

(2) Try to start the engine. The engine should not start.

(3) Let the foot pedal come back to the center position. Make sure that line marked on shaft is within $1/32''$ of switch body. If line is not within $1/32''$ of switch body see paragraph 3-4.8, page 3-9.

(4) Try to start the engine. The engine should start now.

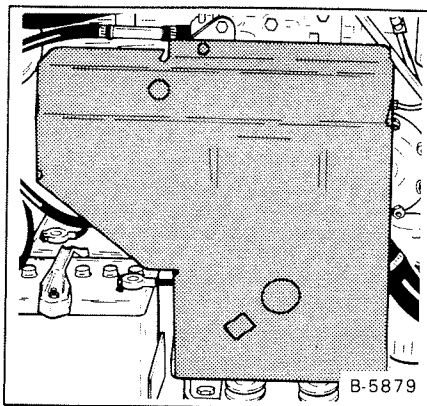


Fig. 6-4 Removing Shield

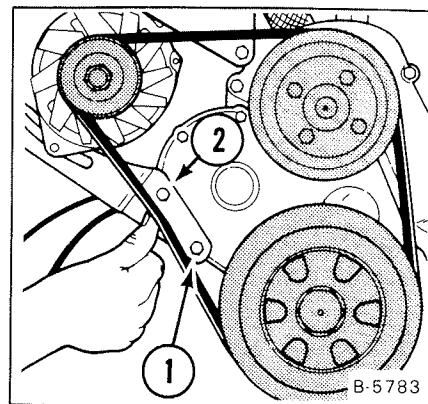


Fig. 6-5 Checking Belt Tension

6-8 ALTERNATOR

6-8.1 Description

The alternator is an electrical device that makes electric current to charge the machine's batteries. The alternator has a built-in voltage regulator.

The alternator is turned by a belt from the engine.

6-8.2 Adjusting or Replacing the Alternator Belt

- (1) Stop the engine. Remove shield (Fig. 6-4).
- (2) Loosen alternator adjusting bolt (Fig. 6-5, Item 1).
- (3) Loosen the alternator mounting bolt (Fig. 6-5, Item 2).
- (4) Remove or replace the drive belt as needed.
- (5) Move the alternator to give the belt $.31''$ (7,87 mm) deflection with 14.3 pounds (6,49 kg) of force, between the sheaves.
- (6) Tighten the adjusting bolt and mounting bolt when the belt is at the correct tension.
- (7) Install the shield.

6-8.3 Checking Alternator Wiring

- (1) Turn the key switch "ON".
- (2) Connect a voltmeter between ground and:
 - (a) No. 1 alternator terminal (Fig. 6-6, Item 1).
 - (b) No. 2 alternator terminal (Item 2).
 - (c) Battery terminal (Item 3).
- (3) If any of these tests show zero voltage, the wiring needs repair.

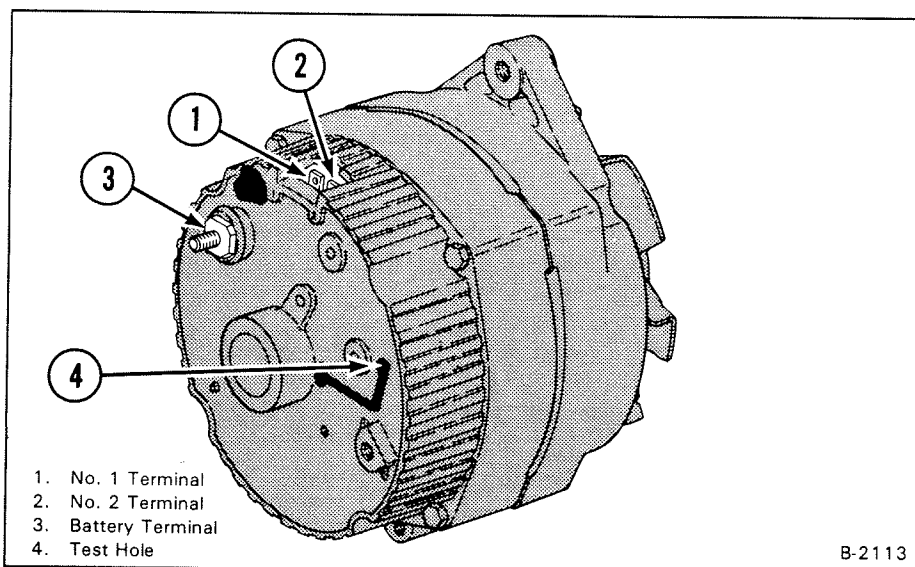


Fig. 6-6 Alternator

- (4) Find the problem in wiring and make repair.
- (5) Check voltage again.

