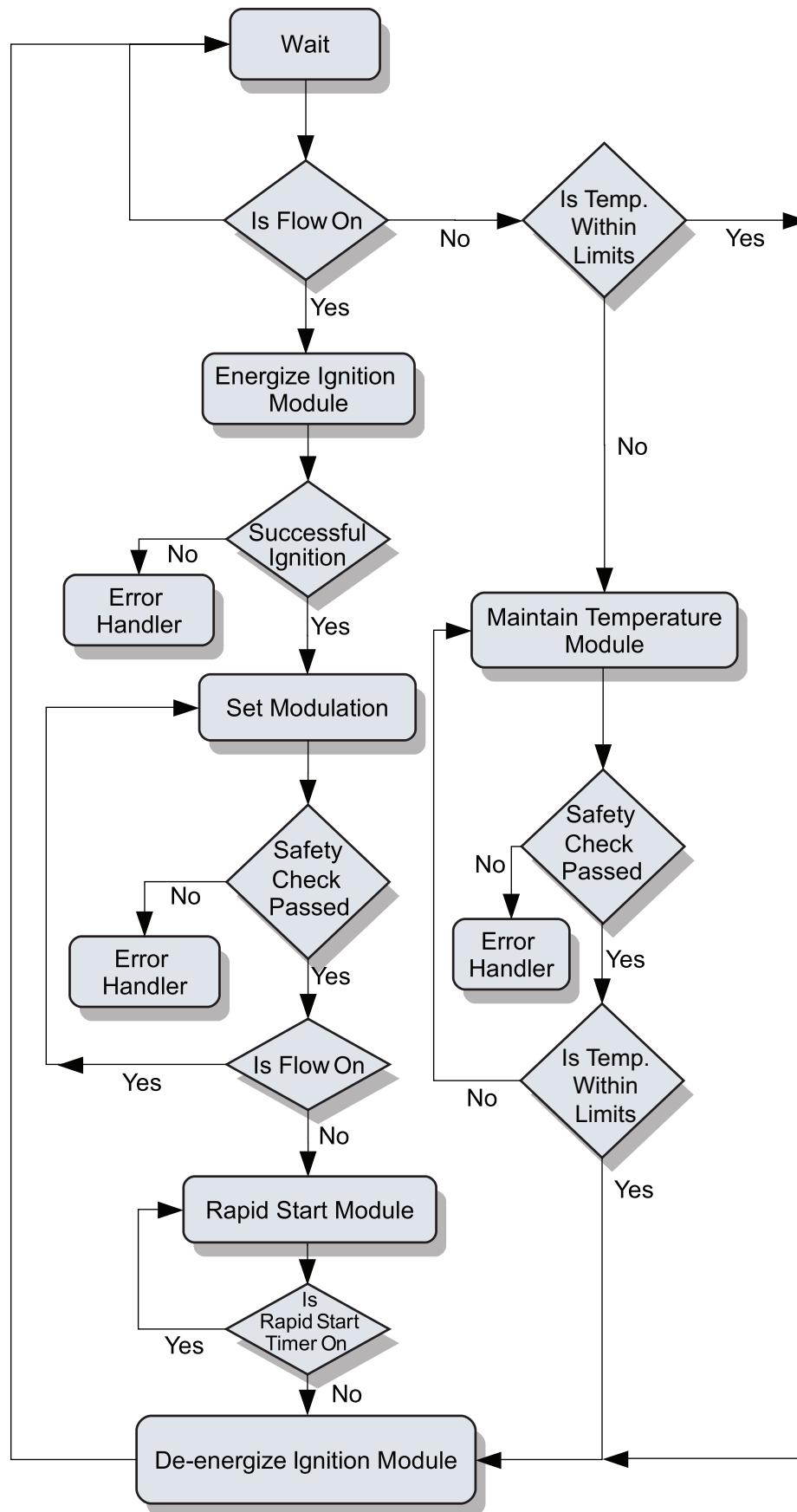


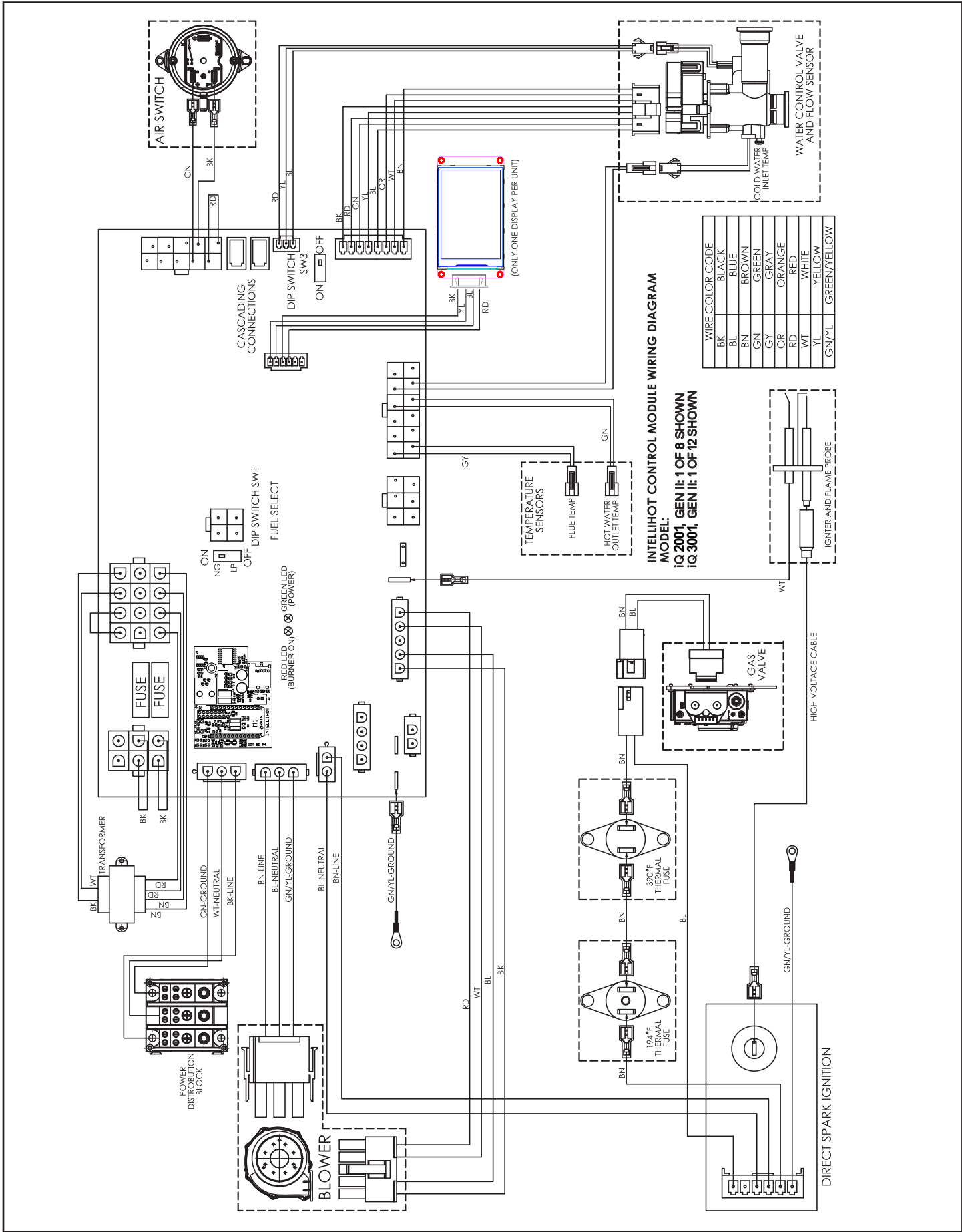
15. Wiring Diagrams and Troubleshooting

15.1 Operational Flow Chart

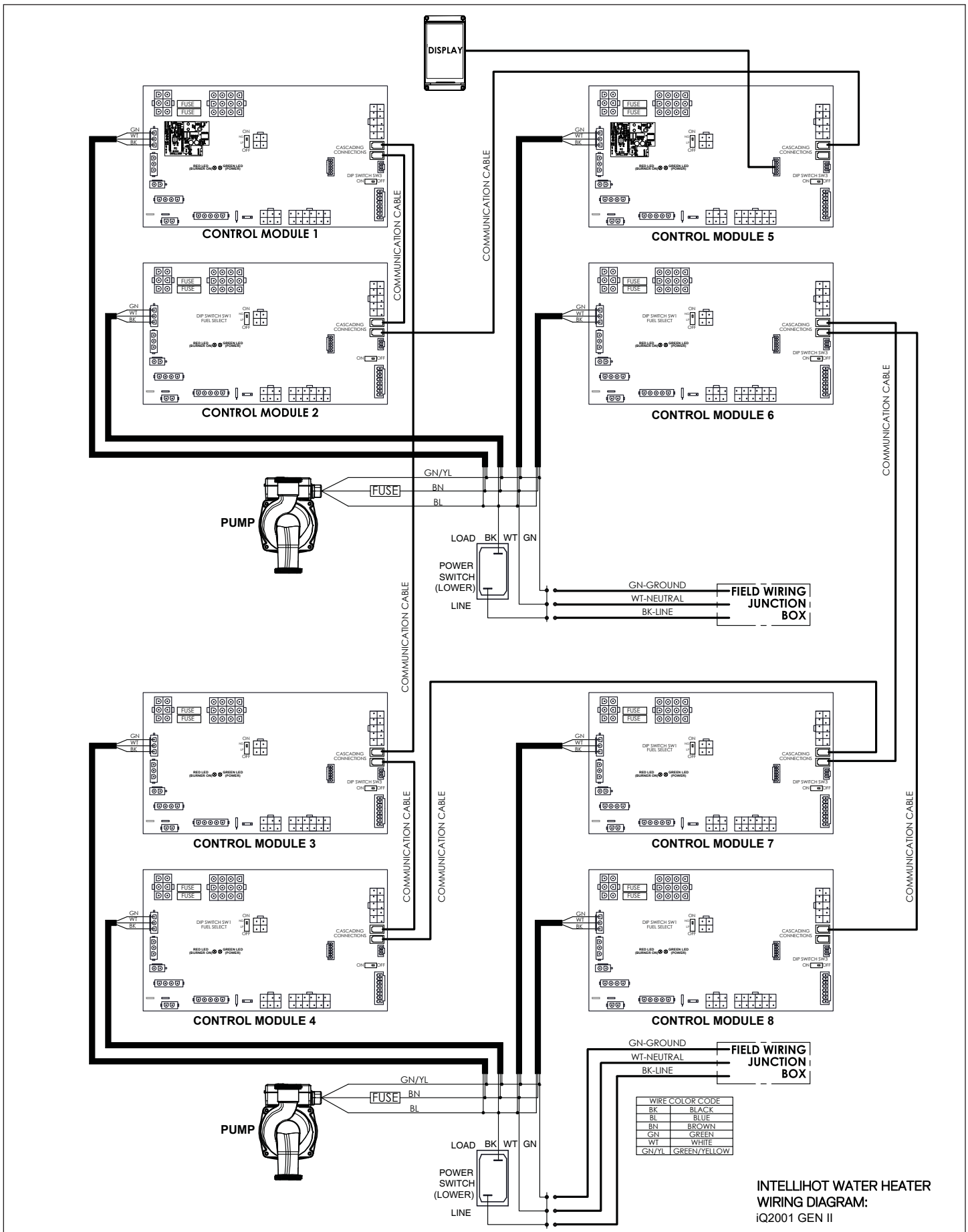


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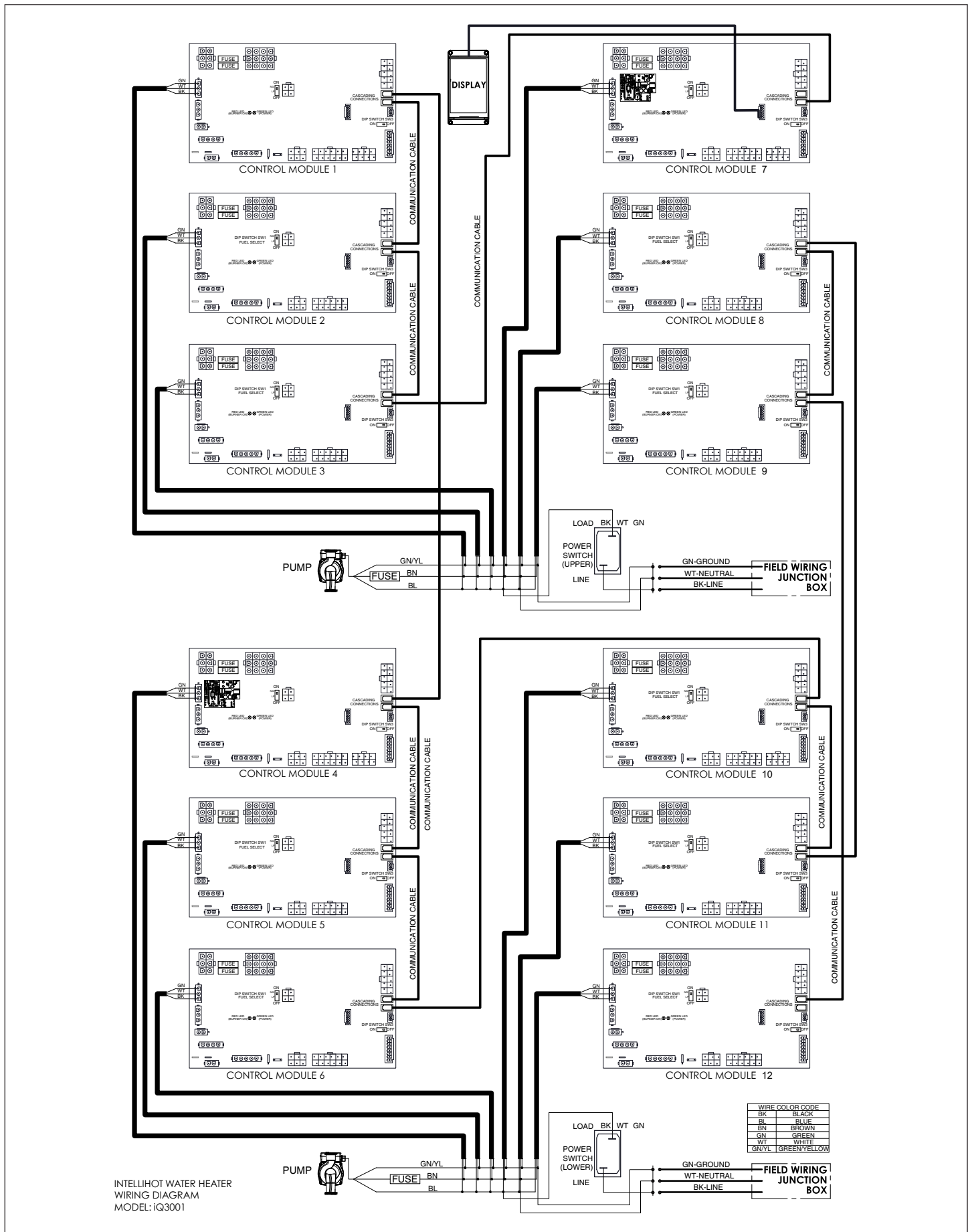
15.2 Complete Wiring Diagram (iQ2001 & iQ3001)









15.3 Control Board Wiring Diagram (iQ2001)









15.4 Control Board Wiring Diagram (iQ3001)


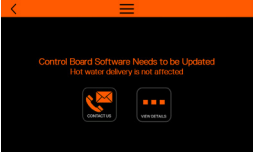



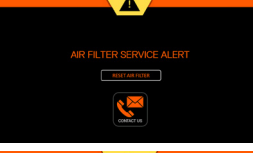
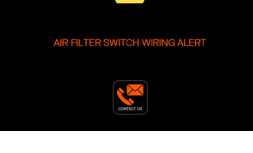


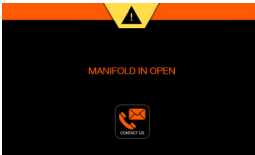



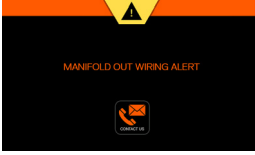
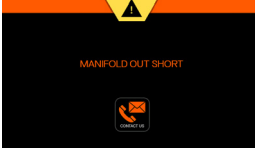


15.5 Troubleshooting Guide

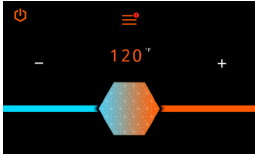


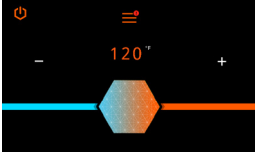


Description	Possible Cause	Remedy
Blower  	<ul style="list-style-type: none"> • Blower noisy / impeller jammed. • Disconnected signal wire. • Wiring faulty. • Blower signal picking up noise. • Wiring faulty • Blower faulty 	<ul style="list-style-type: none"> • Inspect blower / impeller. Clean and remove 