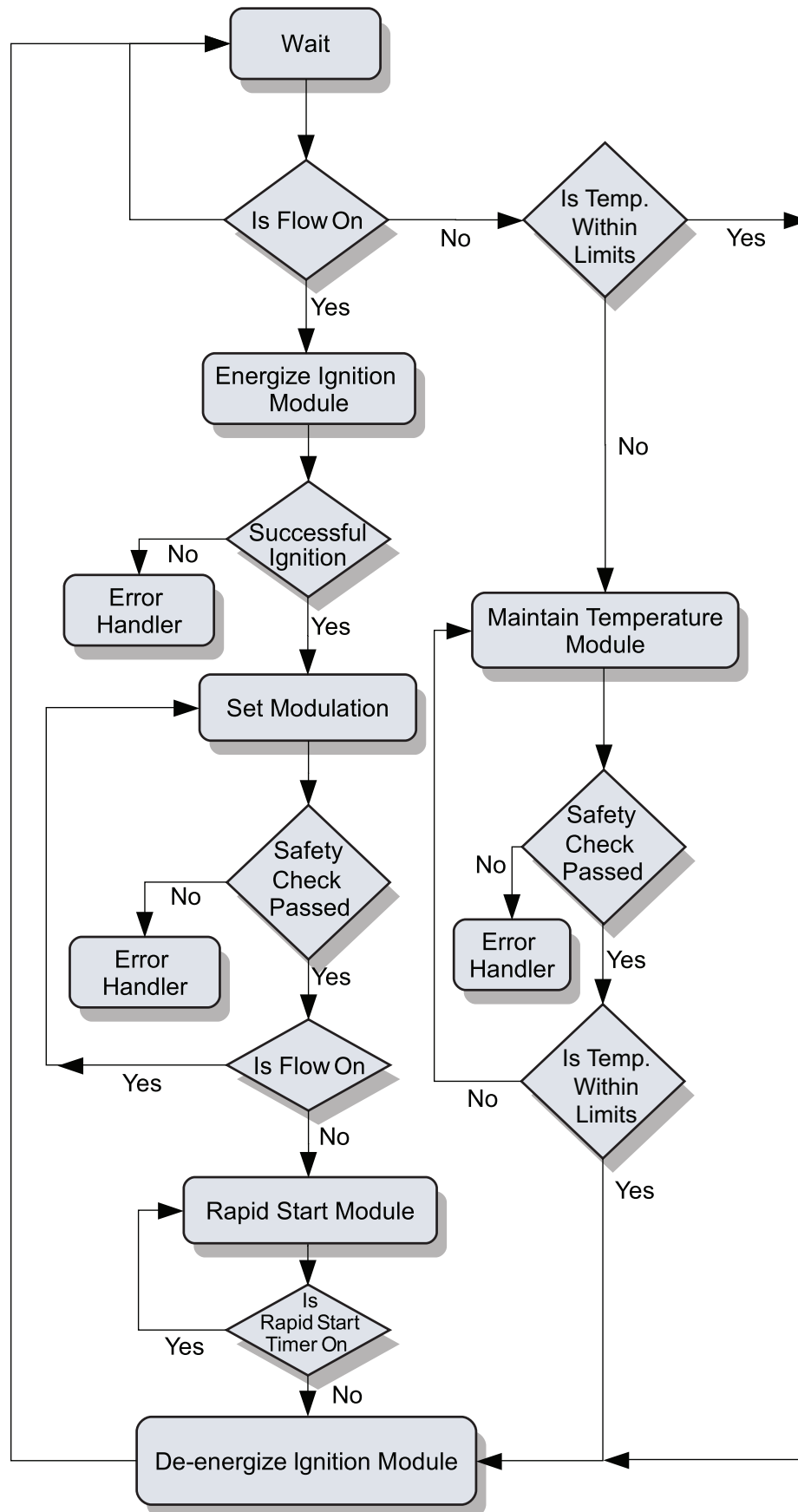


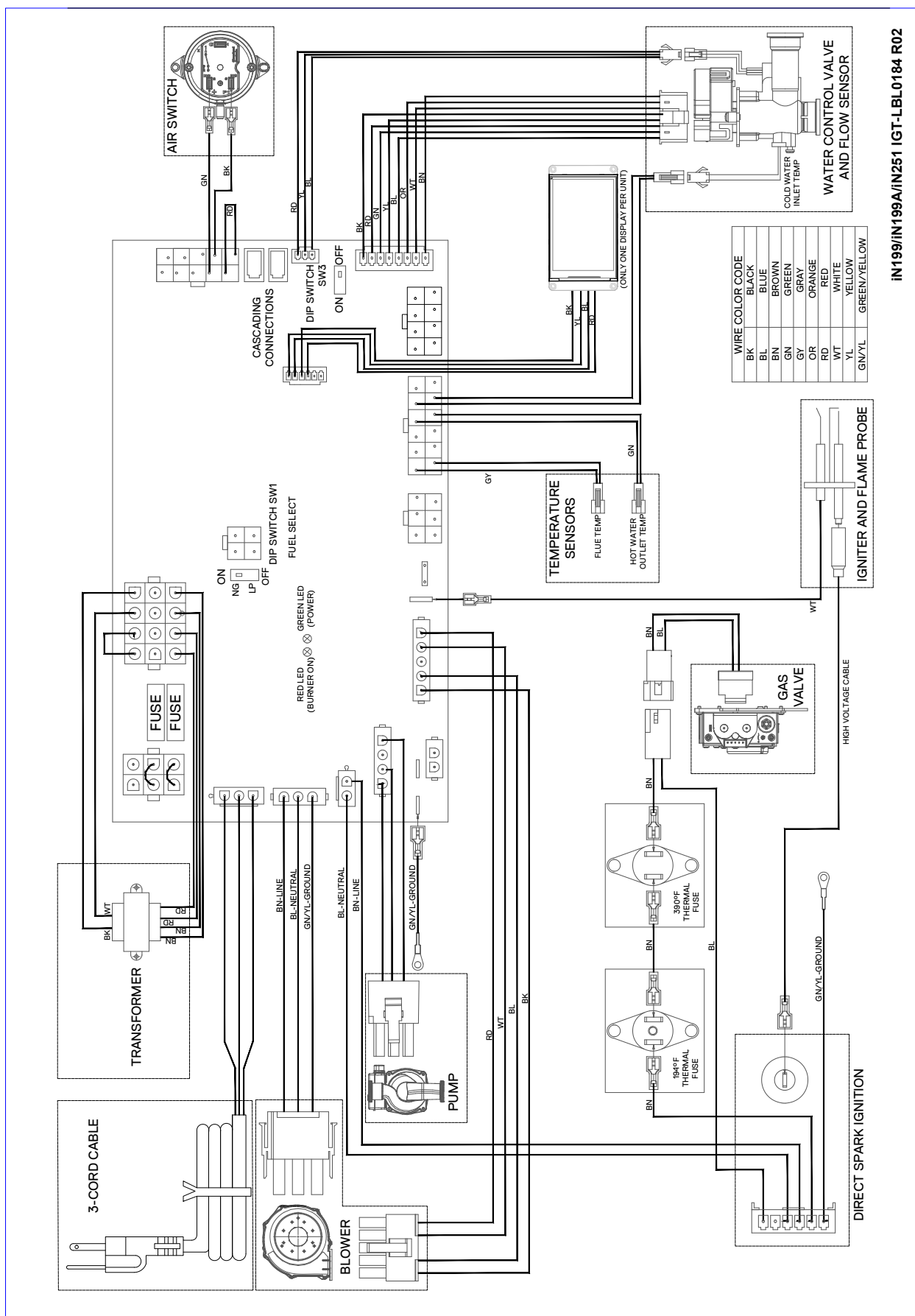
15. Wiring Diagrams and Troubleshooting

15.1 Operational Flow Chart

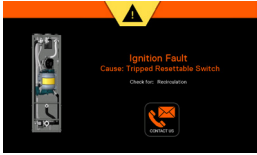
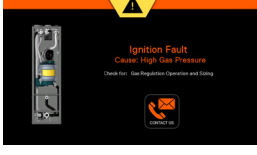
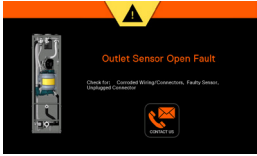
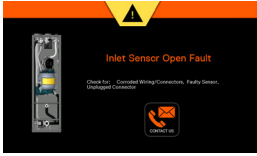


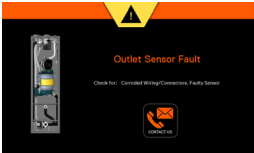
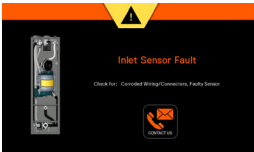
