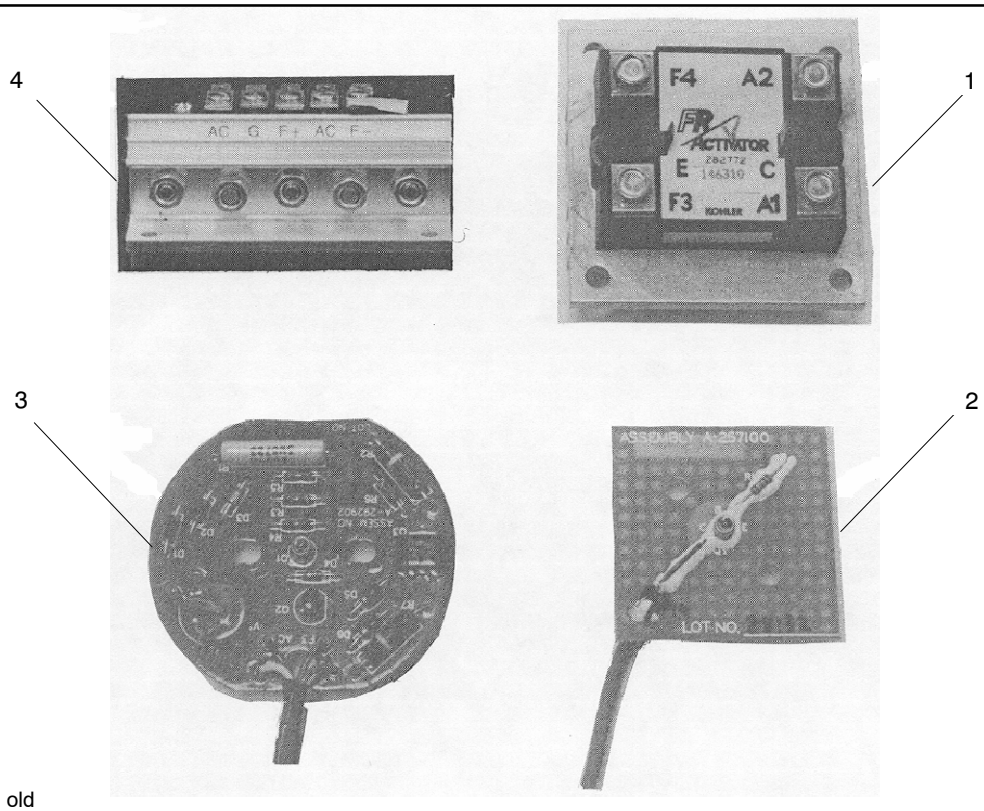
INSTALLATION INSTRUCTIONS

Original Issue Date: **9/90**
Model: **180-300ROZ**
Market: **Industrial**
Subject: **Split Activator Kit 256425**

Introduction

The split activator kit is designed to replace the standard one-piece FR activator with the split FR activator. Although the function of the FR activator remains unchanged, the components of the activator are now distributed between the rotating photo transistor board and the SCR assembly. (Refer to Service Bulletin 474.) The SCR assembly occupies the same position as the old FR activator and still controls current flow to the generator field. However, the command and sensing circuitry to control the SCR is now located on the shaft-mounted photo transistor board. Refer to Figure 1 for a comparison between the one-piece and split FR activators.



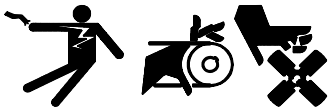
1. FR activator, old
2. Photo transistor board, old
3. Photo transistor board, new
4. SCR assembly, new

Figure 1 FR Activator Comparison

Safety Precautions

Observe the following safety precautions while installing the kit.

⚠ WARNING



Accidental starting.
Can cause severe injury or death.

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.

Disabling the generator set. Accidental starting can cause severe injury or death. Before working on the generator set or connected equipment, 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.

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.

Note: Installation of the split activator kit normally does not require end bracket removal. However, if the generator end bracket is removed, replace end bracket tolerance ring before reassembling the generator set. Replacement tolerance rings are available from Generator Service Parts.

Installation Procedure

1. Disconnect starting batteries (negative lead first) and power to battery charger (if equipped).

2. Disconnect all controller harnesses and remove junction box and controller. These components can be removed as one unit.