6—8.4 Checking Alternator Output

WARNING

Lift the machine and put blocks under the frame (See Paragraph 1—2, Page 1—1) so that there is no danger of the machine moving during service. Failure to obey warnings may cause injury or death.

- (1) Disconnect negative battery cable.
- (2) Remove wire from "BAT" terminal on alternator and fasten it to (—) connector of an ammeter. Fasten (+) connector of the ammeter to battery terminal of alternator.
- (3) Connect battery cable again.
- (4) Disconnect the wire from the fuel solenoid and turn the engine with the starter for approximately 30 seconds to cause a discharge of the battery.
- (5) Connect the wire to the fuel solenoid and start engine and run at full throttle. The ammeter reading must be within 10 amps of rated amperage (marked on alternator case).
- (6) If reading is correct, alternator is good. If reading is more or less than 10 amps of rated amperage, check the regulator.

6—8.5 Checking the Regulator

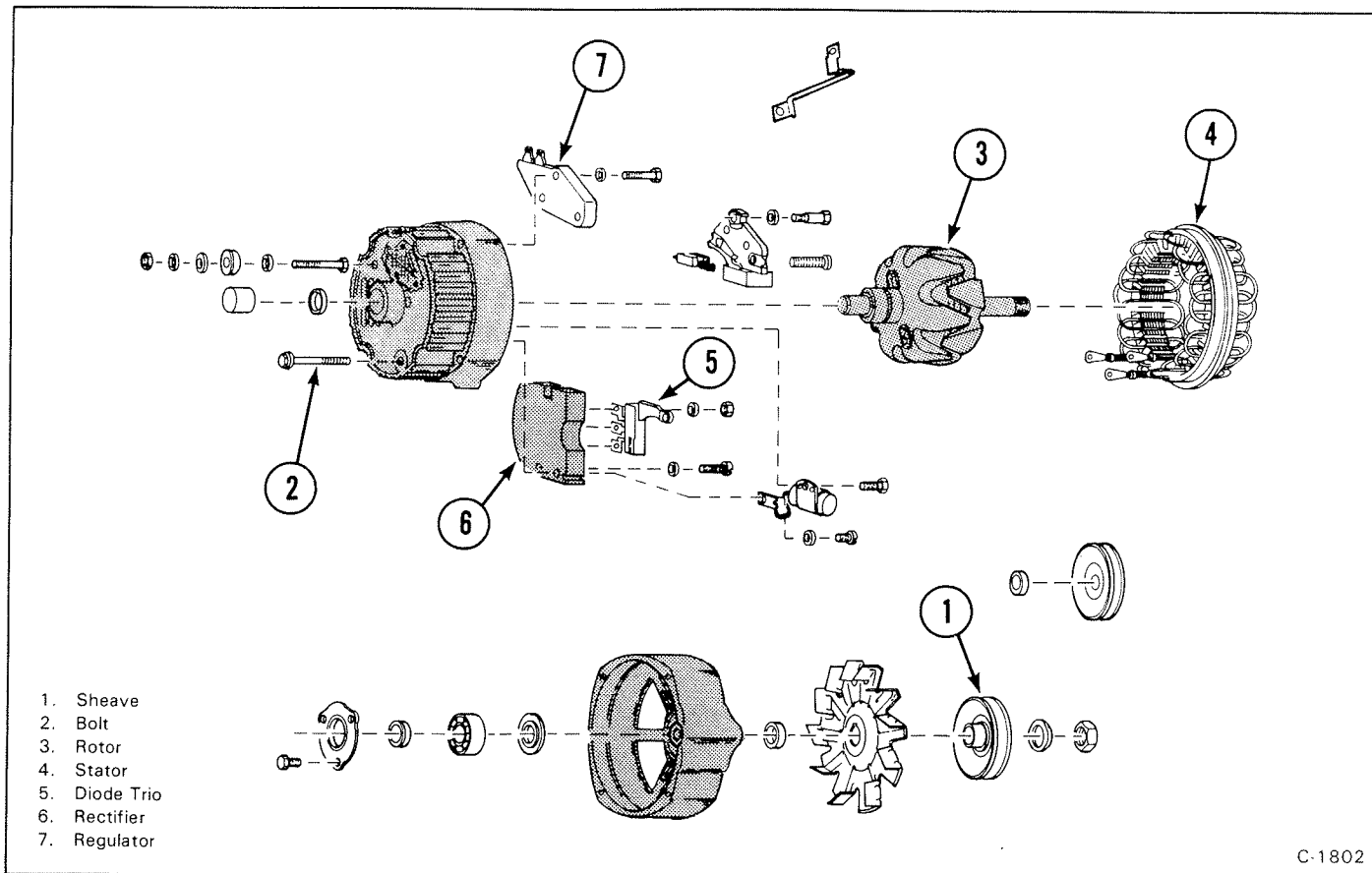
- (1) Connect ammeter as in paragraph 6—8.4.
- (2) Disconnect the wire from the fuel solenoid and turn engine with starter for 15 seconds at a time to cause a discharge of the battery.
- (3) Connect the wire to the fuel solenoid, start engine and run at full throttle.
- (4) Put a small screwdriver in test hole (Fig. 6—6, Item 4).
- (5) If ammeter reading is within 10 amps of rated amperage (37 amps), the regulator probably has a defect. If ammeter is not within 10 amps of 37 amp., check the diode trio, rectifier, stator or rotor. See below for these checks.

