

INSTALLATION INSTRUCTIONS

Original Issue Date: 11/16

Model: 20-200 kW with Fast-Response® X Alternator

Market: Industrial, Residential/Commercial, and Marine

Subject: FRX Activator Service Kit GM101821-S

Introduction

Use the FRX activator service kit when replacing the FRX activator board on 20-200 kW generator sets that are equipped with a Fast-Response® X alternator.

Read the entire installation procedure and compare the kit parts with the parts list at the end of this publication before beginning installation. Perform the steps in the order shown.

Safety Precautions

Observe the following safety precautions while performing this procedure.

⚠ WARNING
<p>Accidental starting. Can cause severe injury or death.</p> <p>Disconnect the battery cables before working on the generator set. Remove the negative (-) lead first when disconnecting the battery. Reconnect the negative (-) lead last when reconnecting the battery.</p>

Disabling the generator set. Accidental starting can cause severe injury or death. Before working on the generator set or equipment connected to the set, disable the generator set as follows: (1) Move the generator set master switch to the OFF position. (2) Disconnect the power to the battery charger. (3) Remove the battery cables, negative (-) lead first. Reconnect the negative (-) lead last when reconnecting the battery. Follow these precautions to prevent starting of the generator set by an automatic transfer switch, remote start/stop switch, or engine start command from a remote computer.

(Decision-Maker® 3+ and 550 Controllers)

Disabling the generator set. Accidental starting can cause severe injury or death. Before working on the generator set or equipment connected to the set, disable the generator set as follows: (1) Press the generator set off/reset button to shut down the generator set. (2) Disconnect the power to the battery charger, if equipped. (3) Remove the battery cables, negative (-) lead first. Reconnect the negative (-) lead last when reconnecting the battery. Follow these precautions to prevent the starting of the generator set by the remote start/stop switch.

(RDC, DC, RDC2, DC2, Decision-Maker® 3000, 3500, and 6000 Controllers)

Procedure

Note: Read all safety precautions at the beginning of this publication before performing any work on the generator set.

1. **Remove the generator set from service.**
 - 1.1 Press the generator set master control OFF/RESET button or move the generator set master switch to the OFF position.
 - 1.2 Disconnect power to the battery charger, if equipped.
 - 1.3 Disconnect the generator set engine starting battery, negative (-) lead first.
2. **Access the alternator end of the generator set.**
 - 2.1 Open the enclosure panels as needed.
 - 2.2 Remove the junction box rear cover.
 - 2.3 Remove the alternator (rodent) guard, if used.

3. Remove the existing components.

- 3.1 Remove the 4 screws and the LED optic board holder. See Figure 1.

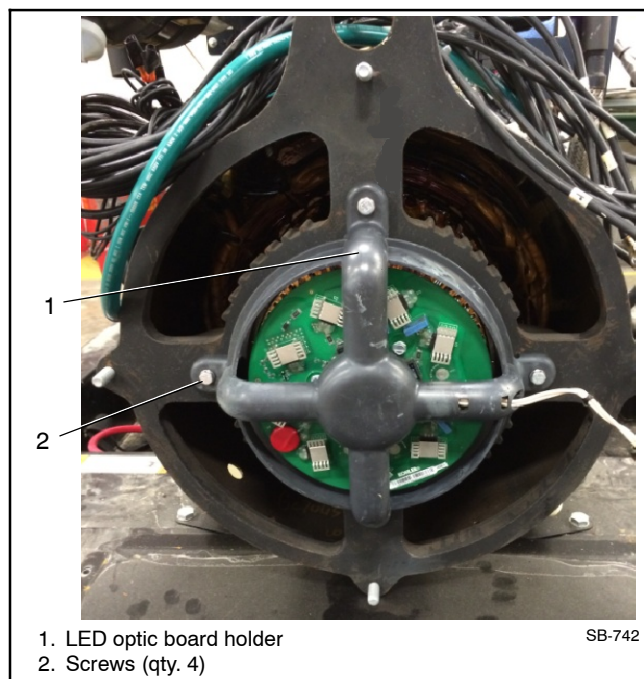


Figure 1 Removing LED Optic Board Holder

- 3.2 Remove the 3 screws and the existing FRX activator board from the exciter armature. See Figure 2. The existing FRX activator board and 3 screws will not be reused.