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. • Check Pin 3 & Pin 5 are connected together. If not connected together, please request ELC0305 • Replace blower signal wiring harness • Replace blower
Igniter Ignition Failure 	<ul style="list-style-type: none"> • Water over-heat switch tripped. • Faulty DSI, faulty igniter wire, faulty ignition connection, faulty PCB, bad igniter. • Low gas pressure. • Wiring faulty. 	<ul style="list-style-type: none"> • 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  	<ul style="list-style-type: none"> • Unplugged connectors. • Faulty sensor wiring. • Faulty sensor. • Heat engine water outlet temperature sensor. • Flue temperature sensor. • Inlet water temperature sensor. • Faulty controller. 	<ul style="list-style-type: none"> • 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  	<ul style="list-style-type: none"> • Faulty sensor wiring or faulty sensor. • Inlet water temperature sensor. • Heat engine water outlet temperature sensor. • Faulty controller. 	<ul style="list-style-type: none"> • 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
Heat Engine Outlet temperature exceeded set limit 	<ul style="list-style-type: none"> Flow rate changes excessive. Faulty sensor wiring. Faulty sensor. Faulty controller. 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Incorrect vent set up. High inlet temperature. Faulty sensor wiring. Faulty sensor. Faulty controller. 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Exhaust blocked (bird, etc). Backed up condensate. Wiring loose (switch open). 	<ul style="list-style-type: none"> 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  	<ul style="list-style-type: none"> Unplugged connectors. Faulty sensor wiring. Faulty sensor. Flue temperature sensor. Inlet water temperature sensor. Faulty controller. 	<ul style="list-style-type: none"> 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 Fault 	<ul style="list-style-type: none"> Loss of communication between units or between the Heat Exchangers. 	<ul style="list-style-type: none"> 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. Ensure each Heat Exchanger control board has the same software Ensure each Heat Exchanger has the same serial number Ensure each Heat Exchanger has the correct internal HEX ID

