CHARGING SYSTEM

CHARGING SYSTEM CIRCUIT

Fig. 11-1

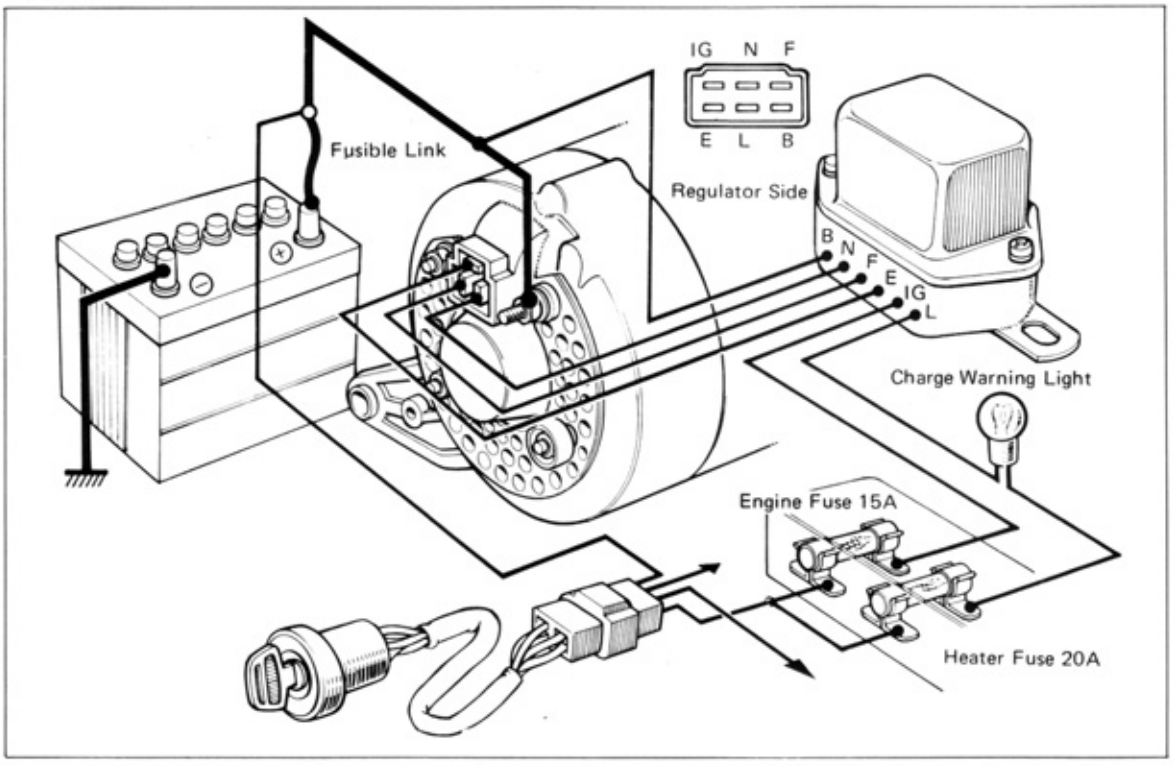
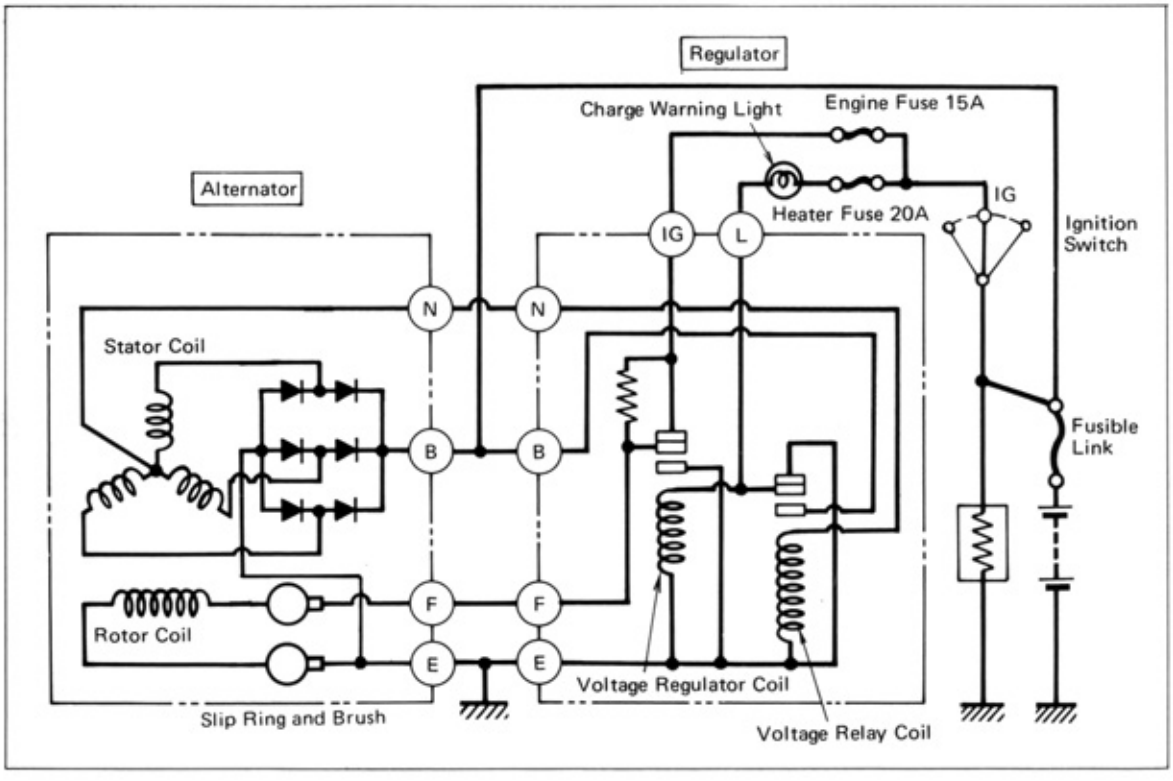
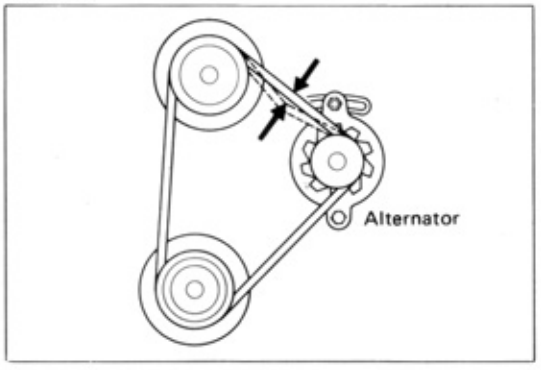


Fig. 11-2



ON-VEHICLE INSPECTION

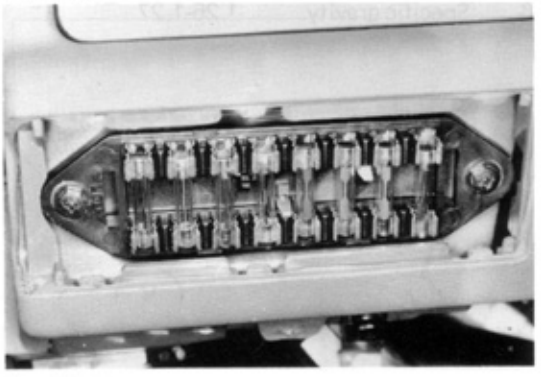
Fig. 11-3



Inspect system components as follows.

