Installation of Control Board Replacement Kit 300-3950

PURPOSE OF KIT

These instructions describe the removal and replacement of the Control Circuit board used on the following generators.

BGE . . . . . Spec F and G
BGEL . . . . . Spec E and G
NHE, NHEL . . . . . Spec D, E and G
BGM, NHM . . . . . Spec A **only**
BGD . . . . . Spec A and B
NHD . . . . . Spec A, B and C

SAFETY PRECAUTIONS

Read these instructions completely and become familiar with safety warnings, cautions, and procedures before starting the installation.

⚠CAUTION ***Always disconnect a battery charger from its AC source before disconnecting the battery cables. Otherwise, disconnecting the cables can result in voltage spikes high enough to damage the DC control circuits of the set.***

⚠WARNING ***Accidental starting of the generator set while working on it can cause severe personal injury or death. Prevent accidental starting by disconnecting the starting battery cables (negative [–] first).***

KIT PARTS

Prior to installation, verify receipt of the proper parts from the table below.

Part Description	QTY.
Splice, Window; 22–16	6
Screw, Pan Head; 6–32 x .38	4
Harness, Wire, PCB	1
PCB, Control Assembly	1

BGM/NHM MOUNTING CONSIDERATIONS

If installing the kit on a BGM/NHM (Marquis) generator set, note the following change:

The lead marked J1-12-E2 MUST be connected to K5, pin 85 instead of the marked connection. Disregard the wire routing labels in this instance only.

Consult Figure 3 (J1 diagram) for more information.

This note applies **only** to technicians installing the Control Board kit on the BGM/NHM (Marquis) gensets.

⚠WARNING ***Incorrect installation, service, or parts replacement can result in severe personal injury, death, and/or equipment damage. Service personnel must be qualified to perform electrical and mechanical installions and service.***

INSTALLATION

Tools Required

- Wire stripping and splicing tool
- Torx screwdriver kit
- Needle-nose pliers
- Conventional screwdriver kit

Procedure

1. Disconnect the generator set starting battery cables (negative [–] cable first) to prevent the genset from starting.
2. Turn off and disconnect battery charger (if equipped).
3. Pull the genset fuse from the control panel and set it aside. Disconnect the remote cable, if present.
4. Remove the two screws from the top of the control panel. Pull the panel down and away from the control box.

5. Pull connectors J1 and J3 off the edge of the Control Circuit board. Remove the wires from the control panel wire retainer (Figure 1).

6. Remove the four screws securing the circuit board to the control panel and pull the board off the panel. Discard the old board and screws.

7. Mount the new circuit board from the kit onto the control panel using the no. 6 screws in the kit.

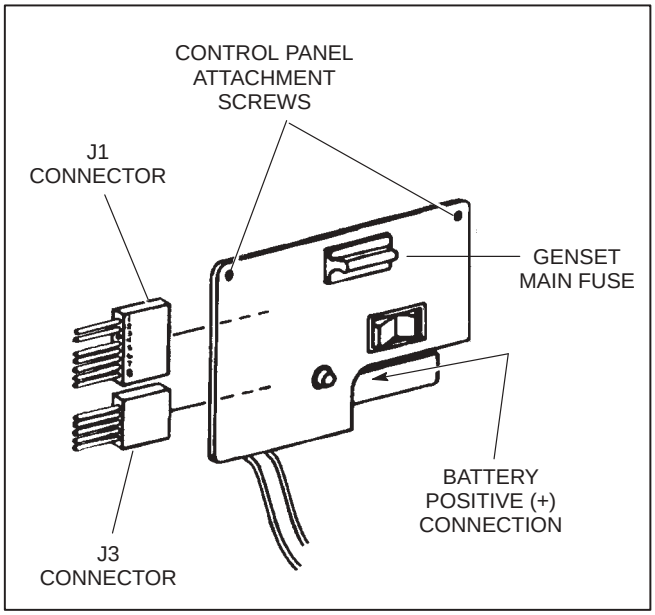

FIGURE 1: CONTROL PANEL ASSEMBLY (EARLIER VERSION w/J1 and J3 CONNECTORS)

Build New Connector

1. Cut connectors J1 and J3 from the wires extending into the generator set control. Clip wires as close to the connector as possible.

