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## INSTALLATION INSTRUCTIONS

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Original Issue Date: **2/90**

Model: **3.5/4.5/5.5/7CM**

Market: **RV**

Subject: **Controller Replacement Kits 228552, 228553, 228554, and 228655**

The relay controller and interlock relay replaces the solid state Decision-Maker™ controller and interlock circuit boards. See Figure 1 for service kit part numbers. The 3.5/4.5CM-RV and 7CM-RV with pushbutton switch controller (spec. numbers 14021 and below) require the relay controller and interlock relay. The 5.5/7CM-RV with rocker switch controller (spec. numbers 14022 and above) require only the relay controller.

If the solid state controller (C-269155), controller main circuit board (C-269148), controller switch circuit board (C-269149), or interlock circuit board (C-269150) requires replacement, order the proper service kit. The new controller assembly replaces the original controller using the existing controller box and cover. The interlock relay assembly includes a wiring harness that connects to the original harness. Install the controller and interlock relay according to the following procedure.

Refer to Figure 1 for wiring diagram selection.

Model No.	Kit No.	Wiring Diagram (120 Volt)	Wiring Diagram (120/240 Volt)
3.5CM	228552	238760—see Figures 3 and 4	238744—see Figures 5 and 6
4.5CM	228554	238749—see Figures 7 and 8	238750—see Figures 9 and 10
5.5/7CM*	228553	277931—see Figures 11 and 12	277932—see Figures 13 and 14
5.5/7CM**	228655	Not Required	Not Required

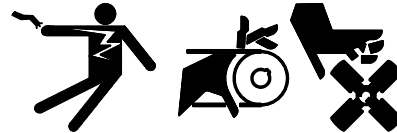
\* Pushbutton switch model (Spec. No. 14021 and below).

\*\* Rocker switch model (Spec. No. 14022 and above).

**Figure 1. Wiring Diagram Selection**

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### ⚠ WARNING



**Accidental starting.  
Can cause severe injury or death.**

Disconnect battery cables before working on generator set (disconnect negative lead first and reconnect it last).

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**Disabling generator set. Accidental starting can cause severe injury or death.** Disconnect battery cables (remove negative lead first and reconnect it last) to disable generator set before working on the generator set or connected equipment. The generator set can be started by the remote start/stop switch unless this precaution is followed.

## Controller Replacement Kits

Parts List		
Kit: 228552 (3.5CM)		
Qty.	Description	Part Number
1	Controller assembly (less box & cover)	A-241994
1	Interlock relay assembly (4CR)	A-238755

Kit: 228554 (4.5CM)		
Qty.	Description	Part Number
1	Controller assembly (less box & cover)	A-241994
1	Interlock relay assembly (4CR)	A-277821

Kit: 228553 (5.5/7CM*)		
Qty.	Description	Part Number
1	Controller assembly (less box & cover)	A-241994
1	Interlock relay assembly (4CR)	A-241760

\* Pushbutton switch model (Spec. No. 14021 and below).

Kit: 228655 (5.5/7CM**)		
Qty.	Description	Part Number
1	Controller assembly (less box & cover)	A-241993
1	Interlock relay assembly (4CR)	Not required

\*\* Rocker switch model (Spec. No. 14022 and above).

## Installation

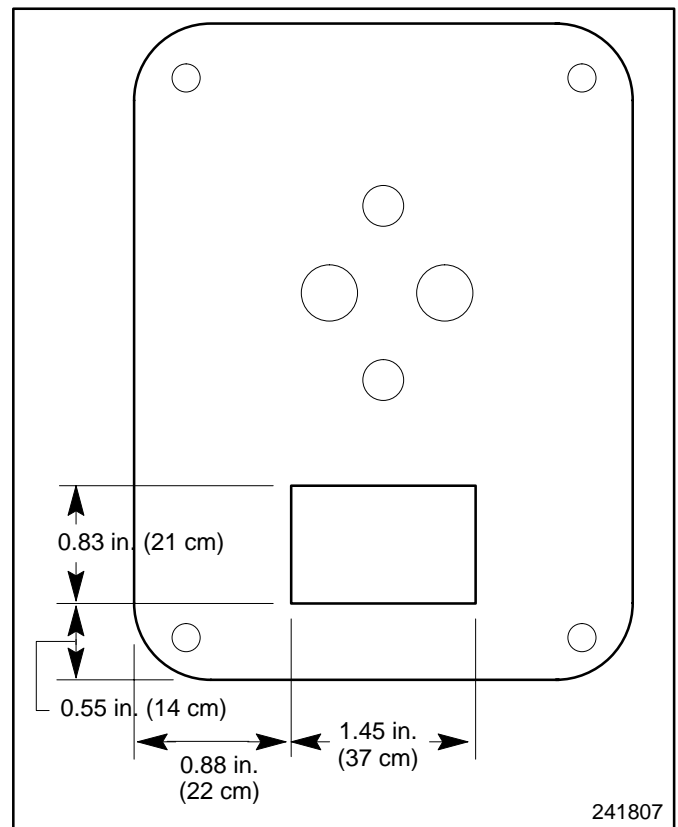
1. Place the generator start/stop switch in the stop position.
2. Disconnect the generator set engine starting battery, negative (-) lead first.

### NOTE

If installing Kit 228655, skip Steps 3-9 and go to Step 10.