1. Drive belt tension (at 10 kg)
   8–12 mm (0.32–0.47 in)

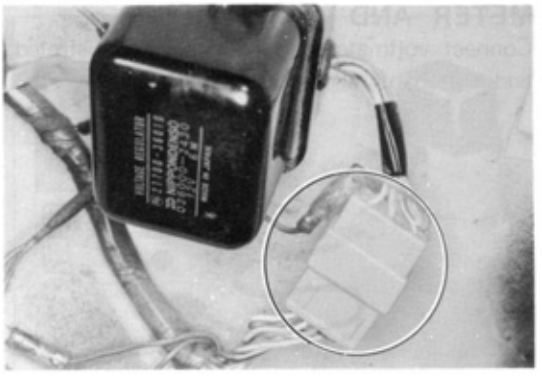
Fig. 11-4



2. Fuses

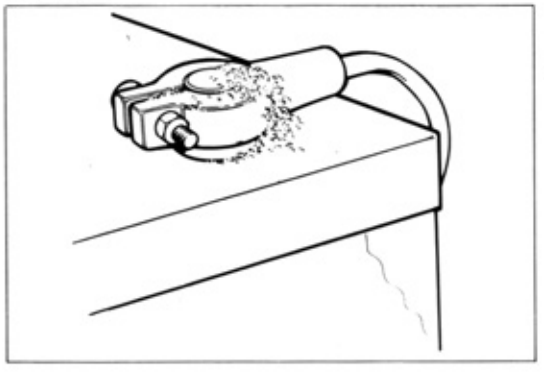
Engine fuse	15A
Heater fuse	20A

Fig. 11-5



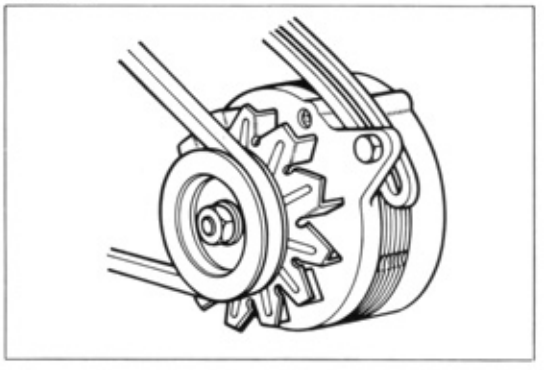
3. Installed condition of wiring for alternator and regulator.

Fig. 11-6



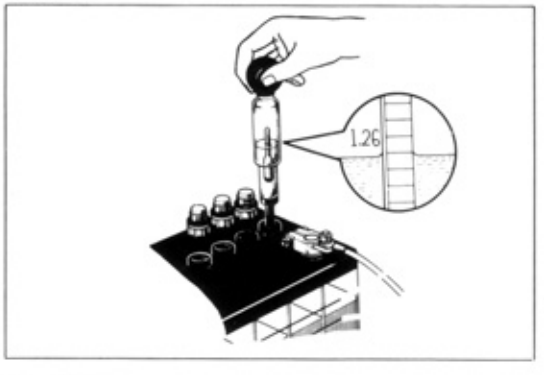
4. Battery terminal and fusible link
   Loose
   Corroded
   Burnt

Fig. 11-7



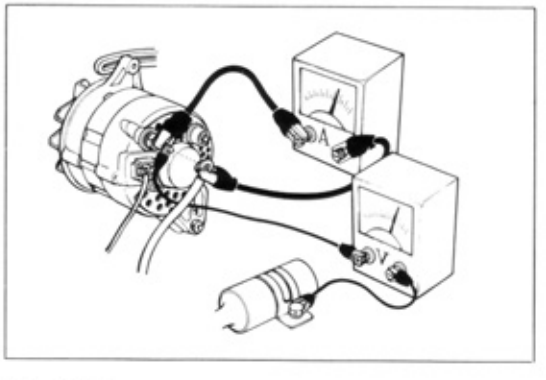
5. Alternator on-vehicle condition
Abnormal noise from alternator when engine is running.

Fig. 11-8



6. Specific gravity 1.25-1.27

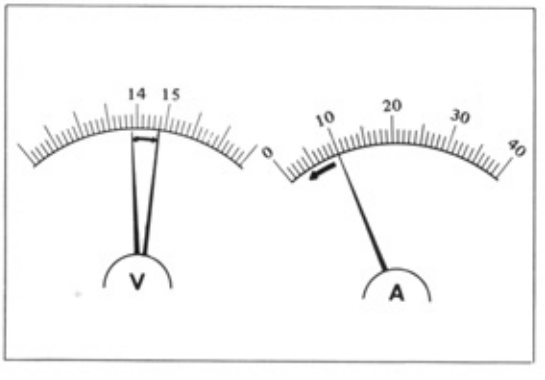
Fig. 11-9



PERFORMANCE TEST USING VOLTMETER AND AMMETER

Connect voltmeter and ammeter as illustrated, and switch off all accessory parts.

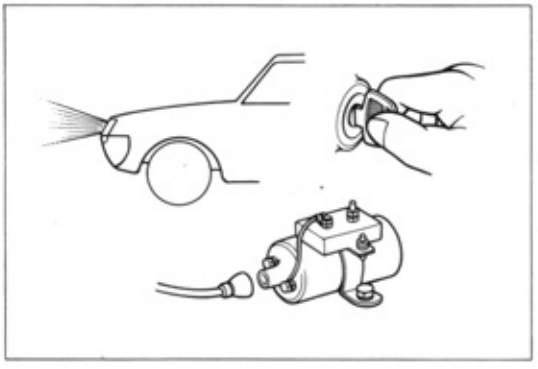
Fig. 11-10



No-load Performance test

Regulated voltage	**13.8 ~ 14.8 V**
Current	**Less than 10 A**
Engine speed	**Idling to 2000 rpm.**

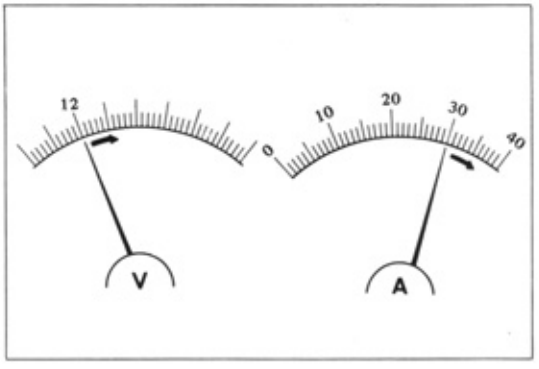
Fig. 11-11



Load Performance test

1. Crank the engine with ignition coil high tension cord disconnected for about 5 to 10 seconds.
2. Turn on headlights and accessories.

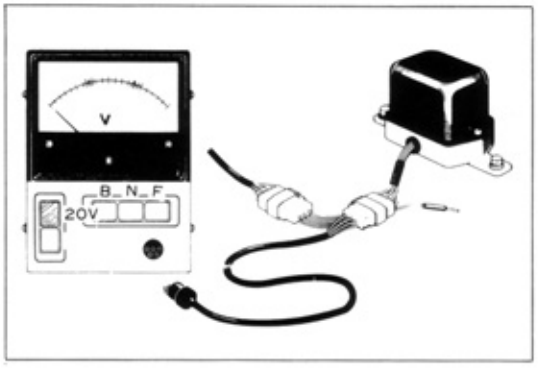
Fig. 11-12



3. Start engine, and run it at approximately 2000 rpm.

Regulated voltage	**12 V**
Current	**More than 30 A**

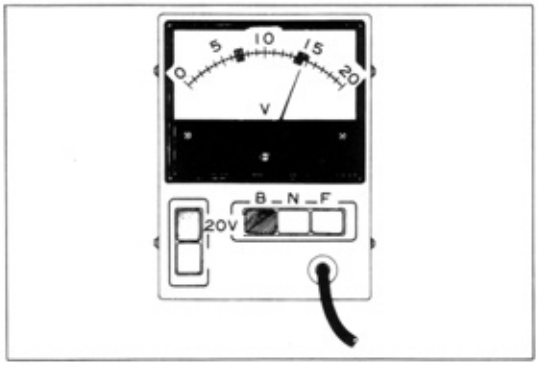
Fig. 11-13



PERFORMANCE TEST BY ALTERNATOR CHECKER

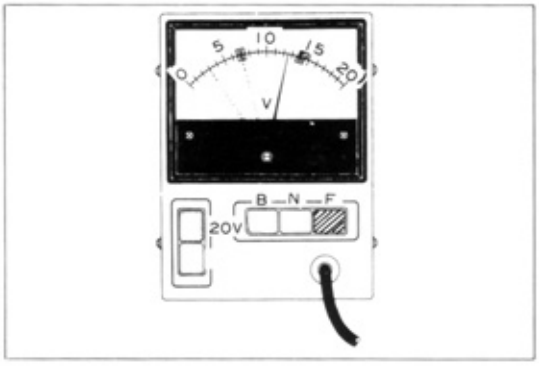
1. Unplug the alternator regulator connector and plug in the checker connector.
   Push "20V" switch.