3. Remove LED board and housing and disconnect speed sensor leads (if end bracket is being removed). See Figure 2.

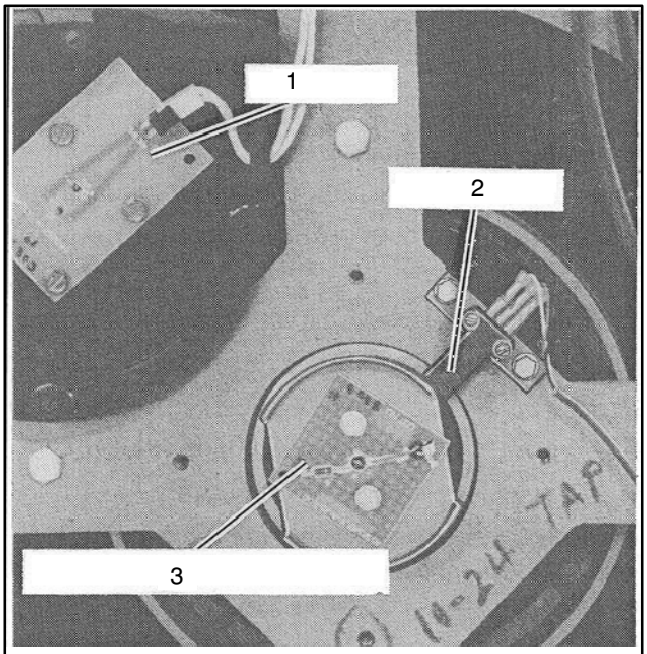
4. Remove screws securing photo transistor board and actuator cup.

5. Reach inside generator and remove leads C and E from FR activator.

6. Cut the ties securing leads to rotor shaft. Remove photo transistor board.

7. If end bracket is being removed for kit installation, remove four bolts securing end bracket to stator. Use a pulling tool to loosen end bracket. *Do not attempt to remove end bracket by striking with a hammer. Damage to exciter field magnets will result.* Pull the end bracket/exciter assembly over the exciter armature. Be extremely careful to avoid damaging exciter field magnets.

8. Disconnect main field and exciter field leads from FR activator. Remove mounting screws securing FR activator and heat sink to rotor. Remove FR activator and heat sink.



1. LED board
2. Speed sensor
3. Photo transistor board, old

Figure 2 LED Board and Housing

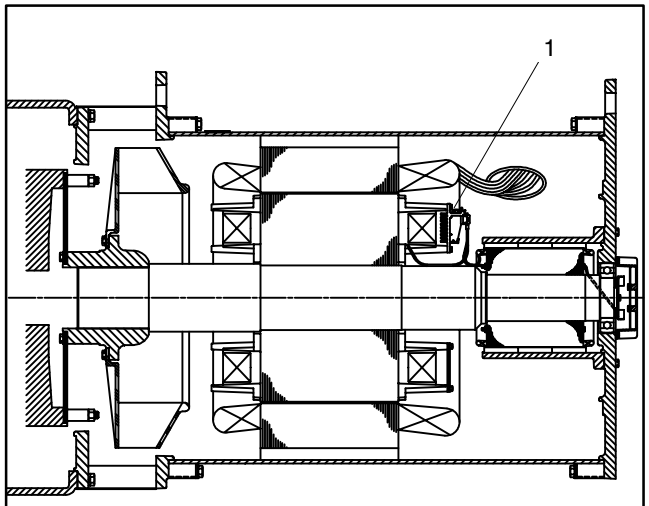
9. Install SCR assembly (A-258939) in position previously occupied by FR activator and heat sink; secure SCR with four screws (X-117-5) and internal tooth lock washers (X-22-9) supplied with kit. SCR heat sink should face engine end of generator as shown in Figure 3.

10. Cut existing terminals from exciter field and main field leads and attach terminals (X-285-11).

11. Place photo transistor board lead through actuator cup as shown in Figure 4. Route the photo transistor board lead through hole in rotor shaft and then through exciter laminations to exit near the SCR assembly.