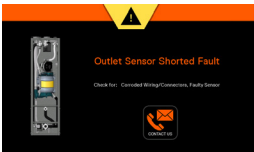
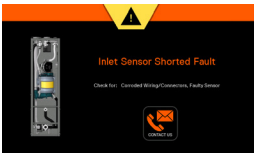
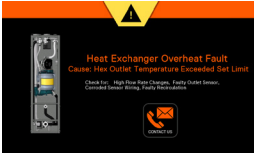
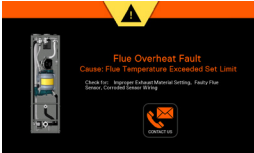
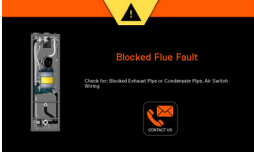
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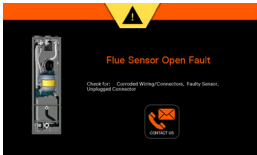
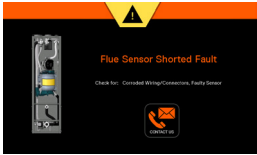
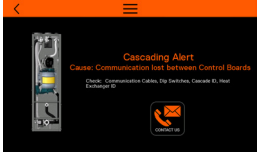
15.2 Wiring Diagram