Fig. 11-14



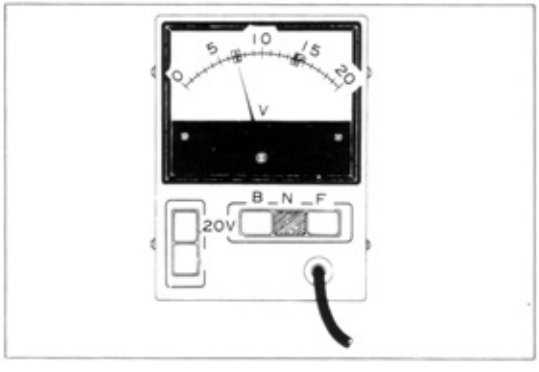
2. Check "B" terminal voltage.
   Push "B" switch.
   Raise engine speed from idling to 2000 rpm.
   Standard voltage 13.8 to 14.8 V

Fig. 11-15



3. Check "F" terminal voltage.
Push "F" switch.
Gradually raise engine speed. The checker reading should gradually decrease from 12 volt to 3 volt.

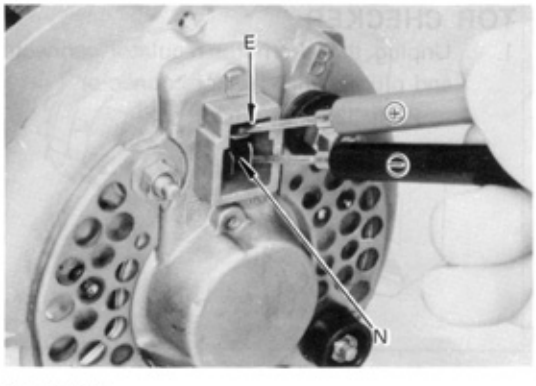
Fig. 11-16



4. Check "N" terminal voltage.
Push "N" switch.
Maintain engine speed at approx. 1500 rpm. The pointer should be at a half of "B" terminal voltage.

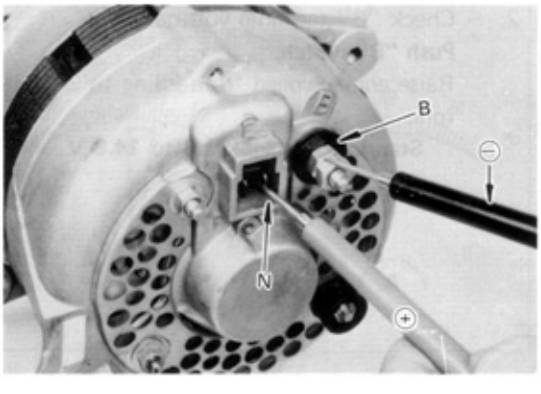
ALTERNATOR INSPECTION

Fig. 11-17



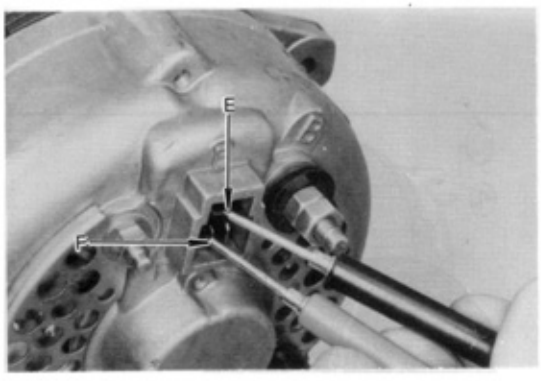
1. Negative side rectifier short test.
Connect an ohmmeter (–) lead to N terminal and (+) lead to E terminal.
Meter should indicate infinity.

Fig. 11-18



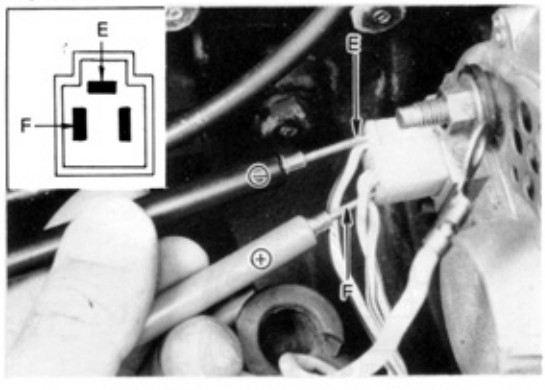
2. Positive side rectifier short test.
Connect an ohmmeter (–) lead to B terminal and (+) lead to N terminal.
Meter should indicate infinity.

Fig. 11-19



3. Check rotor coil resistance.
   Resistance 5-9 Ω

Fig. 11-20



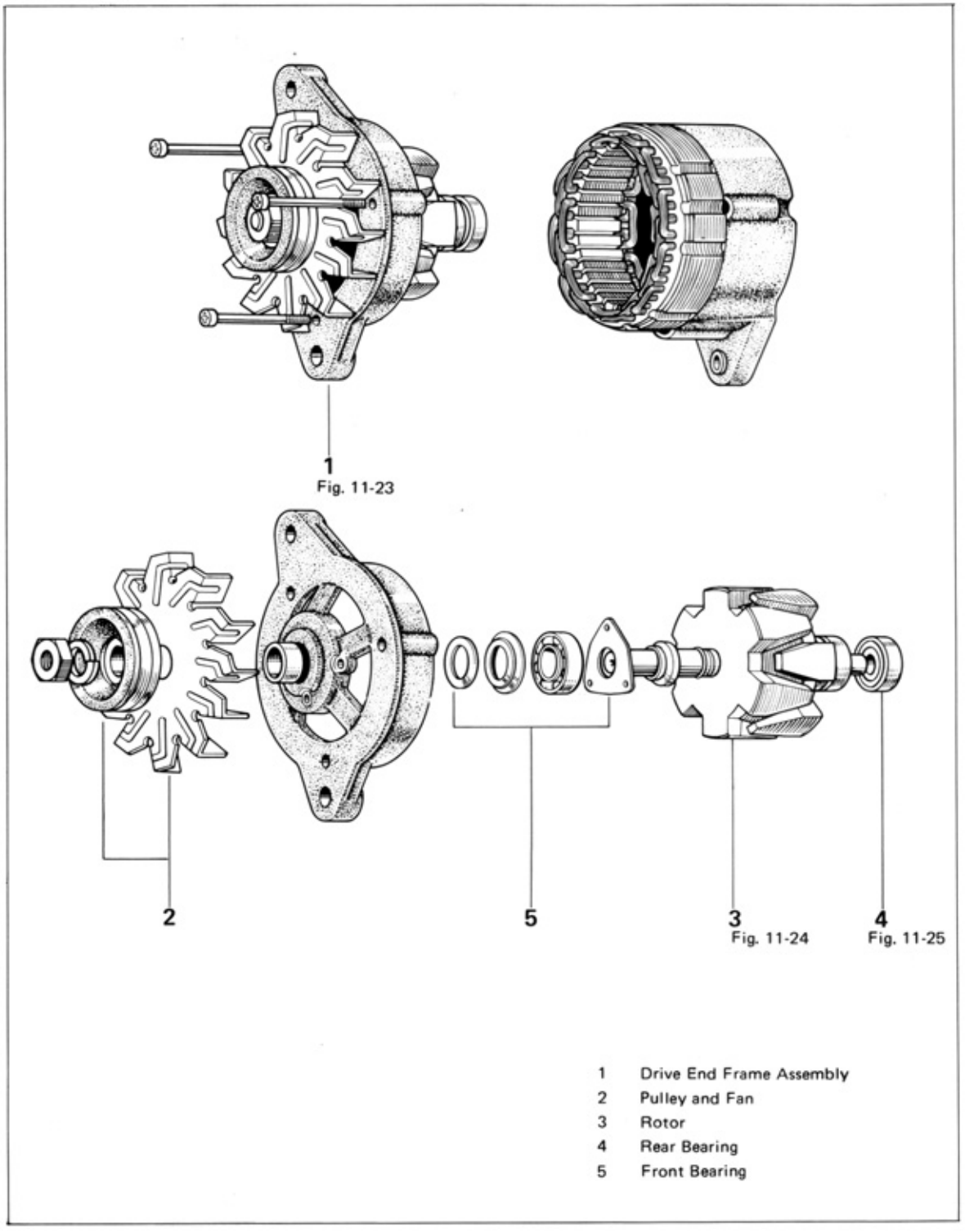
4. Turn ignition switch to ON position, and check if there is battery voltage at F terminal. If not, check ENGINE fuse.