Description	Possible Cause	Remedy
Water Valve    	<ul style="list-style-type: none"> Faulty flow sensor wiring (3 wires connection). Water valve clogged or damaged. Faulty controller board <ul style="list-style-type: none"> Faulty water valve wiring (8 wires connection). Damaged water valve Faulty controller board <ul style="list-style-type: none"> Faulty water valve wiring (8 wires connection). Damaged water valve Faulty controller board <ul style="list-style-type: none"> Faulty water valve wiring (8 wires connection). Damaged water valve Faulty controller board 	<ul style="list-style-type: none"> Check for nicked or broken sensor wiring or connectors. Also check for corroded or wet connectors. Replace water valve. Check & clean Wye Strainer Replace controller board. <ul style="list-style-type: none"> Check for nicked or broken sensor wiring or connectors. Also check for corroded or wet connectors. Replace water valve. Check & clean Wye Strainer Replace controller board <ul style="list-style-type: none"> Check for nicked or broken sensor wiring or connectors. Also check for corroded or wet connectors. Replace water valve. Check & clean Wye Strainer Replace controller board <ul style="list-style-type: none"> Check for nicked or broken sensor wiring or connectors. Also check for corroded or wet connectors. Replace water valve. Check & clean Wye Strainer Replace controller board
Pump   	<ul style="list-style-type: none"> Faulty pump wiring. Pump fuse blown. Faulty pump. 	<ul style="list-style-type: none"> Check for nicked or broken sensor wiring or connectors. Also check for corroded or wet connectors. Replace fuse (5 Amp) Replace pump.
Fuel Type 	<ul style="list-style-type: none"> DIP switches mismatched (SW1) 	<ul style="list-style-type: none"> Check switches on all boards to make sure they are all set to the same gas type.

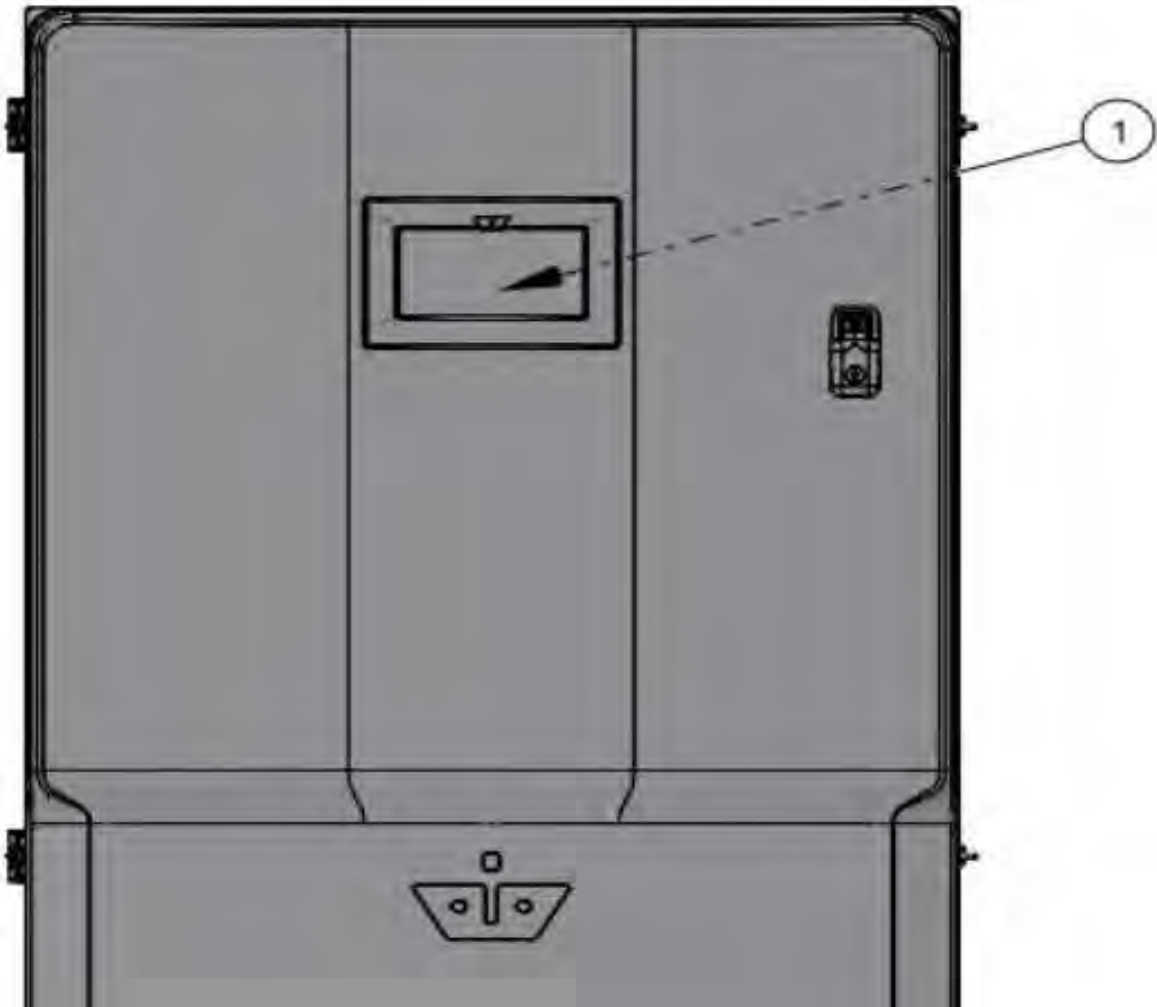
Description	Possible Cause	Remedy
<p>Software</p>    	<ul style="list-style-type: none"> • Incorrect settings. • Incompatible settings. • Incorrect software version. • Faulty wiring. • Faulty Display wiring. • Incorrect Display Software • Control board software is not compatible with the display software • Display software is not compatible with the Control board software 	<ul style="list-style-type: none"> • 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. • Check for nicked or broken sensor wiring or connectors. Also check for corroded or wet connectors. • Update display software • Update the control board software to match with the display software. • Update the display software to match with the control board software.
<p>Air Filter</p>   	<ul style="list-style-type: none"> • Blocked inlet. • Six months maintenance service is overdue • Dirty or damaged filter. 	<ul style="list-style-type: none"> • Remove blockage and install screens to prevent future blockage • Remove and inspect filter. Clean or replace as needed.

