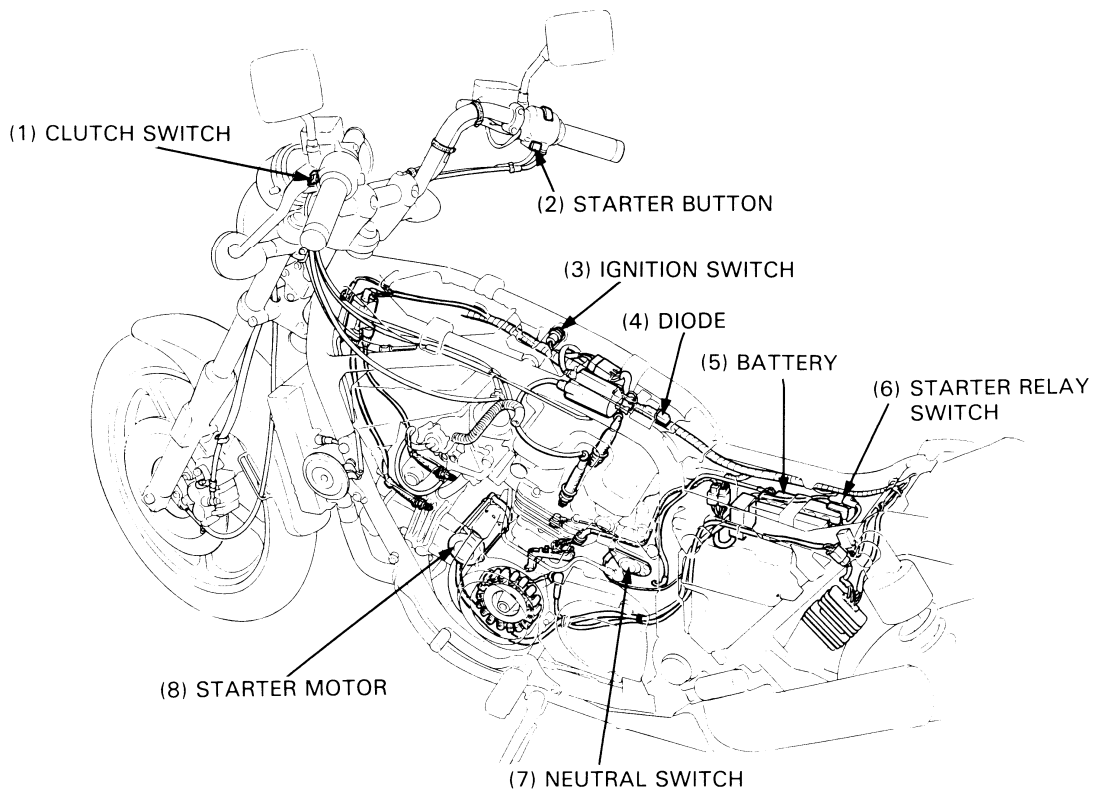
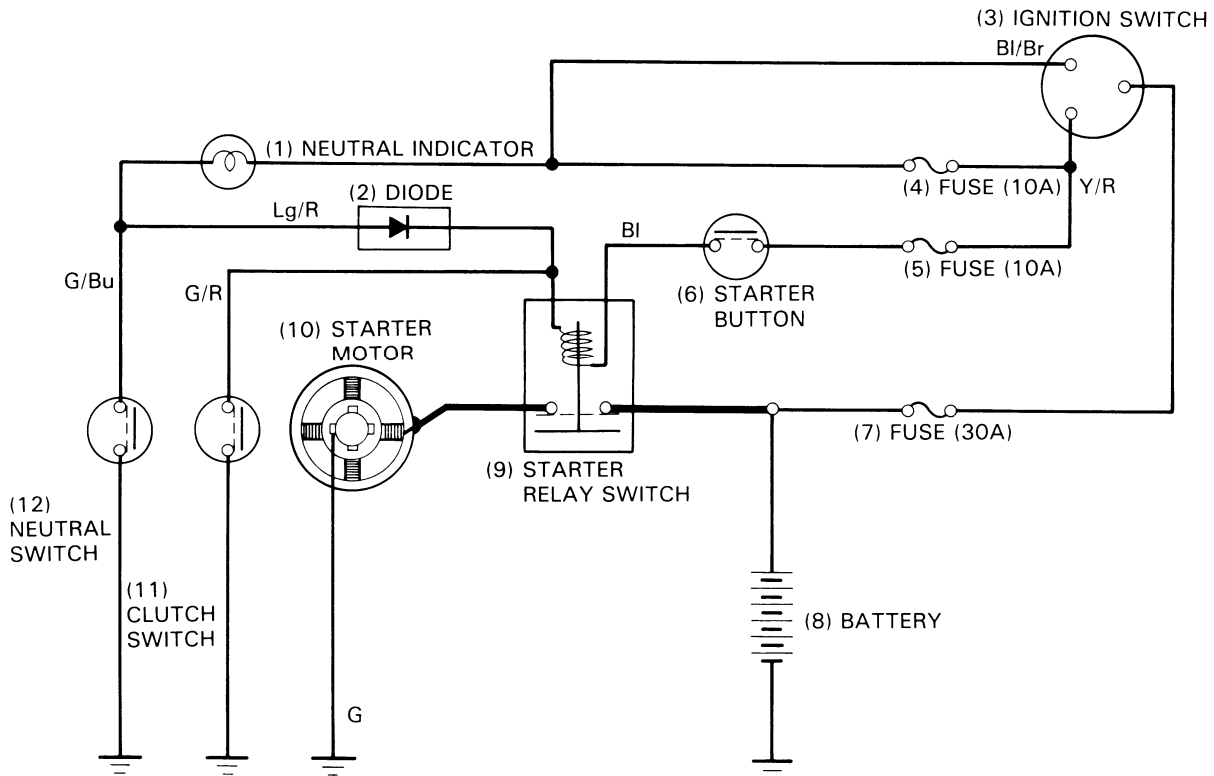