   Make sure the routing labels on the wires remain intact.

   If the routing labels are missing, refer to Figure 3 and Table 1, and refer to the wiring diagram/ schematic for the genset.

2. Using the stripping/splicing tool, crimp the 6 splices to the wires extending from the new J1 connector supplied in the kit. Insert the wires one-by-one into the connectors, then crimp the connectors firmly onto the wires using the splicing tool.

Wiring

Wires on the new connector are labeled for connecting wires in the control box. **Connect the wires one at a time. Do not cut away or obscure the labels on the wires, wherever possible.**

1. Attach the new connector J1 to the wires in the control box as follows:

   A. Using the stripping/splicing tool, strip 1/4 inch off one of the wires from the control box.

   B. Insert the end of the wire into one of the wire splice connectors.

   C. Crimp the connector firmly onto the wire using the splicing tool.

   D. Repeat this step for each of the wires attached to new J1 connector.

   NOTE: Wire J1–3 is not used. Use a tie wrap to coil and secure this wire, or remove the wire.

   ⚠ CAUTION ***When installing on a Marquis (Models BGM and NHM) be sure to connect J1-12 to K5, pin 85. Connecting this lead to E2 as marked, will short out the control board, and the genset will not run.***

2. Remove the remaining non-terminated wires one at a time, replacing them with new wires from J1.

3. Connect the five push-on terminals from connector J1 to the designated connectors inside the genset using the needle-nose pliers (Table 1).

4. The terminal marked K1–s may have two wires. Clip the wire tie holding them together to connect the new K1–S. Secure the terminal with a new wire tie.

5. Plug new J1 connector onto the control board.

6. Tuck all wires neatly back into the control box. if possible, pull the wires back into the control box from the rear of the box.

7. Four of the wires connecting to new J1 pass through the front of the control box. Clip these wires to the retainer located on the lower, inside edge of the control board to secure them in place (Figure 2).

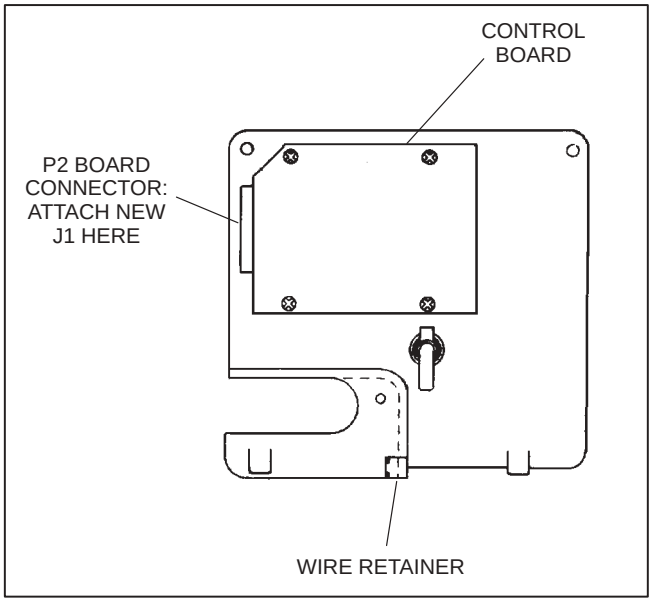

FIGURE 2: BACK OF CONTROL PANEL (REPLACEMENT PANEL)

Reassemble

1. Position the control panel on front of the control box. Reattach the control panel using the two screws removed in Step 4.
2. Connect the positive (+) battery cable to the terminal at the front of the control box.
3. Connect the negative (–) battery cable to the terminal on the generator set.
4. Reconnect the battery charger (if equipped).
5. Install the main fuse in the control panel.
6. Start and test the genset according to the appropriate operator's manual.