ALTERNATOR

DISASSEMBLY

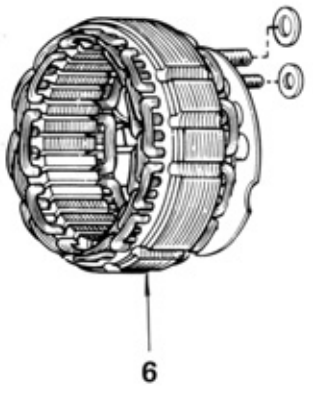
Disassemble in numerical order.

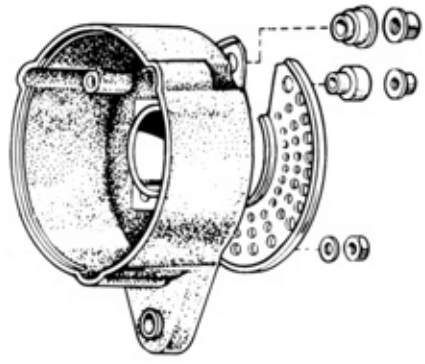
Fig. 11-21

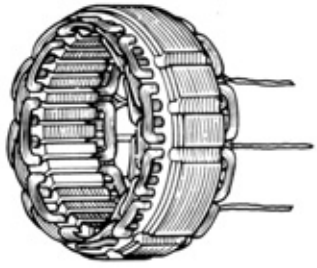


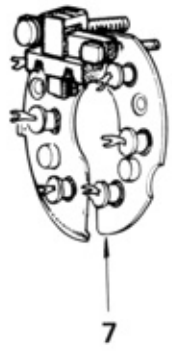
1 Drive End Frame Assembly
2 Pulley and Fan
3 Rotor
4 Rear Bearing
5 Front Bearing

Fig. 11-22









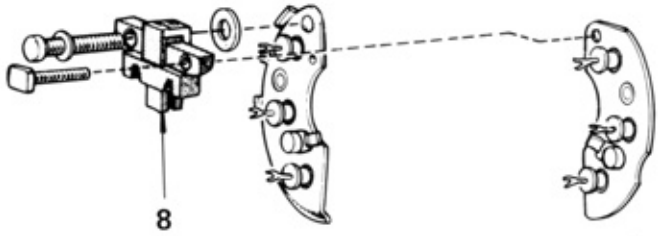
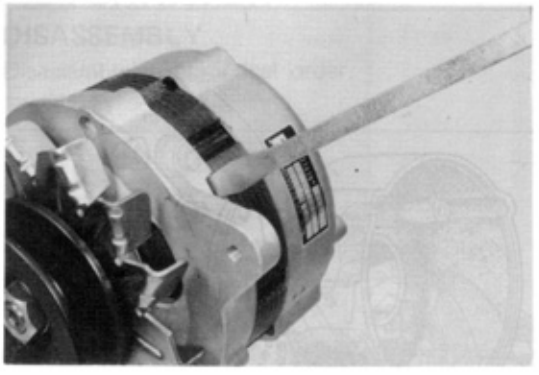


Fig. 11-26

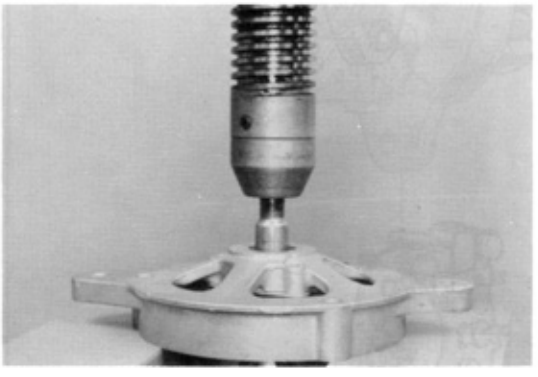
6 Stator Coil and Rectifier Holder
7 Brush Holder and Rectifier Holder
8 Brush Holder

Fig. 11-23



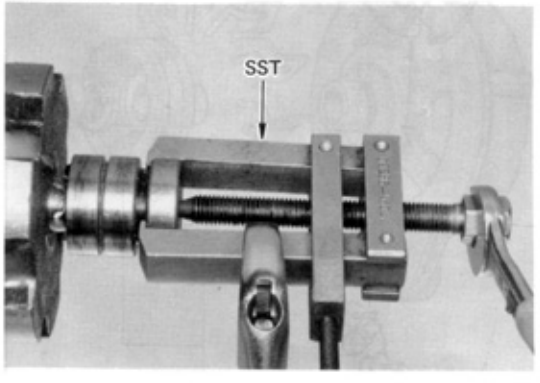
Pry drive end frame from stator.
Do not pry coil wires.

Fig. 11-24



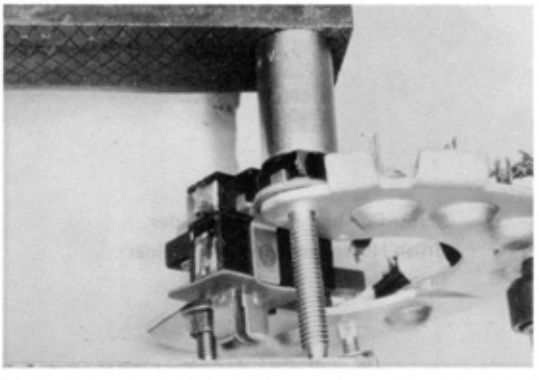
Remove rotor from drive end frame using a press.

Fig. 11-25



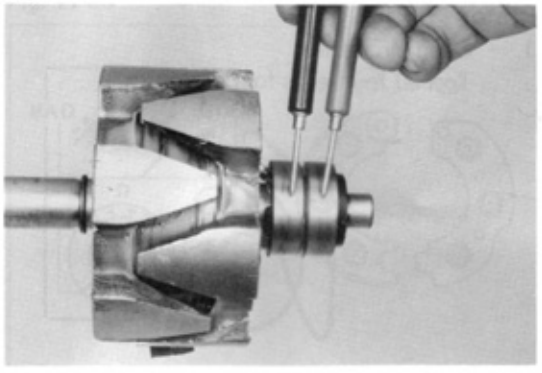
Remove rotor shaft rear bearing using SST [09286-46011].

Fig. 11-26



Remove brush holder assembly using a 10 mm socket wrench and vise.