Description	Possible Cause	Remedy
Manifold Sensors      	<ul style="list-style-type: none"> Blocked inlet. Dirty or damaged filter. Unplugged connectors. Faulty sensor wiring. Faulty sensor. Faulty controller. 	<ul style="list-style-type: none"> Remove blockage and install screens to prevent future blockage Remove and inspect filter. Clean or replace as needed. 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 	<ul style="list-style-type: none"> A system alert is present (main menu screen). Malfunction of monitored part or system. 	<ul style="list-style-type: none"> Refer to the remedy for indicated part or system.
Fault 	<ul style="list-style-type: none"> A fault or error is present (main menu screen). Malfunction of monitored part or system. 	<ul style="list-style-type: none"> Refer to the remedy for indicated part or system.

Description	Possible Cause	Remedy
Alert 	<ul style="list-style-type: none"> • An alert is present (active screen). • Malfunction of monitored part or system. 	<ul style="list-style-type: none"> • Refer to the remedy for indicated part or system.
Alive     	<ul style="list-style-type: none"> • Shows status of water heater. • Sleep mode. • Sleep mode passcode protected. • Indicates an alert exists within the monitored systems. • Indicates a fault exists within the monitored parts or system. • Indicates a fault exists within the monitored parts or system. 	<ul style="list-style-type: none"> • Touch display screen to awake. • Touch display screen to awake and enter passcode. • Refer to the remedy for indicated part or system. • Refer to the remedy for indicated part or system. • Refer to the remedy for indicated part or system.

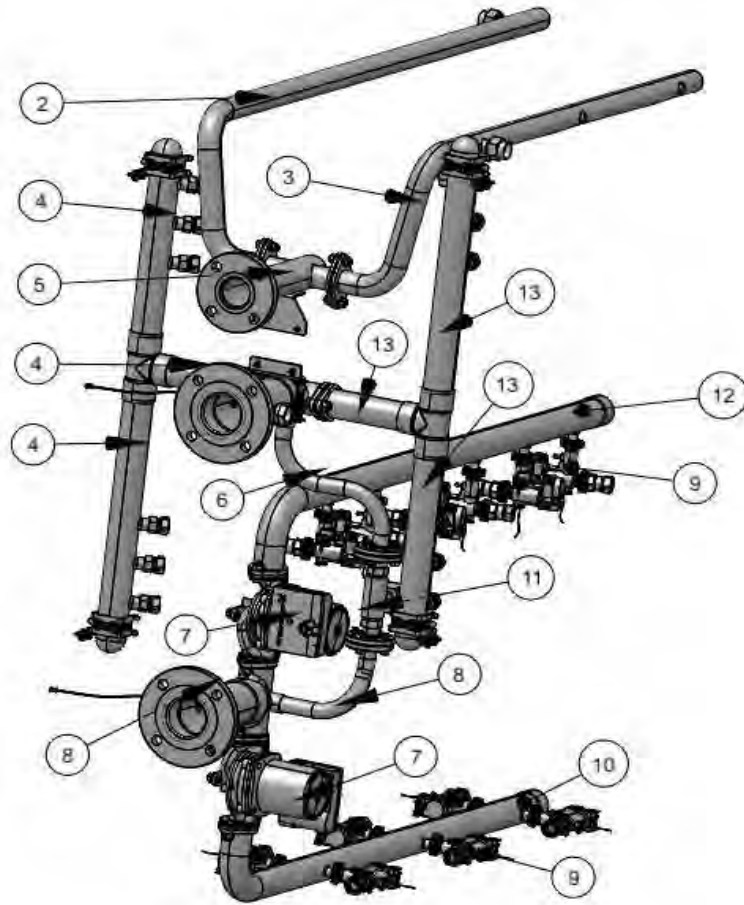
16. Serviceable Parts

16.1 Display



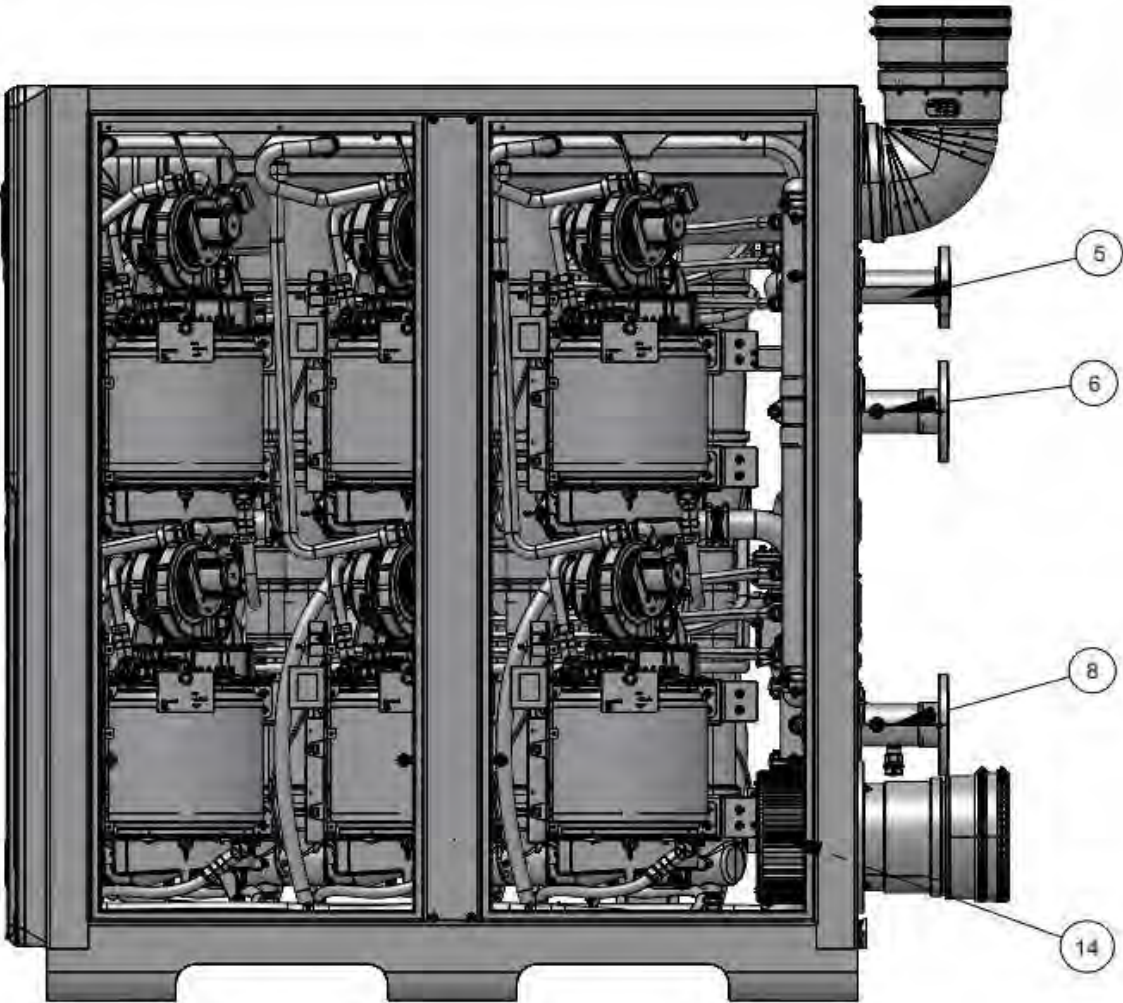
Item	Part Number	Description
1	IGT-SPR0088	Display