⚠WARNING ***Electrical shock can cause severe personal injury or death. Do not touch electrical wiring or components during testing. Disconnect electrical power by removing starting battery negative (–) cable before handling electrical wiring or components.***

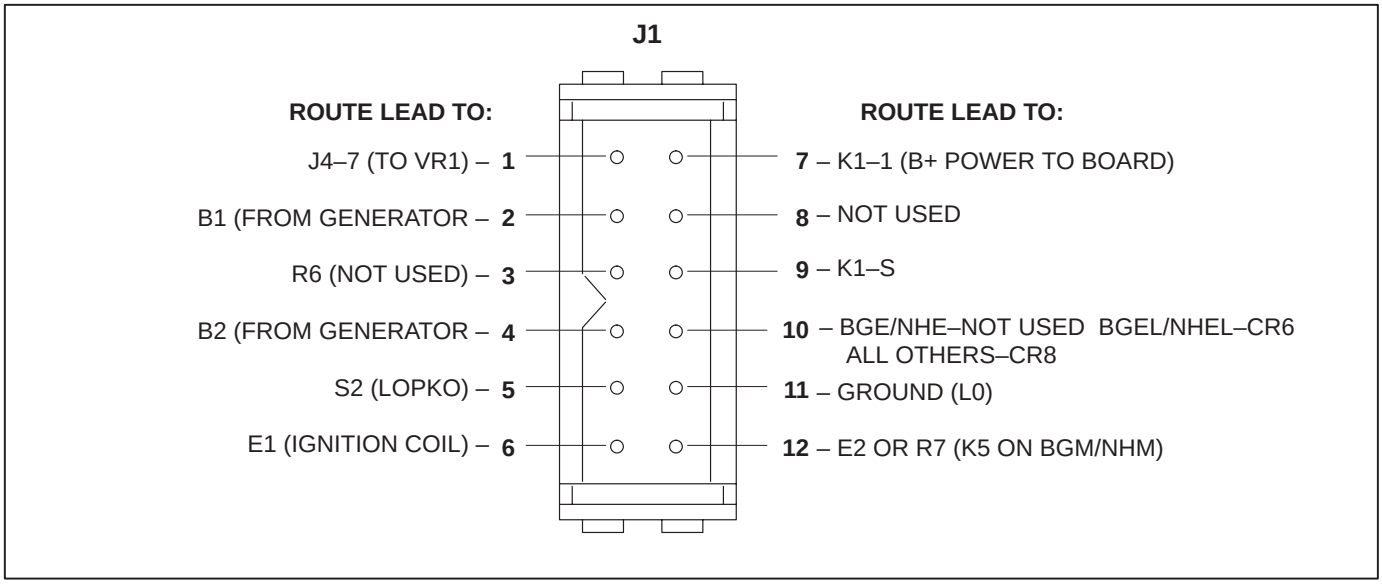

FIGURE 3. J1 PIN CONNECTIONS

TABLE 1. LABELS ON HARNESS LEADS

New Wire Labels Near Connector J1	Original Wire Labels Furthest From Connector	Component Connection
J1–1	J1–5	J4–7 (to VR1)
J1–2	J1–1	B1
J1–3	J1–4	Not used on 3951 board; R6 on 3950 board
J1–4	J1–7	B2
J1–5	J3–4	S2 (LOPKO)

New Wire Labels Near Connector J1	Original Wire Labels Furthest From Connector	Component Connection
J1–6	J3–3	E1 (Ignition coil +)
J1–7	J1–6	K1–1
J1–8	——	Not used
J1–9	J1–2	L1–S (May be piggybacked to CR9–E2 or K6–85)
J1–10	J3–2	BGE/NHE – Not used; BGEL/NHEL – CR6; BGM/NHM and BGD/NHD – CR8
J1–11	J1–8	GND (L0)
J1–12	J3–6	BGM/NHM – K5–85; Models with R7 resistor – R7; All others – Pump E2