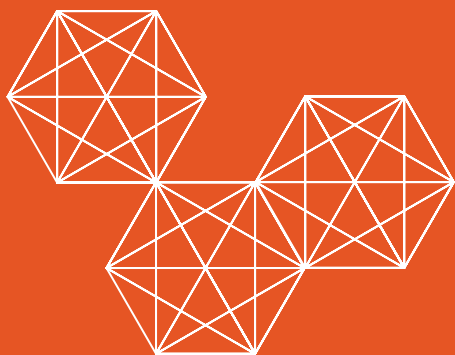




Maintenance Manual **iE1**



Thank you for purchasing this Intellihot unit.

This unit is designed for years of trouble free operation, and I urge you to read and follow the instructions in this "Operation & Installation Manual."

Our mission to create a better heating system began back in the winter of 2005 when a tank water heater broke down and flooded my basement. By combining the principles of a diesel engine's robustness, robotics intelligence, and marine environment durability, we set out to design a unit from the ground up that would outperform and outlast all others.

Quickly, our goal grew from not just making a better water heater, but creating an intelligent water heating and delivery system. Innovation is our hallmark and simplicity, efficiency, and durability are at the core of every Intellihot product.

Our products are proudly engineered and built in Galesburg, Illinois. Intellihot has helped commercial customers throughout the nation save thousands of dollars while eliminating downtime. Our talented team of dedicated professionals is ready to assist you and help your business succeed.

I thank you for purchasing our Intellihot products.

Sincerely,

*Sri Deivasigamani
CEO, Intellihot Inc.*

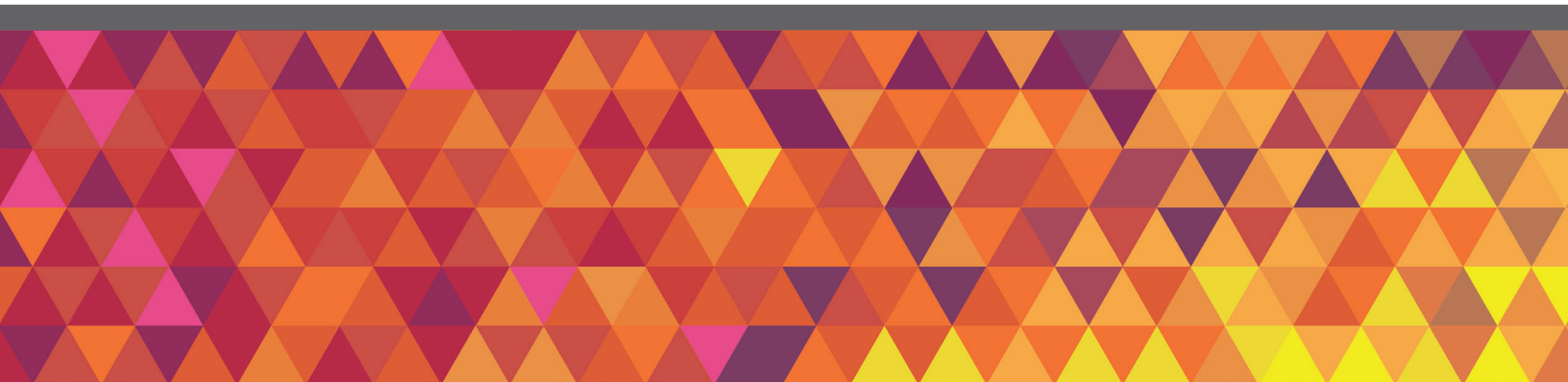
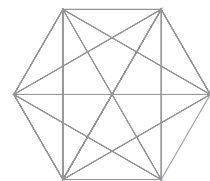
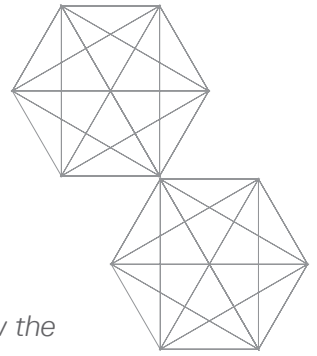


Table of Contents

10. Maintenance

| | |
|---|----|
| 10.1 Inlet Strainer Cleaning | 34 |
| 10.2 Fan Guard Cleaning | 34 |
| 10.3 Temperature-Pressure Relief Valve Test ... | 35 |

11. Wiring Diagrams and Troubleshooting

| | |
|--|----|
| 11.1 Operational Flow Chart | 36 |
| 11.2 Wiring Diagram. | 36 |
| 11.3 Troubleshooting Guide. | 38 |
| 11.3.1 Temperature Sensor Open - Upper Thermal Battery Error | 38 |
| 11.3.2 Temperature Sensor Shorted- Bottom Thermal Battery Error | 38 |
| 11.3.3 Temperature Sensor is Out of Range- Bottom Thermal Battery | 38 |
| 11.3.4 Heat Exchanger Valve Fault | 39 |
| 11.3.5 Bypass Valve Fault | 40 |
| 11.3.6 Float Switch Failed | 40 |
| 11.3.7 Bypass Valve Fault | 40 |

12. Serviceable Parts

| | |
|---------------------------|----|
| 12.1 Display | 41 |
| 12.2 CTA2045 | 41 |
| 12.3 Electronics | 41 |
| 12.4 Cold Side | 42 |
| 12.5 Cold Side | 42 |
| 12.6 Cold Side | 43 |
| 12.7 Glycol Side | 43 |
| 12.8 Glycol Side | 44 |
| 12.9 Tank | 44 |
| 12.10 Heat Pump | 44 |
| 12.11 Miscellaneous | 44 |

This product complies with UL 60335-2-40/CSA 22.2 Electric Water Heater. For use as potable water heating



DANGER



To avoid product damage, personal injury, or even possible death, carefully read, understand, and follow all the instructions in this Installation & Operation Manual before installing this product.

Improper installation, adjustment, alteration, or maintenance can cause injury, loss of life, and/or property damage.

This water heater should be installed and serviced by a qualified technician. The lack of proper service can result in a dangerous condition.