6—8.6 Removing the Alternator

- (1) Disconnect negative battery cables.
- (2) Disconnect wires from alternator.
- (3) Remove adjustment bracket bolt.
- (4) Remove two bolts that hold alternator and remove alternator.

6—8.7 Disassembling the Alternator (Fig. 6—7)

- (1) Put a mark across each half of alternator case to help in correct assembly.
- (2) Remove sheave from shaft (Item 1).



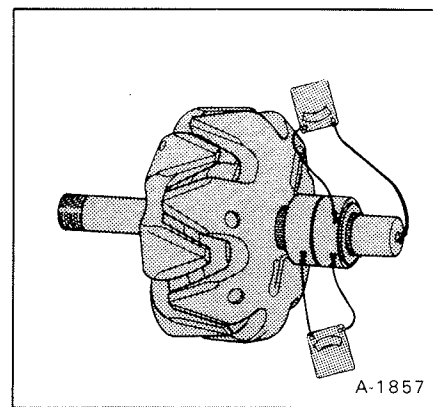
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Fig. 6-7 Disassembling the Alternator

- (3) Remove four bolts that hold case together (Item 2).
- (4) Use a screwdriver to move halves apart. Slide the rotor out of housing (Item 3).
- (5) Remove nuts that hold three stator wires to the housing. Remove stator (Item 4).
- (6) Disconnect diode trio (Item 5).

6-8.8 Checking the Rotor (Fig. 6-8).

- (1) Connect an ohmmeter between one slip ring and shaft. There must be maximum resistance.
- (2) Connect an ohmmeter between both slip rings. Resistance must be between 2.4 ohms and 3.0 ohms. If not, there is a defect in rotor.

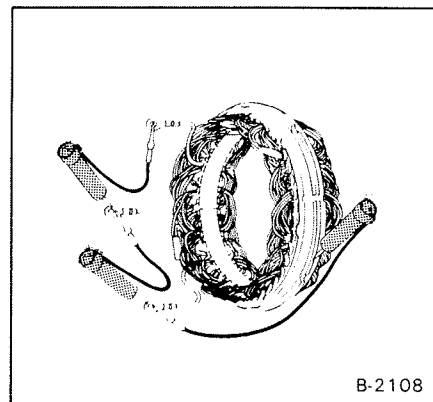


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Fig. 6-8 Checking Rotor Coil Wires

6-8.9 Checking the Stator (Fig. 6-9)

- (1) Connect a test light between the center wire connection and one of the outside wire connections. If the light does not come on, there is a defect in the stator.
- (2) Connect a test light between the center wire connection and the other outside connection. If the light does not come on, there is a defect in stator.
- (3) Connect a test light between one of the wire connections and the frame of the stator. If the light comes on, there is a defect in the stator.



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Fig. 6-9 Checking Stator Coil Wires

6-8.10 Checking Diode Trio (Fig. 6-10)

(1) Connect a test light between the single connection and one of the three connections. Connect the tester the opposite way. The light must come on when connected one way, but not then connected the other way.

IMPORTANT

Do not use voltage that is more than circuit voltage to check the diode trio or rectifier on the alternator.

