KOHLER® GENERATORS

TT-695
INSTRUCTIONS
3/89

Split Activator Rotor Kit
20–150RZ/ROZ Standby Generator Sets

This kit is designed to replace the generator rotor assembly equipped with the standard one-piece FR Activator with a rotor assembly using the new split FR Activator. Although the function of the rotor and FR Activator remain unchanged, the components of the FR Activator are now distributed between the photo transistor board and SCR assembly. (Reference Service Bulletin 474.) Prior to installation, the photo transistor board must be attached to the replacement rotor and connected to the SCR assembly (already mounted on rotor). The generator must be partially disassembled to install the rotor kit. These procedures are outlined in the following paragraphs.

⚠ WARNING

UNIT STARTS WITHOUT NOTICE! Units with automatic transfer switches start automatically. Personal injury or electrocution can result. Turn Generator Master Switch on controller to OFF position and remove battery cables (remove negative lead first and reconnect it last) to disable generator set before working on any equipment connected to the generator.

NOTE

Early FR II models use a straight rotor with a skewed stator (slanted laminations). Later models use a skewed rotor with straight stator. When replacing rotor assembly, be sure replacement is the same as the original. Rotor and stator must be of dissimilar styles (skewed rotor with straight stator or straight rotor with skewed stator) for generator to function properly.

⚠ WARNING

ELECTRICAL SHOCK! The battery can cause electrical burns and shocks. Exercise reasonable care when working near the battery to avoid electrical connections through tools. Remove wristwatch, rings, and any other jewelry.

⚠ WARNING

HOT PIPING! An engine gets hot while running and exhaust system components get extremely hot. Do not work on generator set until unit is allowed to cool.

PRIOR TO DISASSEMBLY

1. Disconnect starting batteries (negative lead first) and remove from work area to prevent fire hazard. Disconnect any AC accessories such as battery charger, block heater, and fuel transfer pump.

2. Shut off fuel supply. Drain fuel system as necessary by emptying fuel into proper containers. Remove any fuel containers from work area to prevent fire hazard. Ventilate work area to clear fumes.

⚠ WARNING

FLASH FIRE! To avoid the possibility of a flash fire, do not smoke or permit flame or spark to occur near carburetor, fuel line, fuel filter, fuel pump, or other sources of spilled fuel or fuel vapors.

3. Disconnect fuel, cooling, and exhaust systems as necessary to tilt generator set. Disconnect output leads or load circuit cables at generator.

4. Check generator weight (see generator nameplate) and verify that cranes, hoists, and other equipment used in disassembly and reassembly are rated for weight of generator.

DISASSEMBLY

1. Disconnect all controller-to-engine and engine-to-generator harnesses and wiring. Disconnect alarm horn circuit board connector (if equipped), LED board and housing, and speed sensor. Junction box and controller can be removed as a unit.

2. Remove bolts from generator vibro-mounts.

3. Suspend the generator at both ends with hooks in lifting eyes. Use a hoist to raise generator end off vibro-mounts. See Figure 1.

4. Support the engine by placing wood blocks under the flywheel housing. Lower generator end until the generator flywheel housing rests on the blocks.