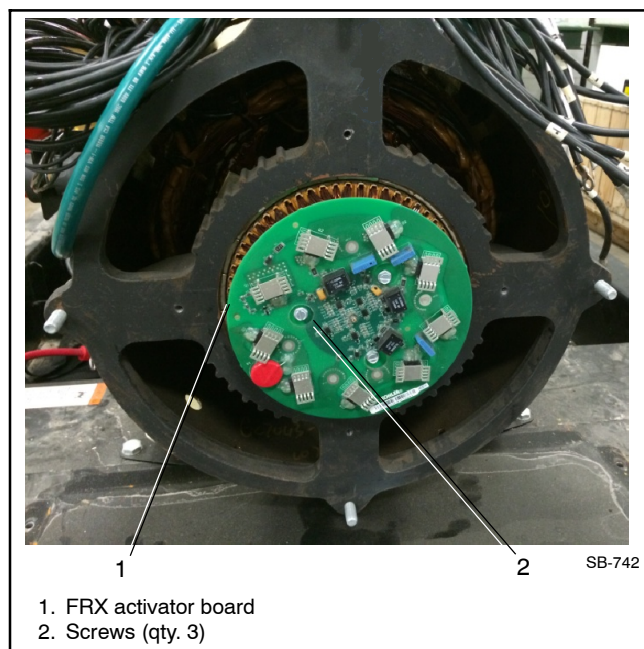


Figure 2 Removing the FRX Activator Board

- 3.3 Access the back of the FRX activator board and disconnect the exciter armature leads (AC1, AC2, and AC3) and rotor assembly leads (F1 and F2) by removing the 5 elastic stop nuts. Note the lead terminals and their positioning on the FRX activator board silkscreen. See Figure 3 and Figure 4.

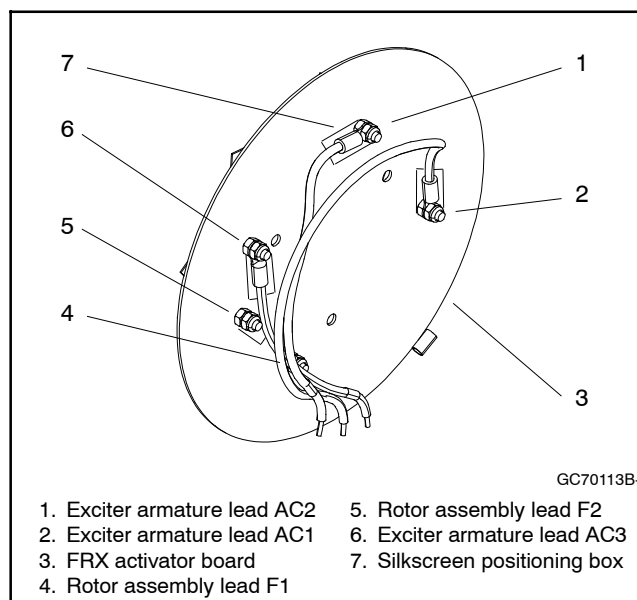


Figure 3 FRX Activator Board

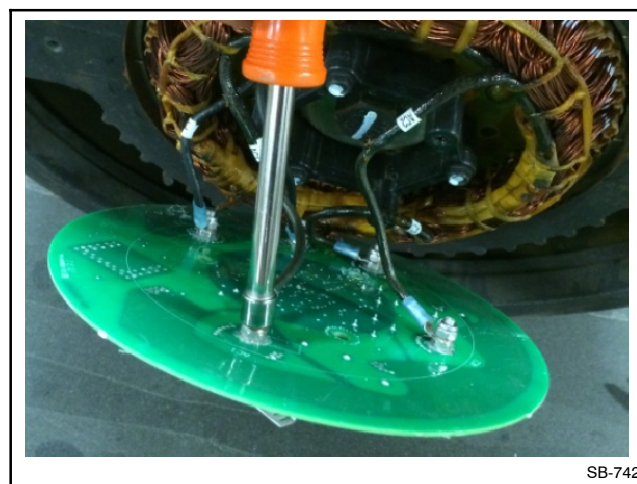


Figure 4 Removing Leads from the FRX Activator Board

- 3.4 Remove the spacer by removing the 3 screws. See Figure 5. The existing spacer and 3 screws will not be reused. Remove the bow washer and bolt only when changing the armature.