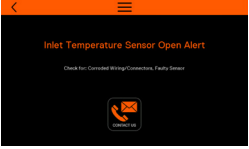
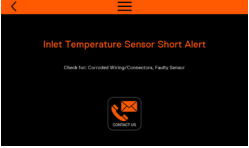
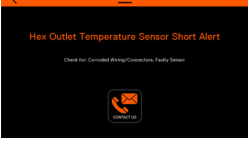
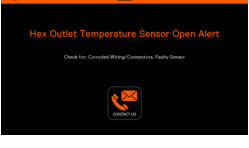
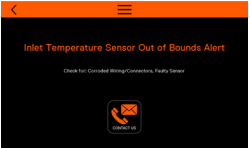
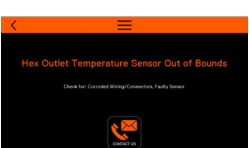


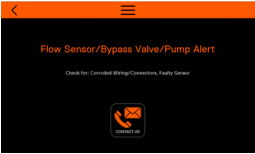
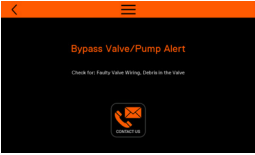
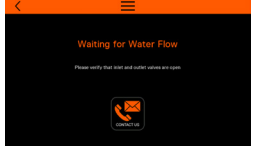
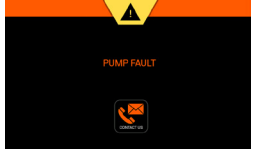
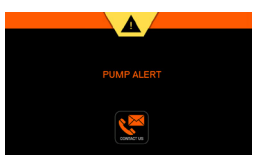
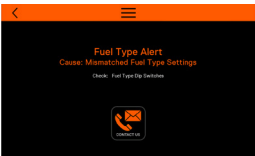
15.3 Troubleshooting Guide

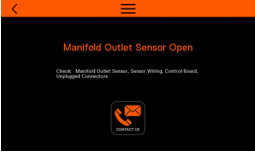
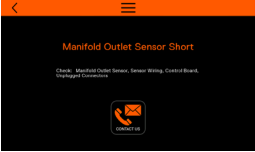
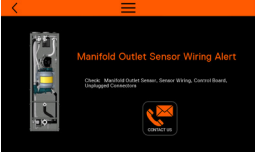
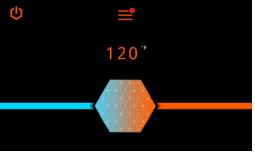
Description	Possible Cause	Remedy
Blower Blower Fault  	• Blower noisy / impeller jammed. • Disconnected signal wire. • Wiring faulty.	• Inspect blower / impeller. Clean and remove any obstructions. • Check PWN signal. Check for loose wires, pins, and repair. • If the problem persists, turn control panel 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 Sensors  	• 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.

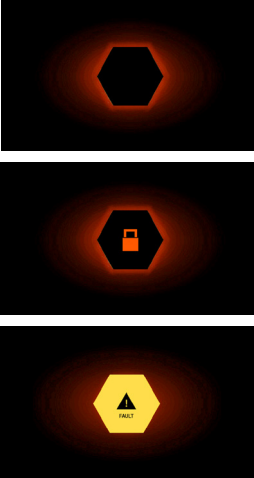
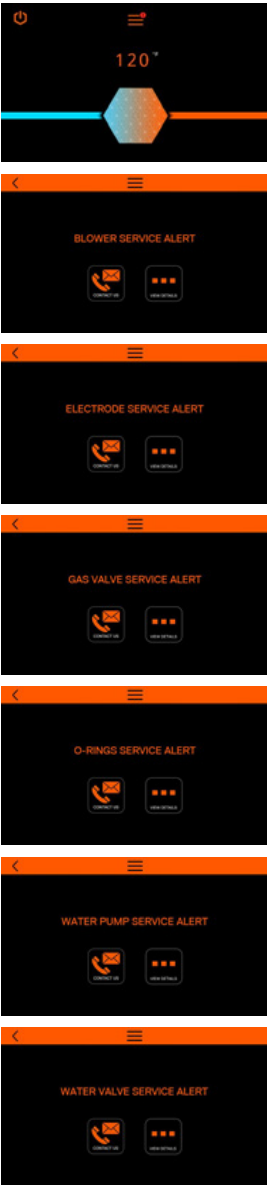
Description	Possible Cause	Remedy
Faulty Sensors Inlet / Outlet Sensors    	- Faulty sensor wiring or faulty sensor. - Inlet water temperature sensor. - Heat engine water outlet temperature sensor. - Faulty controller.	- Check for nicked or broken sensor wiring or connectors. Also check for corroded 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.
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.

Description	Possible Cause	Remedy
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 among 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.
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.

Description	Possible Cause	Remedy
Sensor Alerts      	Faulty sensor wiring or faulty sensor.	• 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).