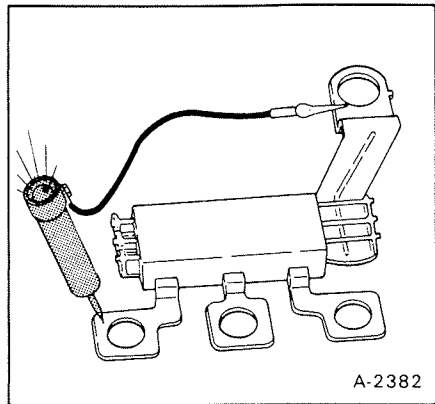


Fig. 6-10 Checking Diode Trio

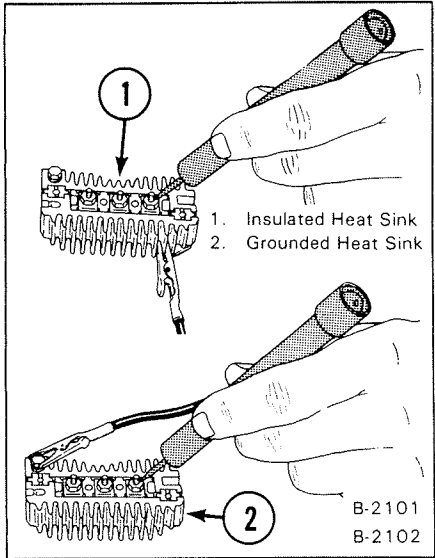


Fig. 6-11 Checking Rectifier

(2) Do step (1) for the other two diodes.

(3) Connect a test light between the center connection and each outside connection (one at a time). If the light comes on, there is a defect in the diode trio.

6-8.11 Checking Rectifier (Fig. 6-11)

(1) Remove rectifier from alternator.

(2) Tighten three nuts on the connections.

(3) Connect test light between one connection and insulated heatsink (Item 1). Connect the tester the opposite way. The light must come on when connected one way but not when connected the other way.

(4) Connect a test light between the same connection and the grounded heatsink (Item 2). Connect the tester the opposite way. The light must come on when connected one way but not when connected the other way.

(5) Do steps (3) and (4) on both of the other connections. If any tests are bad, replace rectifier.

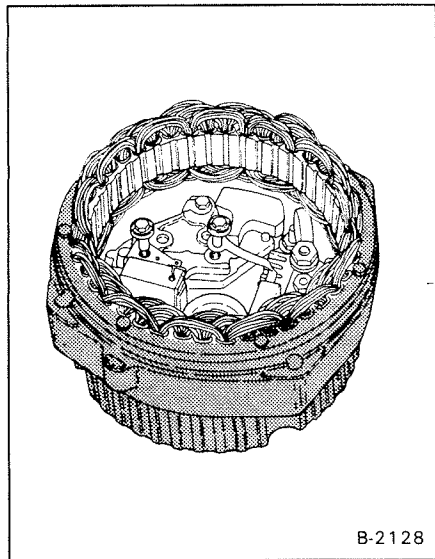


Fig. 6-12 Insulation Washers & Spacers

6-8.12 Assembling and Installing the Alternator

Assembly and installation is reverse of removal and disassembly.

If the regulator is removed, be sure the two insulation washers and spacers are in good condition (Fig. 6-12).

To install the rotor, put a piece of straight wire through the housing to hold the brushes in place (Fig. 6-13).

6-9 STARTER

6-9.1 Description

The starter is a heavy duty electric motor that starts the engine when the key switch is turned to the START position.

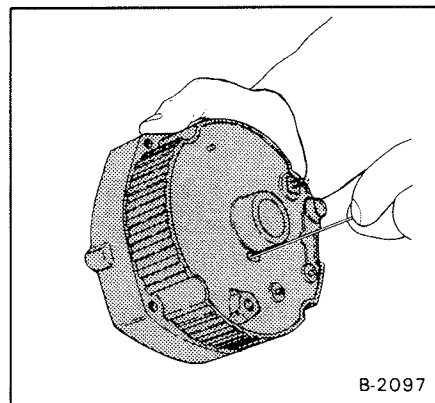


Fig. 6-13 Holding Brushes

6-9.2 Checking Starter (Fig. 6-14)

- (1) Lift the Bobcat Forklift and put blocks under the frame so that there is no danger of the machine falling and causing personal injury (See Paragraph 1-2, Page 1-1 for the correct procedure).
- (2) Keep ignition switch off. Be sure the battery has full charge and the connections are clean and tight.
- (3) Connect a jumper wire between small terminal (Item 3) and battery terminal (Item 2) of the solenoid. If the starter turns, but does not turn the engine, the defect is in the starter drive. If the starter does not turn, continue with step below.
- (4) Connect the jumper wire between battery terminal (Item 2) and lower terminal (Item 4). If the starter turns rapidly, the defect is in the solenoid. If starter does not turn, the defect is in the starter.