Fig. 11-27

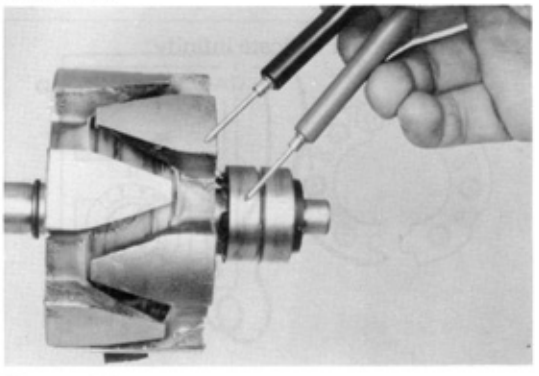


INSPECTION AND REPAIR

Rotor

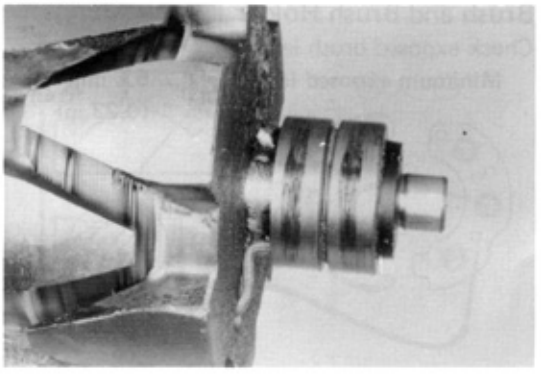
1. Open circuit test
   Standard resistance **4.1-4.3Ω**

Fig. 11-28



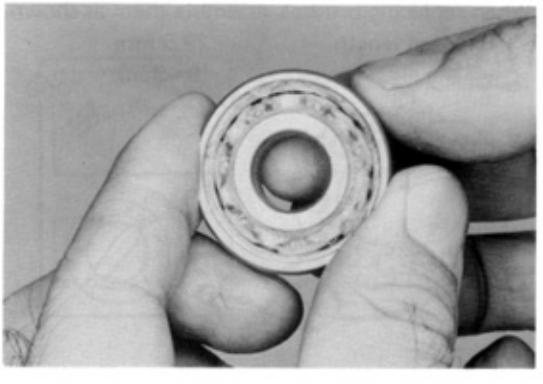
2. Ground test
   Meter should indicate infinity.

Fig. 11-29



3. Check slip ring for being dirty or burnt.

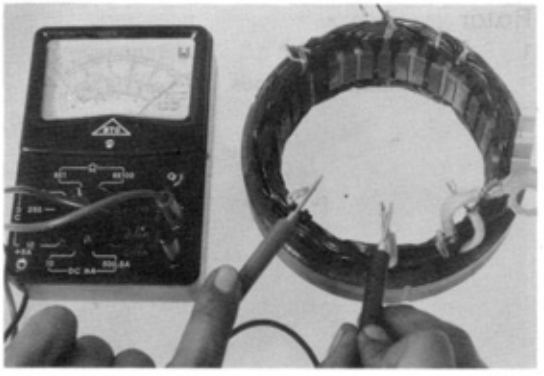
Fig. 11-30



Bearing

Check bearing for wear or roughness.

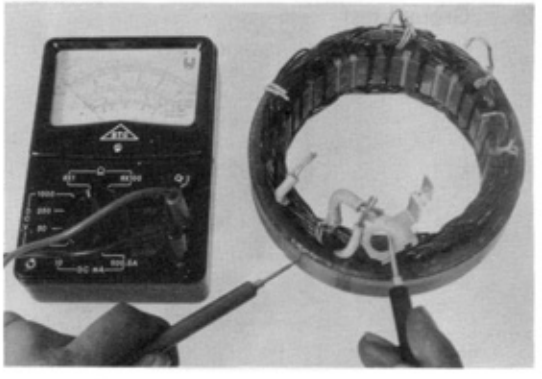
Fig. 11-31



Stator

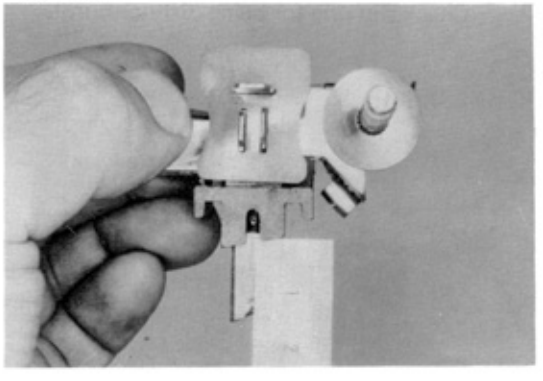
1. Open circuit test
   Test all four leads for continuity.

Fig. 11-32



2. Ground test
   Meter should indicate infinity.

Fig. 11-33

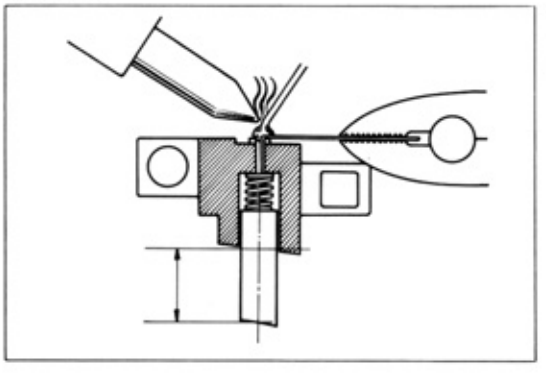


Brush and Brush Holder

Check exposed brush length.

Minimum exposed length **5.5 mm (0.22 in)**

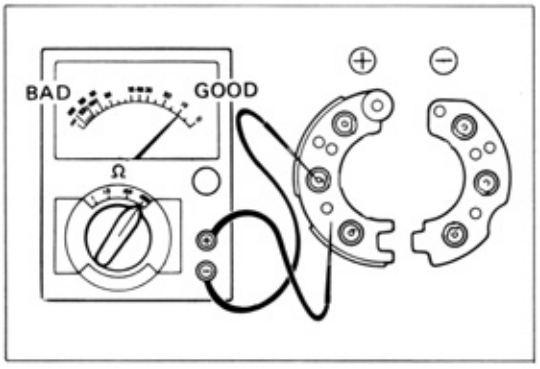
Fig. 11-34



When replacing brushes, assemble them as shown.

Exposed length **12.5 mm (0.49 in)**

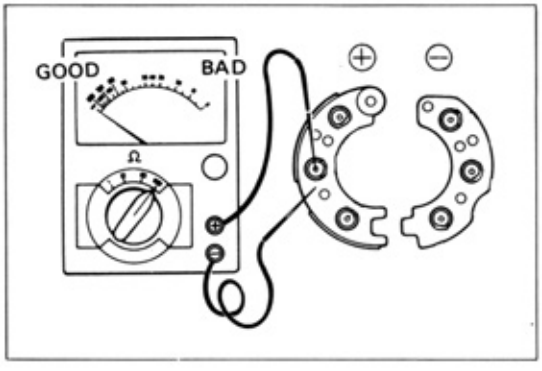
Fig. 11-35



Rectifier

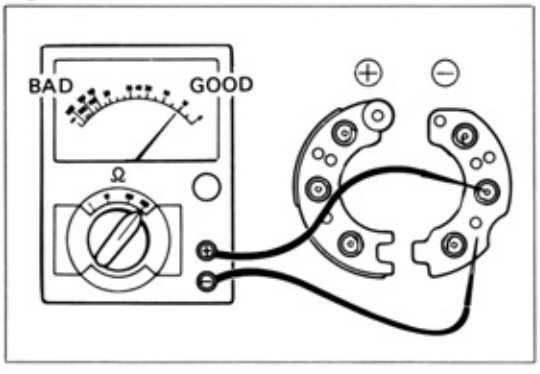
1. Rectifier holder positive side
   Connect an ohmmeter (+) lead to the rectifier holder, and the (–) lead of the meter to the rectifier terminal. If there is no continuity, rectifier assembly must be replaced.

Fig. 11-36



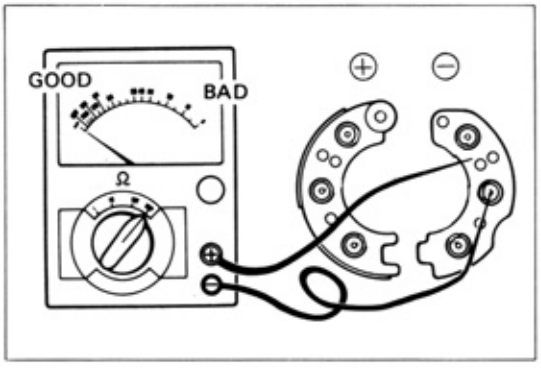
2. Reverse polarity of test leads and check again. If there is continuity, rectifier assembly must be replaced.

Fig. 11-37



3. Rectifier holder negative side
   Connect an ohmmeter (+) lead to the rectifier terminal, and the (–) lead of the meter to the rectifier holder. If there is no continuity, rectifier assembly must be replaced.