ELECTRIC STARTER



SYSTEM DIAGRAM



18. ELECTRIC STARTER

SERVICE INFORMATION	18-1	STARTER RELAY SWITCH	18-4
TROUBLESHOOTING	18-1	CLUTCH DIODE	18-4
STARTER MOTOR	18-2		

SERVICE INFORMATION

GENERAL

- The starter motor can be removed with the engine in the frame.

SPECIFICATIONS

ITEM		STANDARD	SERVICE LIMIT
Starter Motor	Brush spring tension	720–880 g (25.4–32.5 oz)	520 g (18.4 oz)
	Brush length	12.0–13.0 mm (0.47–0.51 in)	6.5 mm (0.26 in)

TROUBLESHOOTING

Starter motor will not turn

- Battery discharged
- Faulty ignition switch
- Faulty starter switch
- Faulty neutral switch
- Faulty starter relay switch
- Loose or disconnected wire or cable
- Open clutch diode

Starter motor turns engine slowly

- Low specific gravity
- Excessive resistance in circuit
- Binding in starter motor

Starter motor turns, but engine does not turn

- Faulty starter clutch
- Faulty starter motor gears
- Faulty starter motor or idle gear

Starter motor and engine turn, but engine does not start

- Faulty ignition system
- Engine problems
 - Low compression
 - Fouled spark plugs

ELECTRIC STARTER

STARTER MOTOR

REMOVAL

WARNING

- *With the ignition switch OFF, remove the negative cable at the battery before servicing the starter motor.*