This manual must remain with the water heater

Due to Intellihot's policy of continuous product improvement and technology, the design, technical specifications, or both in this manual are subject to change without notice.

This manual contains safety information, installation instructions, and maintenance procedures. It must be left with the homeowner or placed near the water heater in a noncombustible location. The customer should retain this manual for future reference.

Contact Information

Call us, your dealer, first if you have any questions about this product. We can help answer questions about installation, operation, or if there are damaged or missing parts when unpacking this unit from the shipping box.



Dealer Contact Information.

WARNING



Electrical Shock Hazard - Do Not Touch

Electrical Shock Hazard

If the water heater becomes immersed in water up to or above the level of the bottom of the element doors, the heater should be examined by a qualified service agency before it is placed in operation.

10. Maintenance

10.1 Inlet Strainer Cleaning

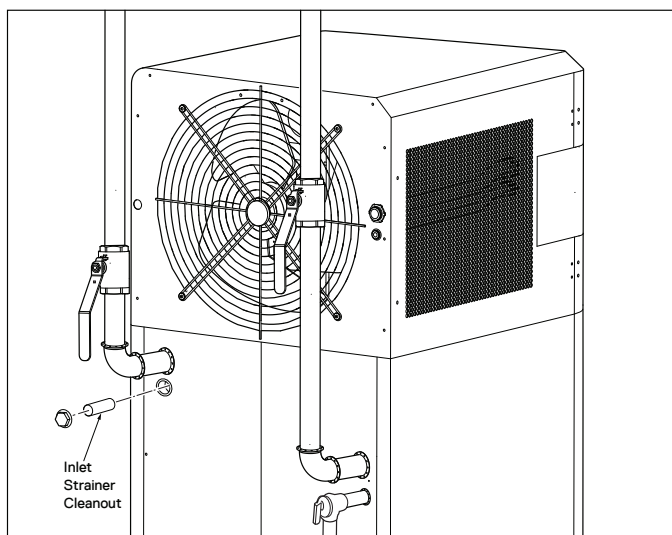
The following procedures must be performed atleast once in every three months or it may affect the warranty of the product.

1. The water heater must be turned OFF at the breaker ON/OFF switch before maintenance checks can be performed.
2. Shut off the water inlet valve.
3. Open a nearby tap/faucet and make sure that all the water is drained then close the tap.
4. Use a wrench to loosen the water inlet strainer and remove the strainer.
5. Clean the strainer, reinstall it and tighten the strainer nut.
6. Turn on the power supply.
7. Open the water inlet valve.
8. Perform visual inspection of the water connections to
9. Make sure that there are no leaks.

10.2 Fan Guard Cleaning

The following procedures must be performed atleast once in every three months or it may affect the warranty of the product.

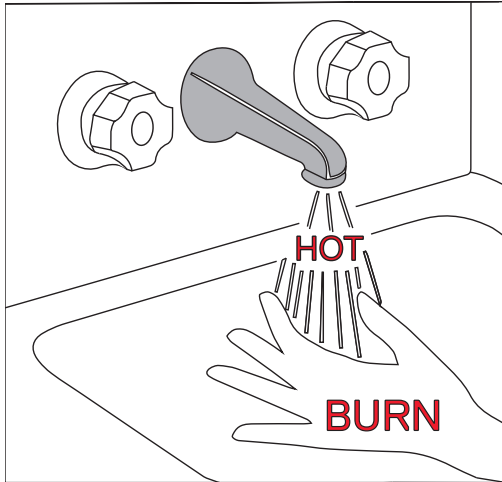
1. The water heater must be turned OFF at the breaker ON/OFF switch before maintenance checks can be performed. Make sure that the fan stops rotating.
3. Use a cleaning brush to clean the fan guard at the back and on the side.
4. Turn ON the water heater and make sure that the fan runs properly.



10.3 Temperature-Pressure Relief Valve Test

The following procedures must be performed atleast once in every three months or it may affect the warranty of the product.

DANGER



WARNING

When testing the Temperature-Pressure Relief Valve's functionality, make sure that no one is standing in front of or near the discharge line's outlet. The discharged water may be hot and may cause injury to personnel.

WARNING

When using a valve, exercise caution because it might be hot and may cause injury to personnel.