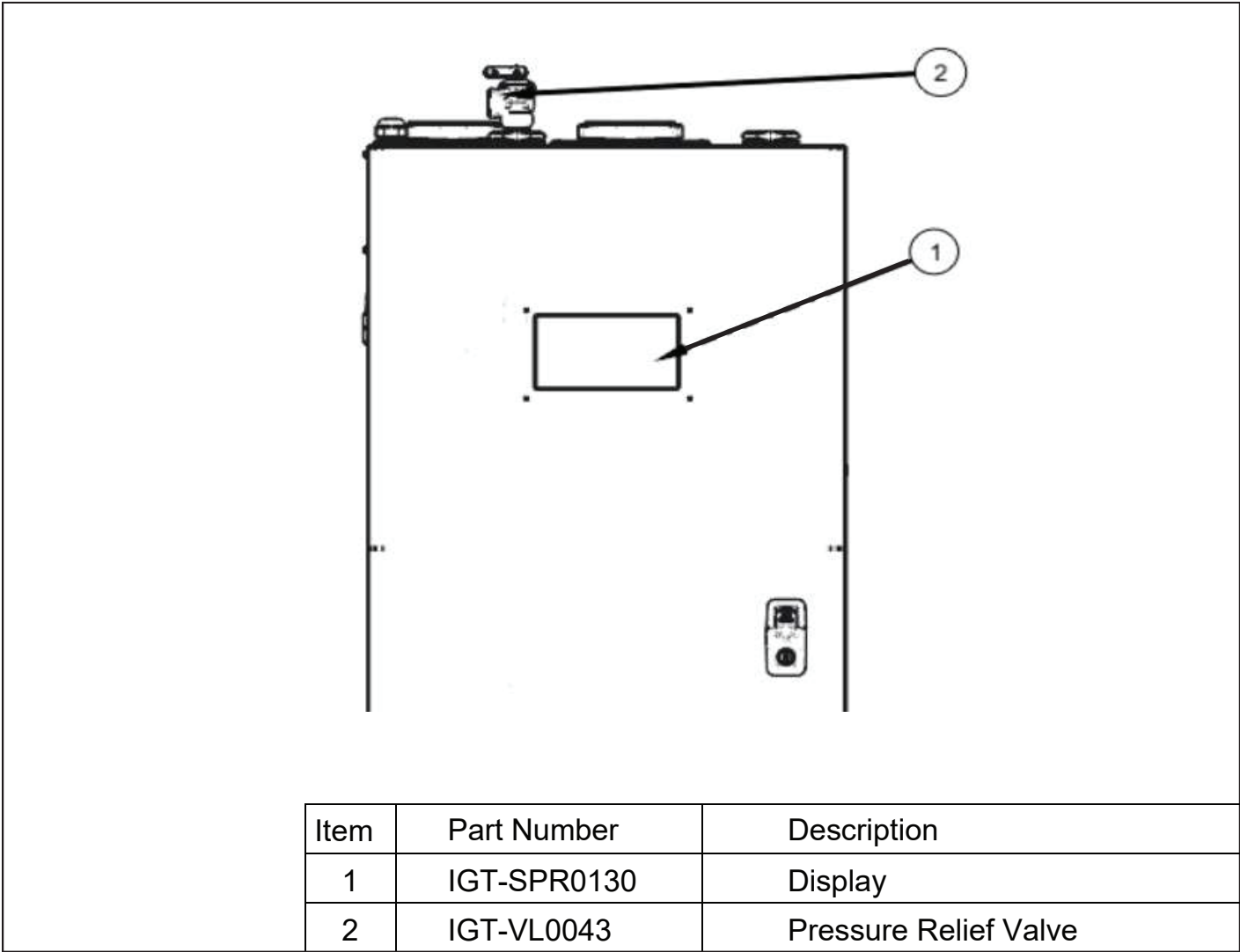
Description	Possible Cause	Remedy
Pump/Bypass     	- Faulty wiring. - Pump fuse blown. - Faulty pump. - Faulty controller. - No flow on the bypass/pump circuit. - No water flow. Faulty pump wiring. - Pump fuse blown. - Faulty pump. - Faulty controller	- Check for nicked or broken sensor wiring or connectors. Also check for corroded or wet connectors. - Replace fuse (5 Amp). - Replace pump. - Replace controller. - Faulty Bypass valve wiring - Debris in the Bypass valve - Please verify that inlet and outlet valves are open - 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.

