

## 6-6 GENERATOR SERVICE

### 6-6.1 Removal of the Generator

- (1) Disconnect the negative battery cable.
- (2) Disconnect the wires from the generator.
- (3) Remove the two bolts that hold the generator in place and remove the generator.
- (4) Installation is the reverse of removal.

### 6-6.2 Disassembly

- (1) Put a mark across each housing half for correct alignment during assembly.
- (2) Remove the pulley from the shaft.
- (3) Remove the four bolts which hold the case together.
- (4) Use a screwdriver to separate each half of the housing (Fig. 6-19). Slide the rotor out of the housing.
- (5) Remove the nuts which hold the three stator wires to the housing. Remove the stator.
- (6) Disconnect the diode trio.

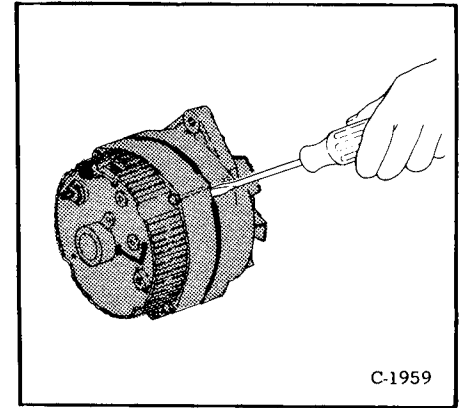
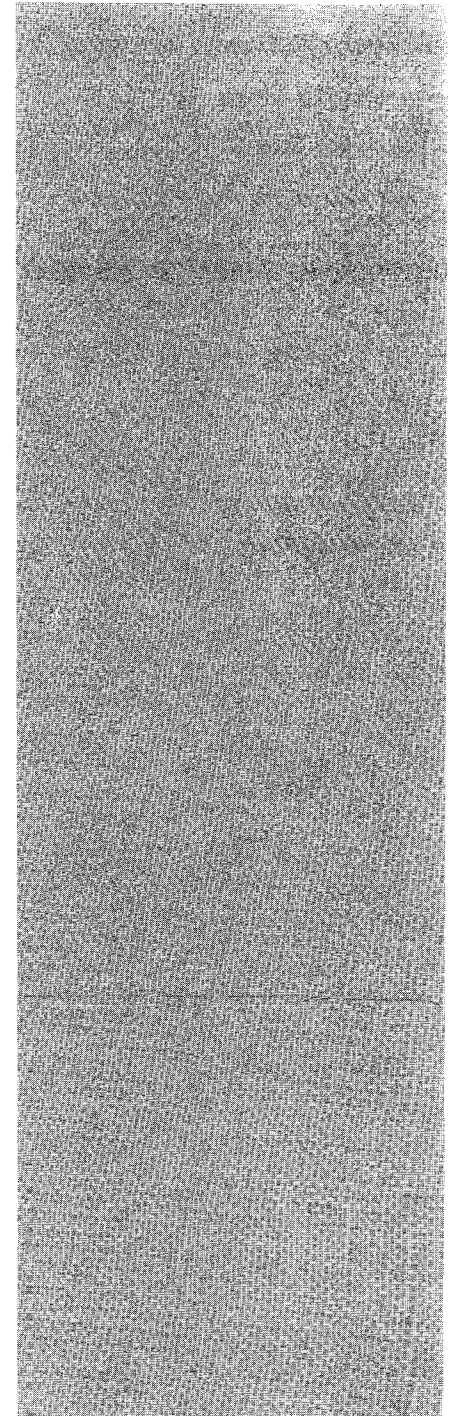


Fig. 6-19 Separate Housing





## 6-7.2 Checking the Starter

### Armature

(1) Make a visual check of the commutator for rough or burned surface and if necessary, polish with a fine sand paper. Turn the commutator in a lathe if it is rough or taper wear is over maximum.

Standard outside diameter	1.73" (41 mm)
Minimum allowable diameter	1.61" (41 mm)

Measure the outside diameter of the commutator at several locations with an outside micrometer and compare the highest micrometer indication with lowest indication to find the amount of wear. Correction is necessary if the amount of wear is beyond the value indication for need of servicing.

Value indication for need of servicing	above .016" (0.44 mm)
Finishing accuracy	.002" (0.05 mm)

(2) Measure the depth of the undercut mica on the commutator (Fig. 6-27). Correction is necessary, if the measured values are beyond the value indication for need of servicing.

Value indication for need of servicing	above .008" (0.2 mm)
Standard depth	.020" - .031" (0.5 - 0.8 mm)

(3) Armature coil insulation test:

Test for insulation between the commutator segments using a growler tester (Fig. 6-28). If the light of the growler illuminates, the coils are poorly insulated and the armature needs replacement.

(4) Testing of the armature coils for shorts:

Put the armature on the growler and turn the armature on the growler slowly while holding a hacksaw blade or a strip of steel over the sections of the armature core (Fig. 6-29). If there is vibration of the hacksaw blade or a strip of steel, or if it is pulled, the armature coils are shorted and the armature needs replacement.

