A. Troubleshooting

If the error code is indicated on the 7-seg LED on the PCB (Part #701) of the water heater (and or the remote controller), refer to Section B.

<< It takes long time to get hot water at the fixtures >>

The time required to deliver 40°F hot water from your fixtures depends on the length of piping between the two. The longer the distance or the bigger the pipes, the longer it takes to get hot water.

If you would like to receive hot water to your fixtures quicker, you may want to consider a hot water recirculation system.

<< The water is not hot enough or turns cold and stays cold >>

- Compare the flow rate and refer to the "Output temperature chart" of the water heater.
- Check cross plumbing between cold water lines and hot water lines.
- Check if the gas supply valve is fully open, the gas supply line pressure and the gas supply pressure are enough. Refer to the "Gas supply and gas pipe sizing" of the installation manual.
- Refer to "Water circuit" in this section.

<< The water is too hot >>

Check the water temperature, lower setting temperature.

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

Refer to the "Power supply circuit" and "Water circuit" in this section.

<< Fluctuation in hot water temperature >>

- Check if the filter on the cold water inlet is cleaned. (Part #408)
- Check if the water supplied to the heating element is sufficient.
- Check for cross connection between cold water lines and hot water lines.
- Refer to "Water circuit" in this section.
- Refer to "Water circuit" in this section.

<< Unit does not ignite when water goes through the water heater >>

- Refer to the "Power supply circuit" and "Water circuit" in this section.
- Use the remote controller, turn the power button on and then light the green LED will light up.
- Check if the filter on the cold water inlet is cleaned. (Part #408)

B. Error codes

301: Incorrect dipswitch setting
- Check the dipswitch settings on the PCB. Refer to Section D.

101: Warning for the "991" error code
- Check if the gas type of the water heater (gas type made) replace the water heater to correct one.
- Check if there is any blockage (for example, Damper sticking, Vent Flaps installed on the terminal, water pipe is plugged up around the terminal) or if the remote controller (combustion air) in the intake 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 are enough distance between the intake terminal and the exhaust terminal. Refer to the "Vent termination clearance" of the installation manual.
- Check if the total vent length doesn’t exceed 50 ft and the # of elbows is less than 15a.
- Check if the air intake vent is no blockage on the fan motor. Refer to the "High altitude function" of the Section D. And change the dipswitch settings.
- Check if there is grease and/or dirt in the burner (Part #101), and the fan motor (Part #115), especially if the water heater has been installed in a contaminated area.
- Check if there is dust and dirt in heat exchanger.
- Check if 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 the Hi-limit switch (Part #402) is properly functioning.
3. Check for connection/breakage of wires (Part #401, 403, 704, 707), burn marks on the computer board (Part #701), and/or coat on the flame rod (Part #106). And then if D.C.H.F. (Part #401, 407) is not functioning.
4. Check if there is a buzzing spark ignition sound coming from the burner (Part #101) when the water heater goes into combustion.
5. Check if there is any sparking/kick sound. Check voltage on each wire to gas valve assembly (Part #120) and/or the igniter (Part #125). Refer to the "Appendix A" in Section C.
6. Check if there is a sparking sound from the igniter (Part #101) when the water heater goes into combustion.
7. Listen for the double "clunk" sound coming from the gas valves assembly (Part #120) when water heater goes into combustion.
- Only for sparking/kick sound check: Check voltage on each wire to gas valve assembly (Part #120) and/or the igniter (Part #125). Refer to the "Appendix A" in Section C.
8. Check if there is dust and dirt in nozzles of the manifold (Part #120).
- If there is no sparking sound, refer to Part #121.
9. Check for spark and/or kick sound. Check voltage on each wire to gas valve assembly (Part #120) and/or the igniter (Part #125). Refer to the "Appendix A" in Section C.

121: Loss of flame

1. Check gas supply and inlet gas pressure.
2. Check if the Hi-limit switch (Part #402) is properly functioning.
3. Check for connection/breakage of wires (Part #401, 403, 704, 707), burn marks on the computer board (Part #701), and/or coat on the flame rod (Part #106). And then if D.C.H.F. (Part #401, 407) is not functioning, Check the manufacturer.
4. Check if there is a sparking ignition sound coming from the burner (Part #101) when the water heater goes into combustion.
5. Check if there is dust and dirt in nozzles of the manifold (Part #120).
6. Check current on the flame rod (Part #106). Refer to the #3 at Appendix A in Section E.