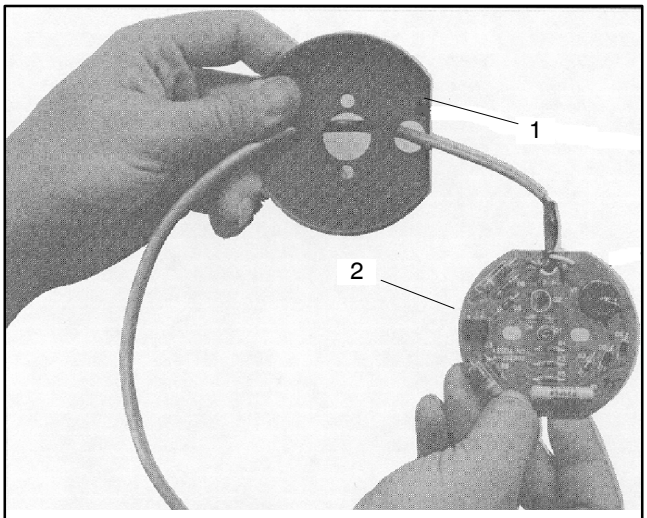
12. Attach photo transistor board (B-292902), insulator (257850), washers (243321) and actuator cup to end of rotor shaft with screws (X-117-5) and internal tooth lock washers (X-22-9) supplied with kit. Torque mounting screws to 1.1 Nm (10 in. lb.) maximum. Photo transistor board and mounting components should be assembled as shown in Figure 5.

13. Cut off excess lead wire from photo transistor board; leave enough wire to reach the SCR assembly. Strip 50–75 mm (2–3 in.) of gray insulator jacket from lead. Attach terminal (X-431-25) to each wire. Before connecting leads to SCR assembly, secure leads to rotor shaft with tie wrap (X-468-7).



1. SCR assembly

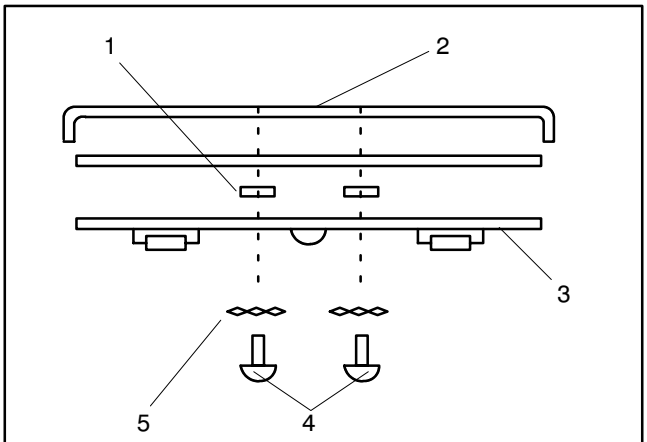
Figure 3 SCR Installation (Alternator Side View)



1. Actuator cup
2. Photo transistor board

Note: Insulator board/washers not shown

Figure 4 Photo Transistor Board Installation



1. Insulating washers
2. Actuator cup
3. Photo transistor board
4. Mounting screws
5. Internal tooth lock washers

Figure 5 Photo Transistor Board Mounting

14. Connect one rotor field lead to SCR F– terminal and remaining rotor field lead to SCR F+ terminal. See Figure 6. Connect exciter armature leads to SCR AC terminals. Connect photo board black wire to SCR AC terminal, green wire to G terminal, red wire to F+ terminal, and white wire to remaining AC terminal. Tighten SCR assembly terminal screws to secure electrical connections.

15. Remove four screws and washers securing counterweights to rotor. See Figure 7. Position new counterweight (257562) in parallel with existing counterweights and secure in same position on rotor. (The additional counterweight is necessary to counteract the additional weight of the SCR assembly.) Secure counterweights with original hardware.

16. If end bracket was removed to install kit, replace end bracket tolerance ring (available from generator service parts). Since end bracket removal is normally not necessary to install the kit on larger sets, a tolerance ring is not included with the kit.