16.2 Gas & Water Circuit



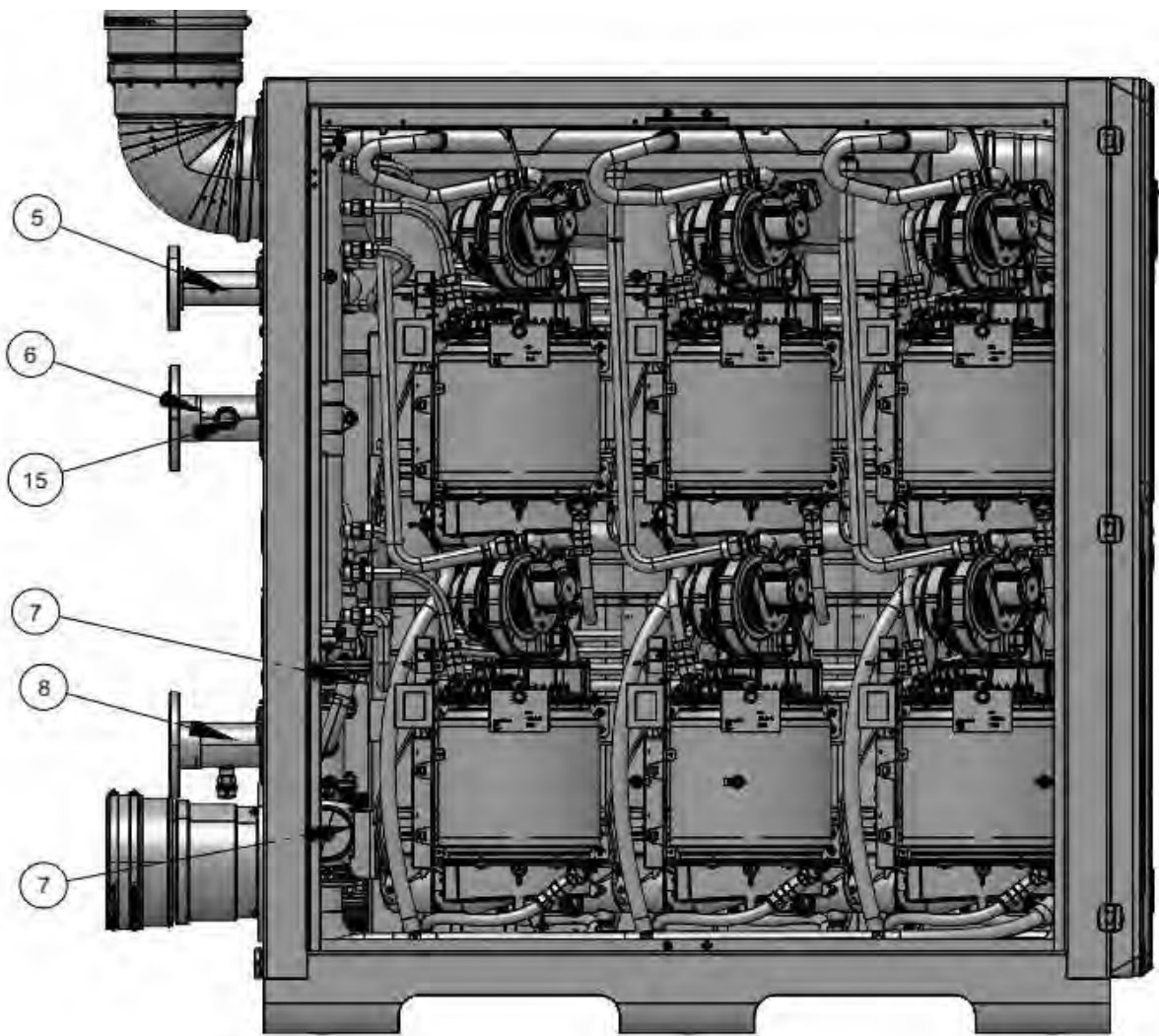
Item	Part Number	Description
2	IGT-MANF0054	Gas Manifold (Right)
3	IGT-MANF0055	Gas Manifold (Left)
4	IGT-MANF0038	Hot Side Manifold (Right)
5	IGT-MANF0037	Gas Inlet Manifold
6	IGT-MANF0040	Hot Side Manifold
7	IGT-SPR0075	Internal Pump
8	IGT-MANF0029	Cold Inlet Manifold
9	IGT-SPR0003	Water Valve Kit
10	IGT-MANF0031	Cold Inlet Manifold (Bottom)
11	IGT-VL0019	Bypass Valve
12	IGT-MANF0030	Cold Inlet Manifold (Top)
13	IGT-MANF39	Hot Side Manifold (Left)