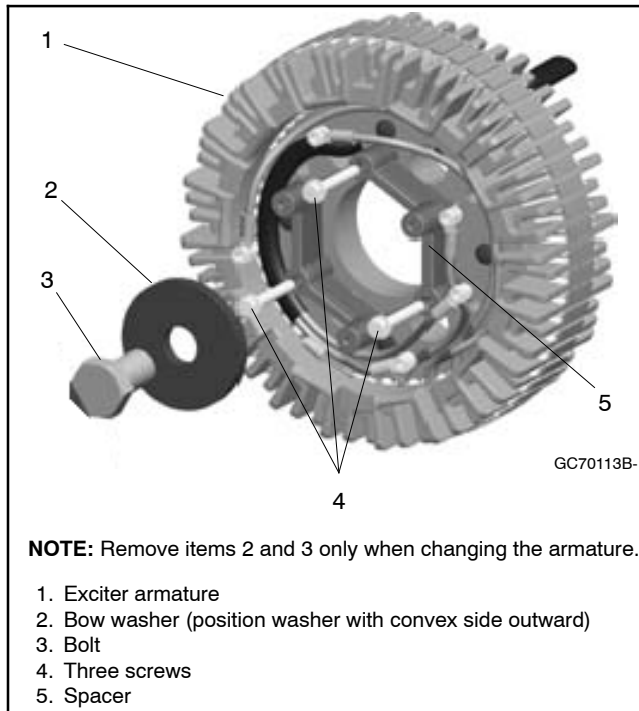


Figure 5 Spacer Removal

4. Install the new components.

- 4.1 Mount the new spacer (GM98936) to the exciter armature using 6 thread-forming Torx head screws (M7500CE-05020-85). See Figure 6 and Figure 11.

Note: Orient the non-electrical connection mounting hole to the mounting hole above the keyway. See Figure 8.

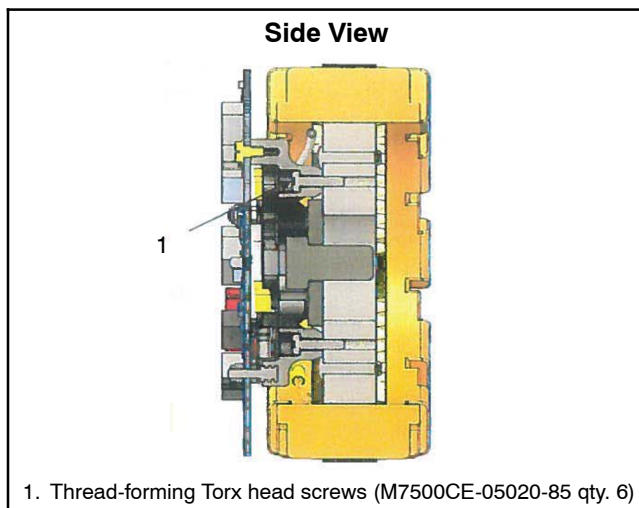


Figure 6 Spacer (GM98936) Installation

- 4.2 Route the exciter armature and rotor leads (AC1, AC2, AC3, F1, and F2) around the outer diameter of the spacer to the inside to eliminate slack. See Figure 7 and Figure 8.

Note: Lead connection locations are identified on the spacer and in Figure 8.

Note: Secure excess lead length before attaching terminals.