3. Remove the screws that hold the metal access plate on the generator end bracket. Locate the AC interlock board (269150) inside upper left portion of end bracket. Remove the plug from the interlock board. Remove and discard the interlock board.
4. Mount the voltage regulator either inside or outside the end bracket. **This step applies only to sets with the voltage regulator mounted inside the end bracket.** Remove the four overbolts that hold the end bracket to the generator. Place a retaining wire in the brush holder. Gently tap the end bracket with a mallet to remove. Voltage regulator is now accessible.
5. With interlock relay assembly held in location of old interlock circuit board, mark the position of the relay assembly mounting holes. (Existing mounting hole may be reused if desired.) Drill two 1/8 in. (3.175 mm) diameter holes in locations marked. Install the interlock relay positioning the relay coil towards the bottom of the generator. (This step prevents relay chatter while driving the vehicle on bumpy roads.)
6. Remove the wiring harness that was connected to the old interlock board by disconnecting the white plug connectors. Remove the blue and gray wires from the voltage regulator AC terminals. Remove the pink wire from the voltage regulator B terminal.
7. Connect the long pink wire from the new interlock relay to the voltage regulator B terminal. Connect the interlock relay blue and gray wires to the voltage regulator AC terminals. Plug the other two connectors into the existing connectors from the generator.
8. Place tie wraps around the wires to prevent entanglement.
9. **This step applies only to sets with the voltage regulator mounted inside the end bracket.** Use a mallet to gently tap the end bracket into position on the generator. Secure with overbolts. Remove the retaining wire from the brush holder and replace the access plate.

10. Remove the controller cover (cover and hardware will be reused).
11. Remove the old circuit boards from inside the controller box and cover.
12. Remove the toggle switch (or rocker switch) from the controller cover.
13. Compress the wings on the harness connectors and remove from the controller box.
14. Using the new rocker switch as a template, cut a rectangular opening in the controller cover. See Figure 2. If the original controller used a rocker switch, enlarge the square opening as shown in Figure 2.
15. Mount the relay assembly on the top two bosses in the controller using two screws (X-67-77).
16. Place a new nameplate (241999) on the cover.
17. Insert the harness connectors into the appropriate holes.
18. Disconnect the rocker switch from the relay assembly. Mount the rocker switch in the front cover plate. Reconnect the rocker switch to the relay assembly.
19. Replace the controller cover using existing hardware.
20. Reconnect the generator set engine starting battery, negative (-) lead last.
21. Start the generator set and verify that the set performs properly. Stop generator set.