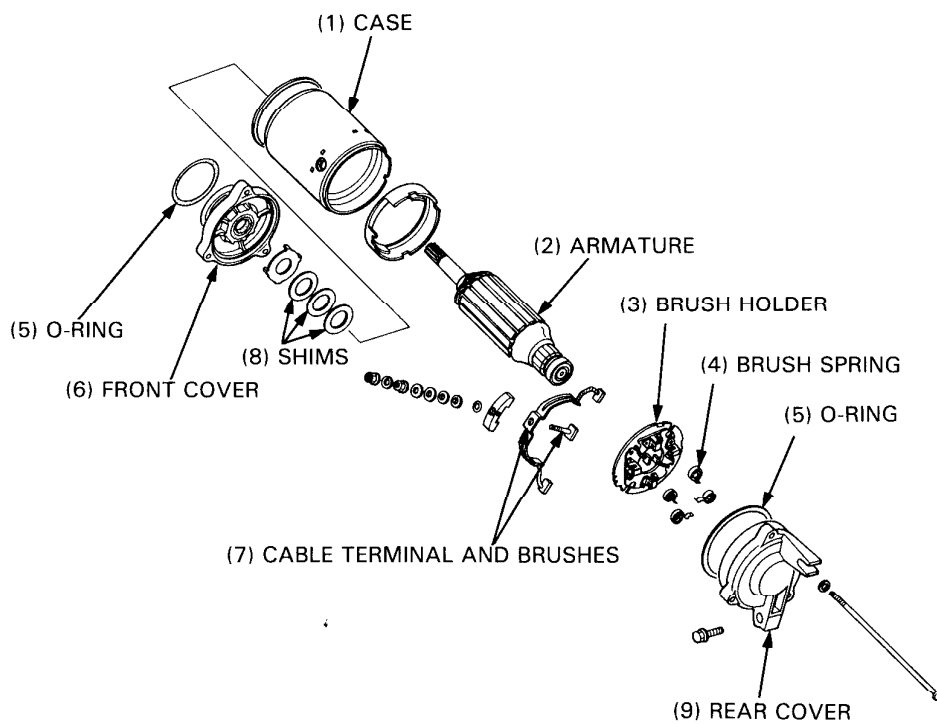
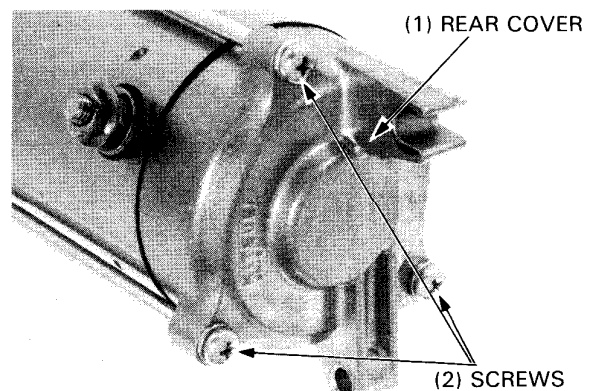
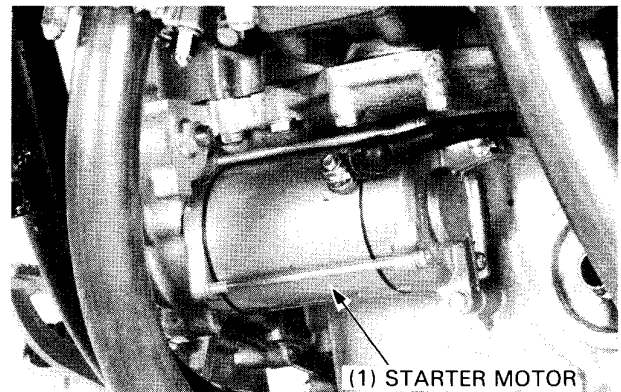
Remove the under cover (page 5-3).
Remove the oil filter (page 2-3).

Disconnect the starter motor cable at the motor.
Remove the starter motor mounting bolts and starter motor.

Remove the screws and rear cover.

NOTE

- The starter motor can be inspected without removing the armature from the case.



INSPECTION

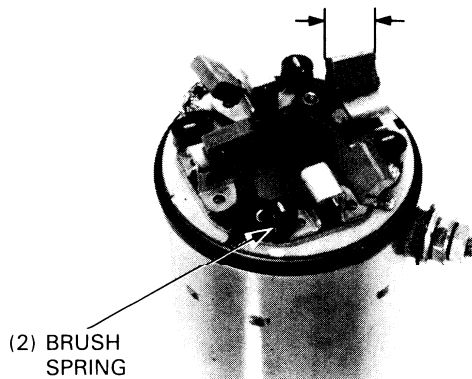
Brush and spring

Inspect the brushes and measure the brush length.
Measure the brush spring tension with a spring scale.

SERVICE LIMITS:

Brush length: 6.5 mm (0.26 in)

Brush spring tension: 520 g (18.4 oz)



Commutator

Remove the armature coils (page 18-3).

NOTE

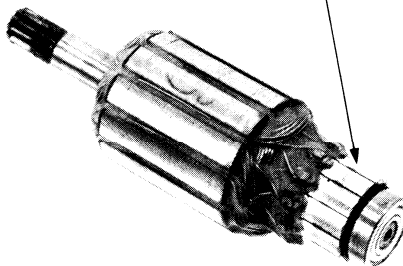
- Record the location and number of thrust washers.

