove the cellular module.
Unit# 1	Bottom HEX	Top HEX		
Unit# 2	Bottom HEX	Top HEX		

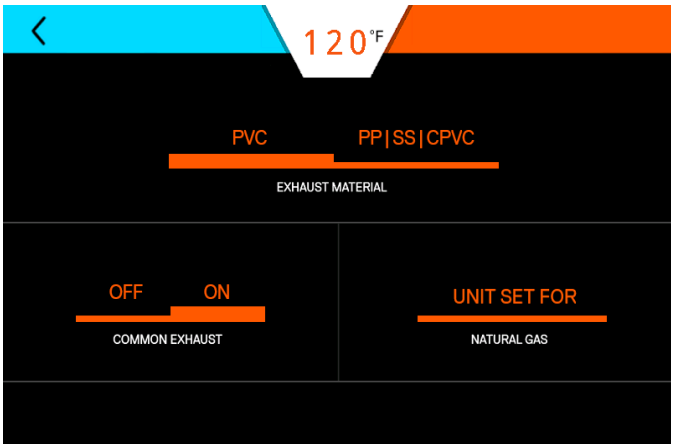
Cascade Termination DIPSW 3 Setting (3 units)			Cable Connection	Note
Model	**DIP SW 3 ON (up)**	**DIP SW 3 OFF (down)**	1. Cascade cable connects from Unit#1 Top HEX to Unit#2 Cellular module (near Bottom HEX) 2. Cascade cable connects from Unit#2 Top HEX to Unit#3 Top HEX	If software version is 205/105 or earlier, please do not remove the cellular module.
Unit# 1	Bottom HEX	Top HEX		
Unit# 2		Top HEX & Bottom HEX		
Unit# 3	Bottom HEX	Top HEX		

Cascade Termination DIPSW 3 Setting (4 units)			Cable Connection	Note
Model	**DIP SW 3 ON (up)**	**DIP SW 3 OFF (down)**	1. Cascade cable connects from Unit#1 Top HEX to Unit#2 Cellular module (near Bottom HEX) 2. Cascade cable connects from Unit#2 Top HEX to Unit#3 Cellular module (near Bottom HEX) 3. Cascade cable connects from Unit#3 Top HEX to Unit#4 Top HEX	If software version is 205/105 or earlier, please do not remove the cellular module.
Unit# 1	Bottom HEX	Top HEX		
Unit# 2		Top HEX & Bottom HEX		
Unit# 3		Top HEX & Bottom HEX		
Unit# 3	Bottom HEX	Top HEX		

13.3 Venting for multiple units

When venting for multiple units the following screens will appear.

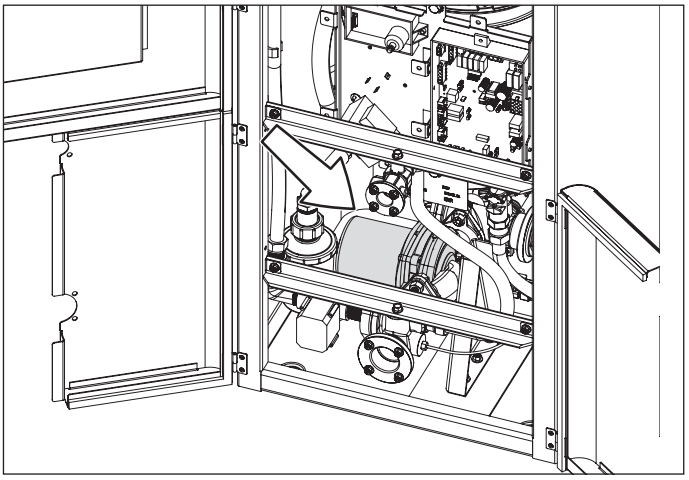




14. Maintenance

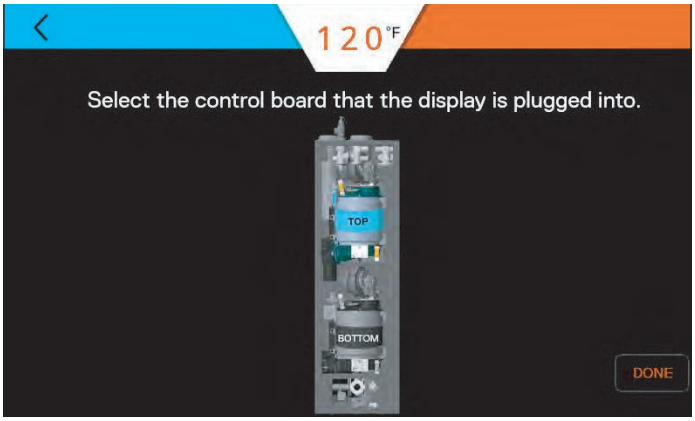
14.1 Maintenance-Free Circulation Pump

The circulation pump is maintenance-free and therefore does not require any servicing. The only adjustment is the speed setting, which must be set to Speed 3 (III).



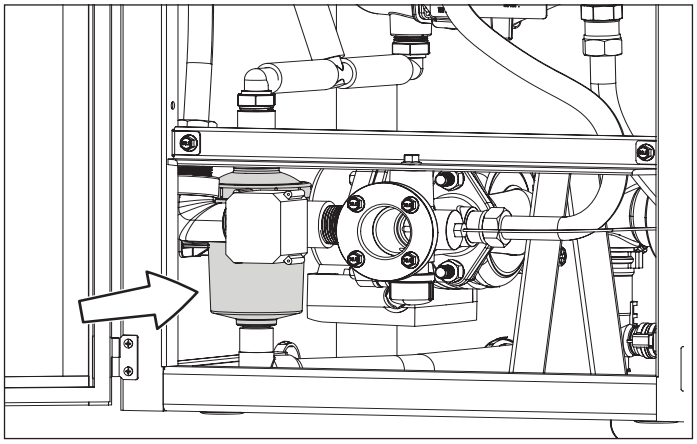
14.2 Heat Engine Locations

Use the following diagrams to identify the location of the heat engines.



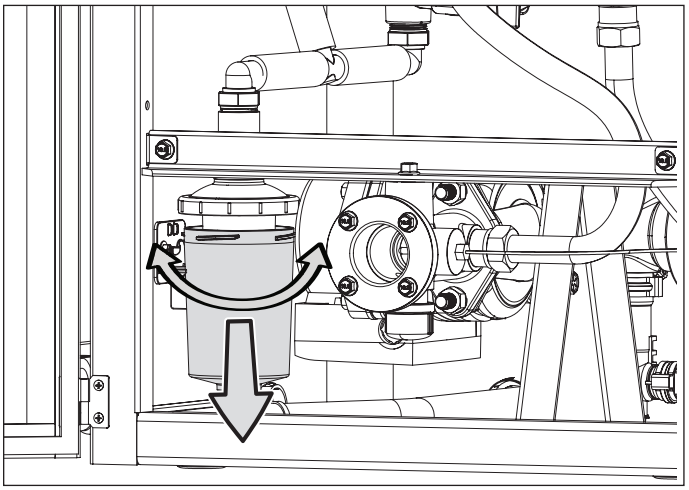
14.3 Condensate Sediment Cup Cleaning

One sediment cup is located inside the water heater cabinet. This cup should be removed and cleaned **every 3 months.**

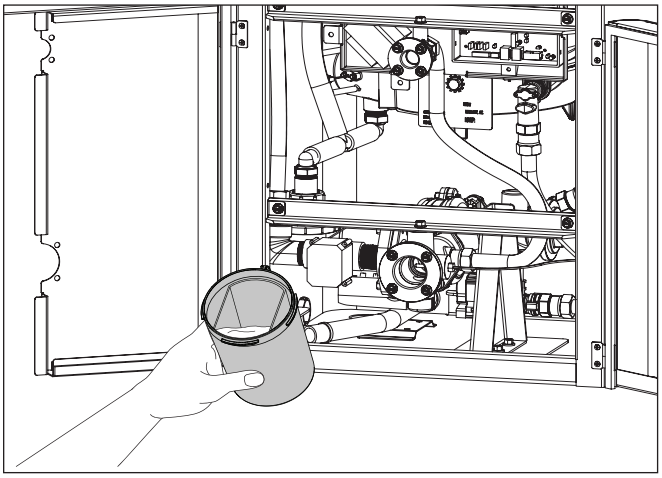


.