**Figure 2. Controller Cover Cutout for Rocker Switch**



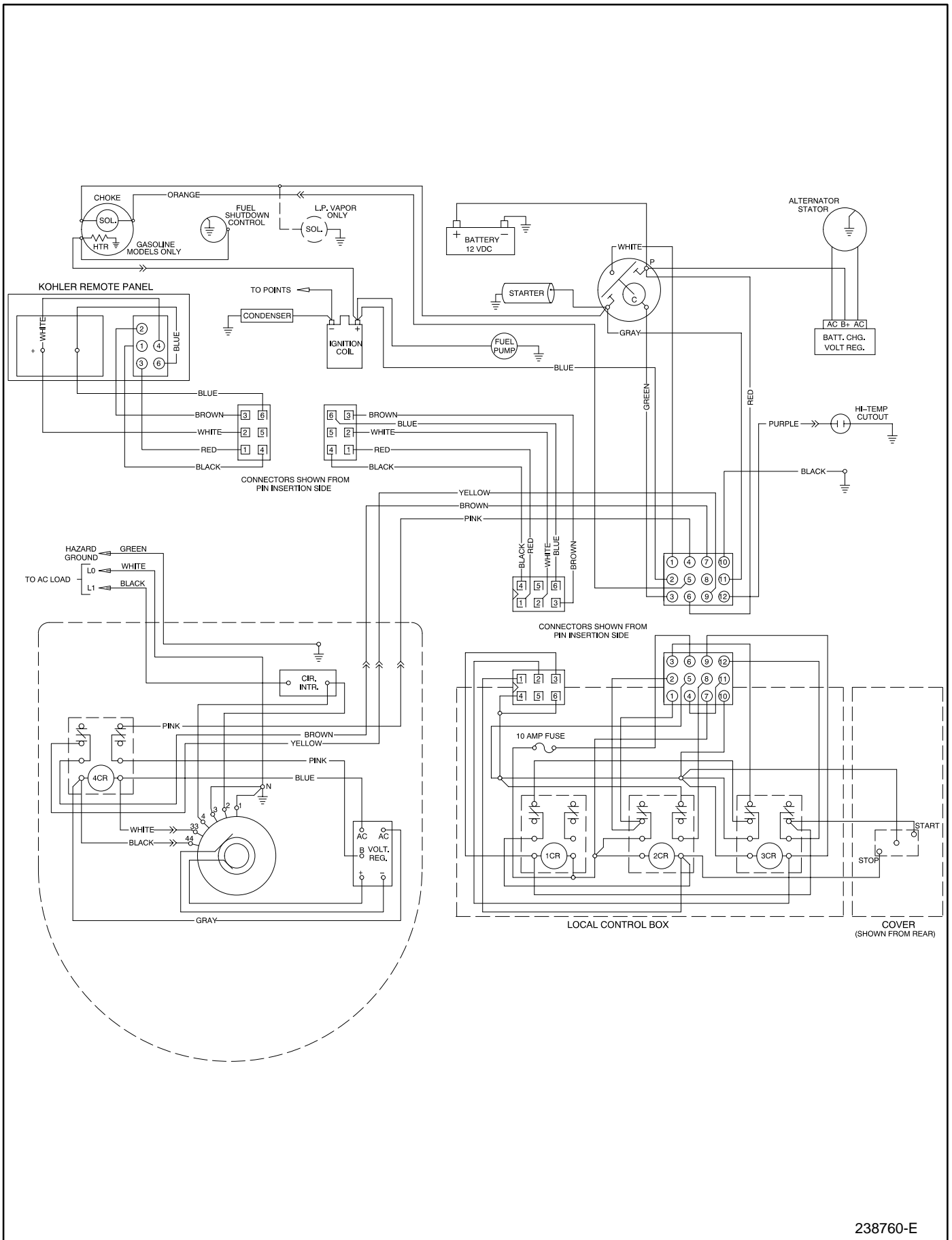


Figure 4. Point-to-Point Wiring Diagram of 