5. Remove fan guard. Remove bolts holding adapter to flywheel housing.

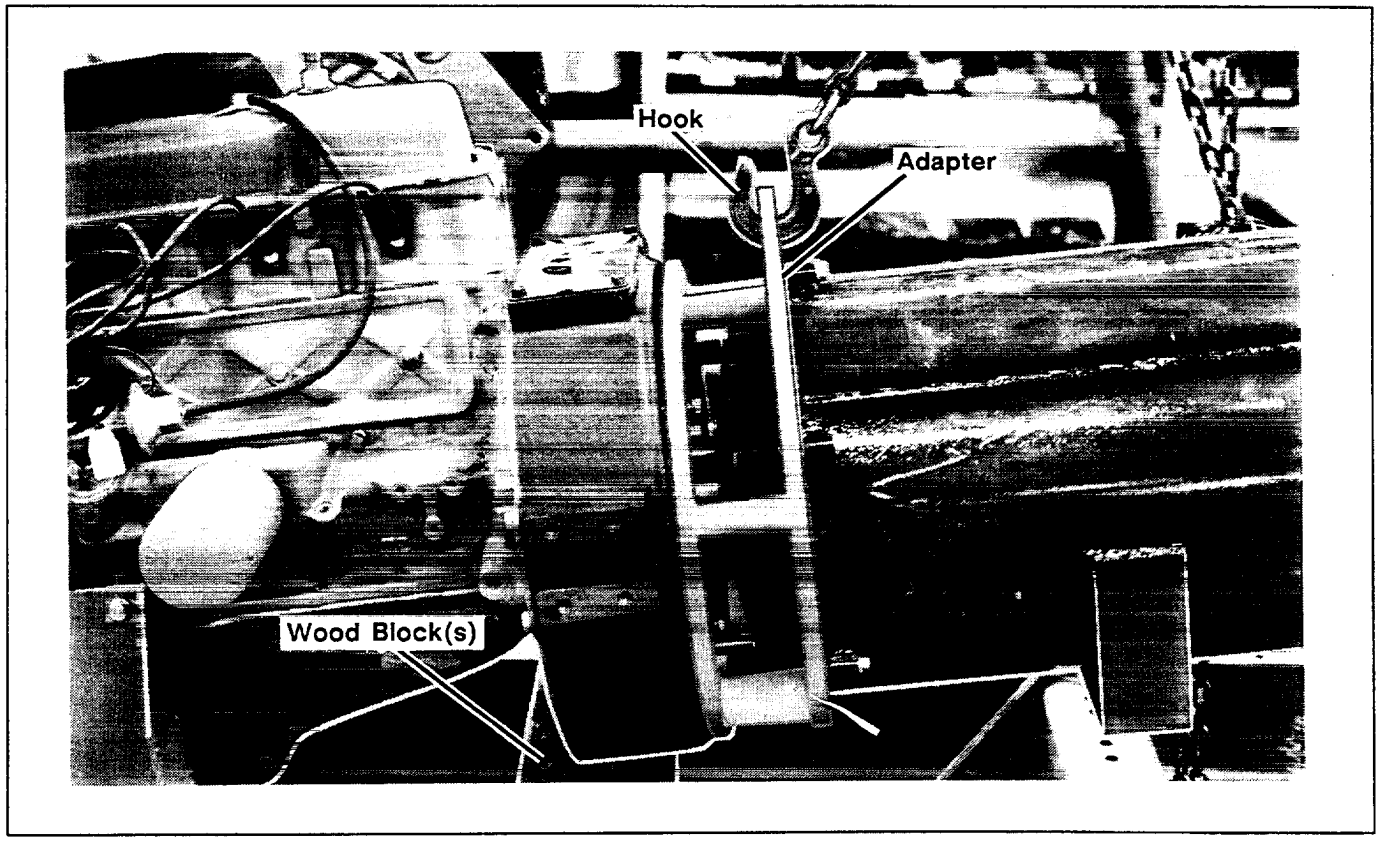

Figure 1. Hoisting Generator

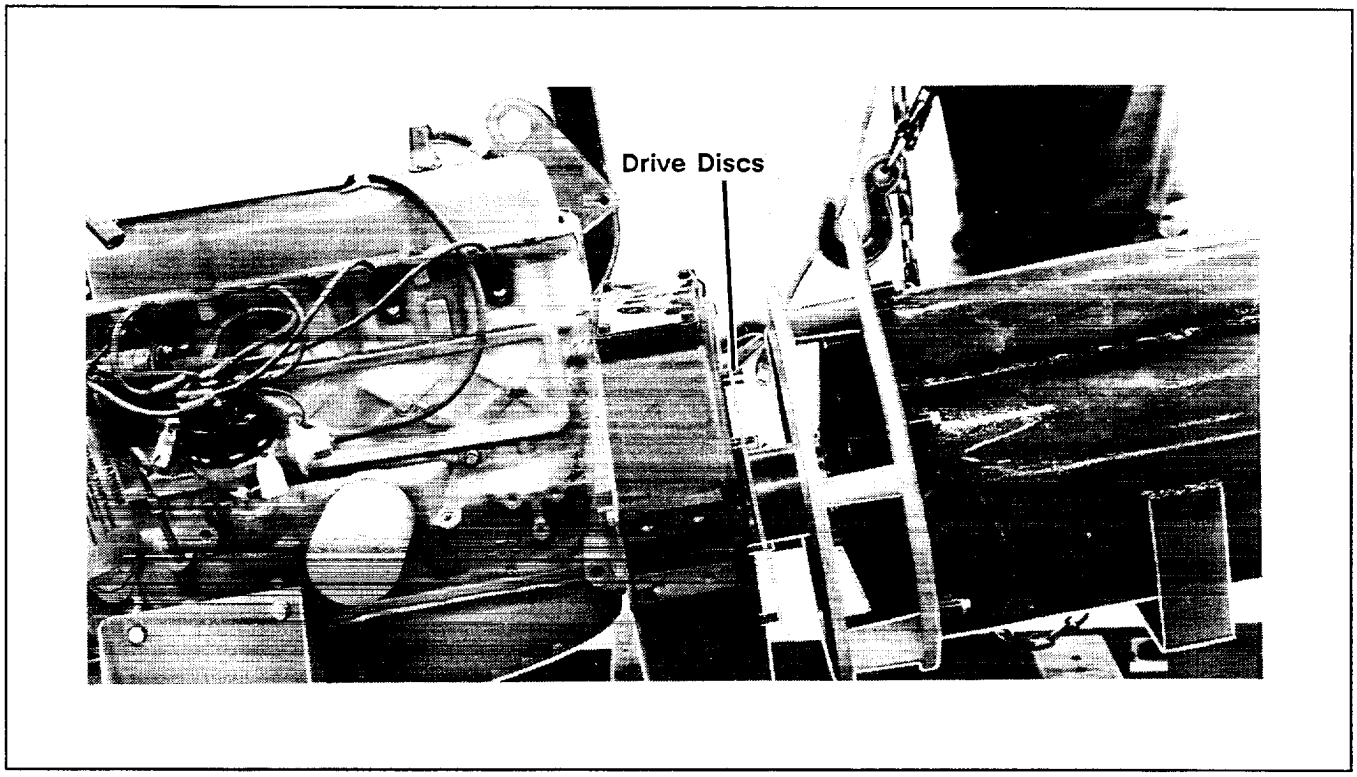

Figure 2. Separating Generator and Engine

6. Remove nuts and spacers holding drive discs to flywheel.

7. Work drive discs over studs to separate generator from engine. See Figure 2.

8. Set the generator assembly on the floor in a horizontal position. Remove support slings or chains.

9. To remove the rotor assembly, hook hoist to adapter and place generator assembly on floor in a vertical position. Before lowering assembly, place boards along the edge of the end bracket to prevent damage to the photo transistor board.