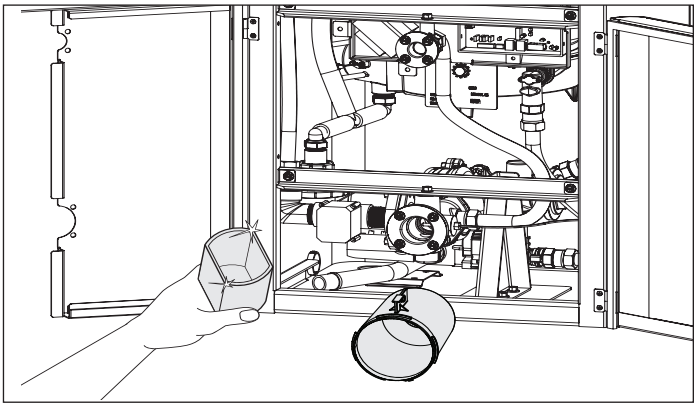
1. Twist the bottom of the sediment cup to release the locking clips.



2. Pull down on the sediment cup and pull it away from the upper portion of the unit. The sediment cup will normally be full of condensate. Carefully, pour the condensate into a container and properly dispose of it.



3. Remove the inner sediment cup from inside the lower portion of the unit.



4. Remove any dirt and debris build-up using soap and warm water.
5. Replace the inner sediment cup and reattach the entire unit.

14.4 Wye Strainer

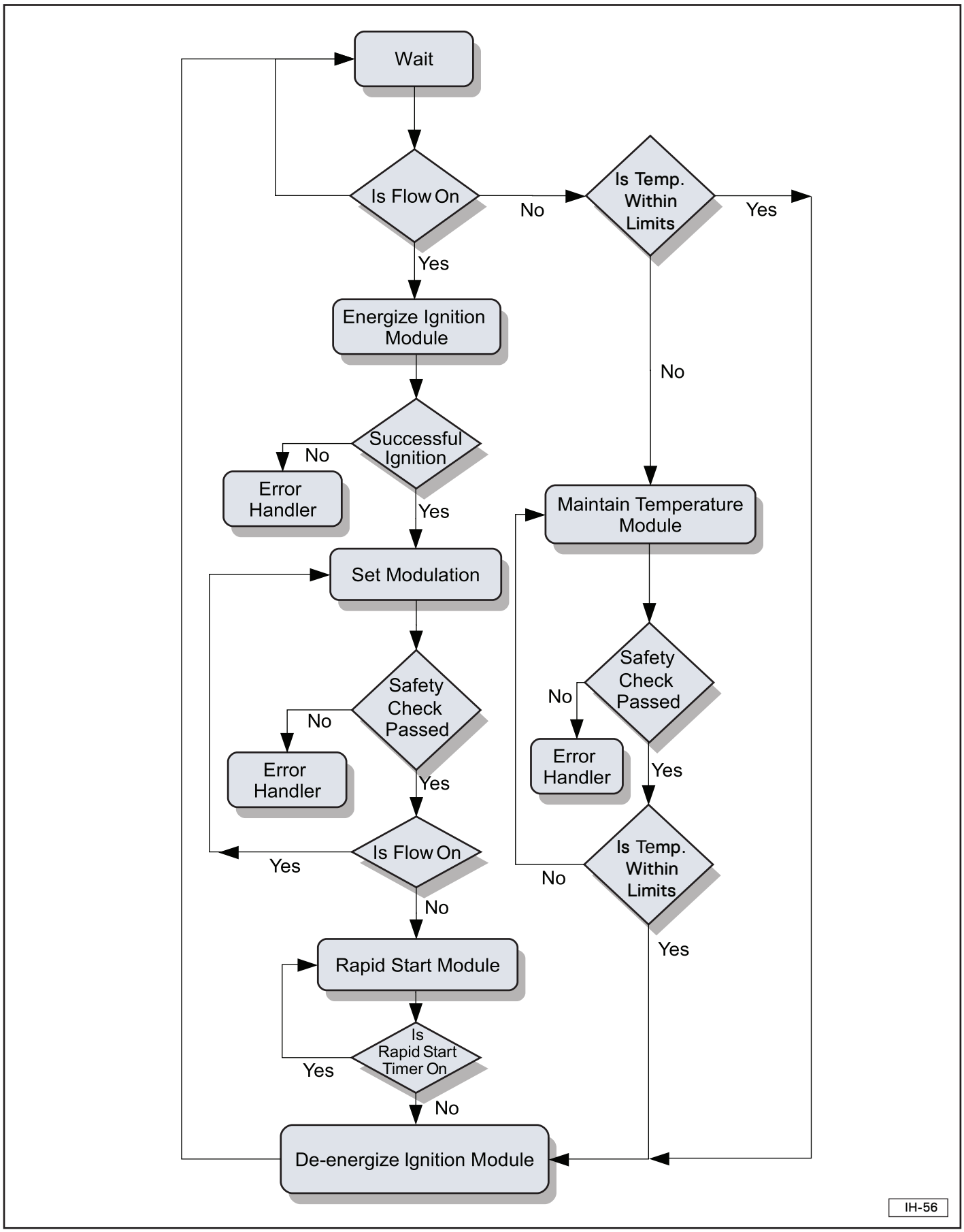
NOTICE

This heater includes an external Wyne strainer. The Wyne strainer must be installed to qualify for unit warranty.

