B. Error codes

031: Incorrect dipswitch setting

- Check the dipswitch setting on the PCB. Refer to Section D.

101: Warning for the "991" error code

- Check the gas type of the unit. If it is wrong gas type model, replace the water heater to correct one.
- Check if there is any blockage (For example, Dampen sticking, Vents flap, installed on the chimney, Snow build up around terminal, Installed in a close [No ventilation or lack of combustion air] in the intake air and/or exhaust. Refer to the "vent termination clearance" of the installation manual).
- If the water heater is installed as a direct-vent system, check whether there is enough distance between the pipe outlet and the air exhaust terminal. Refer to the "vent termination clearance" of the installation manual.
- Check if the overload protector does not exceed 50°C and the #6 elbow is less than 50°C.
- Check the altitude/ elevation of area where the water heater installed. Refer to the "High altitude function" of the unit and change the display settings.
- If there is grease and/or dirt in the burner (Part #1001) and the fan motor (Part #1550), especially if the water heater has been installed in a contaminated area.
- Check if the gas is not in the burnout (Part #1001).
- Check the manifold pressure of the water heater. Refer to installation manual.

111: Ignition failure

1. Check gas supply and inlet gas pressure.
2. Check if gas supply is properly functioning.
3. Check for connection/breakage of wires (Part #1311, 708, 709, 712), burn marks on the computer board (Part #701), and/or the flame rod (Part #1001). And then if D.C.F (Part #1411) is breakage. Consult the manufacturer.
4. Check if there is a buzzing spark ignition sound coming from the burner (Part #1001) when water heater burner for combustion.
5. Listen for the double "clunk" sound coming from the gas valve assembly (Part #102) when water heater is in operation.
6. Only [no sparking and/or kick sound] Check voltage on each wire to gas valves assembly (Part #701) and/or the igniter (Part #121). Refer to the "Appendix A in Section C."
- No sparking sound >>>>>> Refer the #1 to "Appendix A in Section C."
- No kick sound >>>>>> Refer the #2 to "Appendix A in Section C."
- Only sparking sound from the igniter (Part #1411)
- Check if there is dust and lint in the nozzle of the manifold (Part #102).
- Check if there is dust and lint in the nozzle of the manifold (Part #102).
- Check current on the flame rod (Part #108). Refer to the #3 at "Appendix A in Section C."

221: Loss of flame

1. Check gas supply and inlet gas pressure.
2. Check if the Hi-limit switch (Part #1442) is properly functioning.
3. Check for connection/breakage of wires (Part #1311, 708, 709, 712), burn marks on the computer board (Part #701), and/or the flame rod (Part #1001). And then if D.C.F (Part #1411) is breakage. Consult the manufacturer.
4. Check if there is a buzzing spark ignition sound coming from the burner (Part #1001) when water heater is in operation.
5. Check if there is dust and lint in the nozzle of the manifold (Part #102).
6. Check current on the flame rod (Part #108). Refer to the #3 at "Appendix A in Section C."

<<The fan motor still spinning after operation has stopped>>

- This is normal. After operation has stopped, the fan motor keeps running from 15 to 70 minutes as a precaution as purge all the exhaust gas out of the flue.

<<Abnormal sound from water heater>>

- An abnormal sound of the water heater is caused by not enough air supply or wrong installations. The water heater needs more combustion air. Refer to the "101" error code in this section.

<<Power supply circuit>>

1. If the remote controller installed, press the "ON/OFF" button of the remote controller, and make sure that the LED on the "ON/OFF" button of the remote controller is lit. Restart the water heater.
2. Check if the LED on the PCB (Part #703) of the water heater is lit. If so, the power supply circuit of the water heater is under normal condition. Next, refer to the "Water circuit" in this section.
3. Check the fuse on the surge box (Part #703), and if it has a brown spot, need to replace it. Check the fuse in the air conditioner. Refer to the "Water circuit" in this section.
4. Check the power supply, and make sure that the water heater has 120V AC. Check the fuse on the PCB (Part #703) isn’t lit, so some electrical parts can be broken. Consult the manufacturer.

<<Water circuit>>

1. If you set the remote controller, turn the power button on and then the green LED will light up.
2. Open all hot water faucets, and make sure that there is enough water flow. This water heater needs at least 0.75 GPM water flow to operate.
3. Check for corrosion, low pressure, or low water flow.
4. Check if the water is cold on the water inlet cleanser. (Part #406)
5. Check if there is no blockage on the water heater.
6. Check if water ways in the water heater are frozen. If so, unfreeze them. And refer to installation manual to protect your water heater from freeze.
7. If the inlet water pressure is higher than 40 psi. And if it’s lower than 40 psi, need to increase the pressure.
8. Check for connections and breakage of wires (Part #402).
9. Check if the motor drive of the flow adjustment valve (Part #402) is locked due to scale damage, and/or water leakage. Consult the manufacturer.