Inspect the commutator bars for discoloration. Bars discolored in pairs indicate grounded armature coils.

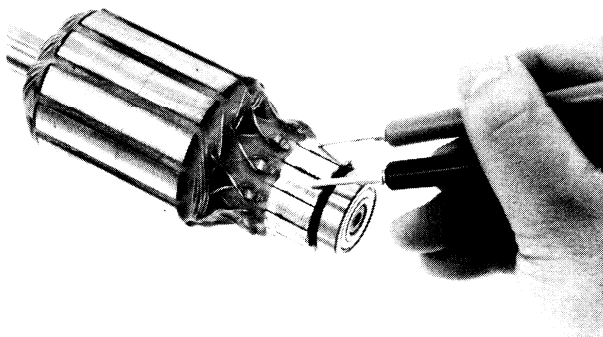
NOTE

- Do not use emery or sand paper on the commutator.

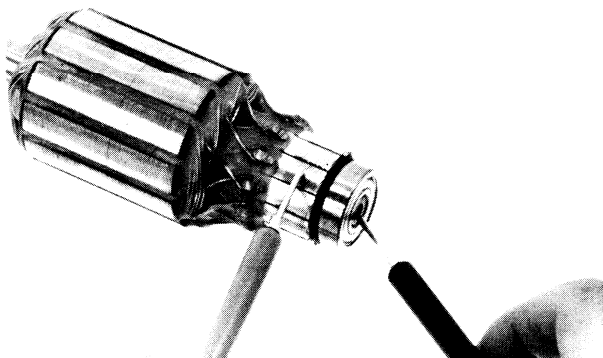
(1) COMMUTATOR



Check for continuity between pairs of commutator bars; there should be continuity.



Also, make a resistance check between individual commutator bars and the armature shaft. There should be no continuity.



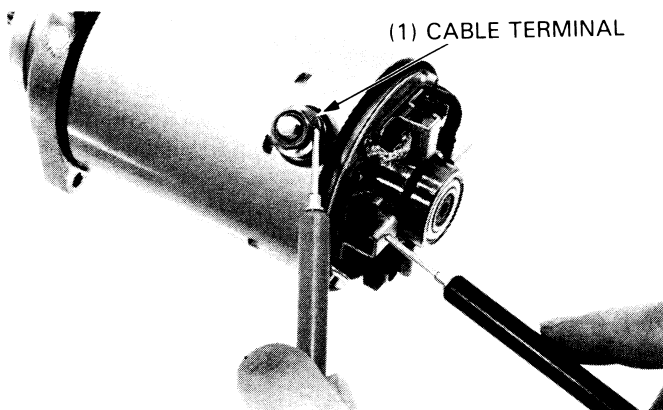
ELECTRIC STARTER

Case

Check for continuity between the cable terminal and the motor case; there should be continuity.

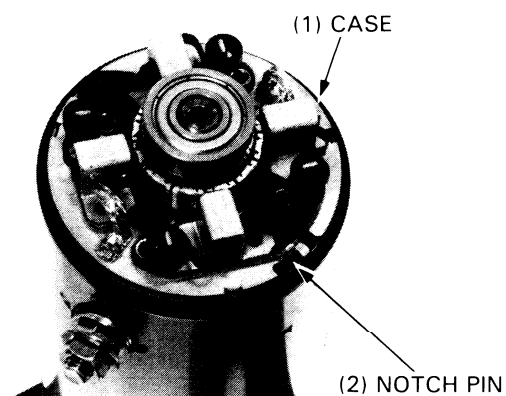
Next check for continuity between the cable terminal and the brushes; there should be continuity.

Replace the starter motor if the field coil does not have continuity or if it is shorted to the motor case.