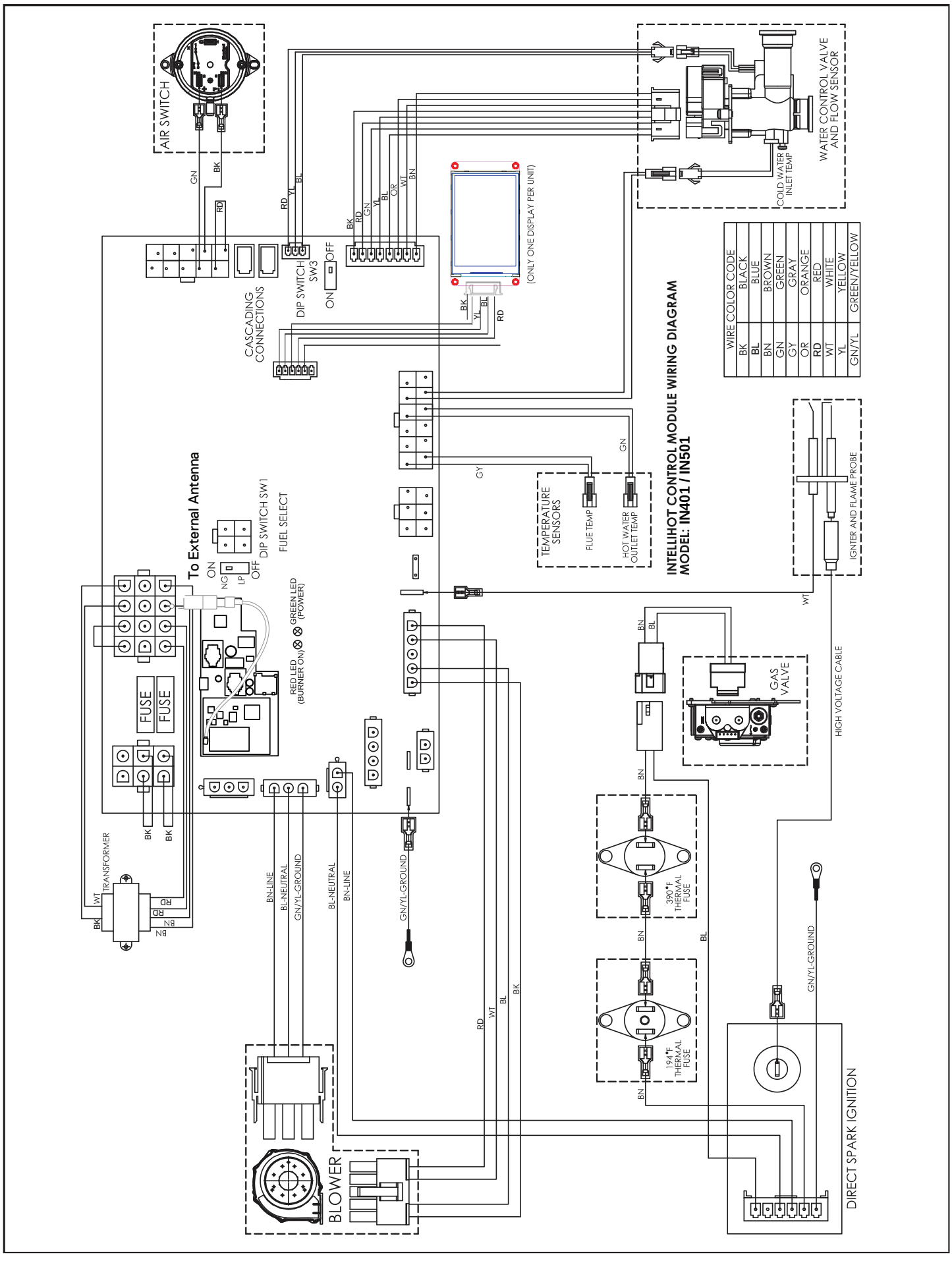
1. Please clean the Wye strainer every **3 months.**

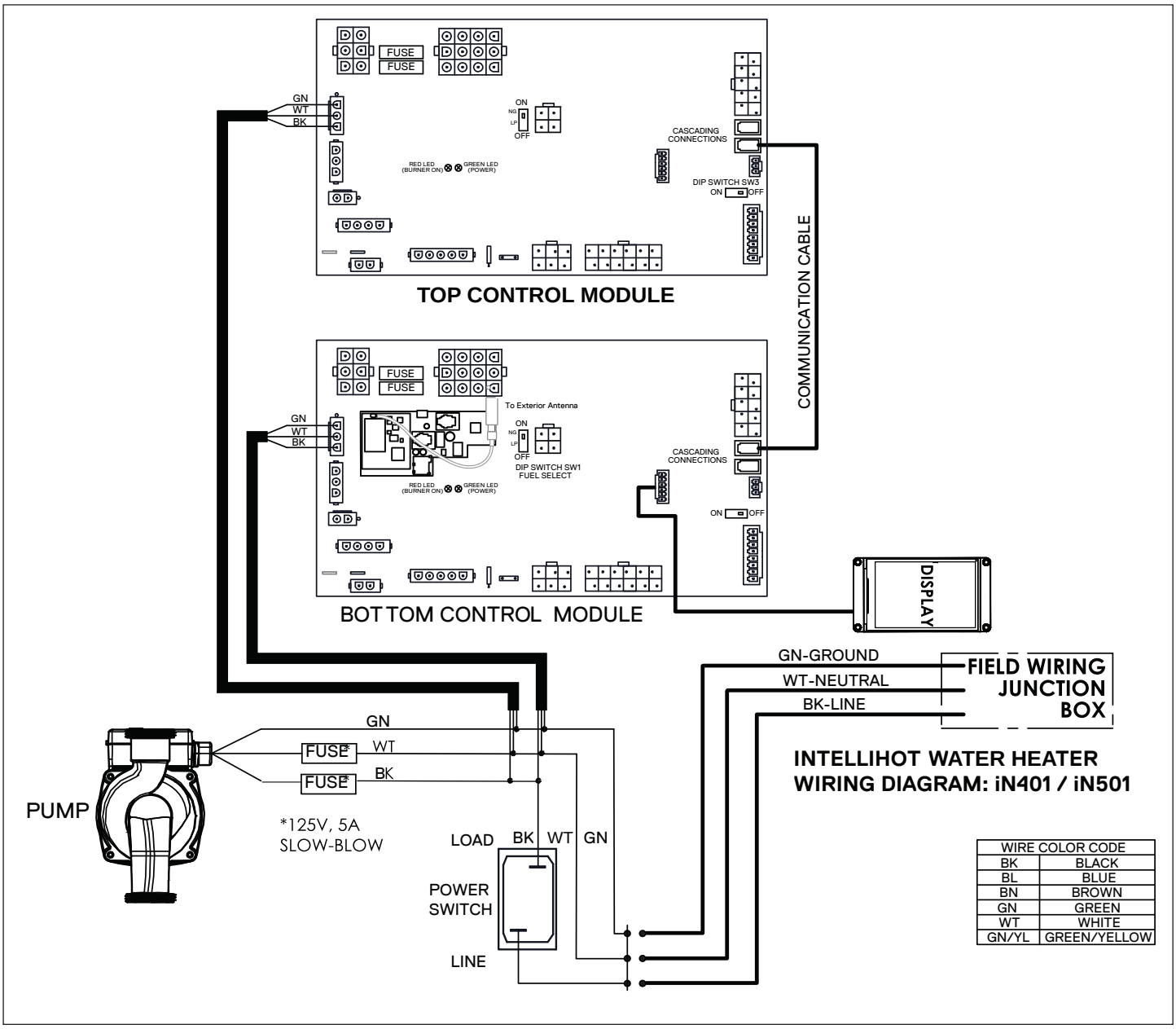
15. Wiring Diagrams and Troubleshooting

15.1 Operational Flow Chart



15.2 Complete Wiring Diagram (all models)



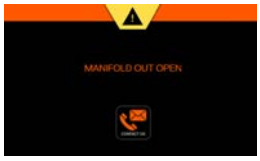
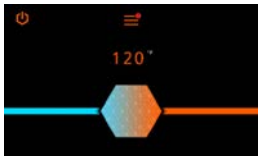

FUSE
FUSE
GN
WT
BK
ON
NG
LP
OFF
RED LED (BURNER ON)
GREEN LED (POWER)
CASCADING CONNECTIONS
DIP SWITCH SW3
ON
OFF
TOP CONTROL MODULE
COMMUNICATION CABLE
To Exterior Antenna
DIP SWITCH SW1 FUEL SELECT
BOTTOM CONTROL MODULE
DISPLAY
GN-GROUND
WT-NEUTRAL
BK-LINE
FIELD WIRING JUNCTION BOX
INTELLIHOT WATER HEATER
WIRING DIAGRAM: iN401 / iN501
PUMP
FUSE*
*125V, 5A
SLOW-BLOW
LOAD
POWER SWITCH
LINE
WIRE COLOR CODE
BK BLACK
BL BLUE
BN BROWN
GN GREEN
WT WHITE
GN/YL GREEN/YELLOW