16.3 Right Side

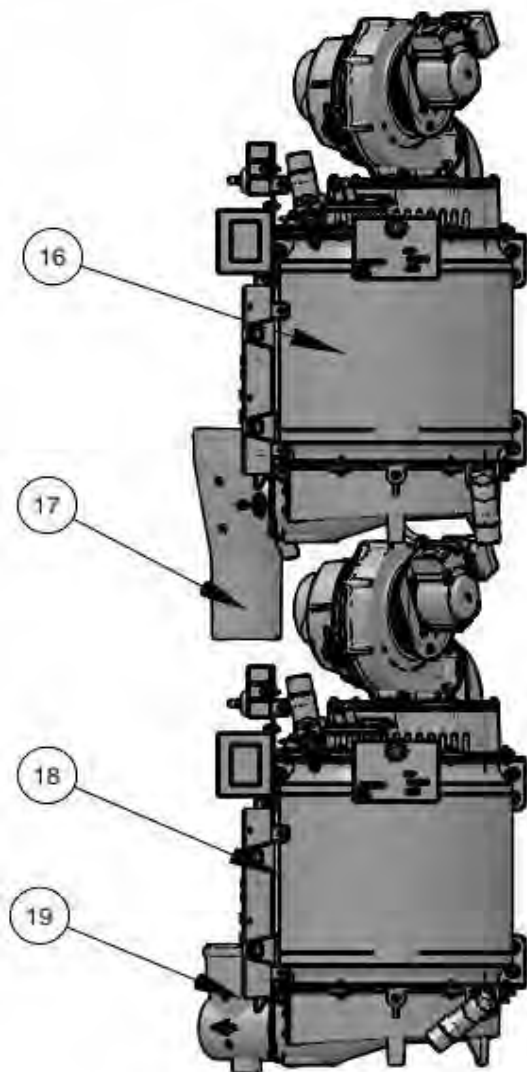


Item	Part Number	Description
5	IGT-MANF0037	Gas Inlet Manifold
6	IGT-MANF0040	Hot Side Manifold
7	IGT-MANF0029	Cold Inlet Manifold
8	IGT-FLTR0005	Air Filter

16.4 Left Side

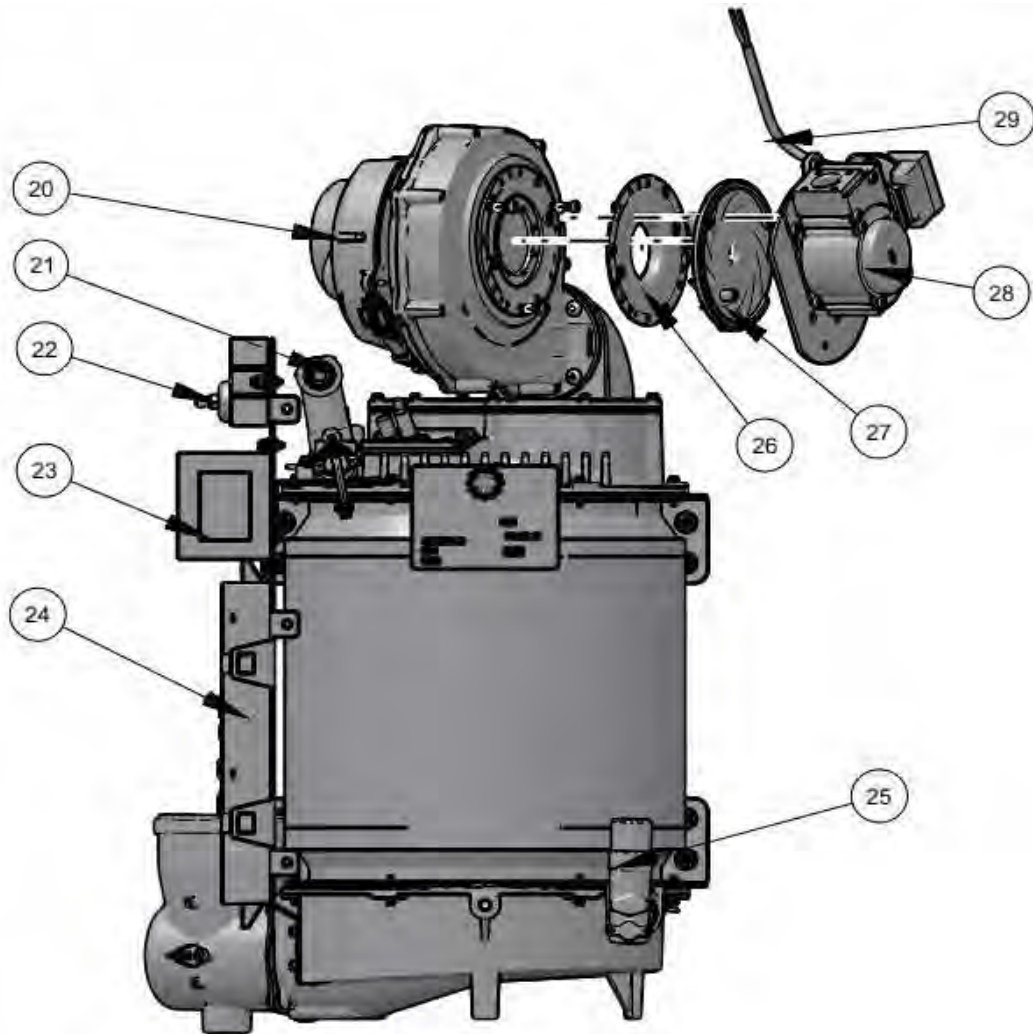


Item	Part Number	Description
5	IGT-MANF0037	Gas Inlet Manifold
6	IGT-MANF0040	Hot Side Manifold
7	IGT-SPR0075	Internal Pump
8	IGT-MANF0029	Cold Inlet Manifold
15	IGT-ELC0116	Manifold Sensor