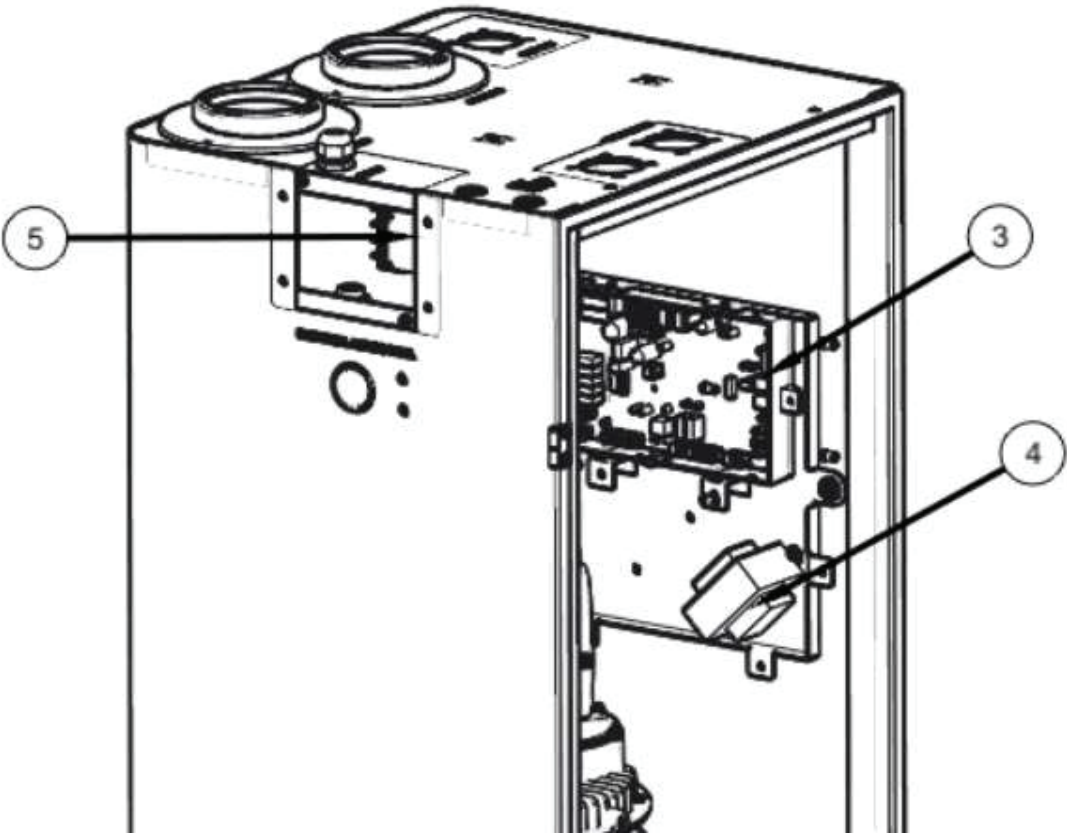
Description	Possible Cause	Remedy
Alive 	- Shows status of water heater. - Sleep mode. - Sleep mode passcode protected. - Indicates a fault exists within the monitored parts or system.	- Touch display screen to awake. - Refer to the remedy for indicated part or system. - Refer to the remedy for indicated 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 Display