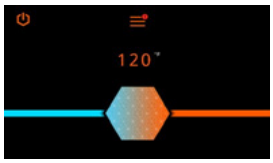
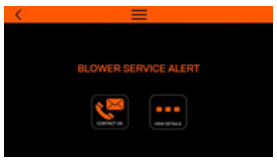
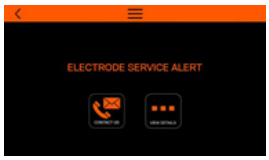
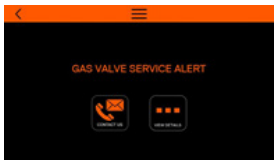
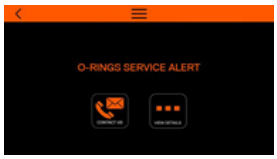
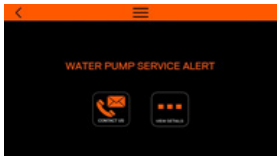
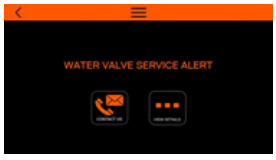
15.3 Troubleshooting Guide

Description	Possible Cause	Remedy
Blower Speed Fault 	· Blower noisy / impeller jammed. · Disconnected signal wire. · Wiring faulty.	· Inspect blower / impeller. Clean and remove any obstructions. · Check PWM signal. Check for loose wires / pins, and repair. · If the problem persists, turn control panel OFF, shut gas valve, disconnect power from unit, and contact an authorized service technician.
Igniter Ignition Fault 	· Water over-heat switch tripped. · Faulty DSI, faulty igniter wire, faulty ignition connection, faulty PCB, bad igniter. · Low gas pressure. · Wiring faulty.	· Check pump, check cross-over solenoid. Electrical noise (DSI). · Replace part. · Adjust gas pressure at regulator, check / increase size of gas line, check for gas line blockage. · If the problem persists, turn control panel OFF, shut gas valve, disconnect power from unit, and contact an authorized service technician.
Open Sensors Inlet / Outlet Sensor  	· Unplugged connectors. · Faulty sensor wiring. · Faulty sensor. · Heat engine water outlet temperature sensor. · Flue temperature sensor. · Inlet water temperature sensor. · Faulty controller.	· Check connectors and ensure they are securely connected · Check for nicked or broken sensor wiring or connectors. Also check for corroded or wet connectors · Measure resistance of sensor at connector (18 kΩ at 50°F, 10 kΩ at 77°F, 3 kΩ at 140°F) · Replace controller.
Faulty Sensors Inlet / Outlet Sensors  	· Faulty sensor wiring or faulty sensor. · Inlet water temperature sensor. · Heat exchanger water outlet temperature sensor. · Faulty controller.	· Check for nicked or broken sensor wiring or connectors. Also check for corroded or wet connectors. · Measure resistance of sensor at connector (18 kΩ at 50°F, 10 kΩ at 77°F, 3 kΩ at 140°F) · Replace controller
Heat Exchanger Outlet temperature exceeded set limit 	· Flow rate changes excessive. · Faulty sensor wiring. · Faulty sensor. · Faulty controller.	· Ensure the water flow rate does not change faster than 2 GPM every 5 seconds. · Check for nicked or broken sensor wiring or connectors. Also check for corroded or wet connectors. · Measure resistance of sensor at connector (18 kΩ at 50°F, 10 kΩ at 77°F, 3 kΩ at 140°F). · Replace controller.

Description	Possible Cause	Remedy
Flue		
Temperature Exceeded Set Limit 	· Incorrect vent set up. · High inlet temperature. · Faulty sensor wiring. · Faulty sensor. · Faulty controller.	· If vent pipe material is CPVC or polypropylene, ensure that CPVC is selected in the vent material screen. · 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. · Check for nicked or broken sensor wiring and connectors. Also check for corroded or wet connectors. · Measure resistance of sensor at connector (18 kΩ at 50°F, 10 kΩ at 77°F, 3 kΩ at 140°F). · Replace controller
Blocked Flue Fault 	· Exhaust blocked (bird, etc). · Backed up condensate. · Wiring loose (switch open).	· Check exhaust termination. Check exhaust connection at water heater. Install screens to prevent blockage. · Check slope of drain. Check for double loops, air locks, or debris in loop. · Check wiring.
Flue sensor  	· Unplugged connectors. · Faulty sensor wiring. · Faulty sensor. · Flue temperature sensor. · Inlet water temperature sensor. · Faulty controller.	· Check connectors and ensure they are securely connected · Check for nicked or broken sensor wiring or connectors. Also check for corroded or wet connectors · Measure resistance of sensor at connector (18 kΩ at 50°F, 10 kΩ at 77°F, 3 kΩ at 140°F) · Replace controller.
Cascading		
Alert 	· Loss of communication between units.	· Check for broken or nicked communication cable or loose connector. · Ensure that the communication cable is not bundled or tied to any high voltage lines. · Ensure dip switch (SW3) is ON in first and last units and OFF in all other units. · Ensure each unit numbering is unique.

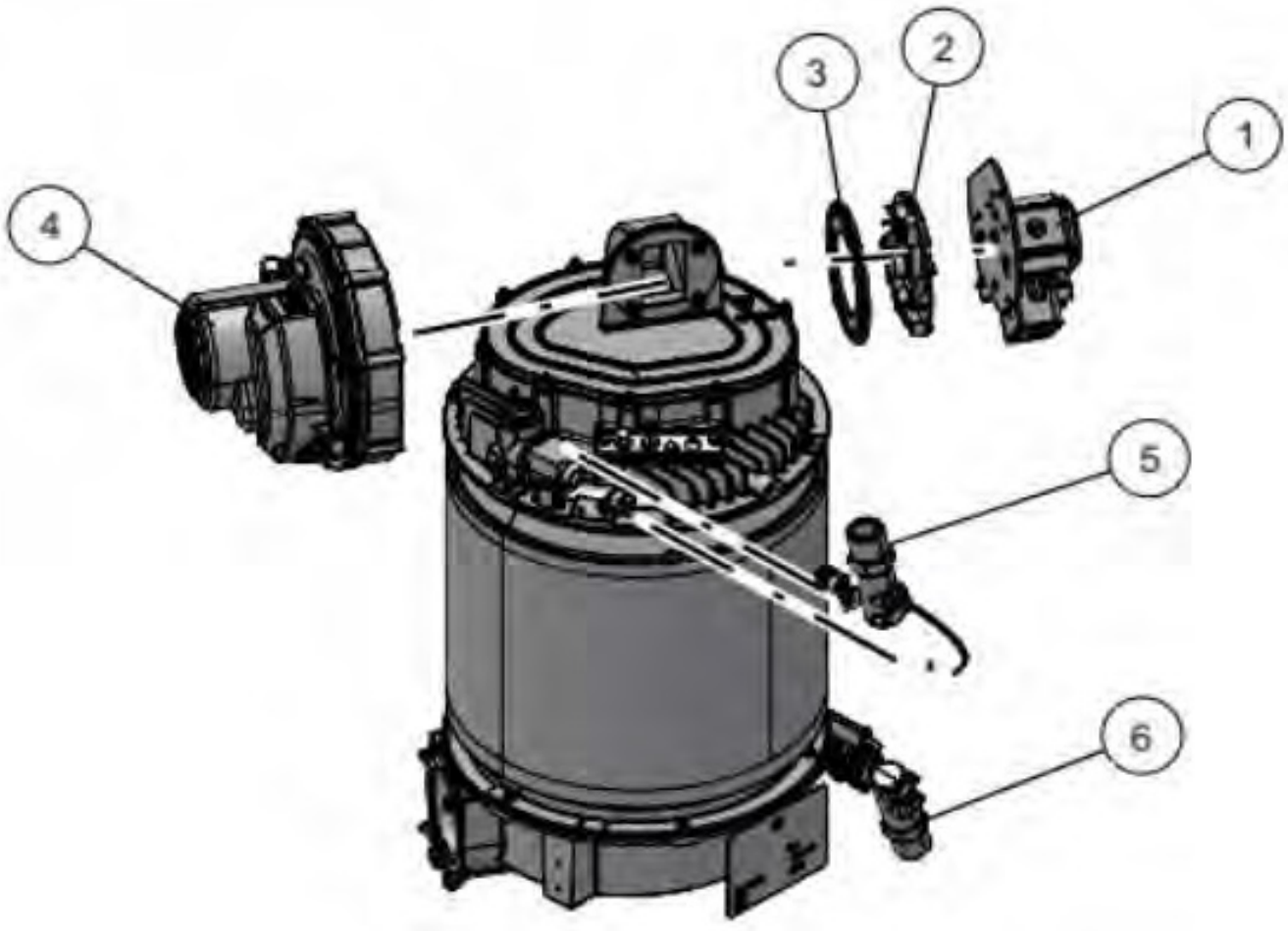
Description	Possible Cause	Remedy
Water Valve    	· Faulty sensor wiring. · Water valve clogged or damaged.	· Check for nicked or broken sensor wiring or connectors. Also check for corroded or wet connectors. · Replace water valve.
Pump 	· Faulty pump wiring. · Pump fuse blown. · Faulty pump. · Faulty controller.	· Check for nicked or broken sensor wiring or connectors. Also check for corroded or wet connectors. · Replace fuse (5 Amp) · Replace pump. · Replace controller.
Fuel Type 	· Wrong fuel type being used.	· Use correct fuel type.