10. Remove drive discs and fan from generator assembly as shown in Figure 3.

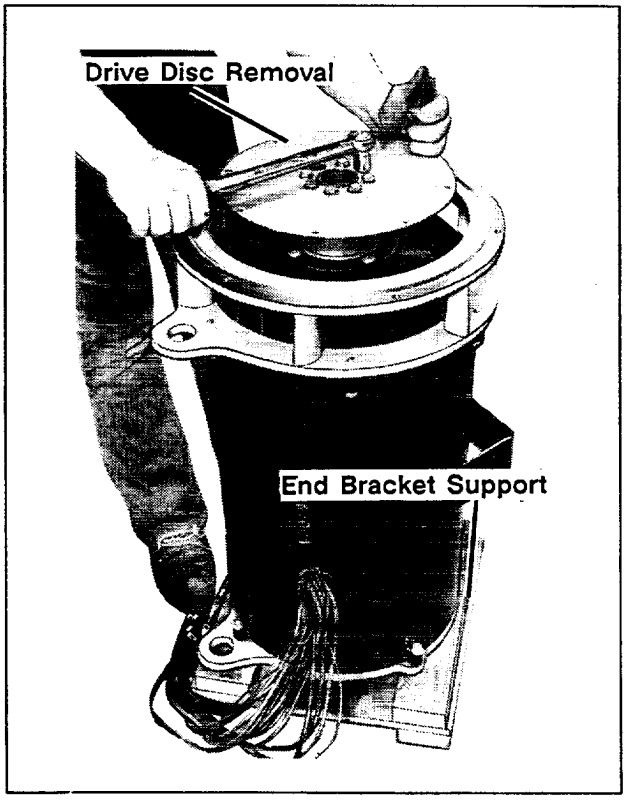

Figure 3. Generator Support/Drive Disc and Fan Removal

11. Fasten lifting eye and hoist hook to rotor flange. Hoist rotor while being careful to avoid damaging exciter field magnets. See Figure 4. Lower rotor and remove lifting eye and hoist hook. Remove screws securing photo transistor board. Retain screws for installation of new photo transistor board.

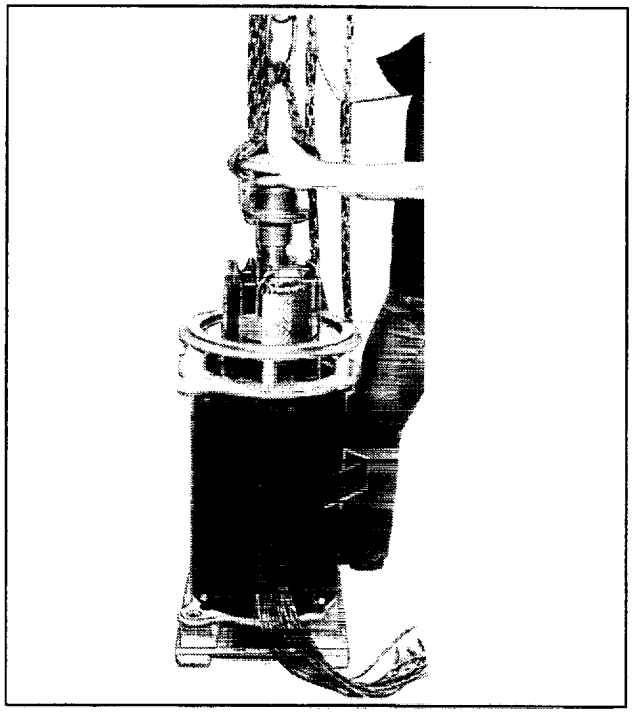

Figure 4. Hoisting Rotor Assembly

12. Attach lifting eye and hoist hook to replacement rotor flange. Hoist rotor to vertical position. Be careful to avoid damaging windings, laminations, or bearings.

NOTE

Early FR II models use a straight rotor with a skewed stator (slanted laminations). Later models use a skewed rotor with straight stator. When replacing rotor assembly, be sure replacement is the same as the original. Rotor and stator must be of dissimilar styles styles (skewed rotor with straight stator or straight rotor with skewed stator) for generator to function properly.

13. While the rotor is suspended, install the new photo transistor board. Place photo transistor board lead through actuator cup as shown in Figure 5. Route the photo transistor board lead through hole in rotor shaft and then through exciter laminations to exit near the SCR Assembly.