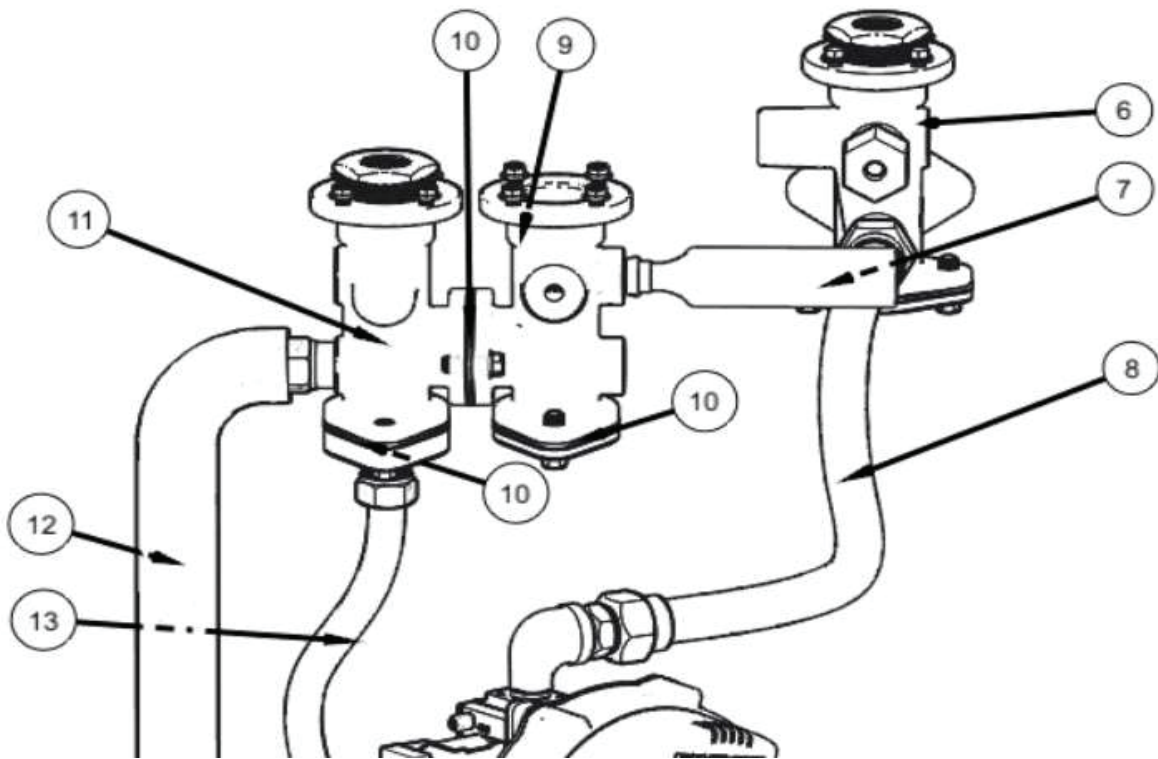


16.2 Control Board



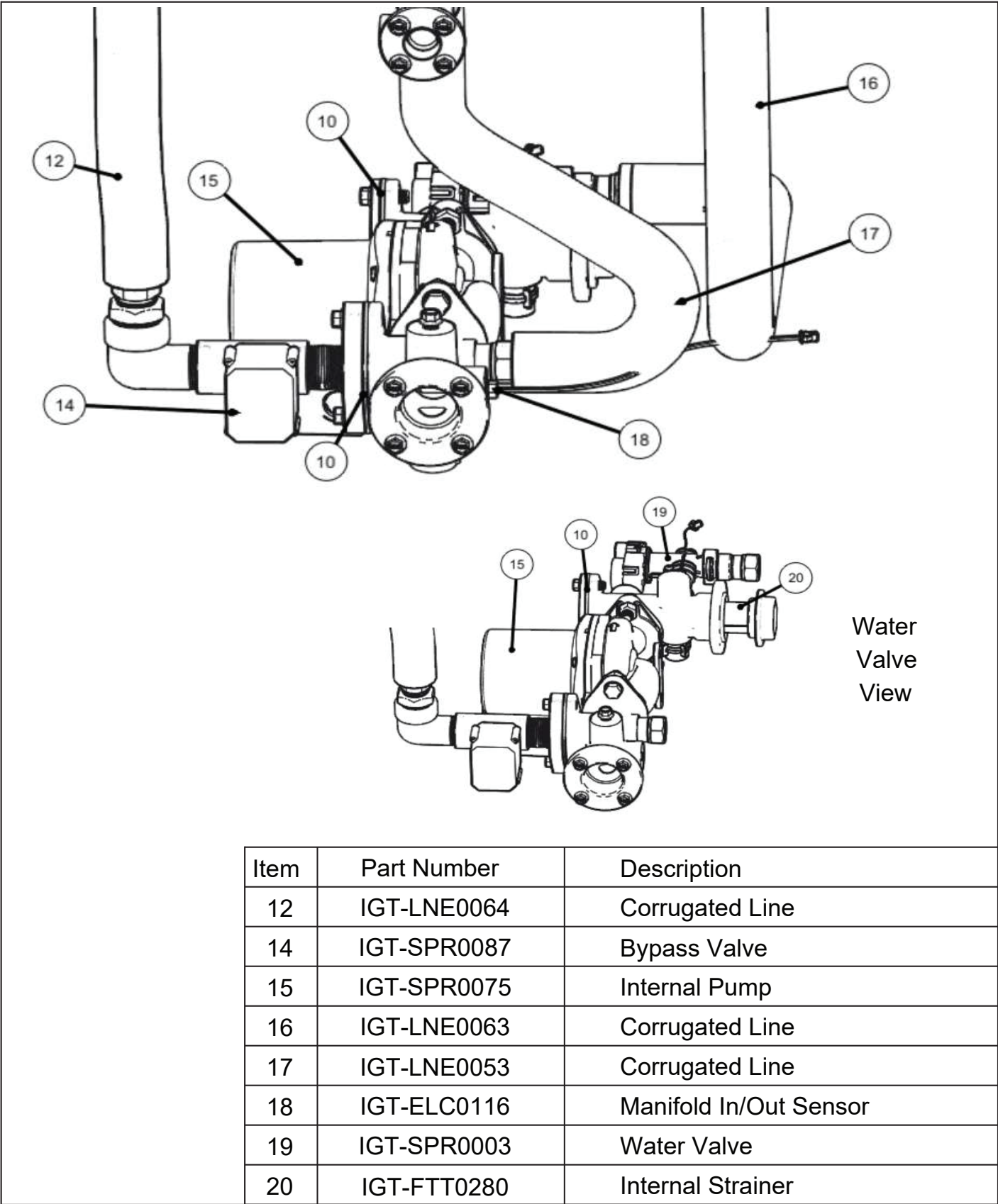
Item	Part Number	Description
3	IGT-SPR0129	Control Board
4	IGT-SPR0065	Transformer Kit
5	IGT-ELC0138	Rocker Switch