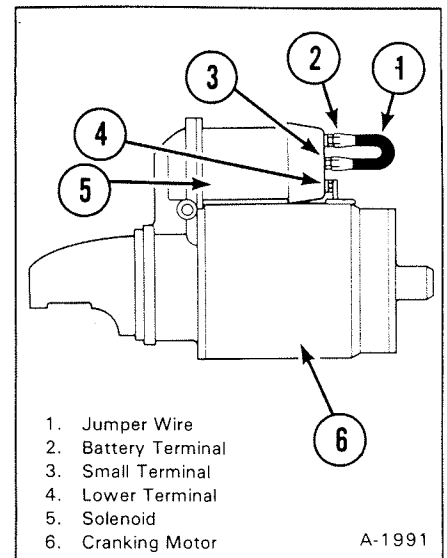


Fig. 6-14 Checking Starter

6-9.3 Removing Starter

- (1) Disconnect negative battery cable.
- (2) Disconnect wires from starter connections.
- (3) Remove the two bolts that hold the starter in place, and remove starter.

6-9.4 Disassembling the Starter (Fig. 6-15)

- (1) Remove the connector link between the solenoid and the starter.
- (2) Remove nuts and washers that fasten the solenoid to the drive end of housing.
- (3) Remove the main part of the solenoid (Item 1). Remove the plunger (Item 3) and the spring (Item 2) by lifting it from the top of the shift fork (Item 4).

NOTE: The plunger (Item 3) must also be replaced if the main part of the solenoid is replaced.

- (4) Remove bolt (Item 5) from the housing in the shift fork pivot.
- (5) Remove the bolts from end cap (Item 6) and starter frame (Item 7).
- (6) Remove shaft fork (Item 4) from the starter frame.
- (7) Remove shim washer (Item 8) from armature shaft at commutator end. Remove the armature (Item 9) complete with internal thrustwasher (Item 10) and drive assembly (Item 11), through the drive end of the starter frame.
- (8) Remove thrustwasher (Item 10) from the commutator end of the armature shaft.
- (9) Remove drive stop ring (Item 12), thrust collar (Item 13), and slide drive assembly (Item 11) off the armature shaft.

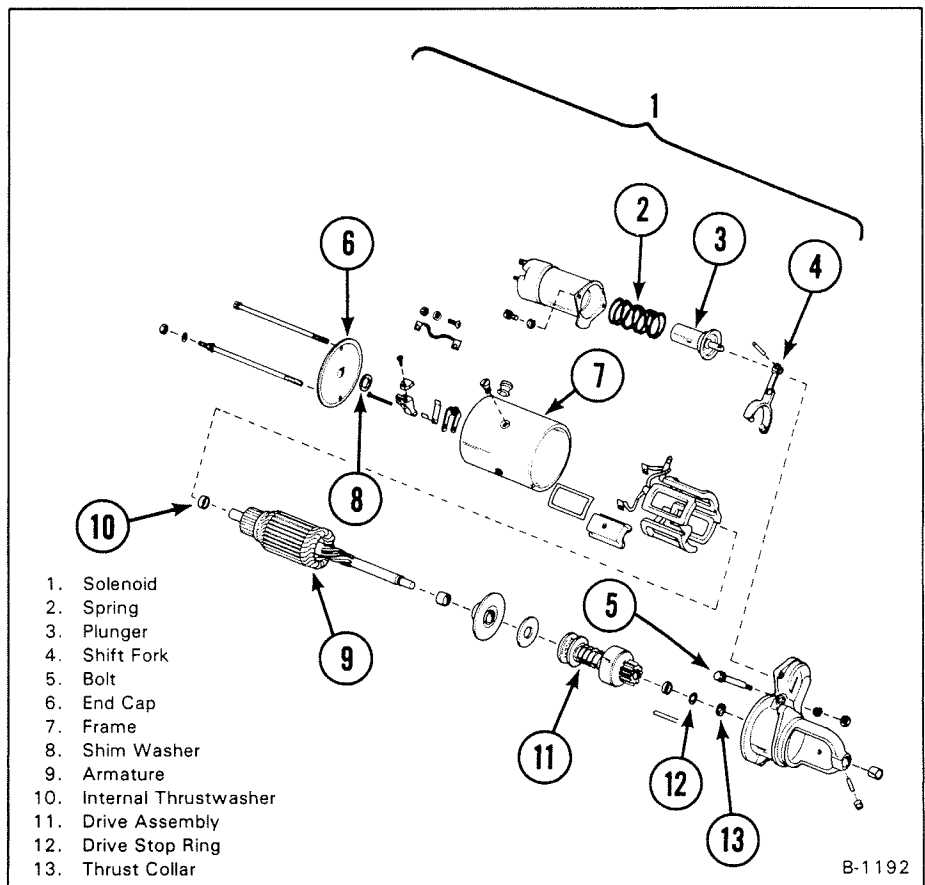


Fig. 6-15 Disassembling the Starter