122: Loss of flame

1. Check gas supply and inlet gas pressure.
2. Check if the Hi-limit switch (Part #402) is properly functioning.
3. Check for connection/breakage of wires (Part #401, 403, 704, 707), burn marks on the computer board (Part #701), and/or coat on the flame rod (Part #106). And then if D.C.H.F. (Part #401, 407) is not functioning, Check the manufacturer.
4. Check if there is a sparking ignition sound coming from the burner (Part #101) when the water heater goes into combustion.
5. Check if there is dust and dirt in nozzles of the manifold (Part #120).

D. Dipswitch Settings on the computer board of the water heater

Change the dipswitch settings when the power supply is turning off. Be sure that the direction the side pin should be set to "DEFAUT" the factory setting.

1. For the dark square, the line indicates the direction the side pin should be set to DEFAUT the factory setting.

2. For light pin, the line indicates the direction the side pin should be set to DEFAUT the factory setting.

B. Error codes

301: Incorrect dipswitch setting
- Check the dipswitch settings on the PCB. Refer to Section D.

101: Warning for the "991" error code
- Check if the gas type of the water heater (gas type made) replace the water heater to correct one.
- Check if there is any blockage (for example, Damper sticking, Vent Flaps installed on the terminal, water pipe is plugged up around the terminal) or if the remote controller (combustion air) in the intake 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 are enough distance between the intake terminal and the exhaust terminal. Refer to the "Vent termination clearance" of the installation manual.
- Check if the total vent length doesn’t exceed 50 ft and the # of elbows is less than 15a.
- Check if the air intake vent is no blockage on the fan motor. Refer to the "High altitude function" of the Section D. And change the dipswitch settings.
- Check if there is grease and/or dirt in the burner (Part #101), and the fan motor (Part #115), especially if the water heater has been installed in a contaminated area.
- Check if there is dust and dirt in heat exchanger.
- Check if 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 the Hi-limit switch (Part #402) is properly functioning.
3. Check for connection/breakage of wires (Part #401, 403, 704, 707), burn marks on the computer board (Part #701), and/or coat on the flame rod (Part #106). And then if D.C.H.F. (Part #401, 407) is not functioning, Check the manufacturer.
4. Check if there is a buzzing spark ignition sound coming from the burner (Part #101) when the water heater goes into combustion.
5. Check if there is any sparking/kick sound. Check voltage on each wire to gas valve assembly (Part #120) and/or the igniter (Part #125). Refer to the "Appendix A" in Section C.
6. Check if there is dust and dirt in nozzles of the manifold (Part #120).
- If there is no sparking sound, refer to Part #121.
7. Check if there is dust and dirt in nozzles of the manifold (Part #120).
8. Check current on the flame rod (Part #106). Refer to the #3 at Appendix A in Section E.

121: Loss of flame

1. Check gas supply and inlet gas pressure.
2. Check if the Hi-limit switch (Part #402) is properly functioning.
3. Check for connection/breakage of wires (Part #401, 403, 704, 707), burn marks on the computer board (Part #701), and/or coat on the flame rod (Part #106). And then if D.C.H.F. (Part #401, 407) is not functioning, Check the manufacturer.
4. Check if there is a sparking ignition sound coming from the burner (Part #101) when the water heater goes into combustion.
5. Check if there is dust and dirt in nozzles of the manifold (Part #120).
6. Check current on the flame rod (Part #106). Refer to the #3 at Appendix A in Section E.

E. Wiring Diagram and check point of the Water heater

- Check these points during ignition stage.
- Check voltage on the various wires.
- Check voltage between blue wire and blue light wire.
- Check voltage between blue wire and orange wire.
- Check voltage between blue wire and orange wire.
- Check voltage between blue wire and brown wire.

Appendix A

Check the following points.
1. Check the connection to the water heater.
2. Check the connection to the computer board.

Appendix B

Check the following points.
1. Check the connection to the computer board.
2. Check the connection to the computer board.

Appendix C

Check the following points.
1. Check the connection to the computer board.
2. Check the connection to the computer board.

Appendix D

Check the following points.
1. Check the connection to the water heater.
2. Check the connection to the computer board.

Appendix E

Check the following points.
1. Check the connection to the water heater.
2. Check the connection to the computer board.

Appendix F

Check the following points.
1. Check the connection to the water heater.
2. Check the connection to the computer board.