Description	Possible Cause	Remedy
Software  	· Incorrect settings. · Incompatible settings. · Incorrect software version. · Faulty wiring.	· Review and correct settings. · Review and correct settings. · Update software version. · Check for nicked or broken sensor wiring or connectors. Also check for corroded or wet connectors.
Manifold Sensors      	· Unplugged connectors. · Faulty sensor wiring. · Faulty sensor. · Flue temperature sensor. · Inlet water temperature sensor. · Faulty controller.	· Check connectors and ensure they are securely connected · Check for nicked or broken sensor wiring or connectors. Also check for corroded or wet connectors · Measure resistance of sensor at connector (18 kΩ at 50°F, 10 kΩ at 77°F, 3 kΩ at 140°F) · Replace controller.
System Alert / Fault 	· A system alert or fault is present (main menu screen). · Malfunction of monitored part or system.	· Press the Menu bar and refer to the remedy for indicated part or system.

Description	Possible Cause	Remedy
Alive 	· Shows status of water heater. · Sleep mode.	· Touch display screen to awake.
	· Sleep mode passcode protected.	· Refer to the remedy for indicated part or system.
	· Indicates a fault exists within the monitored parts or system.	· Refer to the remedy for indicated part or system.
Service Alert       	· A system alert or fault is present (main menu screen). · Malfunction of monitored part or system.	· Press the Menu bar and refer to the remedy for indicated part or system.