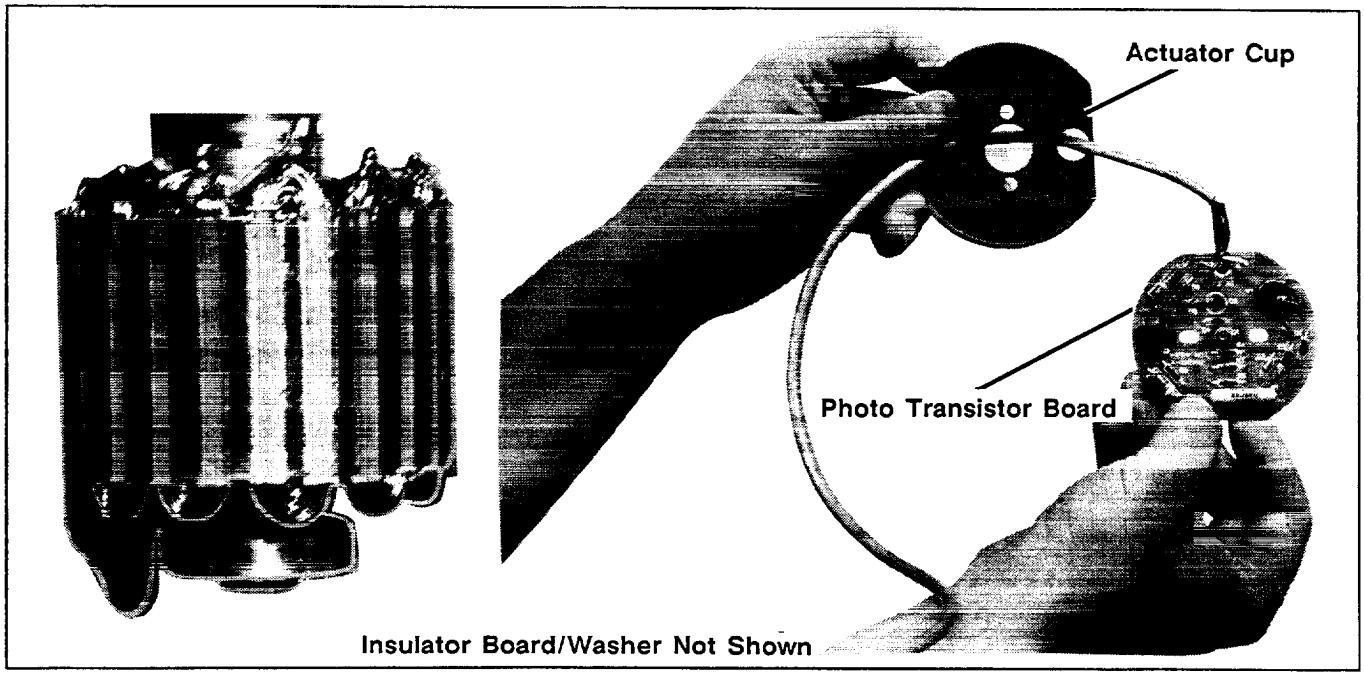

Figure 5. Installing Photo Transistor Board

14. Attach photo transistor board (B-292902), insulator (257850), washers (243321) and actuator cup to end of rotor shaft with screws retained from step 11. Torque to 10 in. lbs. maximum (1.1 Nm). Photo transistor board and mounting components should be assembled as shown in Figure 6.

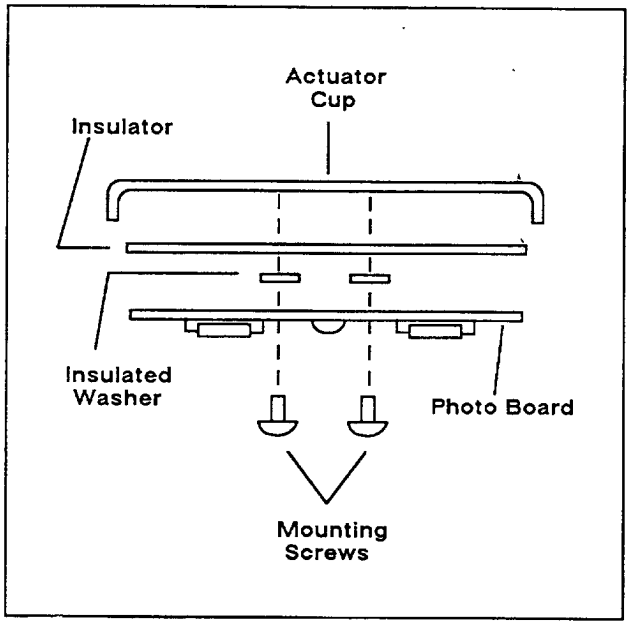

Figure 6. Photo Transistor Board Mounting

15. Cut off excess lead wire from photo transistor board, leaving enough wire to reach the SCR assembly. Strip 2-3 in. (50-75 mm) of gray insulator jacket from lead. Cut off all exposed uninsulated wire. Strip about 1/4 in. (6 mm) of insulation off each lead and crimp on terminal (X-283-7). Before connecting leads to SCR assembly, secure leads to rotor shaft with tie wrap (X-468-3).