238760—3.5CM21, 120 Volt

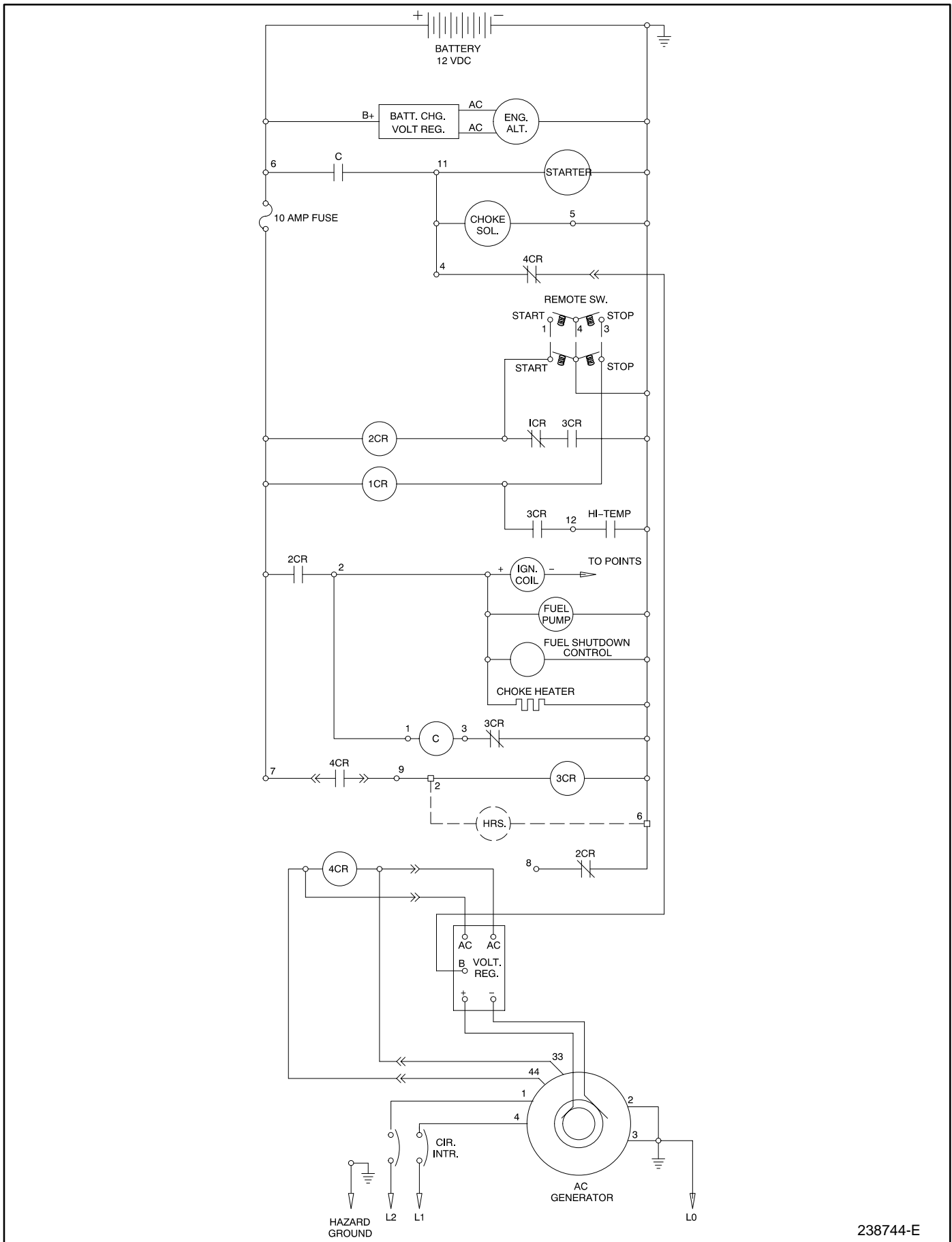
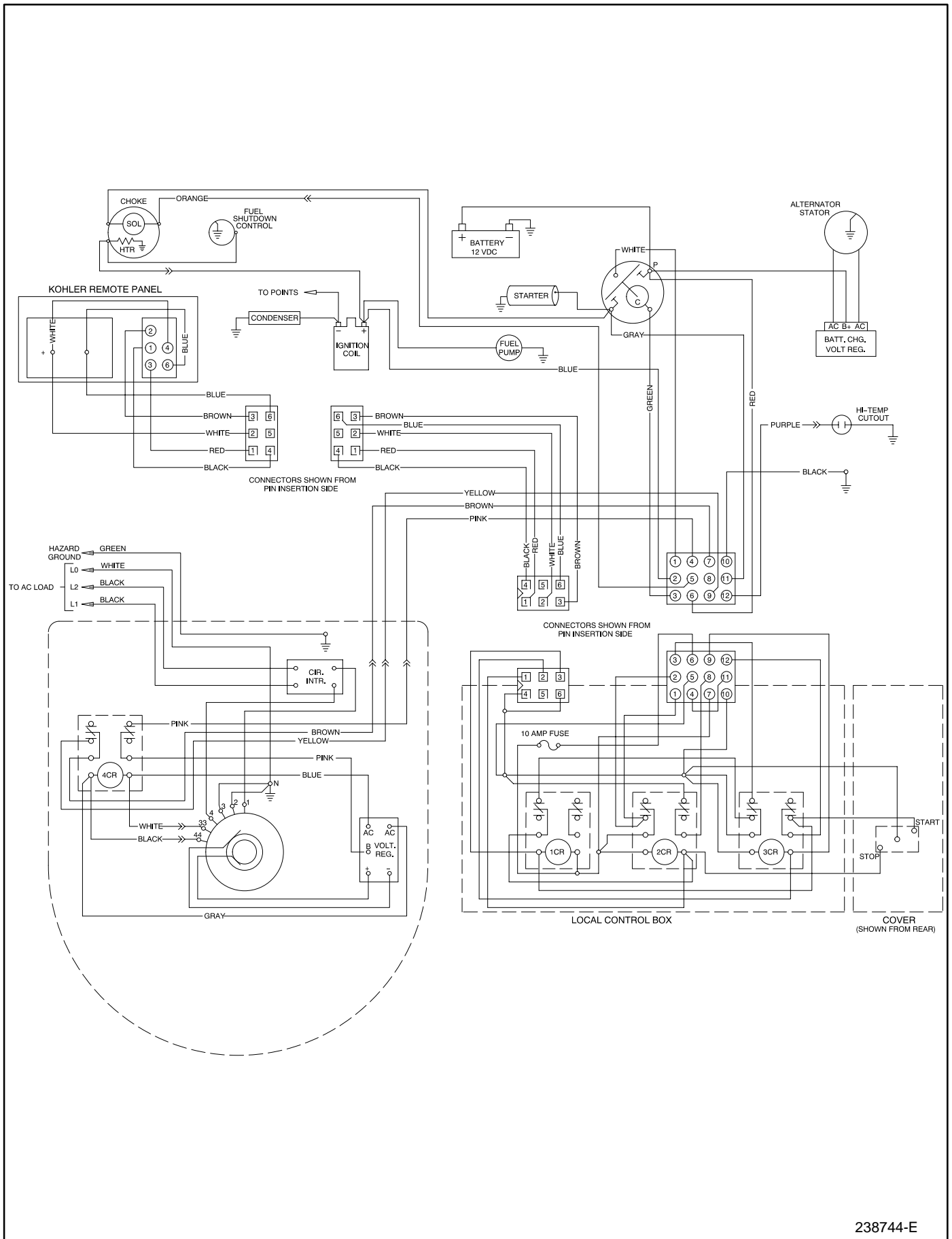
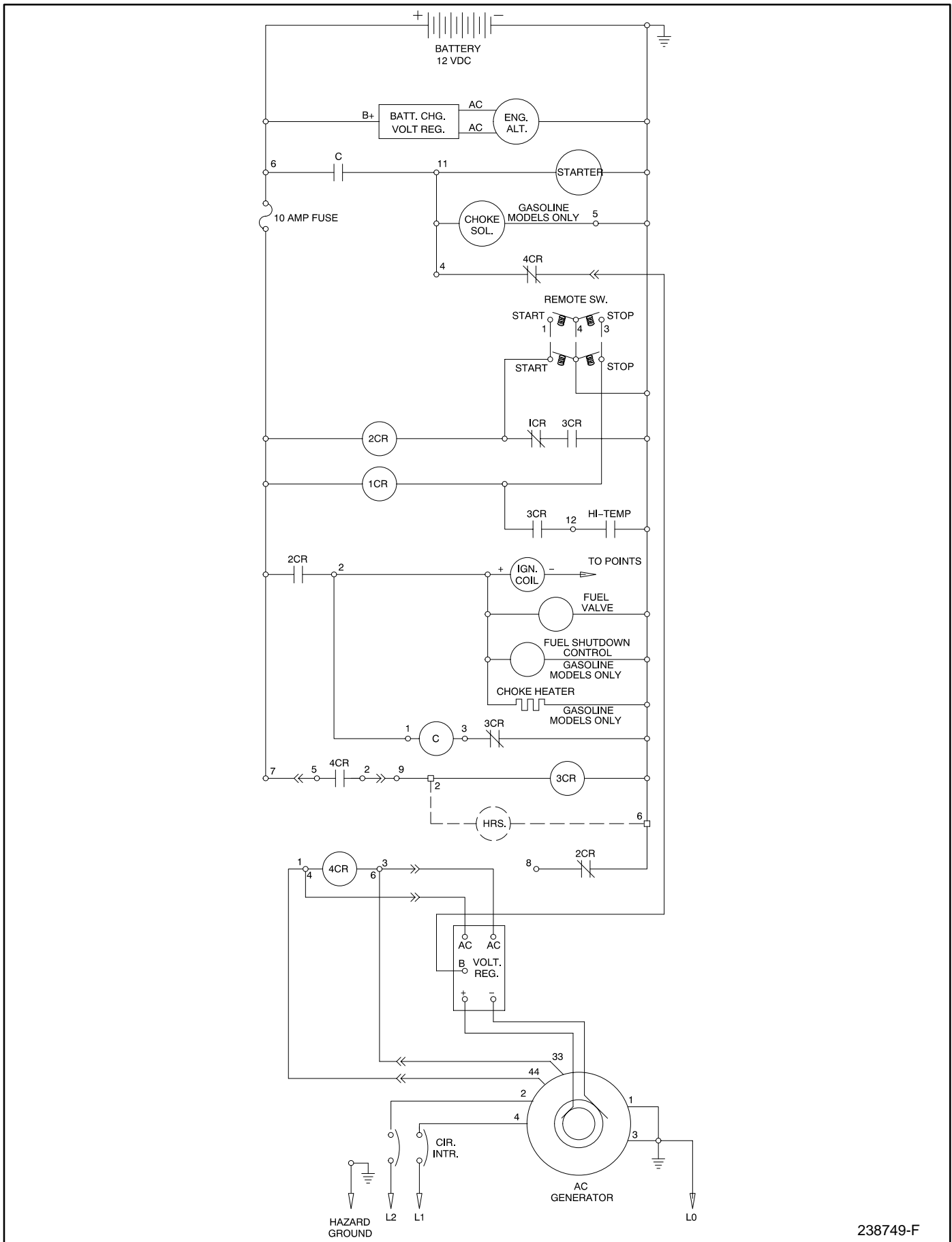