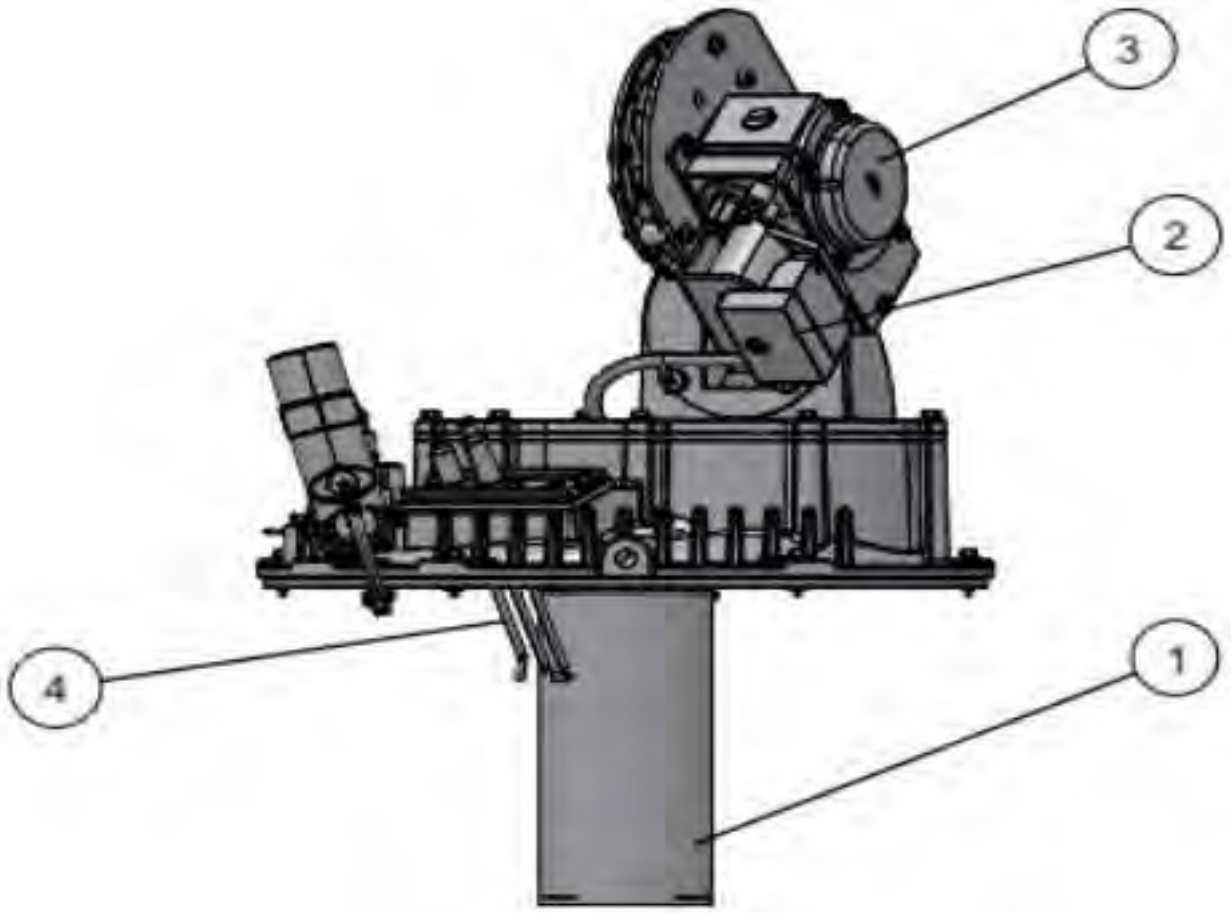
16. Serviceable Parts

16.1. Blower & HEX Parts



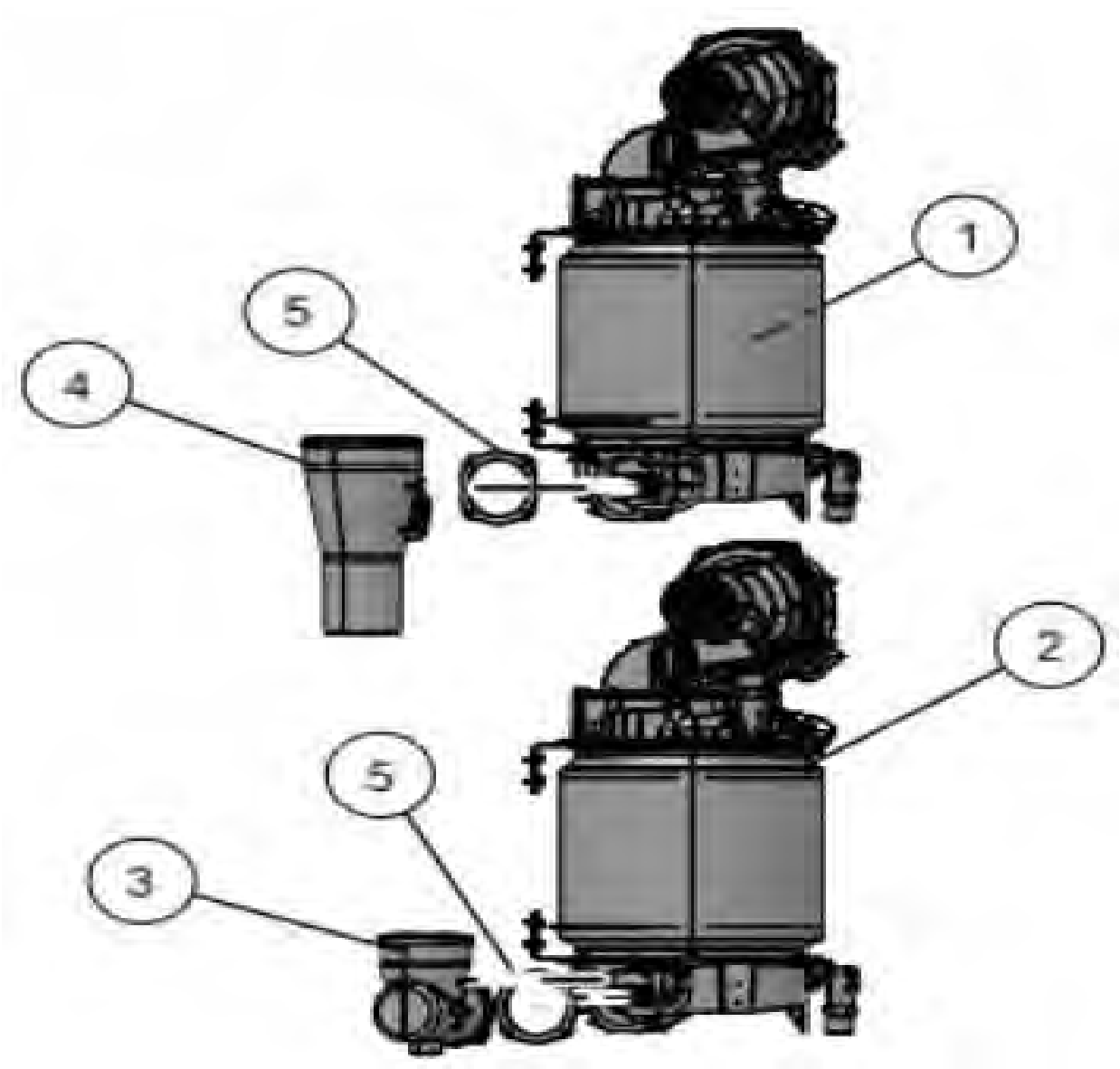
Item	Part Number	Description
1	IGT-SPR0011	Gas Valve Kit
2	IGT-ELC0147	Gray Swirl Plate
3	IGT-ELC0012	Fan Adapter Plate
4	IGT-SPR0008	Blower Kit
5	IGT-CST0011	Outlet Casting Adapter
6	IGT-CST0010	Inlet Casting Adapter

16.2. Burner, Electrode & Gas Valve



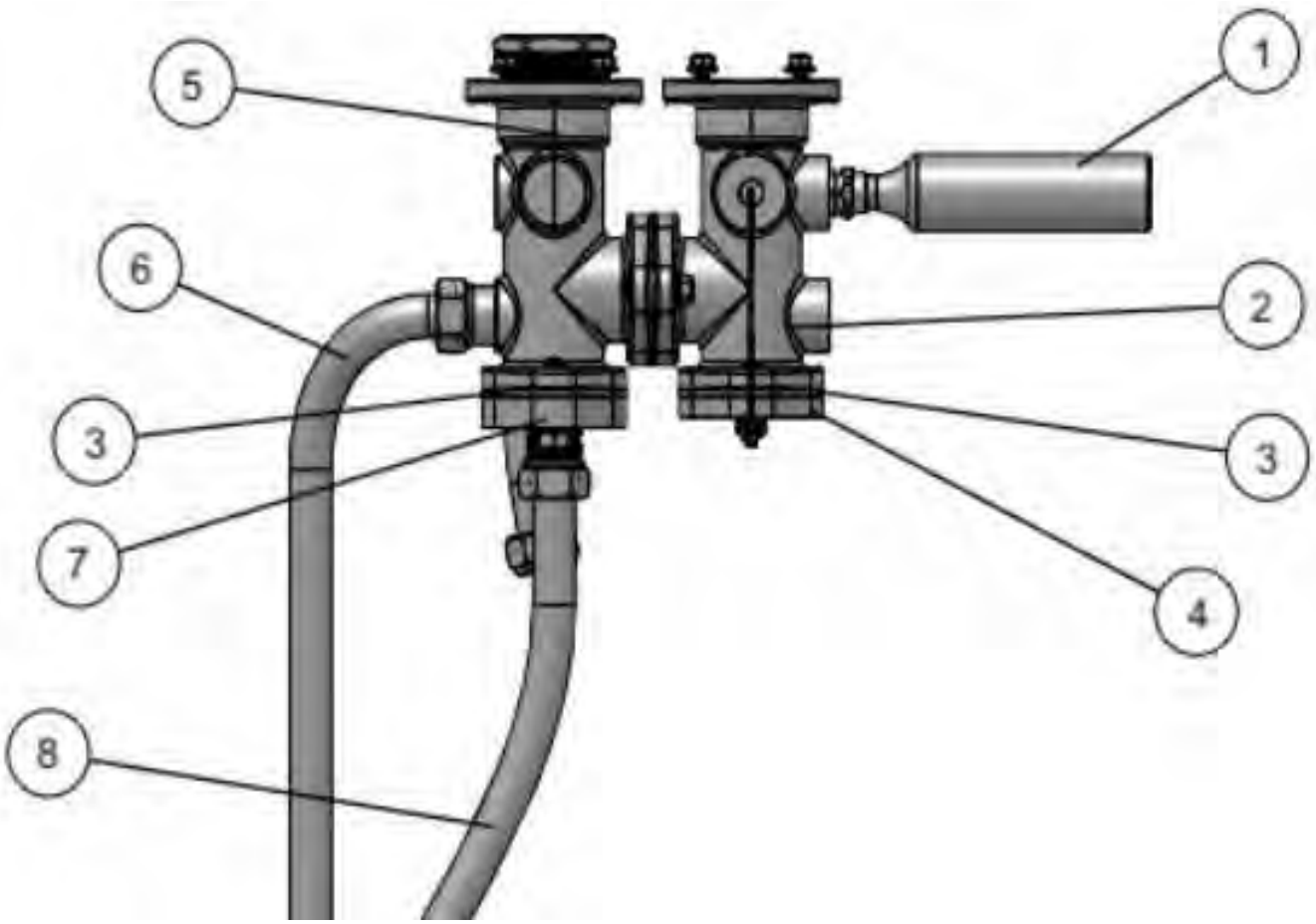
Item	Part Number	Description
1	IGT-SPR0111	Gen II V02 Burner Kit
2	IGT-ELC0020	Gas Valve Harness
3	IGT-SPR0011	Gas Valve Kit
4	IGT-SPR0106	Gen II V02 Electrode Kit