Fig. 11-38

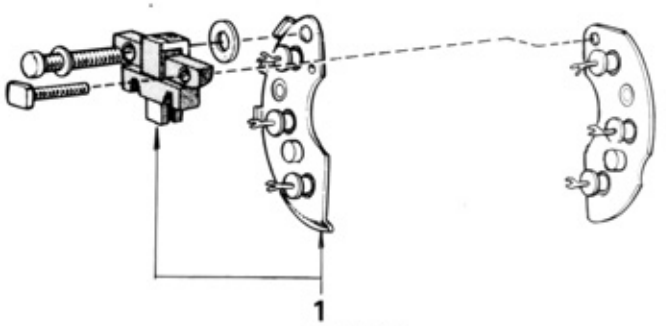


4. Reverse polarity of test leads and check again. If there is continuity, rectifier assembly must be replaced.

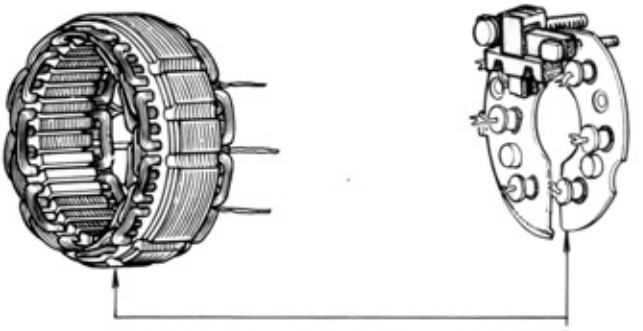
ASSEMBLY

Assemble in numerical order.

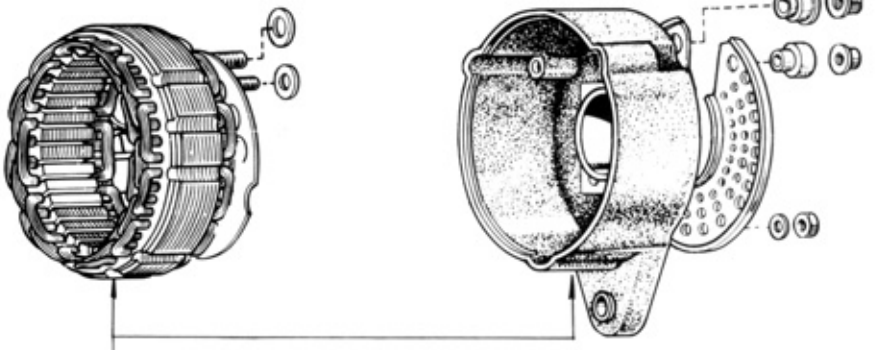
Fig. 11-39



1
Fig.11-41
Fig.11-42



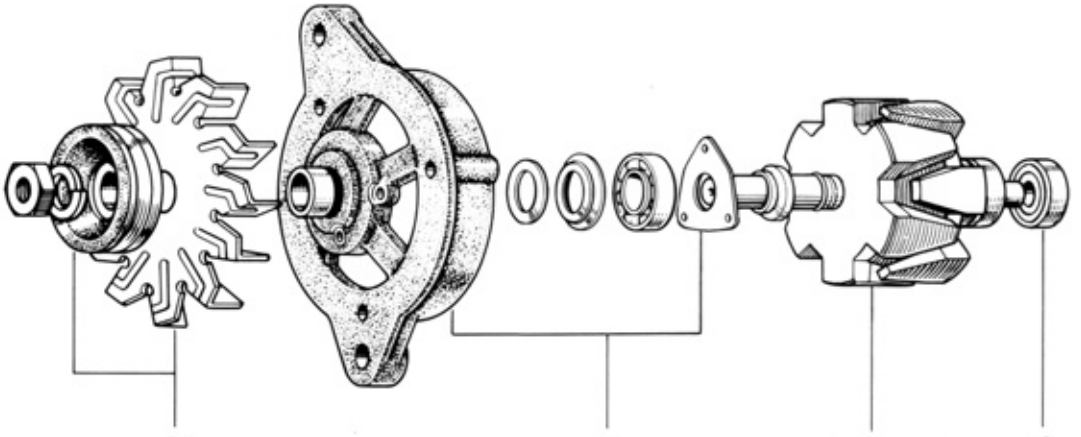
2
Fig.11-43

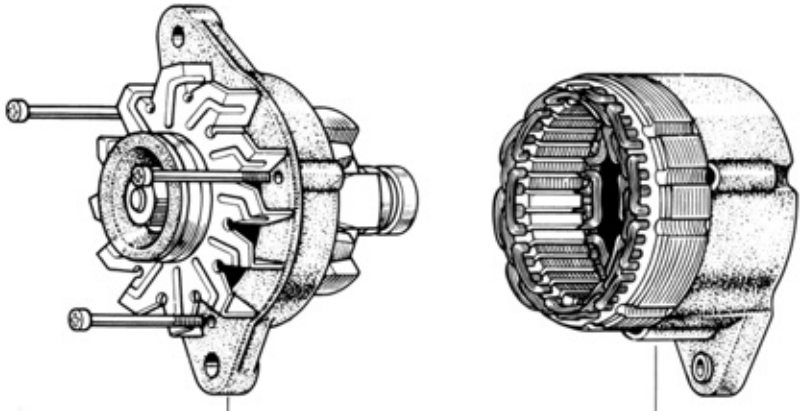


3
Fig.11-44
Fig.11-45
Fig.11-46

1 Brush Holder
2 Brush Holder and Rectifier Holder
3 Stator Coil and Rectifier Holder

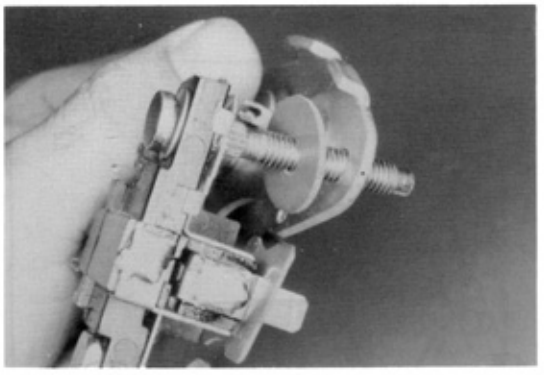
Fig. 11-40





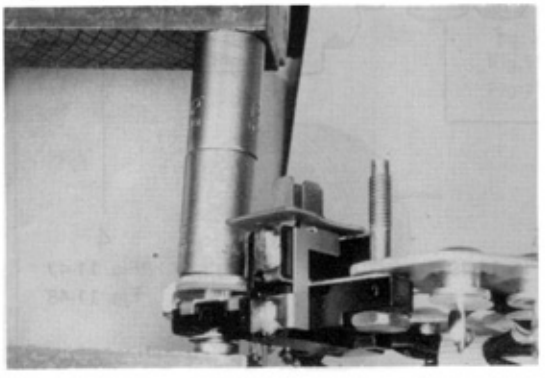
4 Rear Bearing
5 Front Bearing
6 Rotor
7 Pulley and Fan
8 Drive End Frame Assembly

Fig. 11-41



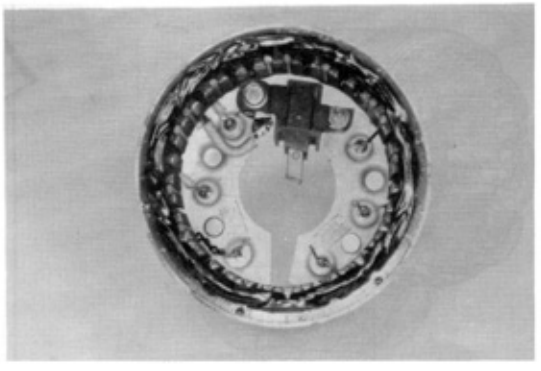
Insert insulator between positive rectifier holder and brush holder.