Figure 5. Schematic Wiring Diagram of 238744—3.5CFM61, 120/240 Volt



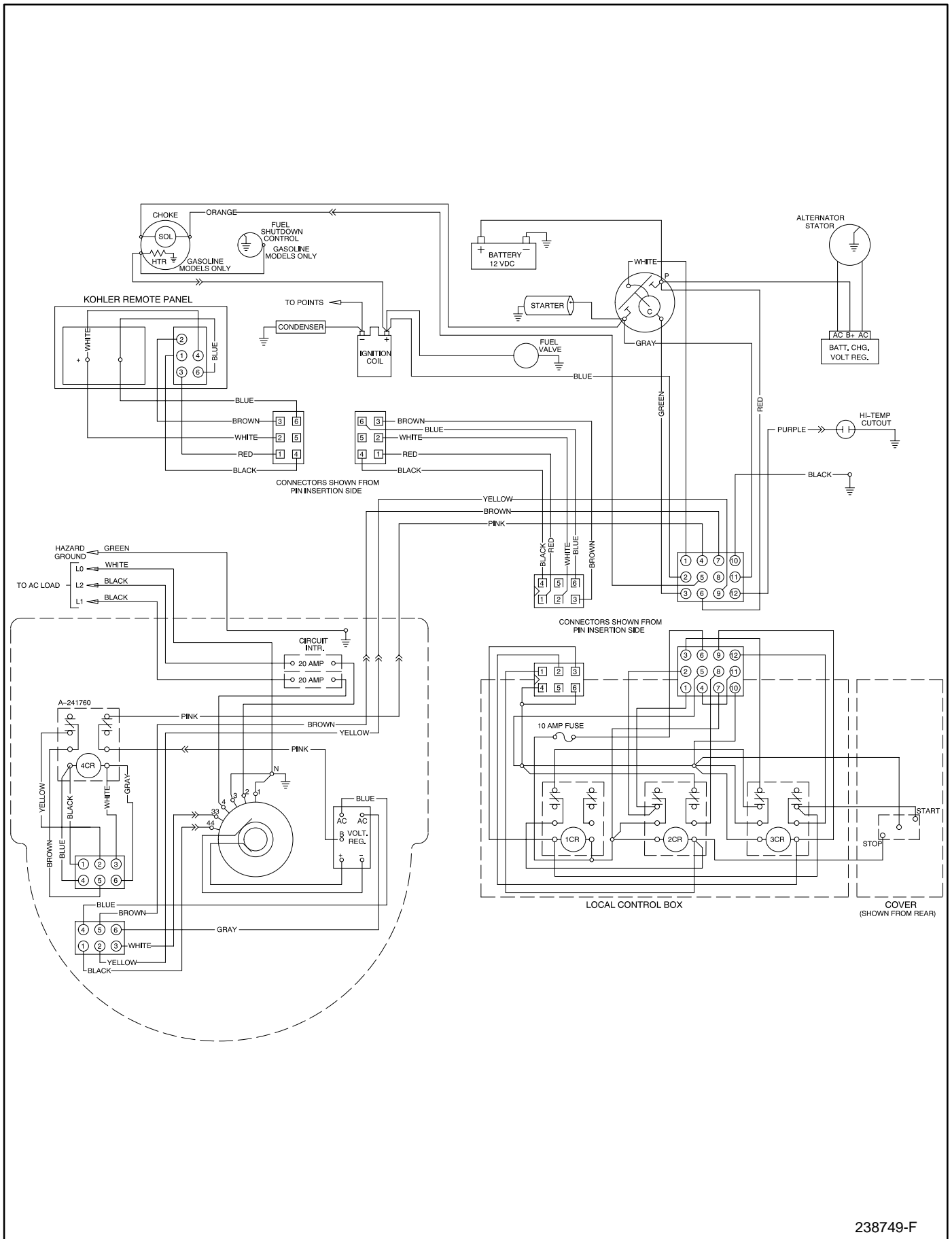
238744-E

Figure 6. Point-to-Point Wiring Diagram of 238744—3.5CFM61, 120/240 Volt



238749-F

Figure 7. Schematic Wiring Diagram of 238749—4.5CM21 (Single Cylinder), 120 Volt



238749-F

Figure 8. Point-to-Point Wiring Diagram of 238749—4.5CM21 (Single Cylinder), 120 Volt