16.3 Water Circuit (top side)

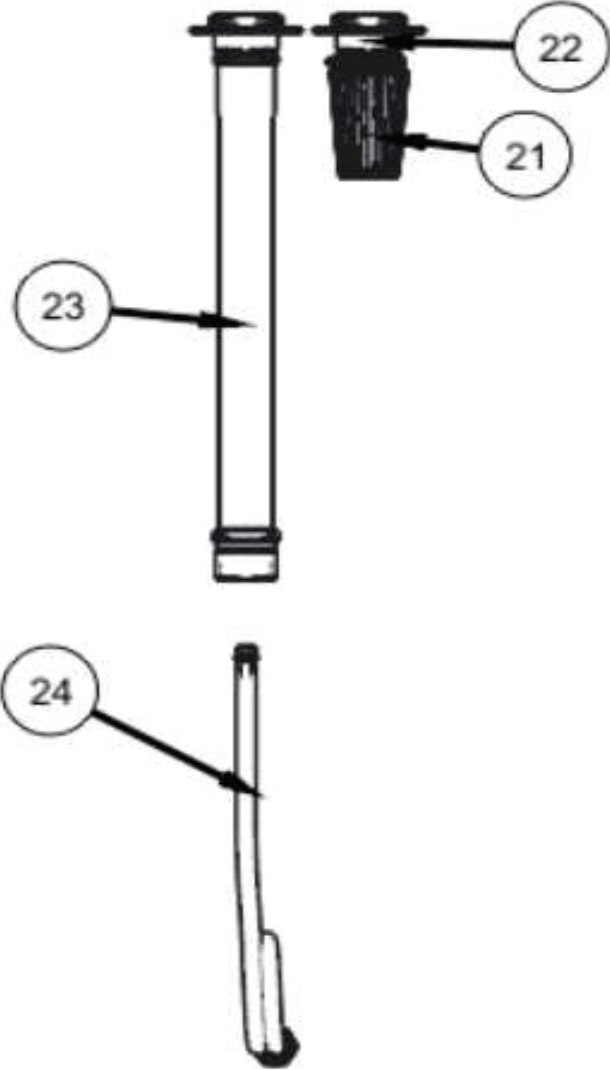


Item	Part Number	Description
6	IGT-FTT0235-5	Gas Out Casting
7	IGT-PLG0018	Water Hammer Arrestor
8	IGT-PLG0014	Gas Tube
9	IGT-FTT0235-3	Hot Side Water Out Casting
10	IGT-SLS0041	Seal
11	IGT-FTT0235-1	Cold Side Water Out Casting
12	IGT-LNE0064	Corrugated Line
13	IGT-LNE0061	Corrugated Line