Fig. 11-42



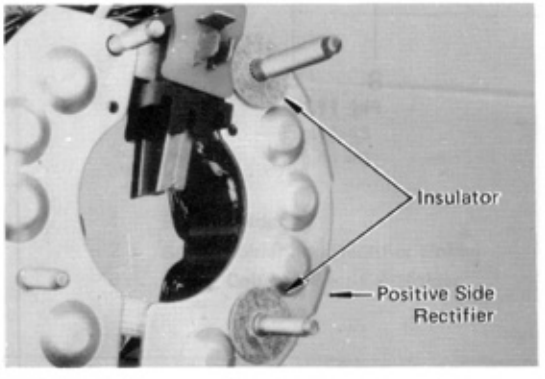
Install brush holder onto rectifier holder using socket wrench and a vise.

Fig. 11-43



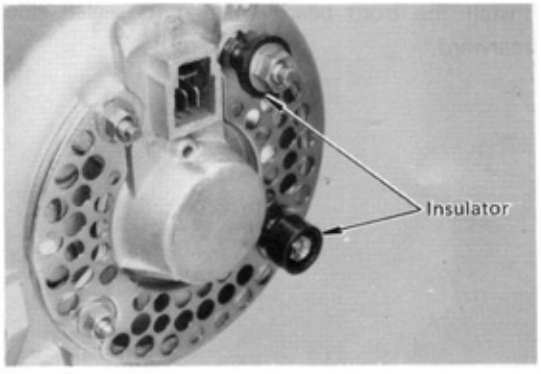
Connect stator coil "N" lead onto brush holder terminal, and solder each stator lead and rectifier lead to positive rectifier.

Fig. 11-44



Assemble rear end frame and rectifier holder with insulators.

Fig. 11-45

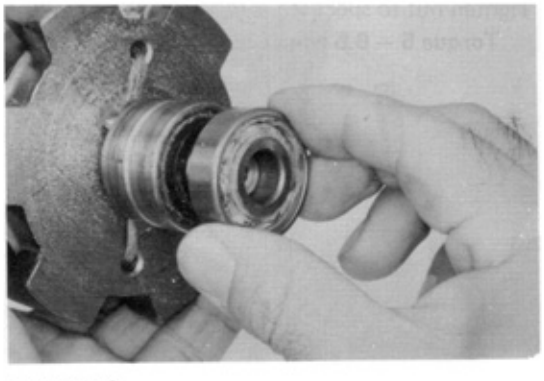


Assemble rear end cover with insulators.

Fig. 11-46

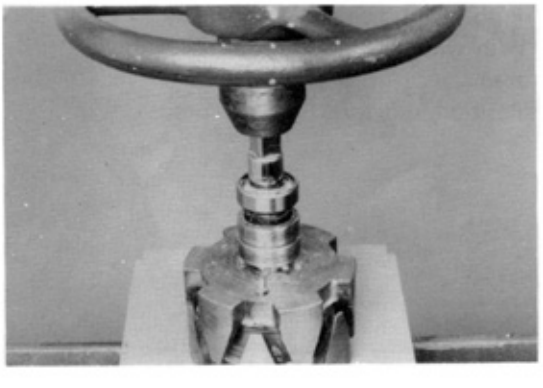
If there is danger of stator coil terminal wiring contacting on frame or rotor, correct by bending wiring.

Fig. 11-47



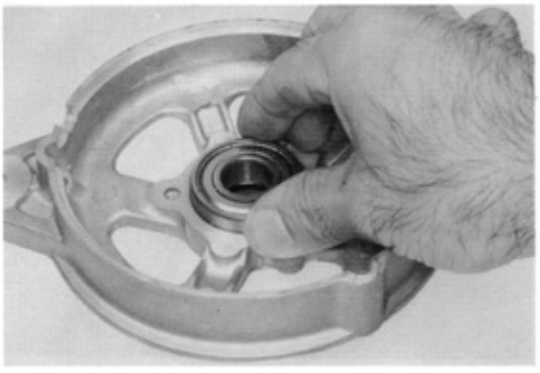
Install rear bearing facing its sealed side forward.

Fig. 11-48



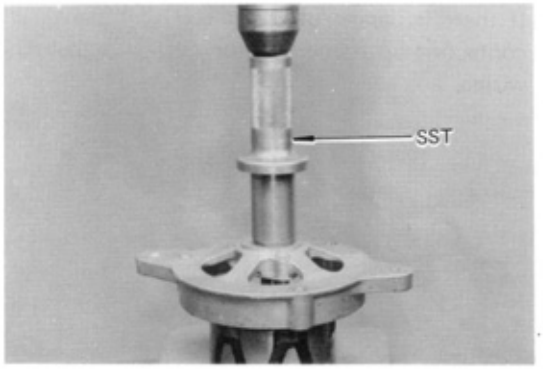
Press rear bearing onto rotor shaft, using a press.

Fig. 11-49



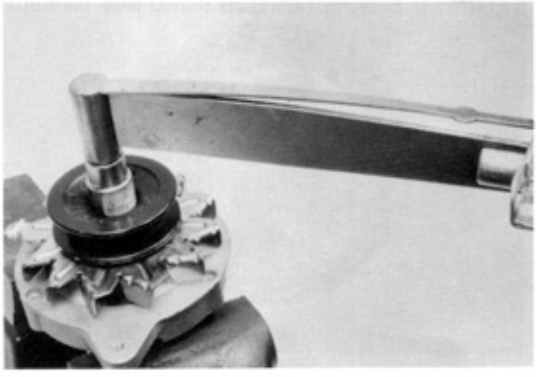
Install the front bearing facing its sealed side rearward.

Fig. 11-50



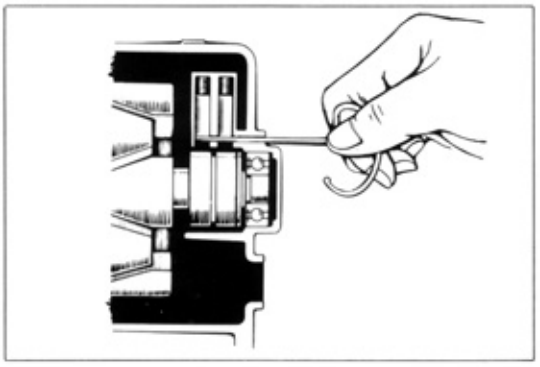
Press drive end frame assembly onto rotor shaft, using SST [09325-12010].

Fig. 11-51



Tighten nut to specified torque.
Torque 5 – 6.5 kg-m (36 – 47 ft-lb)

Fig. 11-52



Push in brushes and temporarily lock in place with wire inserted through access hole in end frame.
Position lead wires to clear rotor.

ALTERNATOR REGULATOR

Fig. 11-53

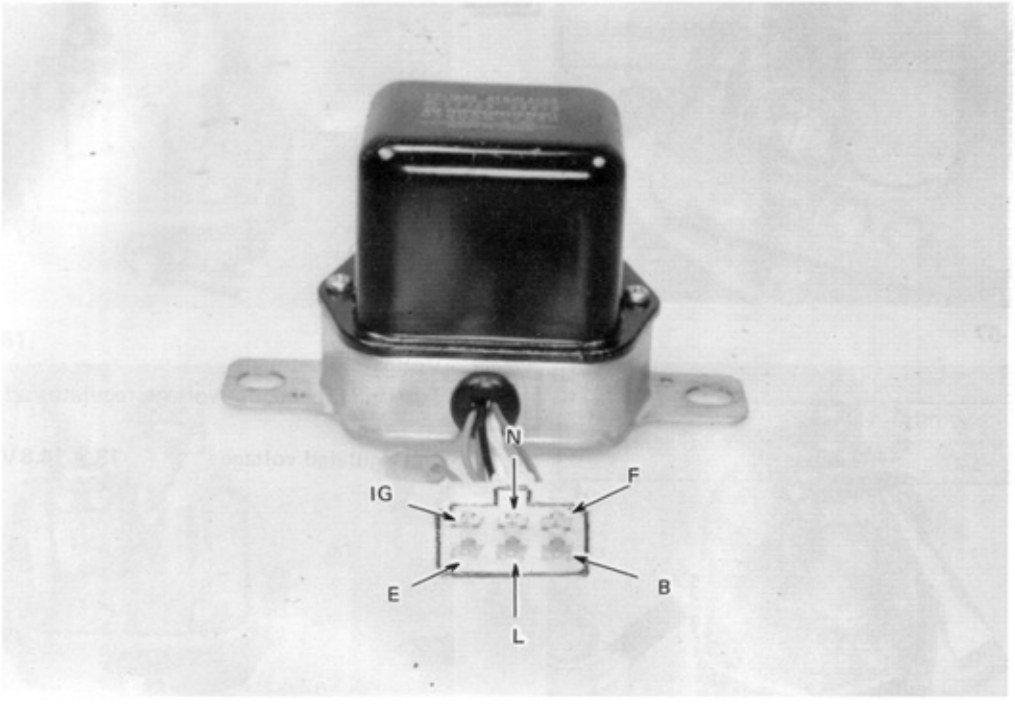
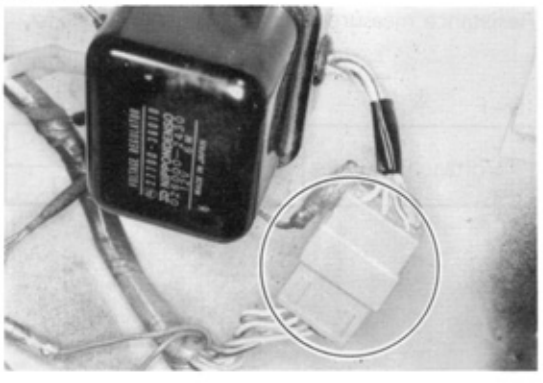