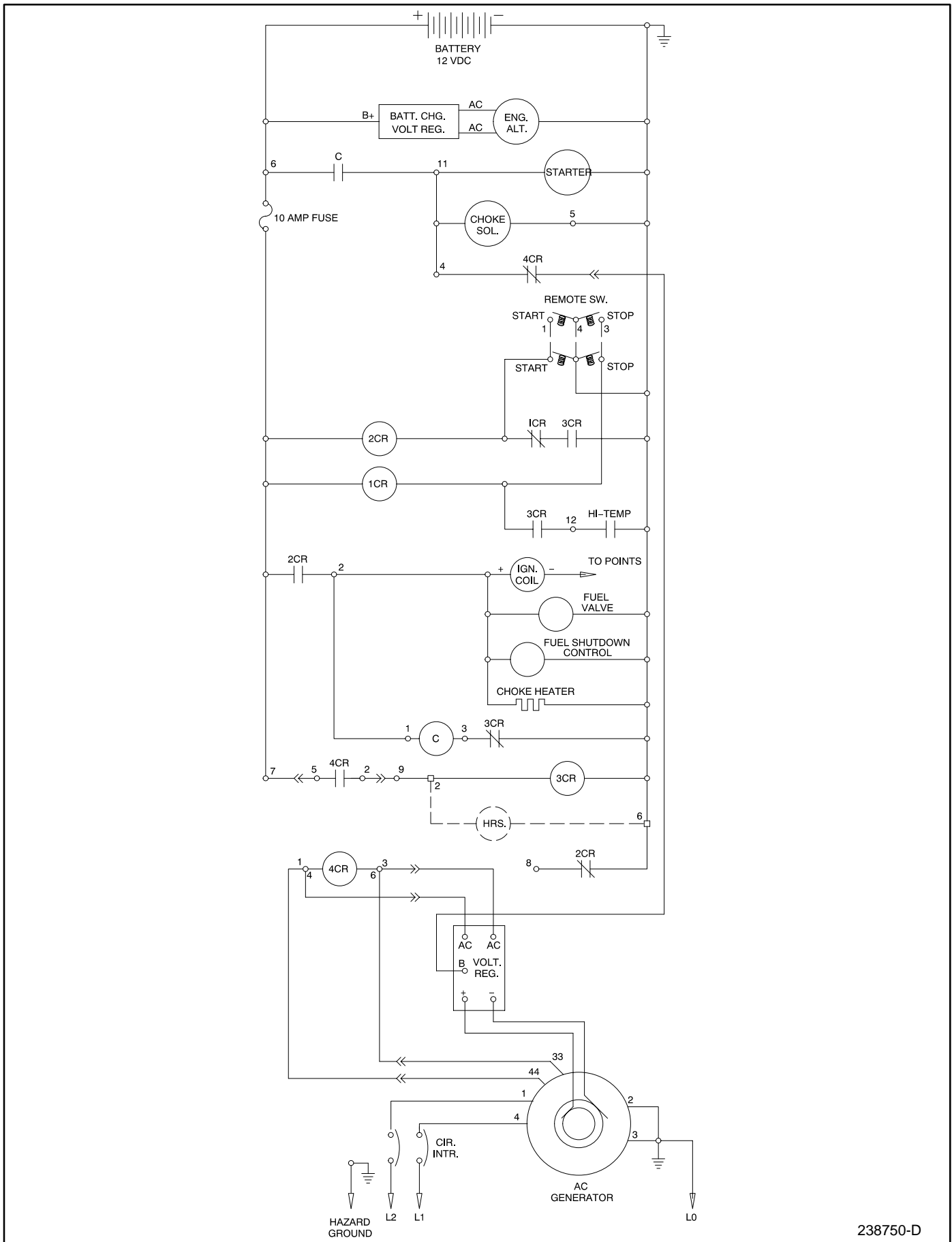
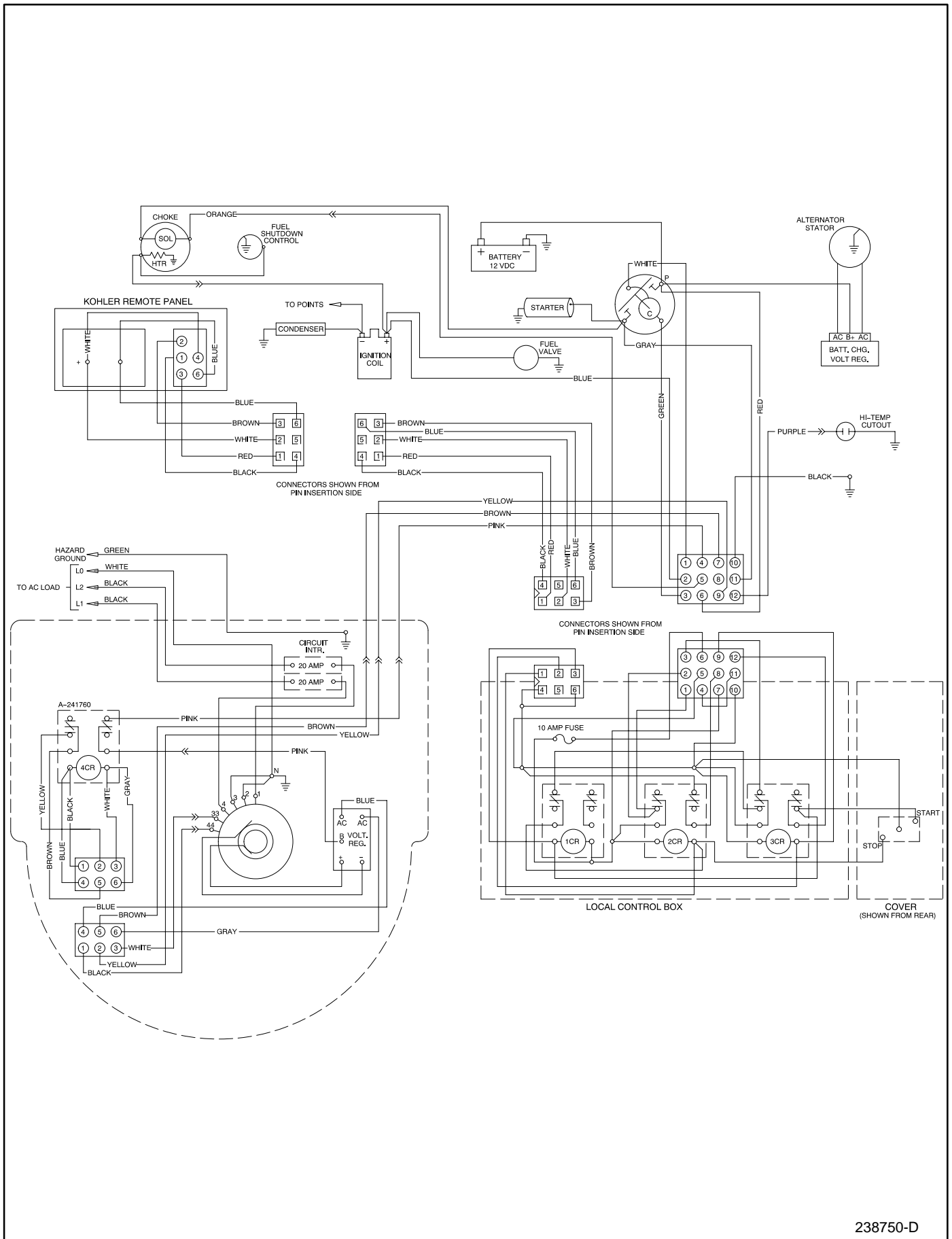