CAUTION

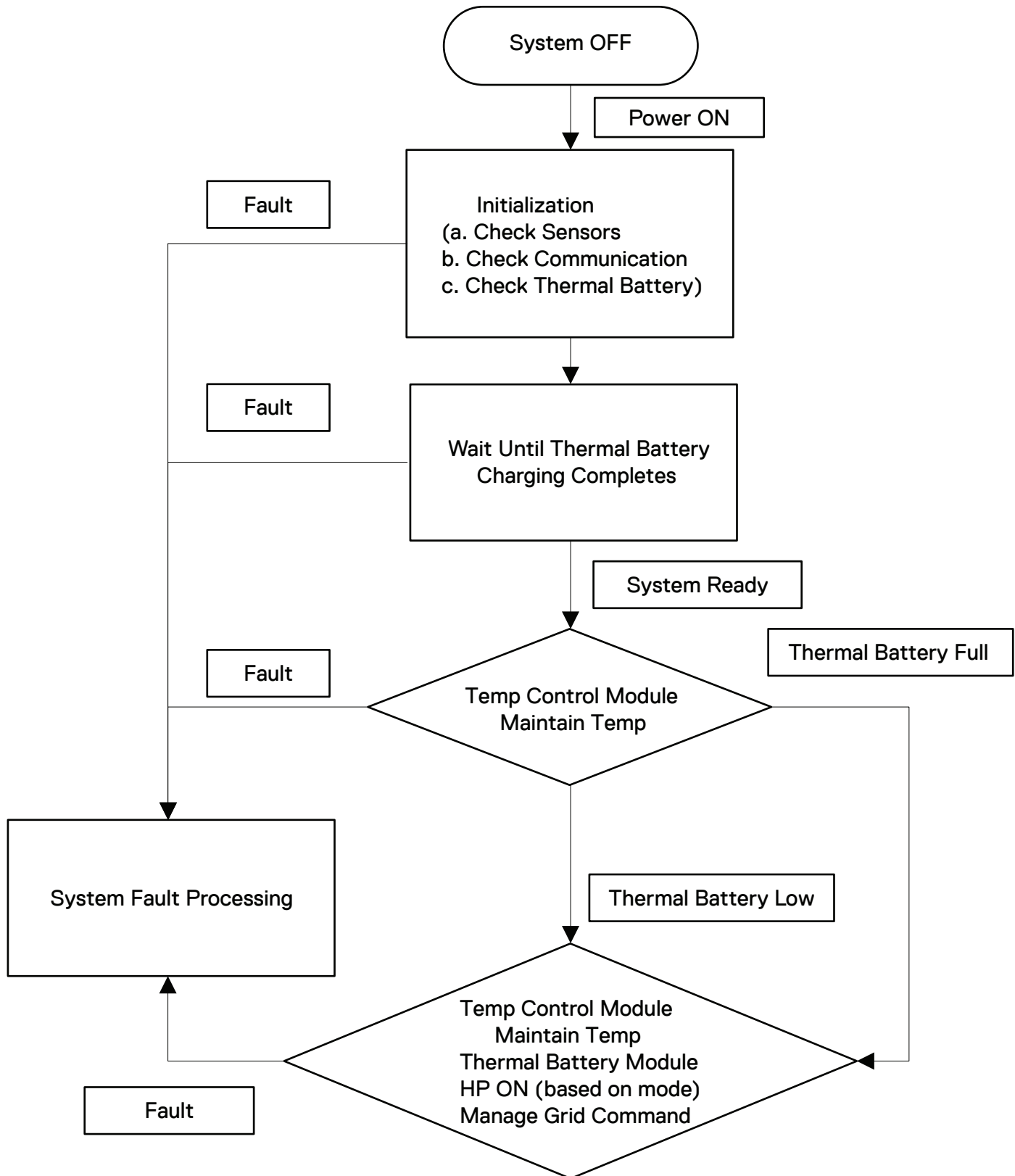
Make sure that the surrounding is clear off any objects. The discharged water may be hot and may cause damage to property.

1. Operate the lever at the relief valve's end several times. Make sure that the valve functions properly.
2. The temperature-pressure relief valve must be replaced if it fails to completely reset and continues to release water.

