Part Number 550-141-816/0304

LGB
Gas–fired boiler
Control Supplement

LGB-6 to LGB-20 Series 2 – Propane gas
CSD-1 Control System

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These terms are used throughout this manual to bring attention to the presence of hazards of various risk levels or to important information concerning the life of the product.

WARNING Indicates presence of hazards that can cause severe personal injury, death or substantial property damage.

NOTICE Indicates special instructions on installation, operation or maintenance that are important but not related to personal injury or property damage.

This Control Supplement must only be used by a qualified installer/service technician. Read these instructions completely before beginning the installation. Failure to follow these instructions can cause severe personal injury, death or substantial property damage.
New installation

1. Remove all burners from base box assembly. Remove 3.95 mm natural gas main burner orifices in manifold. Install 2.40 mm propane gas main burner orifices. Use pipe dope sparingly only on male ends. Use pipe dope compatible with propane gases. Do not overtighten orifices.

2. Install pilot burners and flame sensor(s). See Figures 1 and 2 (page 3). Follow Table 1, below for electronic pilot burner (UCS), standing pilot burner (Q327) and flame sensor locations on manifold.

3. Install gas controls and ignition control panel as shown in Table 2, below and Figure 6 (page 12).

4. Attach pilot switch box to interior jacket panel. See Figure 6 (page 12). Connect thermocouple from standing pilot to switch box. Cut 60” pilot tubing into 2 pieces to make connections from pilot valve to pilot switch box and from pilot switch box to standing pilot.

5. Attach:
   a. 550-223-710 label at boiler operating instruction label. Place so that this label reads first.
   b. 550-223-796 label at rating label.
   c. Wiring diagram on door (one on each base).

---

### Table 1

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<thead>
<tr>
<th>Boiler Model Number</th>
<th>Flame Sensor* No. 1</th>
<th>Flame Sensor* No. 2</th>
<th>Electronic Pilot Burner* No. 1</th>
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<td>11</td>
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* From left burner

### Table 2

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<th>Inlet Pipe Size</th>
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<tr>
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<td>A and B</td>
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<tr>
<td>LGB-7</td>
<td>A and B</td>
<td>1&quot; Left base, -- Right base</td>
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<tr>
<td>LGB-8</td>
<td>C and D</td>
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<td>LGB-9</td>
<td>C and D</td>
<td>1½&quot; Left base, -- Right base</td>
</tr>
<tr>
<td>LGB-10</td>
<td>E, F and G</td>
<td>1½&quot; Left base, -- Right base</td>
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<td>LGB-11</td>
<td>E, F and G</td>
<td>1½&quot; Left base, -- Right base</td>
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<td>E, F and G</td>
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<td>H</td>
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<th>Inlet Pipe Size</th>
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<tr>
<td>LGB-16</td>
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<td>LGB-20</td>
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</tr>
</tbody>
</table>
I

New installation – continued

Figure 1
Pilot burner assembly, typical

Figure 2
Main flame sensor assembly
II

Existing installation  Conversion from natural gas to propane gas

**WARNING**
This conversion is to be installed by a Weil-McLain distributor or other qualified agency in accordance with the manufacturer’s instructions and all codes and requirements of the authority having jurisdiction. Failure to follow instructions could result in serious injury or property damage. The qualified agency performing this work assumes responsibility for this conversion.

**WARNING**
For your safety, turn off electrical power supply before making any electrical connections to avoid possible electrical shock hazard.

1. These instructions are for use with Propane Control Cartons as listed in Gas Control Arrangement, Table 2 (page 2).
2. Remove jacket door(s) and access panel(s).
3. Disconnect wiring and tubing from existing pilot burner and main flame sensor.
4. Remove all burners. Remove 3.95 mm natural gas main burner orifices in manifold. Install 2.40 mm propane gas main burner orifices. Use pipe dope sparingly only on male ends. Use pipe dope compatible with propane gases. Do not overtighten orifices.
6. Attach Q327 standing pilot to burner tube in kit. Connect pilot tubing and thermocouple to pilot.
7. Re-install burners. See Table 1 (page 2) for location of pilot burners and flame sensor(s).
8. Attach pilot switch box to jacket. See Figure 6 (page 12). Connect thermocouple to pilot switch box. Cut 60” pilot tubing into 2 pieces to make connections from tee in pilot line to pilot switch box and from pilot switch box to standing pilot.
10. Install propane gas valve train and fittings from carton (See page 5, section IV, paragraph 4 of this Supplement).
11. Re-install access panel(s).
12. See Figure 6, page 12 for propane piping.
14. Attach:
   a. 550-223-710 label at boiler operating instruction label. Place so that this label reads first.
   b. 550-223-796 label at rating label.
   c. Wiring diagram over diagram on door (one on each base).
15. To place in operation, follow instructions on constant burner pilot light-up label and boiler operating label.
16. Replace jacket doors.