16. Connect red wire from photo transistor board to SCR "F+" stud and secure with stop nut (X-101-22). Attach photo board white wire to "AC" stud, green wire to "G" stud, and black wire to remaining AC stud on SCR. Secure with stop nuts. Torque connections to 8 in. lbs. (0.9 Nm) maximum. Reference Figure 7 for FR Activator wiring schematic.

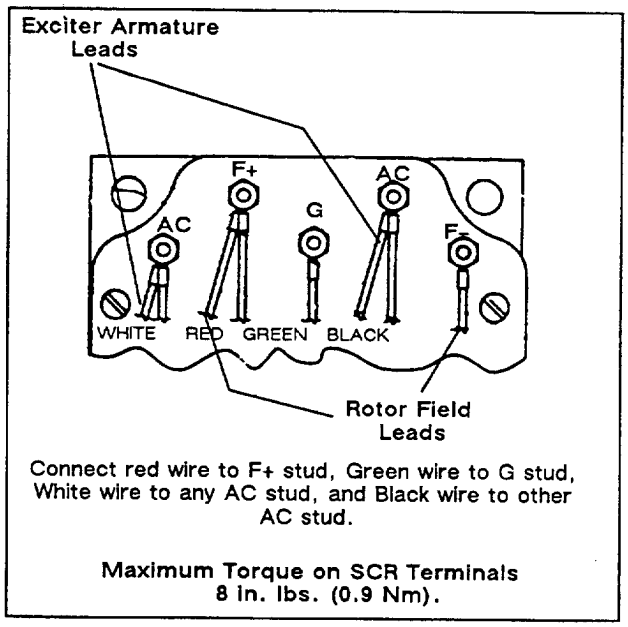

Figure 7. FR Activator Wiring

REASSEMBLY

1. Using a hoist or lift, position generator assembly on adapter end and install new tolerance ring (257830 or 257168) in end bracket. Reposition generator assembly on end bracket end.

2. Suspend rotor over generator assembly. Lower rotor field into stator while being extremely careful to avoid damaging exciter armature, field magnets, stator windings, or rotor laminations. Carefully align rotor bearing into end bracket tolerance ring. Check for an outer race measurement of 1/4 in. (6 mm) from bracket to bearing. Make sure the photo transistor board and actuator cup have clearance below the end bracket.

3 Place fan over rotor flange and torque bolts to 260 in. lbs. (29.4 Nm).

4. Fasten drive discs to end of rotor shaft. Torque drive disc mounting bolts to 50 ft. lbs. (67.8 Nm).

5. Inspect flywheel studs and replace if damaged. Verify that studs are properly tightened into flywheel.

6. Attach hoist to adapter eye and place generator assembly in a horizontal position. Be careful to avoid damage to rotor or stator. Hoisting eyes of generator should be to the top.

7. Attach hoist hooks to end bracket and adapter eye. Raise generator assembly and align studs with drive discs by turning the flywheel. Move generator as necessary to work drive discs over studs. When drive discs are about 1 in. (25 mm) over studs, install spacers. See Figure 8.