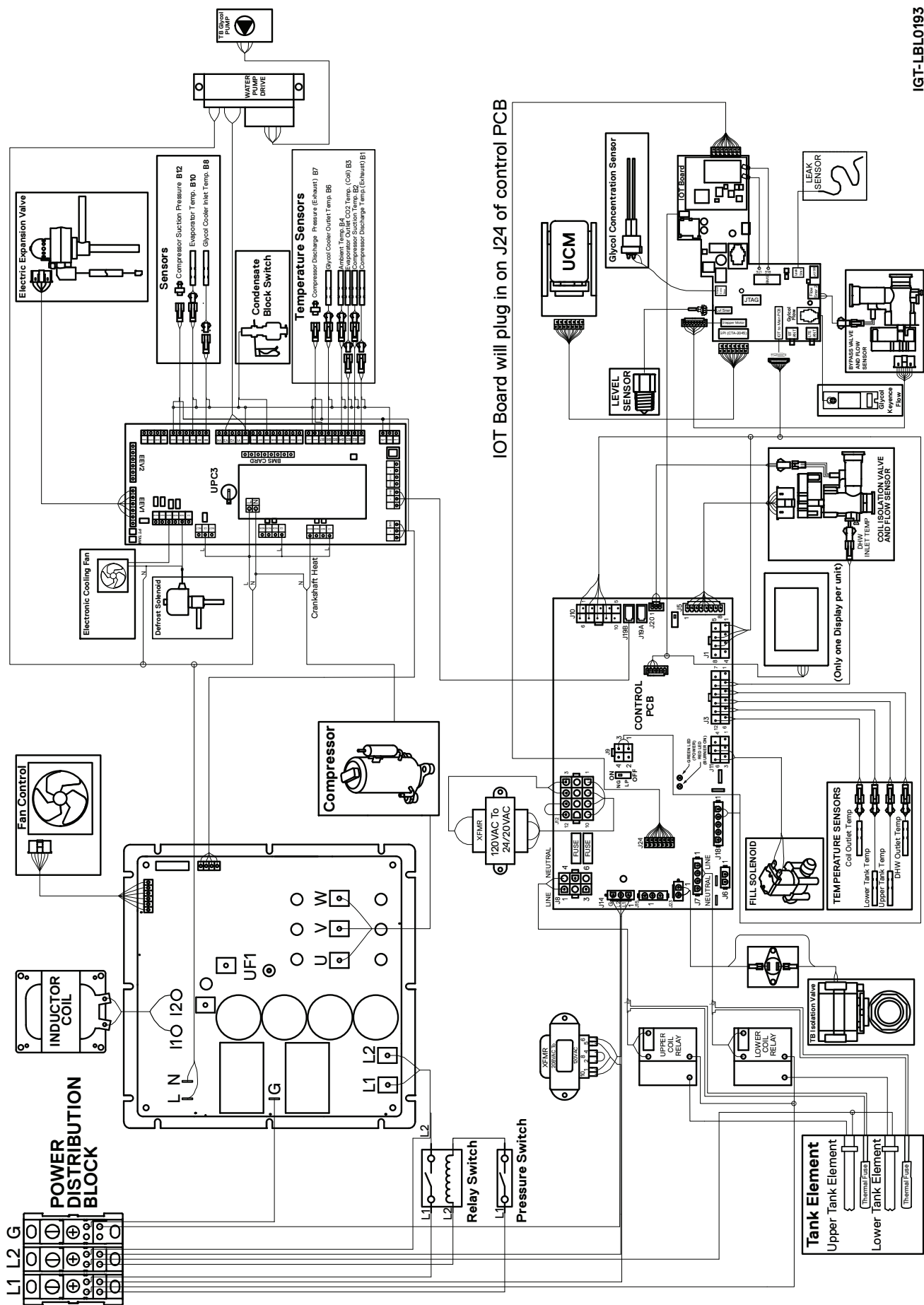
11. Wiring Diagrams and Troubleshooting

11.1 Operational Flow Chart

11.2



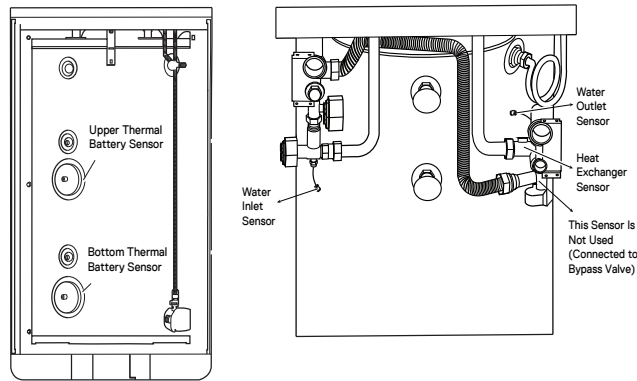
11.3 Wiring Diagram



IGT-LBL0193

11.4 Troubleshooting Guide



Before troubleshooting the water heater for faults please see Section “2. Safety” on page 6 for safety instructions



11.4.1 Temperature Sensor Open - Upper Thermal Battery Error

Temp Sensor Open - Upper Thermal Battery

Troubleshoot and Replace:
-Temperature Sensor





| Possible Causes | Remedy |
|--|--|
| Temperature Sensor is disconnected | Make sure that the temperature sensor connectors are correctly attached. |
| Unplugged connectors | Replace the temperature sensor. |
| Faulty temperature sensor | |
| Nicked or Broken wire. | Replace nicked or broken wires. |
| Incorrect temperature sensor wiring | |
| Too much heat in the water outlet or water inlet | Allow the water outlet temperature to decrease and make sure the resistance of the temperature sensor at the connector is 18 kΩ at 50°F, 10 kΩ at 77°F, 3 kΩ at 140°F. |
| Faulty temperature sensor controller | Replace the Control Board. |

11.4.2 Temperature Sensor Shorted- Bottom Thermal Battery Error

Temp sensor shorted - Bottom Thermal Battery

Troubleshoot and Replace:
-Temperature Sensor





| Possible Causes | Remedy |
|------------------------------------|--|
| Temperature Sensor is disconnected | Make sure that the temperature sensor connectors are correctly attached. |
| Nipped or Broken wire | Replace nicked or broken wires. |
| Faulty temperature sensor | Replace the temperature sensor. |

11.4.3 Temperature Sensor is Out of Range- Bottom Thermal Battery

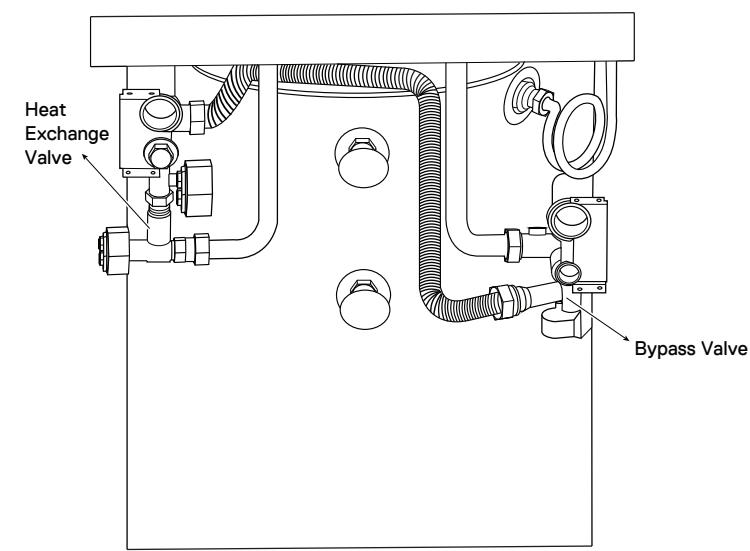
Temp Sensor is Out of Range - Bottom Thermal Battery



Sensor Malfunctioning, Sensor Value is Outside the Range



| Possible Causes | Remedy |
|------------------------------------|--|
| Faulty temperature sensor | Replace the temperature sensor. |
| Sensor value is outside the range | |
| Temperature Sensor is disconnected | Make sure that the temperature sensor connectors are correctly attached. |
| Nipped or Broken wire | Make sure the connectors are dry and free of corrosion. |

11.4.4 Heat Exchanger Valve Fault







Heat Exchanger Valve Fault

Troubleshoot and replace:

- Valve
- Flow Sensor
- Wiring Harness



| Possible Causes | Remedy |
|----------------------------------|--|
| 8 PIN wire disconnected | Make sure the connectors and wiring harness are dry and free of corrosion. |
| Nicked or broken connector | Replace nicked or broken wires and make sure the wire are correctly connected. |
| Faulty temperature sensor wiring | |
| Water valve clogged or damaged | Replace the water valve |

11.4.5 Bypass Valve Fault



Heat Exchanger Valve Fault

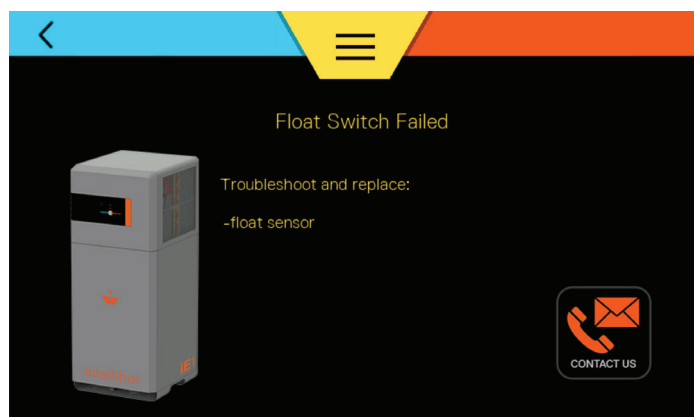
Troubleshoot and replace:

- valve
- flow sensor
- wiring harness

CONTACT US

| Possible Causes | Remedy |
|----------------------------------|--|
| 8 PIN wire disconnected | Make sure the connectors and wiring harness are dry and free of corrosion. |
| Incorrect or broken wiring | |
| Nicked or broken connector | |
| Faulty temperature sensor wiring | Make sure that the temperature sensor connectors are correctly attached. |
| Water valve clogged or damaged | Replace the water valve |
| Faulty IoT interface board | Replace IoT interface board |

11.4.6 Float Switch Failed



Float Switch Failed

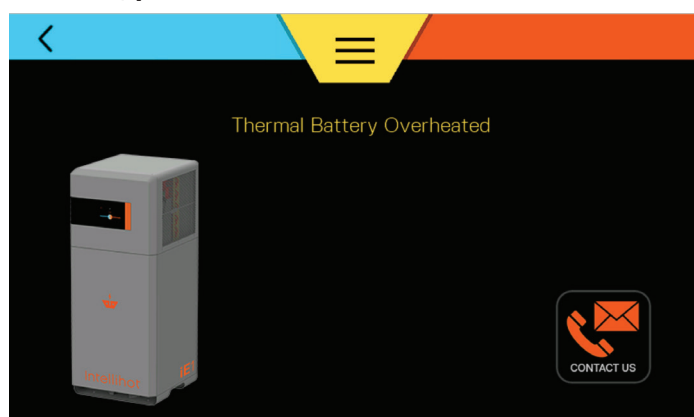
Troubleshoot and replace:

- float sensor

CONTACT US

| Possible Causes | Remedy |
|--|-------------------------------------|
| Faulty thermal battery drain port | Replace thermal battery drain port. |
| Faulty thermal battery inlet port | Replace thermal battery inlet port. |
| Fill solenoid assembly failed or clogged | Replace fill solenoid assembly |
| Faulty Level sensor | Replace level sensor |
| Faulty Glycol Concentration sensor | Replace Glycol Concentration sensor |

11.4.7 Bypass Valve Fault



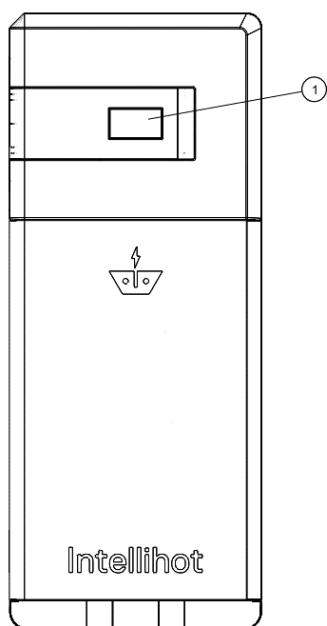
Thermal Battery Overheated

CONTACT US

| Possible Causes | Remedy |
|--------------------------------------|--|
| Faulty upper tank temperature sensor | Replace upper tank temperature sensor. |
| Faulty lower tank temperature sensor | Replace lower tank temperature sensor. |
| Faulty heat pump control board | Replace Heat pump control board |
| Faulty heating element relay | Replace heating element relay |

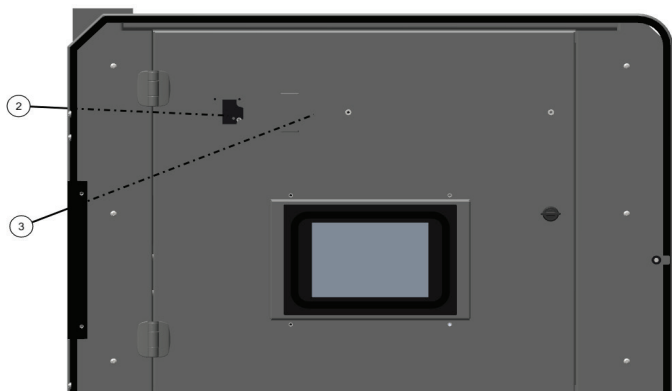
12. Serviceable Parts

12.1 Display



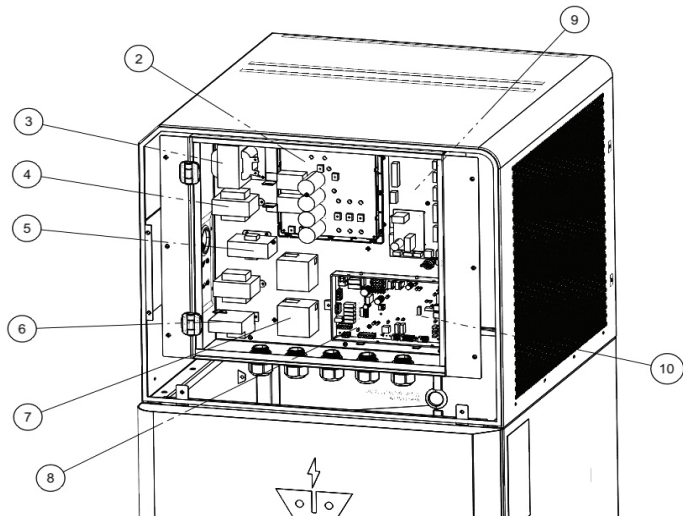
| Item | Part Number | Description | Qty |
|------|-------------|---------------------------------------|-----|
| 1 | IGT-ELC0399 | DISPLAY, 7" CAPACITIVE WITH ENCLOSURE | 1 |