III

Water and steam trim components

1. Install water or steam trim components as required by CSD-1 latest edition. See the boiler manual for tapping locations.
   a. Water boilers require:
      • a manual reset high temperature limit control in addition to the standard automatic reset limit control.
      • a manual reset low water cutoff.
   b. Steam boilers require:
      • a manual reset high pressure limit control in addition to the standard automatic reset limit control.
      • a manual reset low water cutoff in addition to the standard automatic reset low water cutoff.
**IV Gas piping**

1. Contact gas supplier to size pipes, tanks and regulator.
   a. Inlet gas pressure to manual main shut-off gas valve — minimum 11” W.C., maximum 13” W.C.
   b. If pressure to gas valve exceeds 13” W.C., install 100% lock-up gas pressure regulator upstream of hand valve.
2. Remove gas supply knockout disc from jacket panel.
3. Follow good piping practices.
4. Pipe joint compound (pipe dope) must be resistant to corrosive action of liquefied petroleum gases. Apply sparingly only to male threads of pipe joints.
5. Install drip leg at inlet of gas connection to boiler. Where local utility requires, extend drip leg to floor.
6. Install ground joint union when required for servicing.
7. Support piping by hangers, not by boiler or its accessories.
8. Purge all air from supply piping.

**WARNING** Do not check for gas leaks with an open flame – BUBBLE TEST. Failure to use bubble test or test for leaks can cause severe personal injury, death or substantial property damage.

a. Close manual main shut-off valve during any pressure testing at less than 13” W.C.
b. Disconnect boiler and gas valve from gas supply piping during any pressure test greater than 13” W.C.

**V Wiring**

**WARNING** For your safety, turn off electrical power supply before making any electrical connections to avoid possible electrical shock hazard.

1. All wiring must be installed in accordance with the requirements of the National Electrical Code and any additional national, state or local code requirements having jurisdiction. All wiring must be N.E.C. Class 1.
2. The boiler must be electrically grounded in accordance with the National Electrical Code, ANSI/NFPA No. 70-latest edition. Use 105 °C. thermoplastic wire, or equivalent, if any of the original wire must be replaced (except for pilot spark, sense and ground wires).
3. Supply wiring to the boiler must be No. 14 gauge or heavier. Install in conduit.
4. A separate electrical circuit with a fused disconnect switch (15 amp. recommended) should be used for the boiler.
5. Refer to wiring diagrams, Figure 3 (pages 6 and 7) and Figure 5 (page 9). See section, “Wiring procedure” on page 8.
6. Figure 5 on page 9 is the Field Wiring Diagram. See Figure 3, pages 6 and 7, for the schematic and ladder wiring diagrams.
Figure 3
Wiring diagram
Wiring – continued

Sequence of operation

1. Operating control begins startup sequence.
   a. Limit control contacts are closed.
2. Pilot proving module energized.
   a. Pilot solenoid opens.
   b. Pilot ignition spark begins.
   c. Pilot ignites.
   d. Pilot proves.

**NOTICE** On failure to sense pilot flame, the pilot-proving module will wait 5 minutes, then retry for ignition. Upon 2 consecutive pilot flame failures, the control will lockout and illuminate the red lockout light.

3. Main flame proving module energized from pilot proving module.
   a. Secondary gas valve opens.
   b. Main gas valve opens to low fire position.
   c. Main burners ignite at low fire.
   d. Main flame sensor proves low fire carryover.
   e. Main gas valve opens to high fire position.
   f. Main burners increase to high fire.

**NOTICE** On failure to sense main flame, the main flame-proving module will lockout and illuminate the red lockout light.

4. For dual base assembly - operating control energizes controls for each base assembly at the same time. See steps 1 through 3 above.
5. Boiler shuts down when operating control satisfied.

**NOTICE** If the boiler locks out, the alarm contacts on the terminal strip (terminals A1 and A2) close. These contacts are rated to 15 amps, 250 V. To reset the boiler, push the red lockout button.