<<Gas circulation>>

1. If you set the remote controller, turn the power button on and then the green LED will light up.
2. If the water heater has a gas circulation problem, refer to the "Power supply circuit" and "Water circuit" in this section.
3. If there is no gas circulation, check the gas valve assembly (Part #701) and/or burner (Part #1001) are not working properly. Call a technician.
4. If there is no gas circulation, check the gas valve assembly (Part #701) and/or burner (Part #1001) are not working properly. Call a technician.
5. Check if the gas supply line is properly installed and the gas supplies pressure enough. Refer to the "Gas supply and gas piping size" of the installation manual.
6. Change the dipswitch setting. Refer to Section D. Refer to "Water circuit" in this section.

<<The water is not too hot>>

- Check the water set temperature, lower setting temperature.

<<The hot water is not available when a fixture is open>>

- Refer to the "Power supply circuit" and "Water circuit" in this section. If you use the remote controller, turn the power button on and then the green LED will light up.
- Check for connections and breakage of wires (Part #402). Check the fuse on the water heater inlet cleanser. (Part #406)
- Refer to "Water circuit" in this section.

- [931, 321, 331]: Disconnected/short-circuited thermistor

- Check the connection/dirty of the thermistor (Part #407, 408, 411, 716).
- Check thermistor resistance. Refer to the "Appendix D in Section C."

- Air leakage from/failure to the heater (Part #701).

- Check for connection/breakage of wires (Part #703) and/or use a self-actuator. Measure with the self-actuator of the water heater board (Part #402, 717).

- Abnormal Main and Solenoid Gas Valve

- Check for connection/breakage of wires (Part #703) and/or burn marks on the computer board (Part #701).
- Restart power supply to the water heater.
- Check voltage on each valve on the gas valves assembly (Part #702). Refer to the "Power supply circuit" in this section.

- Fan motor fault

- Check if there is grease and/or dirt in the burner (Part #1001) and the fan motor (Part #1550), especially if the water heater has been installed in a contaminated area.
- Check if there is grease and/or dirt in the burner (Part #1001) and the fan motor (Part #1550), especially if the water heater has been installed in a contaminated area.

- Ignition failure

- Check for connection/breakage of wires (Part #703) and/or burn marks on the computer board (Part #701).
- Check for connection/breakage of wires (Part #703) and/or burn marks on the computer board (Part #701).
- Check for connection/breakage of wires (Part #703) and/or burn marks on the computer board (Part #701).
- Check for connection/breakage of wires (Part #703) and/or burn marks on the computer board (Part #701).

- False flame detection

- 1. Clean the flame rod (Part #1411)
- 2. For indoor models, check if condensate drain is installed on the vent collar of the water heater.
- 3. Check if there is leaking from heat exchanger (Part #1411)

- Minimum combustion between water heater and remote controller

- Check the model type of the remote controller. Model No: 0007609500 is the correct one.
- Check the connections between the water heater and remote controller. Refer to the "Remote controller" section of the manual.
- Check the power supply of the water heater. If it is normal, replace the 7.5 LED’s PCB (on the "ON/OFF" button of the remote controller) and then check the power supply of the water heater.
- If the water heater does not work, replace the PCB (Part #701) and replace the remote controller.

- Minimum combustion between Parent unit and Child units for Easylink System

- Check if the connections between the parent unit and the child units are correct. Refer to the "Easylink System" section in the installation manual.

- 991: Imperfect combustion

- Refer to the "101" error code in this section.
### Case assembly

#### 510 Indoor

- **Item#** 319143-151: Case assembly for 510Indoor
- **Item#** 319143-213: Case assembly for 510Outdoor
- **Item#** 319143-174: Front cover for 510 Indoor
- **Item#** 319143-175: Front cover for 510 Outdoor
- **Item#** 319143-156: Air blockage plate (Only 510 Indoor)
- **Item#** 319143-184: Bracket
- **Item#** 319143-014: Junction box
- **Item#** 319143-128: Junction box inner plate
- **Item#** 319143-221: Back guard panel
- **Item#** 319143-025: Screw M6x12 (Washer)
- **Item#** 319143-325: Screw M6x12 (Washer)
- **Item#** 319143-026: Screw M6x12 (Washer)
- **Item#** 319143-060: Screw M4x10
- **Item#** 319143-326: Hex head screw M4x8
- **Item#** 319143-372: Screw M4x10
- **Item#** 319143-330: Screw M4x7.5x8
- **Item#** 319143-327: Screw M5x10
- **Item#** 319143-061: Pan screw M4x6 (2 pieces)
- **Item#** 319143-132: Pan screw M6x6 (2 pieces)
- **Item#** 319143-201: Tap light screw M4x6 (2 pieces)
- **Item#** 319143-062: Pan screw M4x10
- **Item#** 319143-087: Screw M5x4
- **Item#** 319143-328: Screw M4x6
- **Item#** 319143-055: Pan screw M4x8
- **Item#** 319143-143: Nylon clamp
- **Item#** 319143-048: Wire clamp 60