16.3. HEX & Sidecast



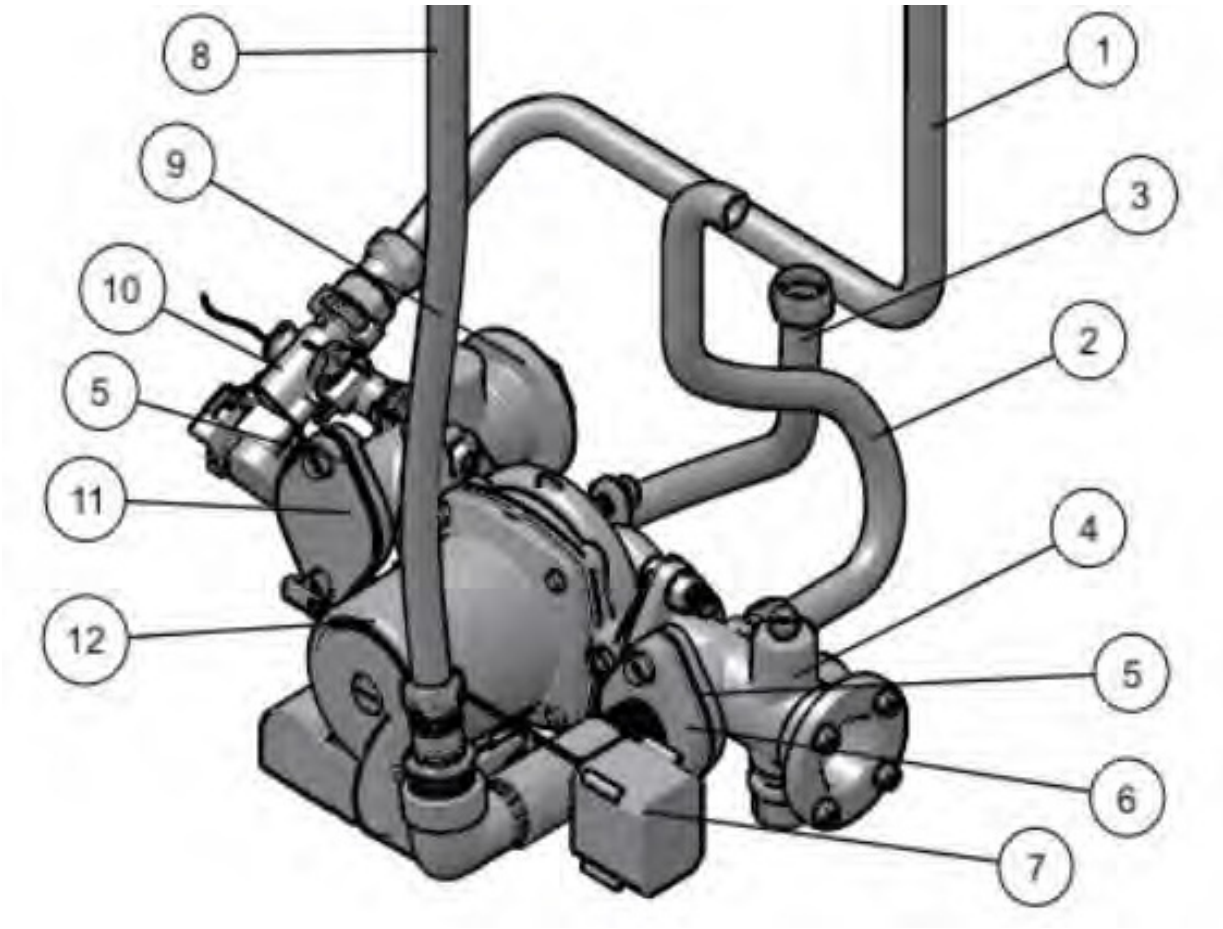
Item	Part Number	Description
1	IGT-SA0511	Top Heat Exchanger
2	IGT-SA0512	Bottom Heat Exchanger
3	IGT-CST0029	Side Cast - Exhaust, 3”
4	IGT-CST0035	Side Cast - Exhaust, 4” to 3”
5	IGT-SLS0083	Side Cast Seal

16.4. Water (hot water side)



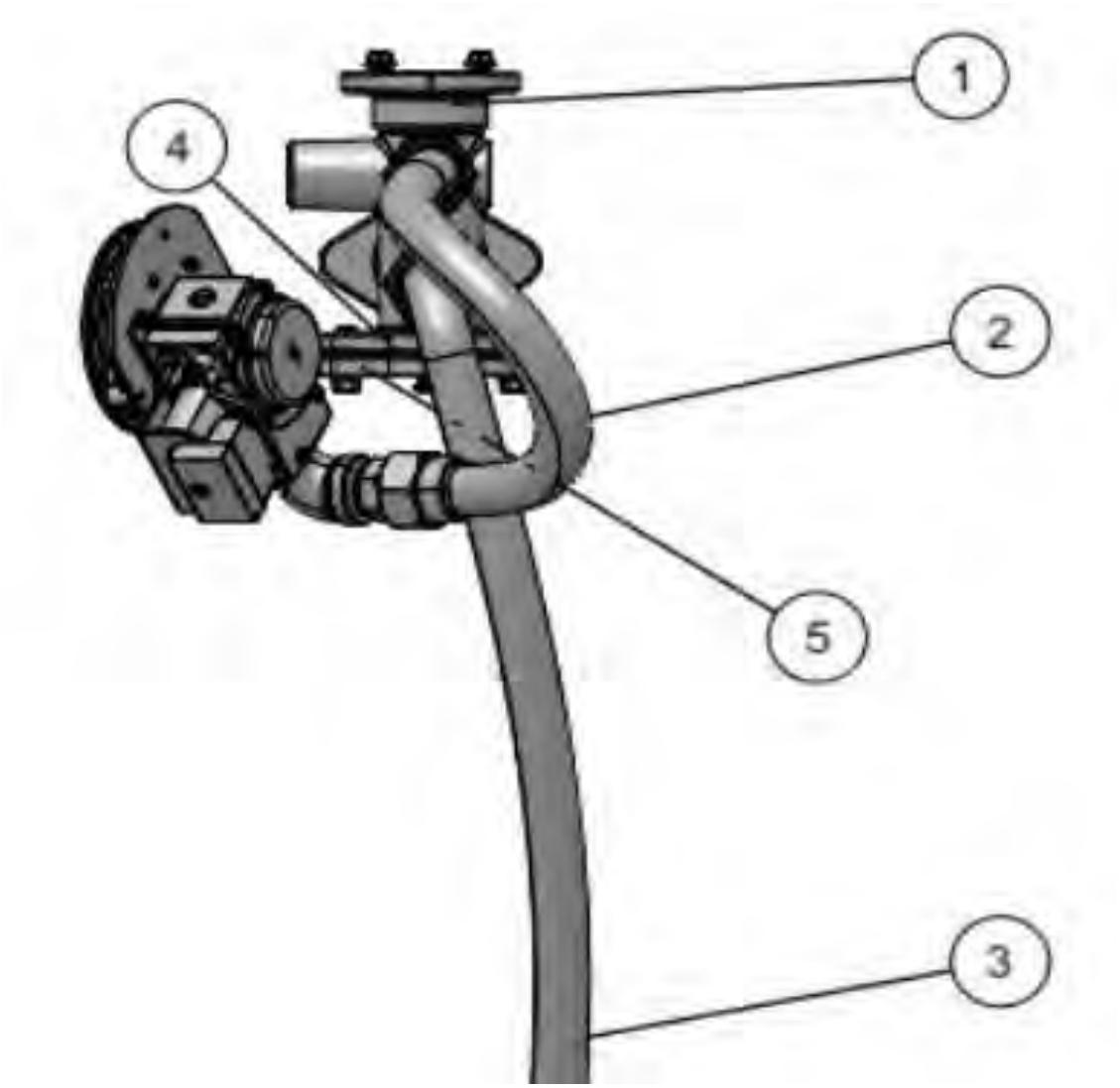
Item	Part Number	Description
1	IGT-PLG0018	Water Hammer Arrestor
2	IGT-FTT0235-3	Water out fitting, hot side
3	IGT-SLS0041	Flange Seal
4	IGT-SM0558	Close-off Plate
5	IGT-FTT0235-4	Water out fitting, T&P side
6	IGT-LNE0063	Corrugated Water line assembly
7	IGT-FTT0243-1	Flange Adapter fitting
8	IGT-LNE0064	Corrugated Water line assembly