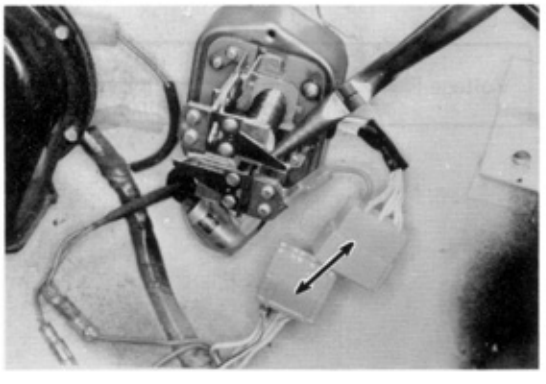
Fig. 11-54



INSPECTION AND ADJUSTMENT

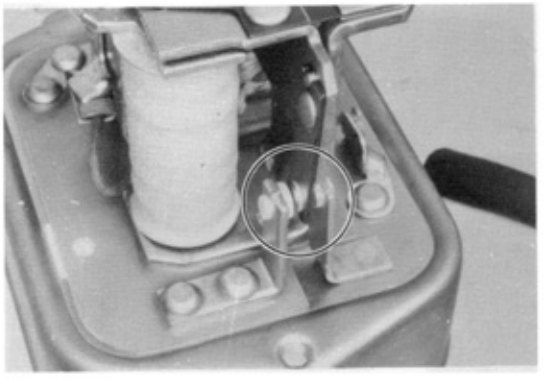
Check connector fitting condition before inspecting regulator.

Fig. 11-55



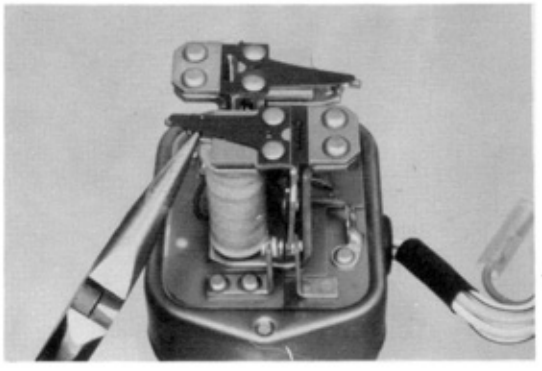
Always be sure to have the regulator connector pulled out when inspecting and adjusting.

Fig. 11-56



Inspect each point surface for burn or excessive damage. Replace if defective.

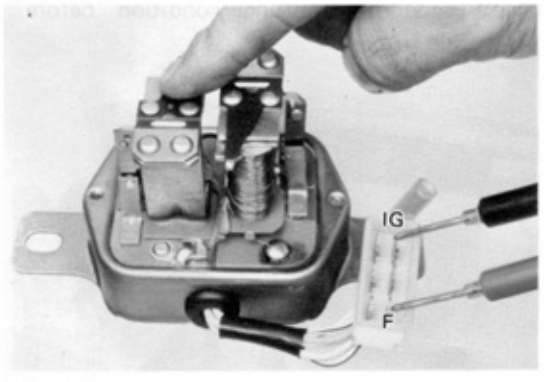
Fig. 11-57



Voltage adjustment
To adjust, bend the voltage regulator adjusting arm.

Regulated voltage **13.8-14.8V**

Fig. 11-58

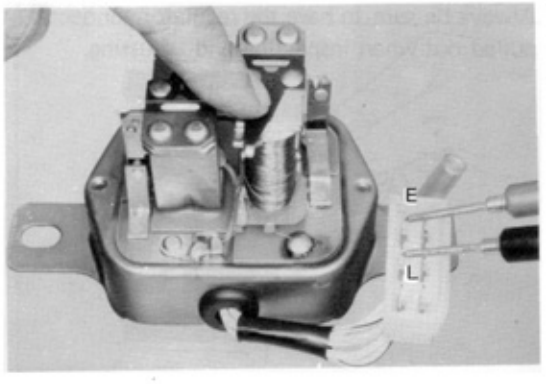


Resistance measurement between terminals.

IG–F

Voltage Regulator	At rest	0Ω
	Pulled in approx.	11Ω

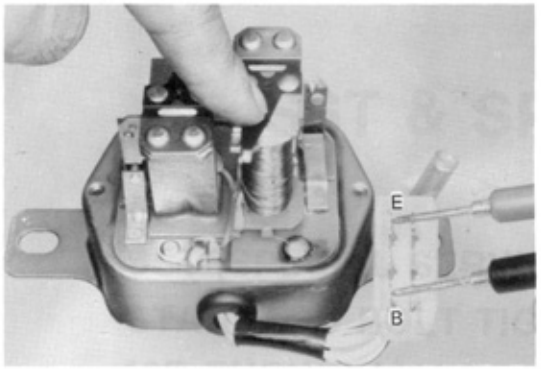
Fig. 11-59



L–E

Voltage Relay	At rest	0Ω
	Pulled in approx.	100Ω

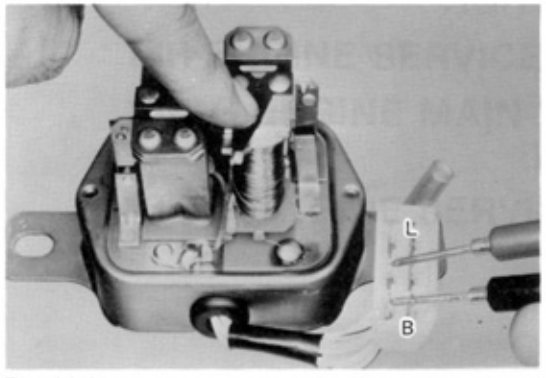
Fig. 11-60



B–E

Voltage Relay	At rest infinity
	Pulled in approx. 100Ω

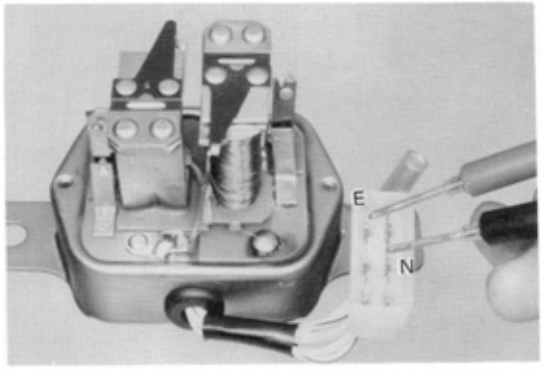
Fig. 11-61



B–L

Voltage Relay	At rest infinity
	Pulled in 0Ω

Fig. 11-62



N–E

approx. 25Ω

MEMO