Figure 7 Routing of Leads

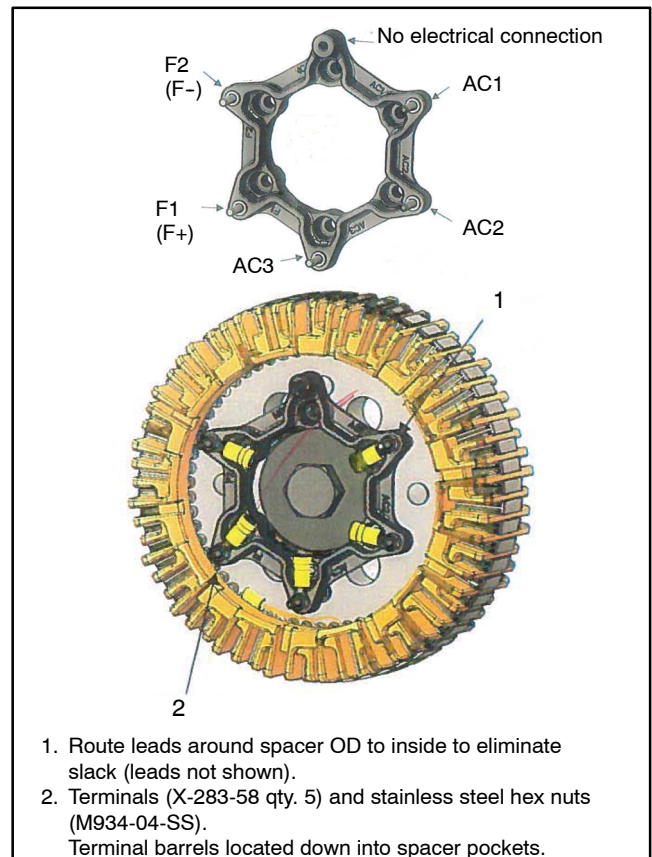


Figure 8 Spacer (GM98936) Connections

- 4.3 Use 5 terminals (X-283-58) and **5 stainless steel hex nuts (M934-04-SS)** to connect leads AC1, AC2, AC3, F1 and F2 to the spacer studs. Torque to 1.3 Nm (12 in. lbs.). Locate the terminal barrels down inside the spacer pockets. See Figure 8 and Figure 11.
- 4.4 If the armature was changed, secure the new exciter armature by reusing the existing bolt and bow washer. See Figure 5. Torque to 194 Nm (143 ft. lbs.).
- 4.5 Secure the activator board (GM98939-1) to the studs on the spacer by using 5 stainless steel elastic stop hex nuts (M985-04-SS) and a thread-forming screw (X-6071-8). Torque to 1.3 Nm (12 in. lbs.). See Figure 9 and Figure 11.

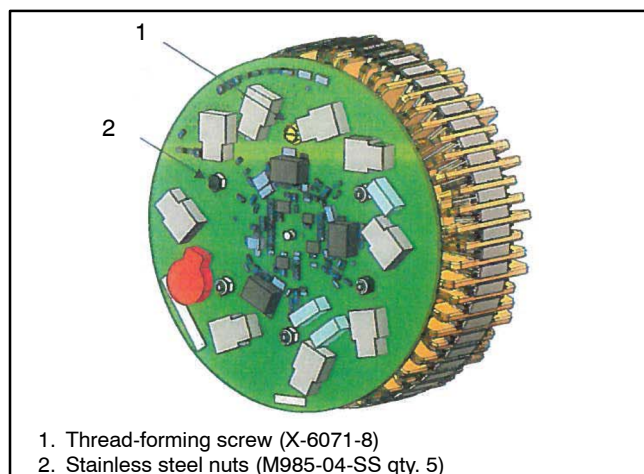


Figure 9 Activator Board

- 4.6 Replace and tighten the 4 screws attaching the LED optic board holder to the end bracket and torque to 6.2 Nm (4.6 ft. lbs.). See Figure 10.

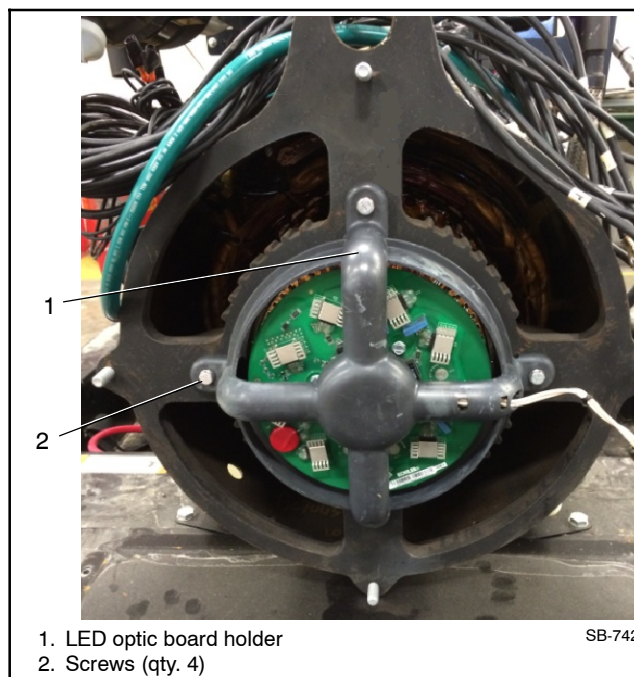


Figure 10 Replacing LED Optic Board Holder

- 4.7 Install the alternator (rodent) guard to the end bracket (if equipped).
- 4.8 Replace the junction box panels.
- 4.9 Replace the enclosure panels (if equipped).