16.5. Water (cold water side)



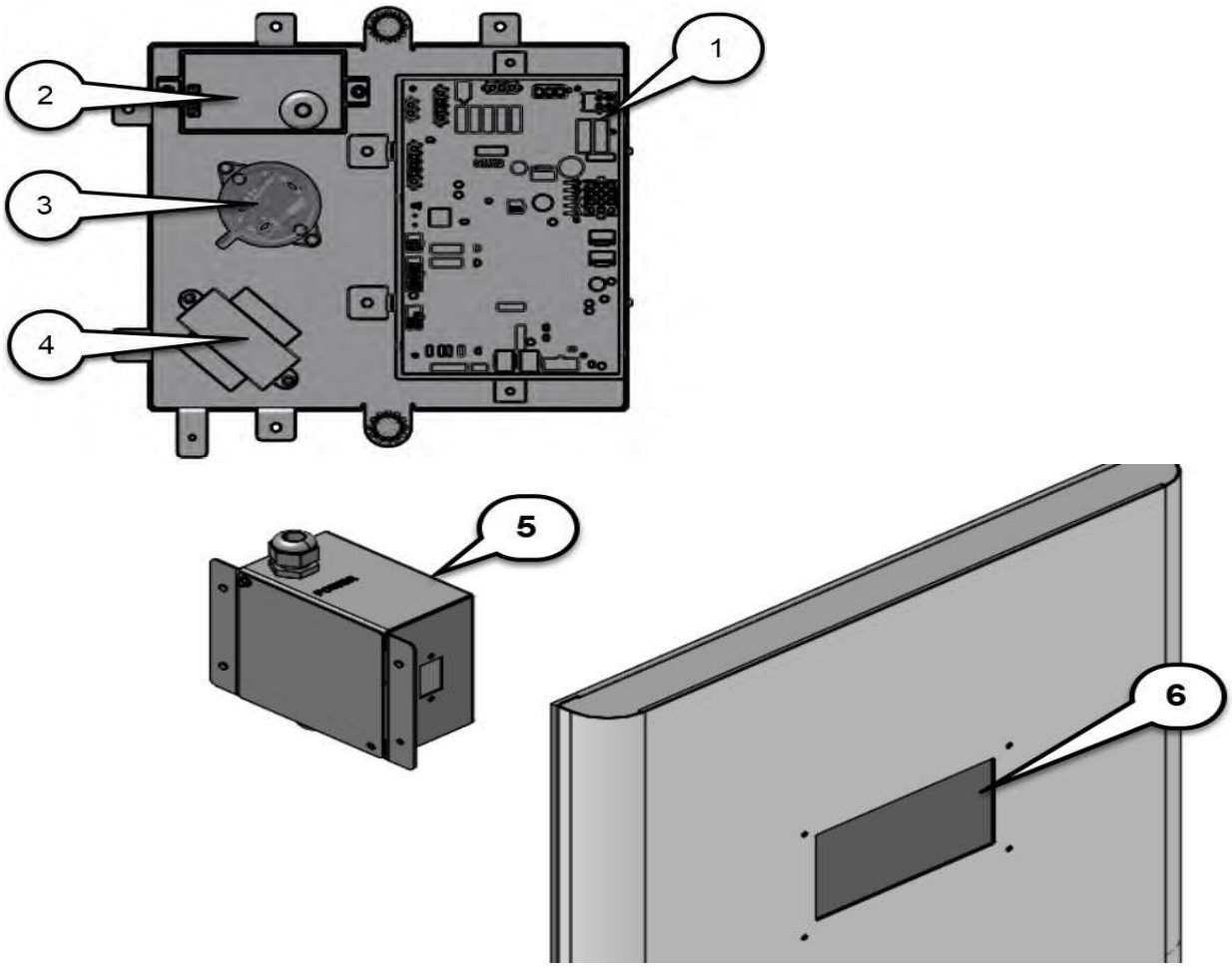
Item	Part Number	Description
1	IGT-LNE0059	Corrugated line assembly
2	IGT-LNE0053	Corrugated line assembly
3	IGT-LNE0061	Corrugated line assembly
4	IGT-FTT0235-1	Water In Fitting, Cold Side
5	IGT-SLS0041	Flange Seal
6	IGT-FTT0244	Flange Adapter Fitting
7	IGT-VL0019	Bypass Valve
8	IGT-LNE0064	Corrugated line assembly
9	IGT-FTT0235-2	Water in Fitting, Strainer
10	IGT-SPR0003	Water Valve kit
11	IGT-SM0558	Close off Plate fitting
12	IGT-SPR0075	Recirculation pump

16.6 Gas Connections



Item	Part Number	Description
1	IGT-FTT0235-5	Gas-in Casting
2	IGT-PLG0014	Gas Corrugated tube
3	IGT-PLG0015	Gas Corrugated tube
4	IGT-SLS0041	Flange Seal
5	IGT-SM0560	Close Off Plate

6.7. Electronics



Item	Part Number	Description
1	IGT-SPR0002	Control Board
2	IGT-SPR0005	Igniter Module (DSI) Kit
3	IGT-ELC0007	Air Switch
4	IGT-SPR0065	Transformer Kit
5	IGT-ELC0138	Rocker Switch
6	IGT-SPR0088	Large Screen Display Kit

16.8 Miscellaneous

Part Number	Description
IGT-ELC0092	25 ft cascading cable
IGT-ELC0232	50 ft cascading cable
IGT-SPR0110	Gen II V 2 Sensors Kit (includes Manifold inlet, Manifold outlet, Flue and Hotwater outlet sensors)
IGT-SPR0109	Gen II V 2 O-Ring kit
IGT-ELC0181	DSI to Electrode HV Cable
IGT-ELC0278	Heat Exchanger to Control board Complete Harness
IGT-ELC0279	Heat Exchanger to Water Valve Wiring Harness Set (top & bottom)
IGT-ELC0280	Mainfold Inlet Sensor Wiring Harness
IGT-ELC0281	Manifold Outlet Sensor Wiring Harness
IGT-ELC0284	Bypass Valve Wiring Harness
IGT-ELC0288	Display Wiring Harness
IGT-SPR0119	Neuron Wye Strainer Kit
IGT-SPR0118	BMS Kit (Factory Installed Option only)