(5) Armature coil continuity test:

Make a continuity test between the commutator sections using a growler (Fig. 6-30). If the light of the growler does not illuminate when the tester wires are connected across the commutator sections, the coil circuit is open and armature needs replacement.

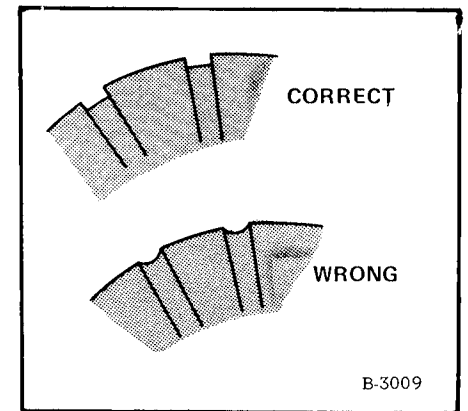


Fig. 6-27 Armature Undercut

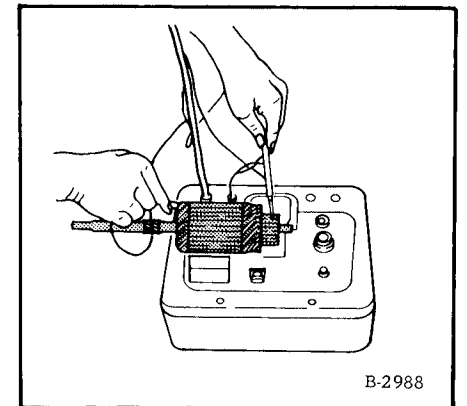


Fig. 6-28 Armature Insulation Test

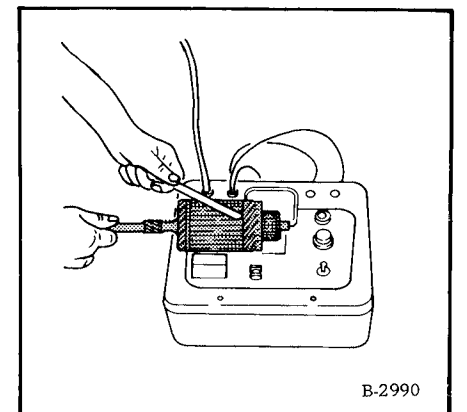


Fig. 6-29 Armature Coil Short Test

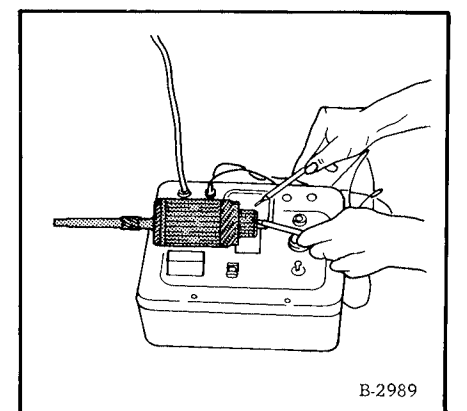


Fig. 6-30 Armature Coil Continuity Test

## Field Coils

(1) Measure the insulation resistance between the field coils and yoke, using a megger meter (Fig. 6-31).

Standard insulation resistance      1M              or higher

If the test indication shows poor insulation, find the cause for poor insulation or grounding by making the test with the cores removed one at a time.

(2) Make a conductor test on the four field coils using a tester (Fig. 6-32).

If the indication between the coil leads show resistance, replace the field coils.

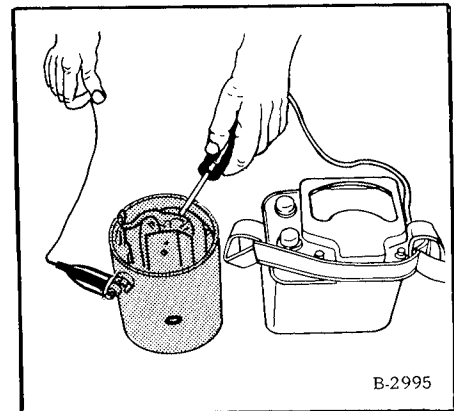


Fig. 6-31 Field Coil Insulation Test

## Brushes and Brush Holder

(1) Check the brushes for wear, damage and broken wires and replace the parts if defect is found.

### Brush information

Standard Brush Length	Limit for use
.710" (18 mm)	.472" (12 mm)

Check the brushes for broken springs, corrosion, distortion or weak tension. Replace parts with defects, as necessary.

Standard spring tension              .031" (0.8 kg)

(2) Clean the brush holders to remove carbon and check for insulation between the brush holders and the mounting plate (Fig. 6-33).

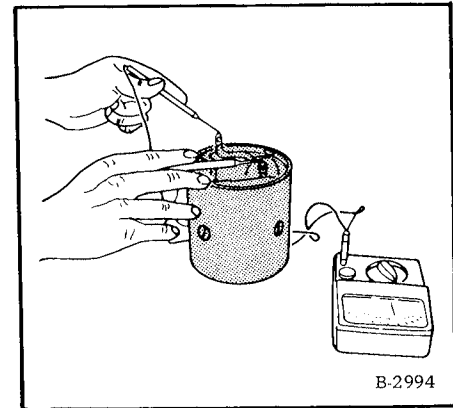


Fig. 6-32 Field Coil Continuity Test

## Solenoid Operating Test

(1) The magnetic switch is normal if the plunger is pulled hard when 12V power is applied between the C and M terminals and returns smoothly when the power is removed.