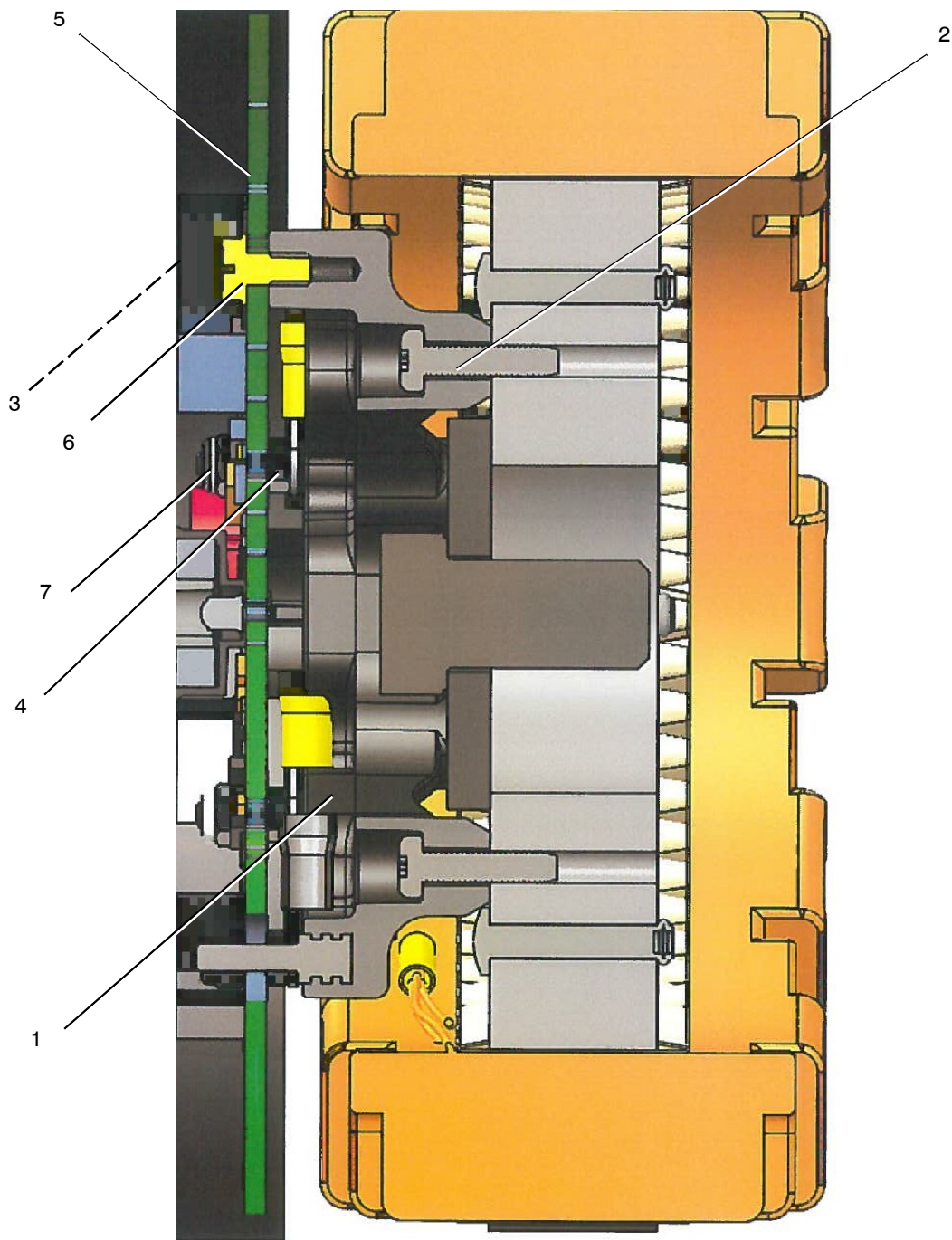
5. Restore the generator set to service.

- 5.1 Check that the generator set is OFF.
- 5.2 Reconnect the generator set engine starting battery, the negative (-) lead last.
- 5.3 Reconnect power to the battery charger, if equipped.

Parts List

Kit: GM101821-S		
Qty.	Description	Part Number
1	Spacer	GM98936
6	Screw, thread forming Torx head	M7500CE-05020-85
5	Terminal	X-283-58
5	Hex nuts, stainless steel	M934-04-SS
5	Nylock nuts, stainless steel	M985-04-SS
1	PCB activator board	GM98939-1
1	Screw, thread forming	X-6071-8

Side View



GC79429-43

Listed in order of assembly:

1. Spacer (GM98936)
2. Thread-forming Torx head screw (M7500CE-05020-85 qty. 6)
3. Terminal (X-283-58 qty. 5), not shown
4. Stainless steel hex nut (M934-04-SS qty. 5)
5. Activator board (GM98939-1)
6. Thread-forming screw (X-6071-8)
7. Stainless steel nylock nut (M985-04-SS qty. 5)

Figure 11 Kit Components Shown in Order of Assembly

Notes

Notes

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