12.2 CTA2045



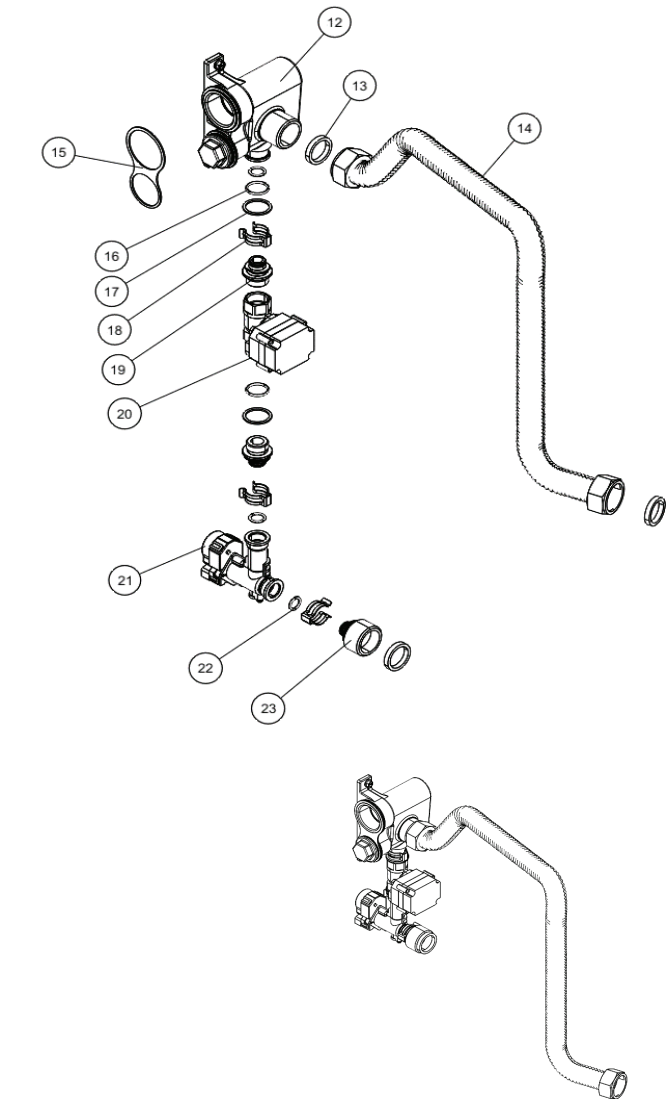
| Item | Part Number | Description | Qty |
|------|-------------|--|-----|
| 2 | IGT-ELC0404 | CTA2045 Interface Board | 1 |
| 3 | IGT-ELC0389 | CTA2045 Interface Module (optional not included) | 1 |

12.3 Electronics

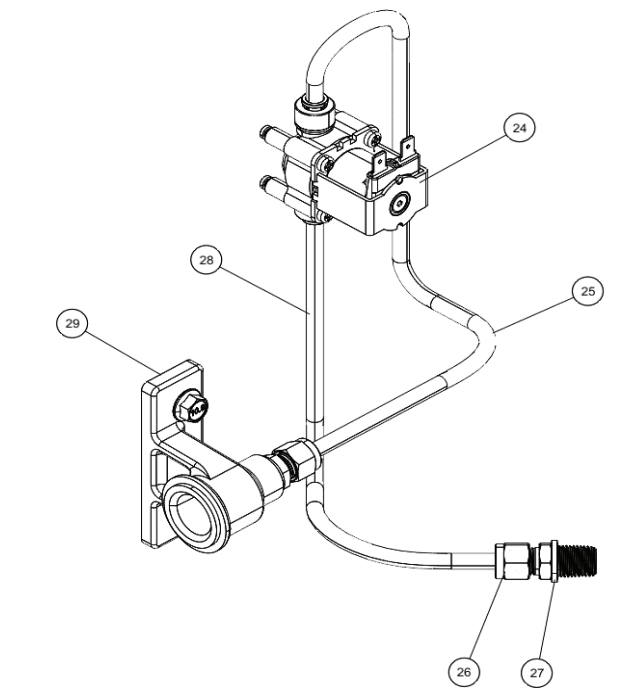


| Item | Part Number | Description | Qty |
|------|-------------|---------------------------------------|-----|
| 4 | IGT-ELC0414 | HPU, COMPRESSOR/FAN INVERTER DRIVER | 1 |
| 5 | IGT-ELC0363 | TRANSFORMER, 120V, 50/60Hz | 1 |
| 6 | IGT-ELC0391 | Transformer, 208V/240V to 120V | 2 |
| 7 | IGT-ELC0382 | iOT Module | 1 |
| 8 | IGT-ELC0398 | HPU, ELECTRIC HEATER RELAY | 2 |
| 9 | IGT-ELC0383 | CAREL CONTROL (UPC3) BOARD | 1 |
| 10 | IGT-SPR0129 | CONTROLLER BOARD, V9.4 | 1 |
| 11 | IGT-SLS0106 | SEAL, CLOSED CELL, 1/8 THK X 1/2 WIDE | 1 |

12.4 Cold Side



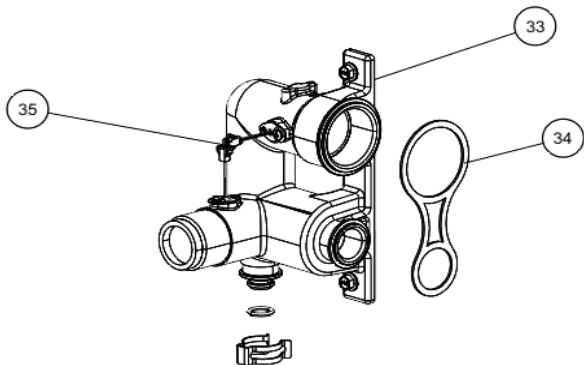
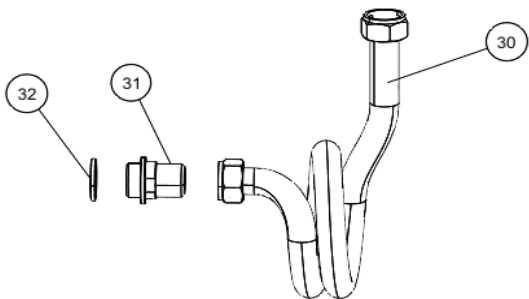
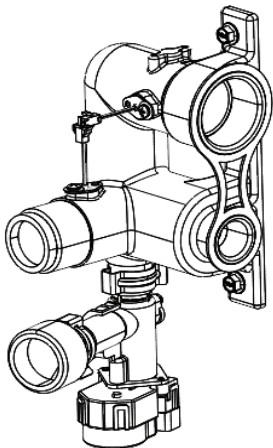
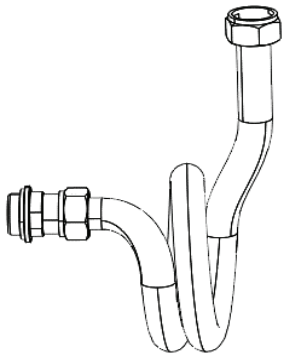
12.5 Cold Side