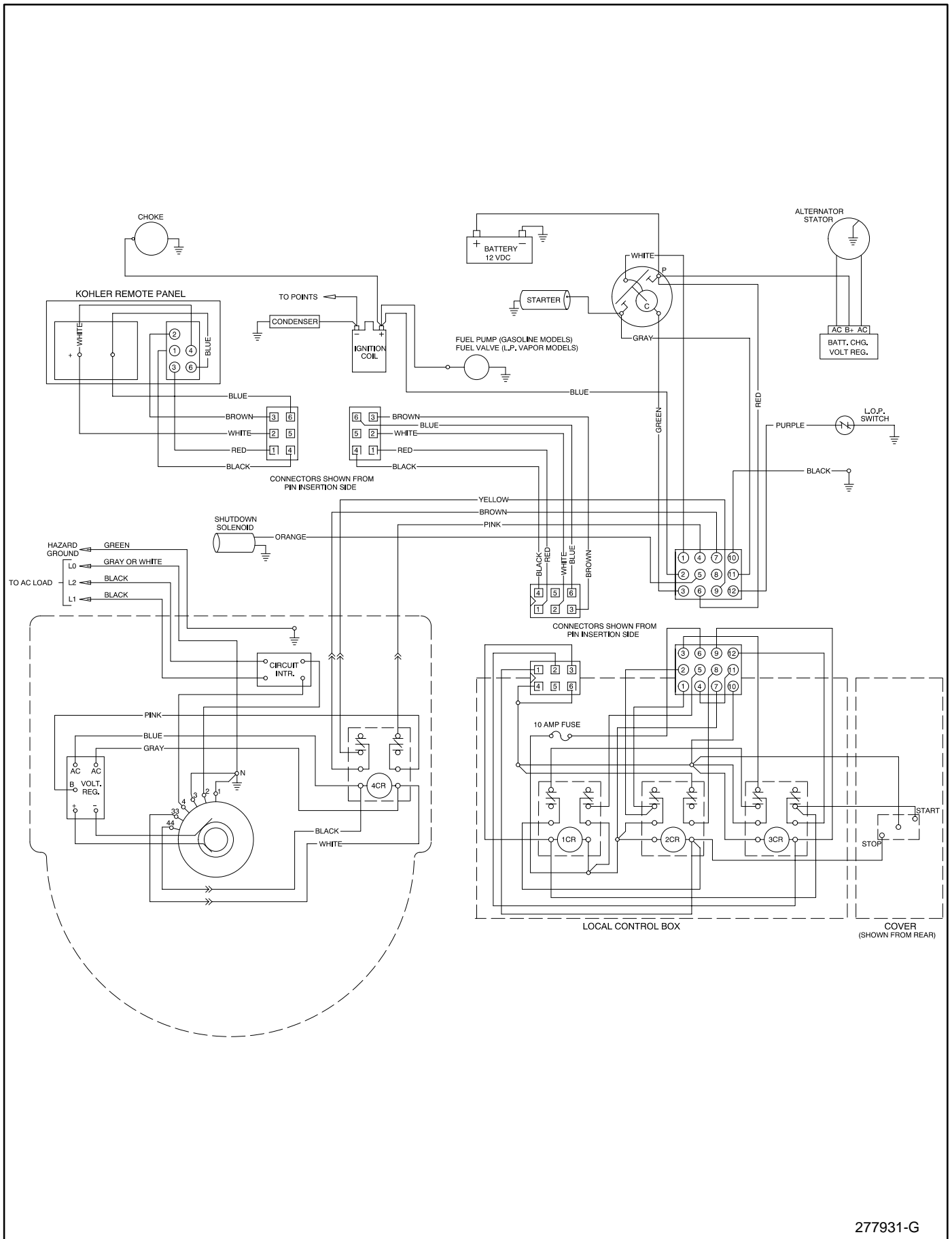
Figure 9. Schematic Wiring Diagram of 238750—4.5CFM61 (Single Cylinder), 120/240 Volt