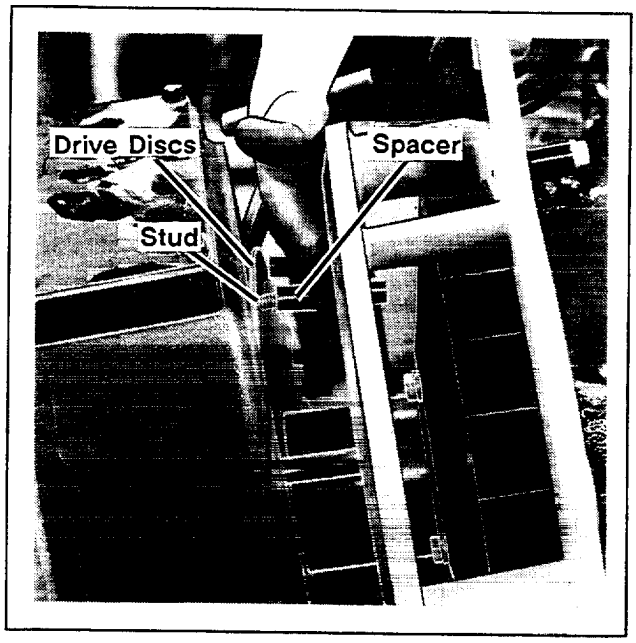

Figure 8. Installing Spacers

8. Move generator as necessary to align adapter and flywheel housing. Fasten and final tighten adapter to flywheel housing bolts and lock washers. Install nuts and studs.

9. Hoist generator and engine slightly to remove wood block(s) from under flywheel housing. Align generator assembly and vibro mounts. Lower generator and tighten vibro mount mounting bolts.

10. Remove chains or slings used to suspend generator. Final tighten drive discs to flywheel.

11. Install fan guard.

12. Replace LED board and housing and speed sensor. Set speed sensor air gap at 0.020 in. (0.508 mm) when remounting. See Figure 9.

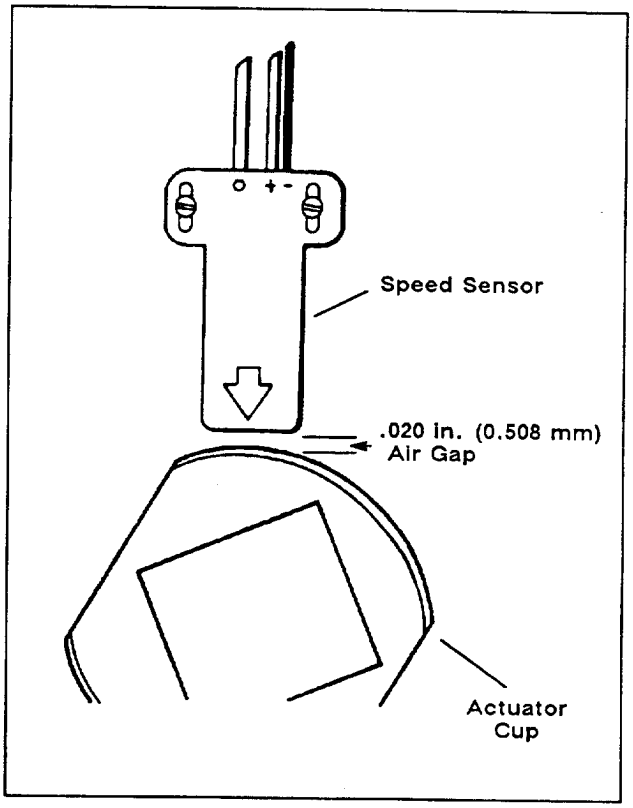

Figure 9. Speed Sensor Air Gap

13. Reinstall junction box and controller. Reconnect all controller-to-engine and engine-to-generator harnesses and wiring. Refer to wiring diagram in Generator Service Manual.

14. Reconnect cooling, exhaust, and fuel systems that were disconnected during disassembly. Reconnect output leads or load circuit cables at generator. Open fuel supply valve.

15. Reconnect starting batteries and AC accessories such as battery charger, block heater, and fuel transfer pump.

PARTS LISTING

KIT NO.	DESCRIPTION & QUANTITY ( )							
			Common Parts					
	Rotor (1)	Tolerance Ring (1)	Circuit Board (1)	Insulated Washer (2)	Terminal (4)	Stop Nut (5)	Insulator (1)	Tie (1)
258280	A-258913	257830	B-292902	243321	X-283-7	X-101-22	278850	X-468-3
258281	A-258976	257830						
258282	A-258977	257830						
258283	A-258979	257830						
258284	A-258981	257830						
258285	A-257516	257168						
258286	A-257517	257168						
258287	A-257518	257168						
258288	A-257519	257168						
258289	A-257520	257168						
258290	A-258975	257830						
258291	A-258978	257830						
258292	A-258980	257830						