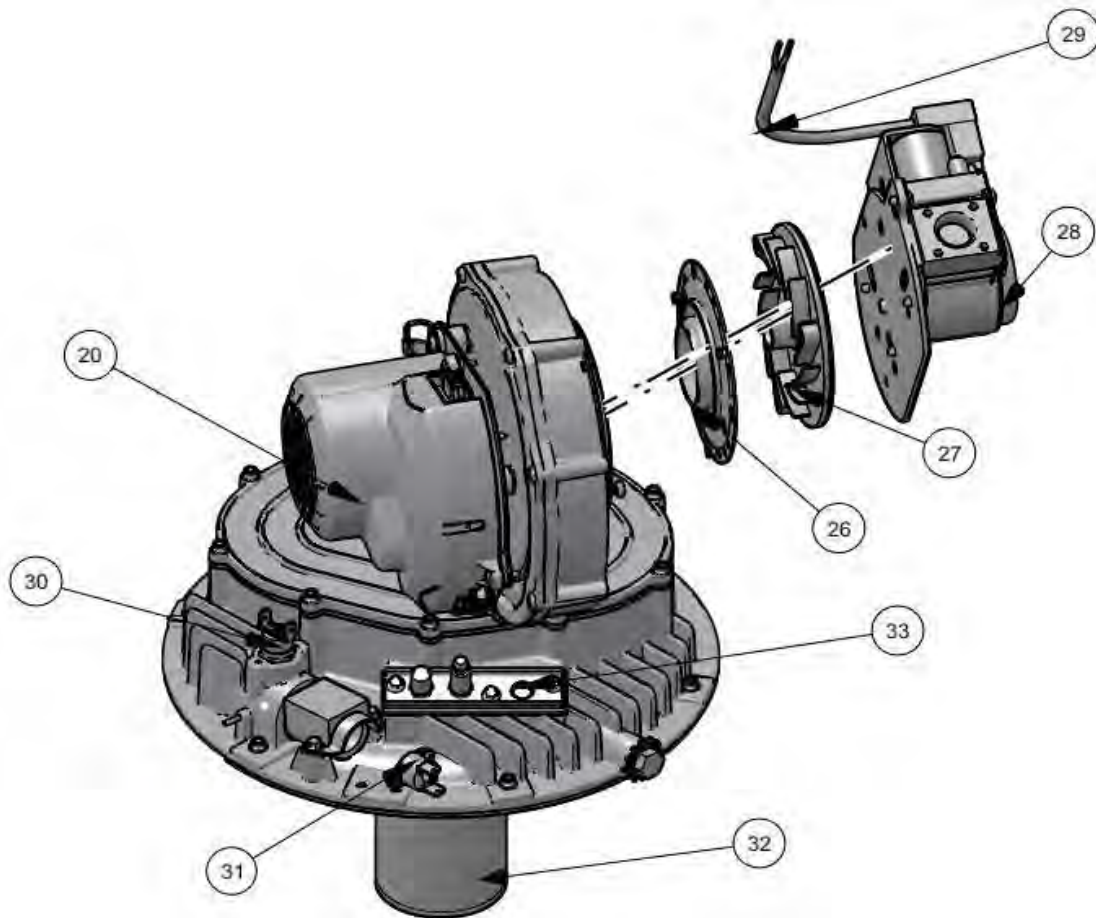
Item	Part Number	Description
16	IGT-SA0404	Top Heat Exchanger
17	IGT-CST0035	Top HEX Exhaust Side Cast
18	IGT-SA0406	Bottom Heat Exchanger
19	IGT-CST0029	Bottom HEX Exhaust Side Cast

16.6 HEX Parts

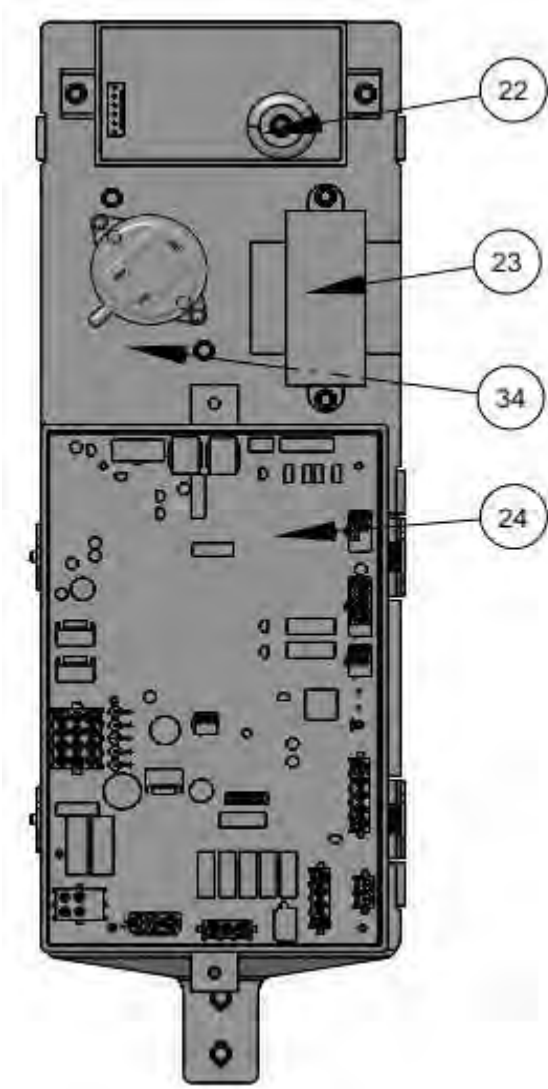


Item	Part Number	Description
20	IGT-SPR0008	Blower Kit
21	IGT-SPR0012	Outer Fitting Kit
22	IGT-SPR0005	Ignitor Module (DSI) Kit
23	IGT-SPR0065	Transformer Kit
24	IGT-SPR0002	Control Board
25	IGT-SPR0010	Inlet Fitting Kit
26	IGT-ELC0012	Fan Adapter Plate
27	IGT-ELC0147	Gray Swirl Plate
28	IGT-SPR0011	Gas Valve Kit
29	IGT-ELC0020	Gas Valve Harness

16.7 Burner, Electrode & Gas Valve



Item	Part Number	Description
20	IGT-SPR008	Blower Kit
26	IGT-ELC0012	Fan Adapter Plate
27	IGT-ELC0147	Gray Swirl Plate
28	IGT-SPR0011	Gas Valve Kit
29	IGT-ELC0020	Gas Valve Harness
30	IGT-SPR0097	High Temp Sensor Kit
31	IGT-SPR0066	Resettable Overheat Switch
32	IGT-SPR0095	Burner Kit
33	IGT-SPR0106	Gen 2 V02 Electrode Kit



Item	Part Number	Description
22	GT-SPR0005	Ignitor Module (DSI) Kit
23	GT-SPR0065	Transformer Kit
24	GT-SPR0002	Control Board
25	GT-ELC0007	Air Switch

16.9 Miscellaneous

Part Number	Description
IGT-ELC0092	25 ft Cascading Cable
IGT-ELC0232	50 ft Cascading Cable
IGT-SPR0109	Gen II V 2 O-Ring Kit
IGT-SPR0110	Gen II V 2 Sensor Kit (include Manifold inlet, Manifold Outlet, Flue and Hotwater Outlet Sensors)
IGT-ELC0085	iOT Kit
IGT-ELC0181	DSI to Electrode HV Cable
IGT-ELC0275	Display Harness
IGT-ELC0274	Heat Exchanger Harness
IGT-ELC0268	Air Filter Switch Harness
IGT-ELC0266	Manifold Inlet Harness
IGT-ELC0267	Manifold Outlet Harness
IGT-ELC0269	Bypass Valve Harness
IGT-ELC0273C	iQ3001 Power Harness
IGT-ELC0270C	iQ2001 Power Harness
IGT-ELC0138	Rocker Switch
IGT-SPR0117	BMS Bacnet Kit