238750-D

Figure 10. Point-to-Point Wiring Diagram of 238750—4.5CFM61 (Single Cylinder), 120/240 Volt





277931-G

Figure 12. Point-to-Point Wiring Diagram of 277931—5.5CM21 and 7CM21, 120 Volt



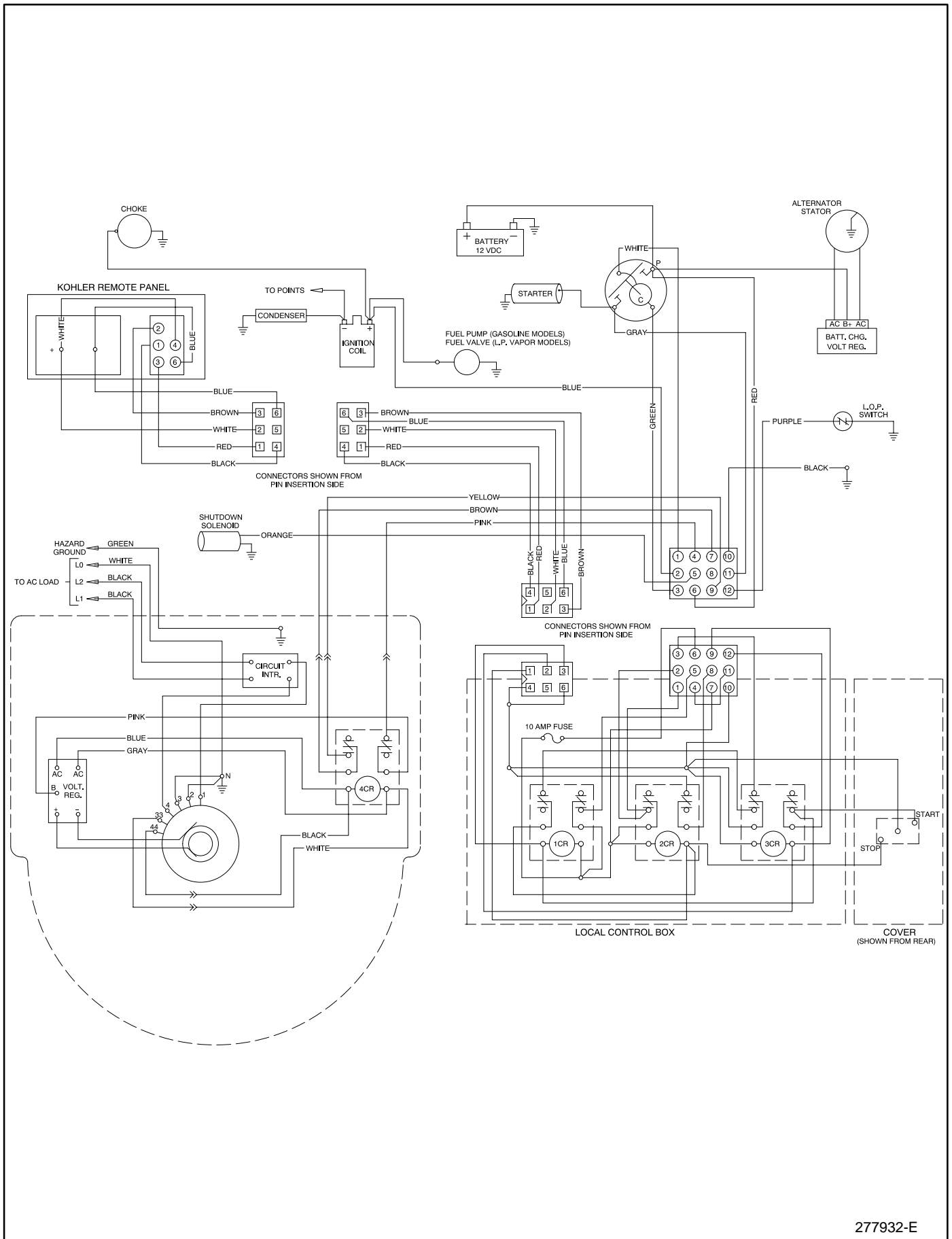


Figure 14. Point-to-Point Wiring Diagram of 277932—5.5CM61 and 7CM61, 120/240 Volt