| Item | Part Number | Description | Qty |
|------|-------------|--|-----|
| 24 | IGT-VL0045 | VALVE, GLYCOL FILL SOLENOID | 1 |
| 25 | IGT-LNE0073 | LINE, WATER, FILL PORT, 1/4 | 1 |
| 26 | IGT-FTT0303 | FITTING, COMPRESSION, G1/4 BSPP X 1/4 TUBE | 2 |
| 27 | IGT-SLS0110 | SEAL, G1/4 BSPP | 2 |
| 28 | IGT-LNE0074 | LINE, WATER, FILL PORT, 1/4 | 1 |
| 29 | IGT-CST0065 | CASTING, FILL PORT, GLYCOL | 1 |

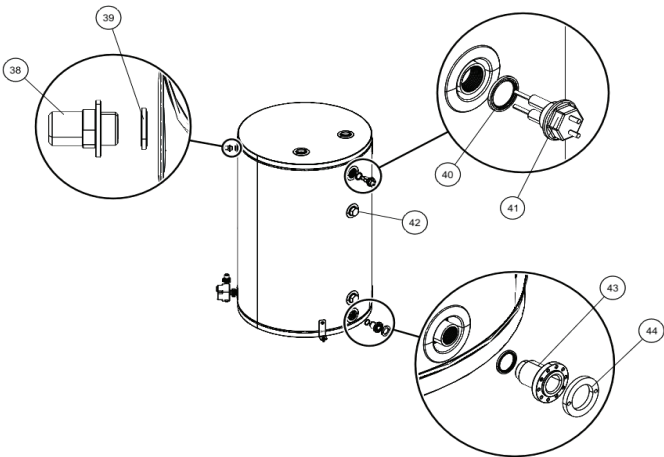
| Item | Part Number | Description | Qty |
|------|--------------|-------------------------------------|-----|
| 12 | IGT-CST0062 | CASTING, WATER INLET, COLD SIDE | 1 |
| 13 | IGT-SLS0116 | SEAL, EPDM, 70 DURO, NSF 61 | 3 |
| 14 | IGT-LNE0072 | CORRUGATED LINE, Ø32 | 1 |
| 15 | IGT-SLS0115 | SEAL, WATER INLET, iE1 | 1 |
| 16 | IGT-OR0031 | O-RING, #119, EPDM, NSF 61, 70 DURO | 2 |
| 17 | IGT-FTT0302 | RETAINING RING, G3/4 | 2 |
| 18 | IGT-HRD0020 | CLIP, RETAINING, Ø19mm-Ø20mm | 3 |
| 19 | IGT-FTT0296 | FITTING, ADAPTER, 20mm X G3/4 | 2 |
| 20 | IGT-VL0044-2 | COIL ISOLATION VALVE | 1 |
| 21 | IGT-SPR0003 | FLOW SENSOR SPARE PARTS KIT | 1 |
| 22 | IGT-OR0010 | O-Ring #113 EPDM, FDA, 70 DURO | 1 |
| 23 | IGT-FTT0297 | FITTING, ADAPTER, 19mm X 1-1/4 NPT | 1 |

12.6 Cold Side



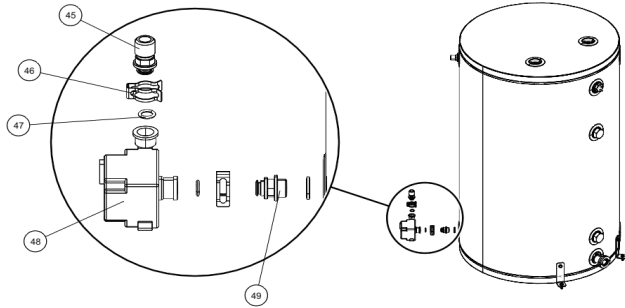
| Item | Part Number | Description | Qty |
|------|-------------|------------------------------------|-----|
| 30 | IGT-LNE0075 | LINE, CORRUGATED, 25" LG | 1 |
| 31 | IGT-FTT0300 | FITTING, ADAPTER, G3/4 TO 3/4 NPT | 1 |
| 32 | IGT-SLS0112 | SEAL, G3/4 BSPP | 1 |
| 33 | IGT-CST0064 | CASTING, WATER OUTLET, HOT SIDE | 1 |
| 34 | IGT-SLS0117 | SEAL, WATER OUTLET, iE1 | 1 |
| 35 | IGT-ELC0062 | SENSOR, THERMISTOR, AIR | 1 |
| 36 | IGT-SPR0003 | FLOW SENSOR SPARE PARTS KIT | 1 |
| 37 | IGT-FTT0295 | FITTING, ADAPTER, 20mm X 1-1/4 NPT | 1 |