16.4 Water Circuit (bottom side)

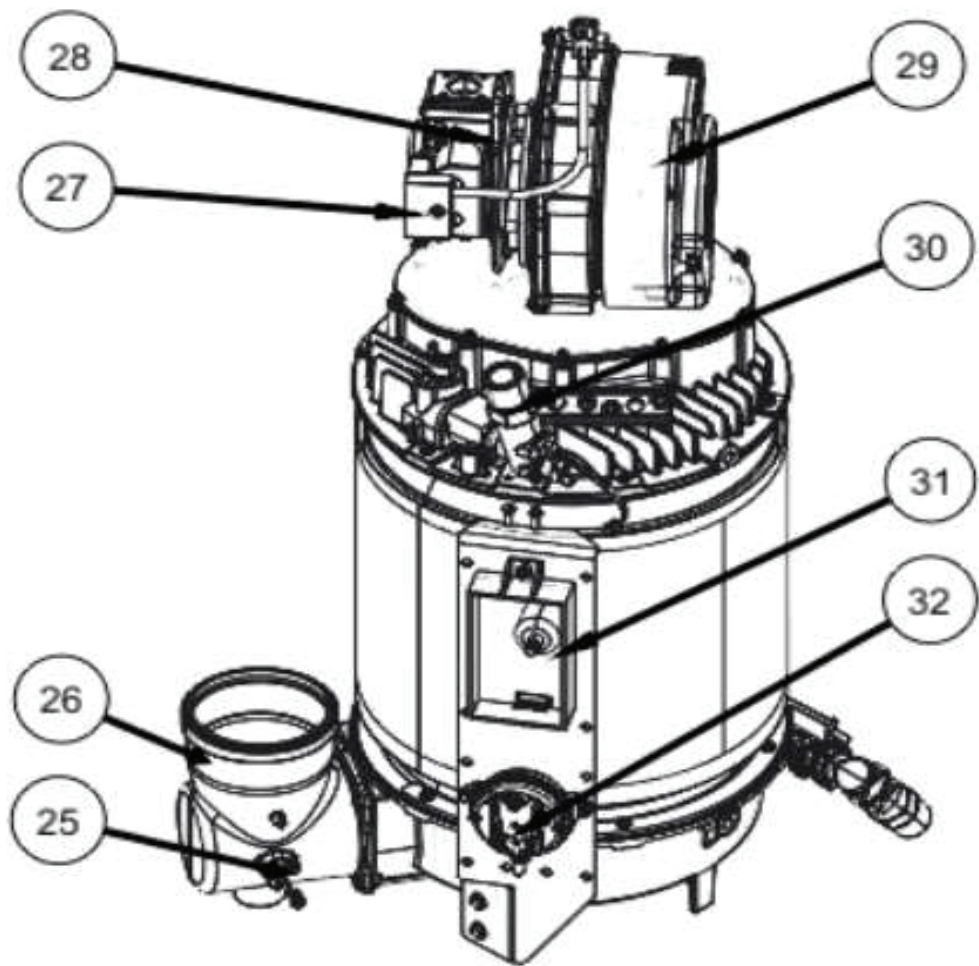


16.5 Exhaust



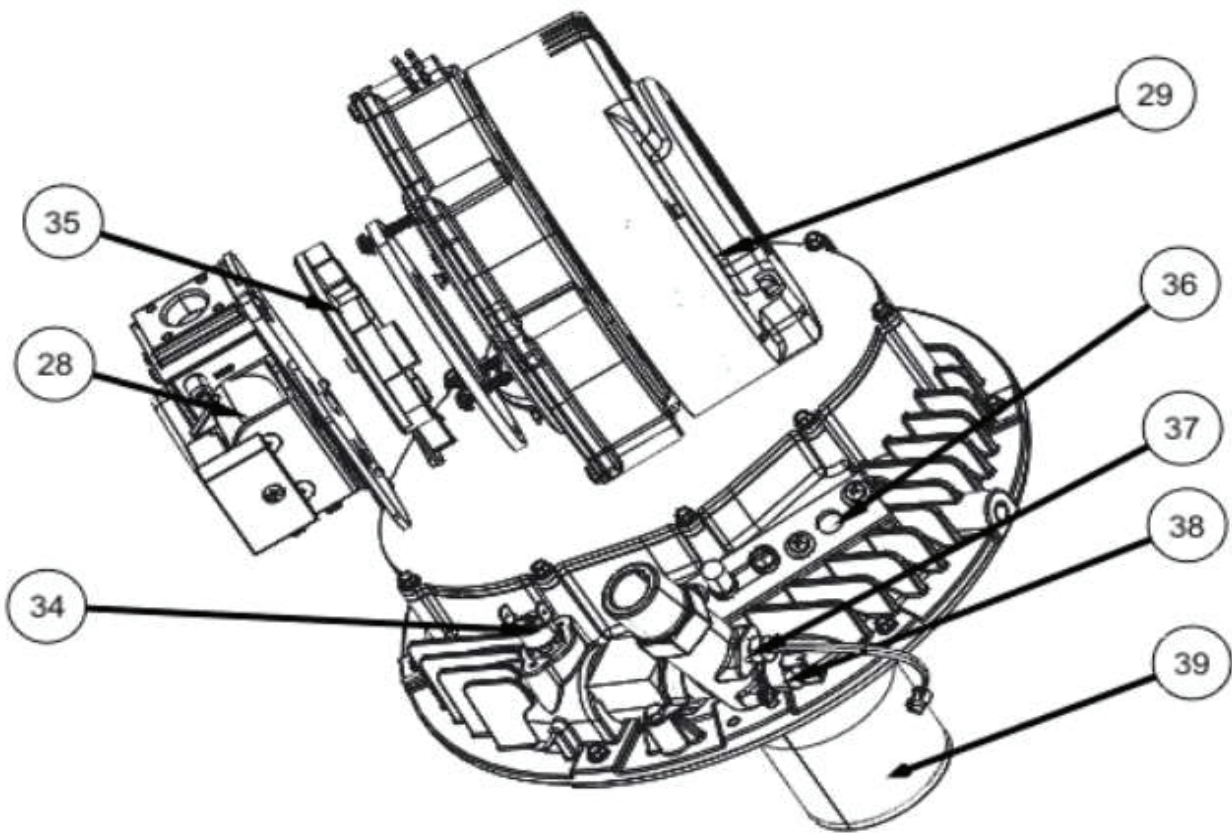
Item	Part Number	Description
21	IGT-FLTR0009	Air Filter
22	IGT-EX0035	Air Intake
23	IGT-EX0034	Exhaust
24	IGT-TB0015	Condensate Hose

16.6 Heat Exchanger



Item	Part Number	Description
25	IGT-ELC0062	Flue Sensor
26	IGT-CST0029	Side Cast
27	IGT-ELC0020	Gas Valve Harness
28	IGT-SPR0011	Gas Valve Kit
29	IGT-SPR0131	Blower Kit
	IGT-SPR0134	Blower Kit (Intellihot)
	IGT-SPR0132	iN251 Blower Kit
30	IGT-SPR0012	Outlet Assembly
31	IGT-SPR0005	DSI
32	IGT-ELC0007	Air Switch

16.7 Heat Exchanger (top side)



Item	Part Number	Description
28	IGT-SPR0011	Gas Valve Kit
29	IGT-SPR0131	Blower Kit
	IGT-SPR0134	Blower Kit (Intellihot)
	IGT-SPR0132	iN251 Blower Kit
34	IGT-SPR0097	Non-resettable switch
35	IGT-ELC0147	Gray Swirl Plate
36	IGT-SPR0106	Electrode Kit
37	IGT-ELC0081	Outlet Sensor
38	IGT-SPR0066	Resettable Switch
39	IGT-SPR0111	Burner 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-ELC0131	Heat Exchanger to Control Board Harness
IGT-ELC0319	Gas Pressure Sensor
IGT-ELC0320	Water Pressure Sensor
IGT-ELC0349	Water and Gas Pressure Sensors Harness
IGT-ELC0352	Pump to Control Board Harness
IGT-ELC0353	Power Harness, Control Board to Rocker Switch
IGT-ELC0354	Manifold Inlet Wiring Harness
IGT-ELC0355	Manifold Outlet Wiring Harness
IGT-ELC0356	Bypass Valve Wiring Harness
IGT-ELC0319	Gas Pressure Sensor
IGT-ELC0320	Water Pressure Sensor
IGT-ELC0288	Display Wiring Harness
IGT-CST0031	Flapper