**NOTE:** When the starter solenoid is fastened to the engine, vibration can cause failure. Move the solenoid to the engine mounting frame. Also be sure the connections on the solenoid have insulation covers.

## 6-8 CHECKING ELECTRICAL WIRING

(1) Check all wires for broken insulation and replace any bad wires.

(2) The electrical connector (between the ROPS and the mainframe) can get corrosion. Put a sealant (water resistant) on the connector before installing. (See the Parts Manual (or microfiche) for the part number of the sealant).

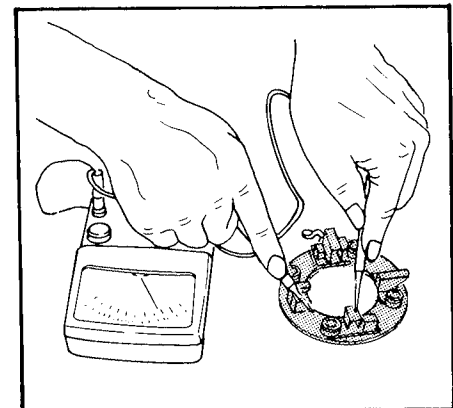


Fig. 6-33 Check Brush Holders

## 6-9 STARTER SUPPORT BRACKET

Install a support bracket (Fig. 6-34) at the lower through bolt of the starter and the right front engine mount if there is a failure of the starter mount. (See Parts Book or Microfiche for correct P/N).

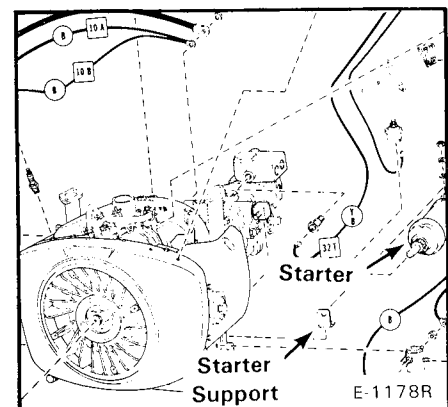


Fig. 6-34 Starter Bracket

## ENGINE SERVICE (520/530)

	<b>Paragraph Number</b>	<b>Page Number</b>
CARBURETOR REPAIR . . . . .	7-3	7-3
CHECKS AND ADJUSTMENTS . . . . .	7-2	7-2
ENGINE . . . . .	7-5	7-5
OIL PUMP AND RELIEF VALVE . . . . .	7-8	7-7
PISTONS, RODS, CRANKSHAFT . . . . .	7-9	7-7
REPAIR OF THE ENGINE . . . . .	7-6	7-5
REPAIR OF THE GOVERNOR . . . . .	7-4	7-4
TIMING COVER, TIMING GEARS, CAMSHAFT	7-7	7-6
TROUBLESHOOTING THE ENGINE . . . . .	7-1	7-1

**ENGINE SERVICE  
(520, 530)**



## 7-1 TROUBLESHOOTING THE ENGINE (520/530)

PROBLEM	CAUSE	CORRECTION	PAGE
Engine will not turn with starter.	Battery charge low.	Increase charge in *battery, find cause for charge loss.	6-2
	Cables loose or dirty.	Clean and tighten cables.	6-2
	Starter defect, solenoid or wiring.	Check starting circuit. Make repairs as needed.	6-3
Engine turns with starter, but is difficult to start.	Wrong starting procedure.	See Owner's Manual for correct procedure.	—
	No fuel in tank.	Add fuel, if needed.	—
	Vent in fuel filler cap has restriction.	Clean as needed.	—
	Dirt or water in fuel system.	Make repairs as needed.	—
	Defect in carburetor.	Make repairs as needed.	7-3
	Hole in fuel line.	Make repairs as needed.	—
	Choke not closing completely.	Make adjustment of linkage.	—
	Ignition system has defect.	Check and make repairs as needed.	7-3
	Wrong oil in engine.	See Oil Specifications.	9-1
	Engine has lost compression.	Overhaul the engine.	7-5
	Engine has overheated.	Clean cooling system, check ignition.	1-6
Engine has little power or runs rough.	Defect in ignition system.	Make repairs as needed.	7-3
	Dirt or water in fuel system.	Clean and make repairs as needed.	—
	Choke not open.	Check choke linkage.	—
	Governor adjustment is wrong.	Check and make adjustment if needed.	7-2
	Dirty air cleaner.	Check air cleaner.	1-4
	Engine has lost compression.	Overhaul the engine.	7-5
Engine overheats.	Cooling system is dirty.	Clean cooling system.	1-6
	Engine air housing cover damaged or missing.	Check air housing covers.	—
	Ignition system set wrong. Engine is overloaded.	Check ignition timing. Operate loader with engine at full throttle.	7-3