17. Replace end bracket (if removed) and secure with four bolts. Torque bolts to 108 Nm (80 ft. lb.).

18. Replace LED board and housing.

19. Reconnect speed sensor leads. Set speed sensor air gap at 0.508 mm (0.020 in.). See Figure 8.

20. Reinstall controller and junction box. Reconnect controller wiring harnesses.

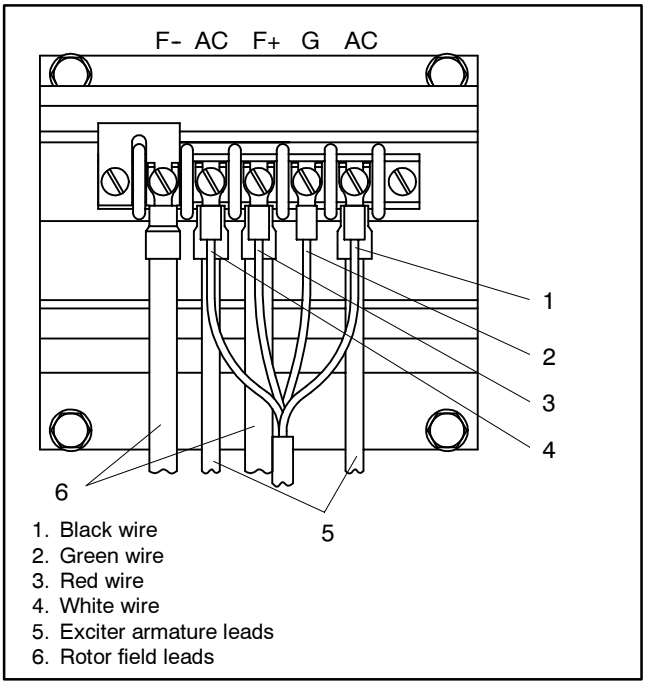


Figure 6 SCR Assembly Wiring

21. Reconnect starting batteries (negative lead last) and power to battery charger (if equipped).

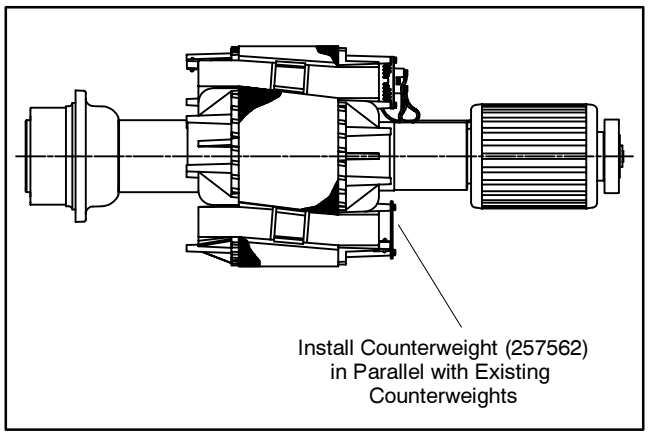


Figure 7 Counterweight Installation

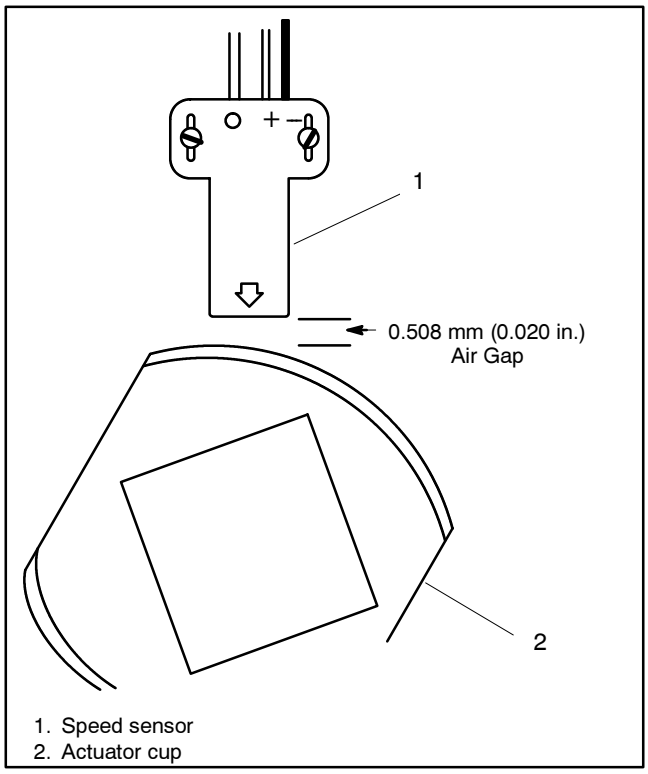


Figure 8 Speed Sensor Air Gap

Parts List

Qty.	Description	Part Number
1	SCR assembly	A-258939
1	Board, photo transistor	B-292902
6	Screw, HC 10-24 x 5/8	X-117-5
6	Washer, internal tooth, 1/4	X-22-9
4	Terminal, spade, 1/4	X-285-11
4	Terminal, female, 1/4	X-431-25
2	Tie, cable	X-468-7
2	Washer, insulating	243321
1	Counterweight	257562
1	Insulator, board	257850