Wiring procedure

1. Determine right or left electrical supply wiring.
2. Attach electrical junction box(es) to inside jacket end panel. Screws and nuts are provided. For dual base boilers, use offset nipples (provided) to connect junction boxes together (as at right), then hang junction boxes by screwing top box to boiler jacket. See Figure 4.
3. Attach control transformer(s) to junction box(es).
4. Drill 1/8” hole in interior jacket panel midway between ignition control panel and left jacket panel. Mount wire support clip using sheet metal screw (furnished).
5. Complete wiring per diagrams, Figure 3 (pages 6 and 7) and Figure 5 (page 9). Terminate at secondary gas valve in valve junction box with wirenuts and strain relief provided.

**NOTICE** “Hot” side of line voltage to boiler must be wired directly to limit circuit, then fed to transformer primary(ies).
Dual Base: “R” terminal of secondaries are to supply power to bases independently of each other. Do not wire “R” terminals together.

6. Install pilot proving and main flame proving ground connections as shown in Figures 1 and 2 and wiring diagram. Route wires through wire support clip.

Figure 4
Junction box assembly
dual base boilers

Screw Holes
to Mount
Junction Box
to Jacket

Junction Box
Base 1

Offset Nipples
(2)

Junction Box
Base 2
Figure 5
Field wiring diagram
VI

Leak test procedure

1. Remove red (MV) and blue (PV) wires from main gas valve.
2. Close main test firing valve attached to the manifold.
3. Check that both leak test valves are closed and remove plugs.
4. Attach manometer to first leak test valve.
5. Open first leak test valve and check for pressure.
6. Close first leak test valve and remove manometer.
7. Attach manometer to second leak test valve.
8. Apply call for heat to boiler.
9. Check that electronic pilot proves.
10. Open second leak test valve and check for pressure.
11. Close second leak test valve and remove manometer.
12. Remove call for heat to boiler.
13. Reinstall plugs on leak test valves.
14. Connect wiring to main gas valve.
15. Open main test firing valve attached to the manifold.

NOTICE When checking for pressure at the leak test valves, any small pressure reading is normal. If the pressure continues to increase after opening the leak test valve, the upstream valve is leaking and should be replaced.
VII

Operating instructions

A. This boiler is equipped with a pilot which must be lighted by hand. When lighting the pilot, follow these instructions exactly. The gas supply to this pilot is controlled by Pilot switch box. This boiler is also equipped with an ignition device which automatically lights a second pilot. The gas supply to this pilot is controlled by the Gas control. Do not try to light this pilot by hand.

B. BEFORE OPERATING THE MANUAL PILOT, smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.

WHAT TO DO IF YOU SMELL GAS

- Do not try to light any appliance.
- Do not touch any electric switch; do not use any phone in your building.
- Immediately call your gas supplier from a neighbor’s phone. Follow the gas supplier’s instructions.
- If you cannot reach your gas supplier, call the fire department.

C. Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control, which has been under water.

This document is intended only as a supplement to the LGB Gas-Fired Boiler Manual. Follow all instructions in the Manual, including those regarding start-up (found in Section VIII, “Placing boiler in operation”).

Starting boiler

1. STOP! Read the safety information above.
2. Set the Operating control to lowest setting.
3. Turn off all electrical power to the appliance.
4. Remove the Base access shield.
6. Wait five (5) minutes to clear out any gas. Then smell for gas, including near the floor. If you smell gas, STOP! Follow “B” in the safety information above. If you don’t smell gas, go to the next step.
7. Open the Pilot shut-off valve.
8. Press and hold the reset lever on the Pilot switch box. Manually light the pilot while holding the lever down. Air in the gas supply line will have to purge through the line before sufficient gas will reach the pilot.
9. After purging all air, hold the Pilot switch box lever for about 1 minute to heat the thermocouple.
10. Release the Pilot switch box lever. The pilot should remain lit.
11. Open the Manual main shut-off valve and follow the sequence below.
12. This appliance is also equipped with an ignition device which automatically lights the second pilot. Do not try to light this pilot by hand.
13. Turn on all electric power to the appliance.
14. Set Operating control to desired setting.
15. If the appliance will not operate, turn off gas to the appliance by closing the Manual main shut-off valve and Pilot shut-off valve. Call your service technician or gas supplier.
16. Replace Base access shield and Front panel.
### VIII Parts list

**Figure 6**

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Description</th>
<th>Size</th>
<th>Vendor/Part Number</th>
<th>Weil-McLain Part Number</th>
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<td>1</td>
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<td>Honeywell 392956</td>
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*Contact local Weil-McLain distributor/agent for current replacement part and order number.*