12.7 Glycol Side



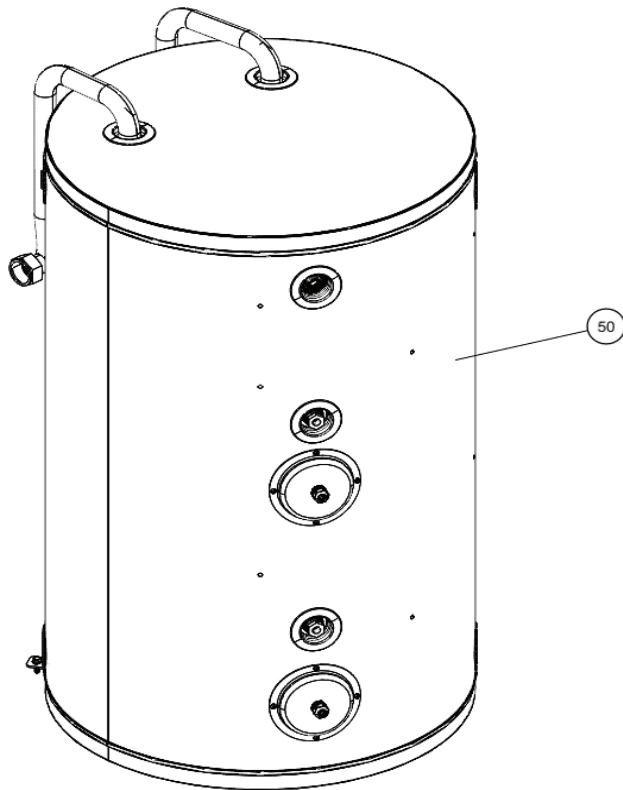
| Item | Part Number | Description | Qty |
|------|-------------|-----------------------------------|-----|
| 38 | IGT-FTT0301 | FITTING, ADAPTER, G1/2 TO 1/2 NPT | 1 |
| 39 | IGT-SLS0111 | SEAL, G1/2 BSPP | 1 |
| 40 | IGT-SLS0113 | SEAL, G1 BSPP | 1 |
| 41 | IGT-ELC0396 | SENSOR, GLYCOL, CONCENTRATION | 1 |
| 42 | IGT-FTT0304 | FITTING, PLUG, G1, SST | 2 |
| 43 | IGT-FTT0294 | FITTING, 3/4 FIP TO G3/4 | 1 |
| 44 | IGT-SLS0114 | SEAL, DRAIN PORT, iE1 | 1 |

12.8 Glycol Side



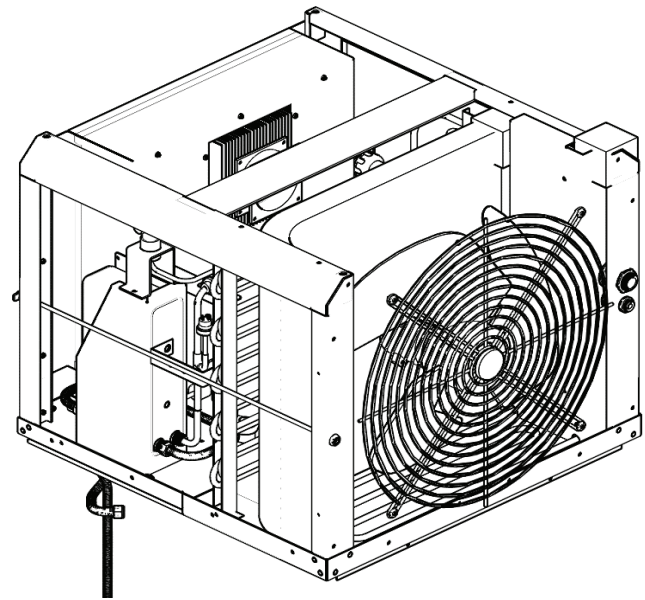
| Item | Part Number | Description | Qty |
|------|-------------|--|-----|
| 45 | IGT-FTT0298 | FITTING, ADAPTER, GLYCOL PUMP TO 1/2 NPT | 1 |
| 46 | IGT-HRD0240 | CLIP | 2 |
| 47 | IGT-OR0032 | O-RING, 3.00 CS X Ø12.50mm ID, VITON | 2 |
| 48 | IGT-PMP0010 | PUMP, CIRCULATION, iE1 | 1 |
| 49 | IGT-FTT0299 | FITTING, ADAPTER, GLY PUMP TO G1/2 | 1 |

12.9 Tank



| Item | Part Number | Description | Qty |
|------|--------------|------------------------------|-----|
| 50 | IGT-THBT0001 | THERMAL-BATTERY STORAGE, iE1 | 1 |

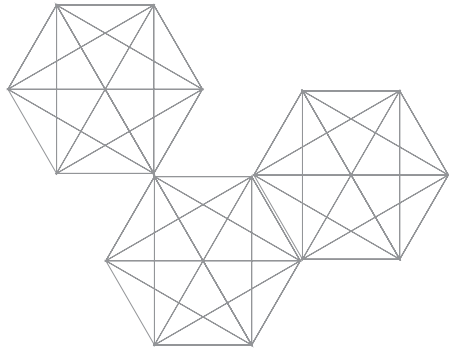
12.10 Heat Pump



| Item | Part Number | Description | Qty |
|------|-------------|----------------|-----|
| 51 | IGT-HPU0001 | Heat Pump Deck | 1 |

12.11 Miscellaneous

| Part Number | Description | Qty |
|-------------|--|-----|
| IGT-ELC0367 | IE1-Power Cord Jumper & Upper Coil Relay Harness | 1 |
| IGT-ELC0368 | IE1-Display Harness | 1 |
| IGT-ELC0369 | iE1-120VAC Terminal Block to Transformer Harness | 1 |
| IGT-ELC0370 | IE1-120VAC Main Power Harness | 1 |
| IGT-ELC0371 | iE1-TB Valve Harness | 1 |
| IGT-ELC0372 | IE1-Lower Coil Relay Harness | 1 |
| IGT-ELC0373 | iE1-IOT Harness | 1 |
| IGT-ELC0374 | IE1-Fill Solenoid Harness | 1 |
| IGT-ELC0375 | iE1-Temperature Sensors Harness | 1 |
| IGT-ELC0376 | iE1-Hex Valve Harness | 1 |
| IGT-ELC0377 | iE1-HEX Flow Sensor Harness | 1 |
| IGT-ELC0378 | iE1-Bypass Valve Harness | 1 |
| IGT-ELC0379 | iE1-Bypass Flow Sensor Harness | 1 |
| IGT-ELC0380 | iE1-Internal Comms Cable Harness | 1 |
| IGT-ELC0381 | iE1-Glycol Concentration Harness | 1 |
| IGT-ELC0386 | iE1-Glycol Keyence Harness | 1 |
| IGT-ELC0388 | CTA2045 to iOT Board Harness | 1 |
| IGT-ELC0395 | Glycol Level sensor with Harness | 1 |



Intellihot

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08-2023
iE1