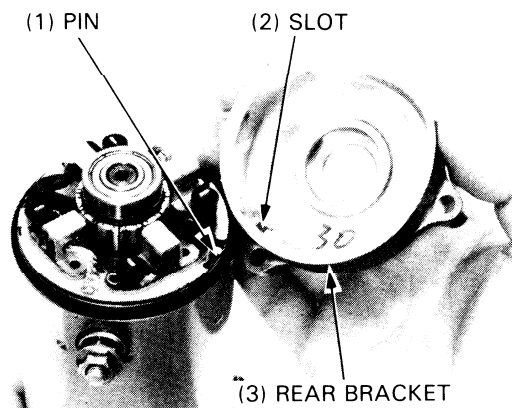


ASSEMBLY/INSTALLATION

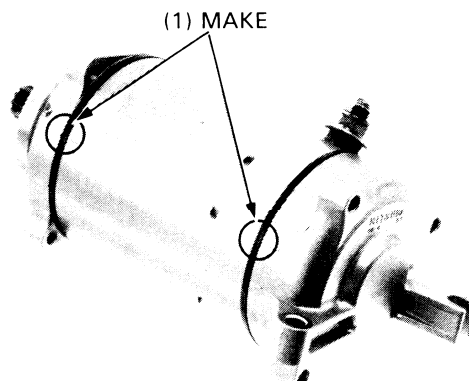
Assemble the starter motor. Align the case notch with the brush holder pin.



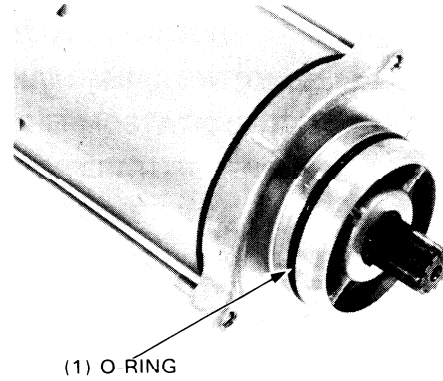
Install the rear cover, aligning its slot with the brush holder pin.



Be sure that the front and rear covers aligned with the marks on the case.



Install the O-ring.
Install the starter motor in the reverse order of removal.



(1) O RING

STARTER RELAY SWITCH

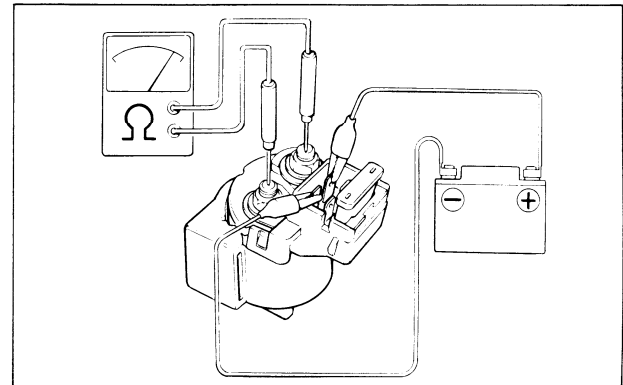
INSPECTION

Shift the transmission into the neutral.
Remove the right side cover.

Depress the starter switch button with the ignition ON.
The coil is normal if the starter relay switch clicks.

Disconnect the connector and cables from the starter relay.

Connect an ohmmeter to the starter cable terminals.
Connect the yellow/red wire terminal to a 12V battery positive (+) terminal, and the green/red wire terminal to the negative (-) terminal using jumper wires.
The relay switch is normal if there is continuity with the battery connected and no continuity with the battery disconnected.

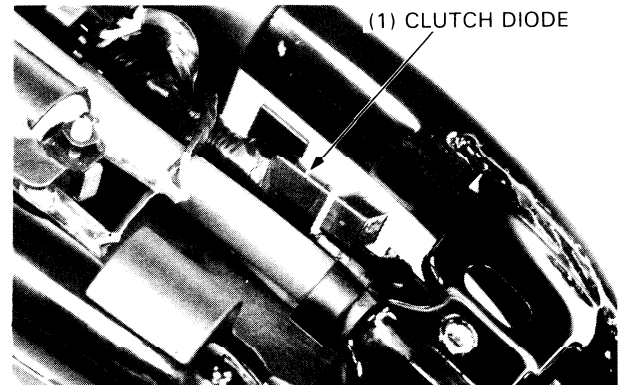


CLUTCH DIODE

REMOVAL

Remove the seats, then remove the fuel tank (page 4-17).

Remove the clutch diode from the wire harness.



(1) CLUTCH DIODE

INSPECTION

Check for continuity with an ohmmeter.

Connect the positive probe to the ⊕ terminal and the negative probe to the ⊖ terminal of the diode.

There should be continuity, then with the probes reversed, there should be no continuity.

NOTE

- The test results shown are for a positive ground ohmmeter and the opposite results will be obtained when a negative ground ohmmeter is used.

(1) NORMAL DIRECTION: CONTINUITY
(2) REVERSE DIRECTION: NO CONTINUITY