#### 510 Outdoor

- **Item#** 319143-151: Case assembly for 510Indoor
- **Item#** 319143-213: Case assembly for 510Outdoor
- **Item#** 319143-174: Front cover for 510 Indoor
- **Item#** 319143-175: Front cover for 510 Outdoor
- **Item#** 319143-156: Air blockage plate (Only 510 Indoor)
- **Item#** 319143-184: Bracket
- **Item#** 319143-014: Junction box
- **Item#** 319143-128: Junction box inner plate
- **Item#** 319143-221: Back guard panel
- **Item#** 319143-025: Screw M6x12 (Washer)
- **Item#** 319143-325: Screw M6x12 (Washer)
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- **Item#** 319143-087: Screw M5x4
- **Item#** 319143-328: Screw M4x6
- **Item#** 319143-055: Pan screw M4x8
- **Item#** 319143-143: Nylon clamp
- **Item#** 319143-048: Wire clamp 60

### Burner assembly

- **Item#** 319143-030: Burner assembly
- **Item#** 319143-046: Manifold assembly with gas valve assembly 1P
- **Item#** 319143-368: Manifold assembly with gas valve assembly N4
- **Item#** 319143-217: Fan motor for 510 Indoor
- **Item#** 319143-215: Fan motor for 510 Outdoor
- **Item#** 319143-032: Burner holder gasket
- **Item#** 319143-031: Burner gasket
- **Item#** 319143-033: Burner window
- **Item#** 319143-034: Rod holder gasket
- **Item#** 319143-035: Flame rod
- **Item#** 319143-037: Igniter rod
- **Item#** 319143-038: Rod holder
- **Item#** 319143-136: Rod cap
- **Item#** 319143-135: Burner dumper
- **Item#** 319143-064: Manifold gasket A
- **Item#** 319143-045: Manifold gasket B
- **Item#** 319143-367: Fan dumper [Only 510 Indoor]
- **Item#** 319143-042: Pressure port
- **Item#** 319143-041: Combustion chamber 20mm for 510 Indoor
- **Item#** 319143-344: Combustion chamber tube for 510 Outdoor
- **Item#** 319143-050: Gas inlet
- **Item#** 319143-049: Gas inlet ring
- **Item#** 319143-051: Igniter plate
- **Item#** 319143-176: Surge box plate
- **Item#** 319143-368: O-ring P12 NR (Black)
- **Item#** 319143-057: O-ring P12 NR (Black)
- **Item#** 319143-206: Silicone ring (Only 510 Outdoor)
- **Item#** 319143-216: Rain protection plate in Exhaust chamber (Only 510 Outdoor)
- **Item#** 319143-219: Exhaust port (Only 510 Outdoor)

### Water way assembly

- **Item#** 319143-39: Heat exchanger assembly for 510 Indoor
- **Item#** 319143-177: Heat exchanger assembly for 510 Outdoor
- **Item#** 319143-178: Flow adjustment valve/Flow sensor
- **Item#** 319143-186: Bypass valve
- **Item#** 319143-193: Water inlet
- **Item#** 319143-197: Inlet drain plug
- **Item#** 319143-198: Inlet water filter
- **Item#** 319143-085: Inlet thermistor
- **Item#** 319143-190: Mixing thermometer
- **Item#** 319143-194: Water outlet
- **Item#** 410-199: Outlet drain plug
- **Item#** 319143-096: Output thermometer
- **Item#** 319143-095: Hi-Limit switch
- **Item#** 319143-149: Overheat cut-off-fuse
- **Item#** 319143-200: Heater
- **Item#** 319143-078: Inlet heater
- **Item#** 319143-088: Pipe heater fixing plate
- **Item#** 319143-125: Heater fixing plate 18
- **Item#** 319143-066: Fuse fixing plate 18
- **Item#** 319143-146: Fuse fixing plate 14
- **Item#** 319143-082: O-ring P4 FKM
- **Item#** 319143-081: O-ring P4 FKM
- **Item#** 319143-091: O-ring P5 FKM
- **Item#** 319143-083: O-ring P15 FKM
- **Item#** 319143-097: Fastener “4.12”
- **Item#** 319143-105: Fastener “14-22”
- **Item#** 319143-226: Fastener “16A”
- **Item#** 319143-205: Fastener “16:25A”
- **Item#** 319143-065: Silicone ring (Only 510 Indoor)