

ELECTRIC STARTER

DEMARREUR ELECTRIQUE

ELEKTRISCHER ANLASSER

- (1) CONTACTEUR D'ALLUMAGE
- (2) INTERRUPTEUR D'ARRET DU MOTEUR
- (3) CONTACTEUR DE DEMARREUR
- (4) DEMARREUR
- (5) BATTERIE
- (6) FUSIBLE AUXILIAIRE
- (7) DIODE D'EMBAYAGE
- (8) RELAIS DE DEMARREUR, FUSIBLE PRINCIPAL
- (9) CONTACTEUR DE POINT MORT
- (10) CONTACTEUR D'EMBAYAGE

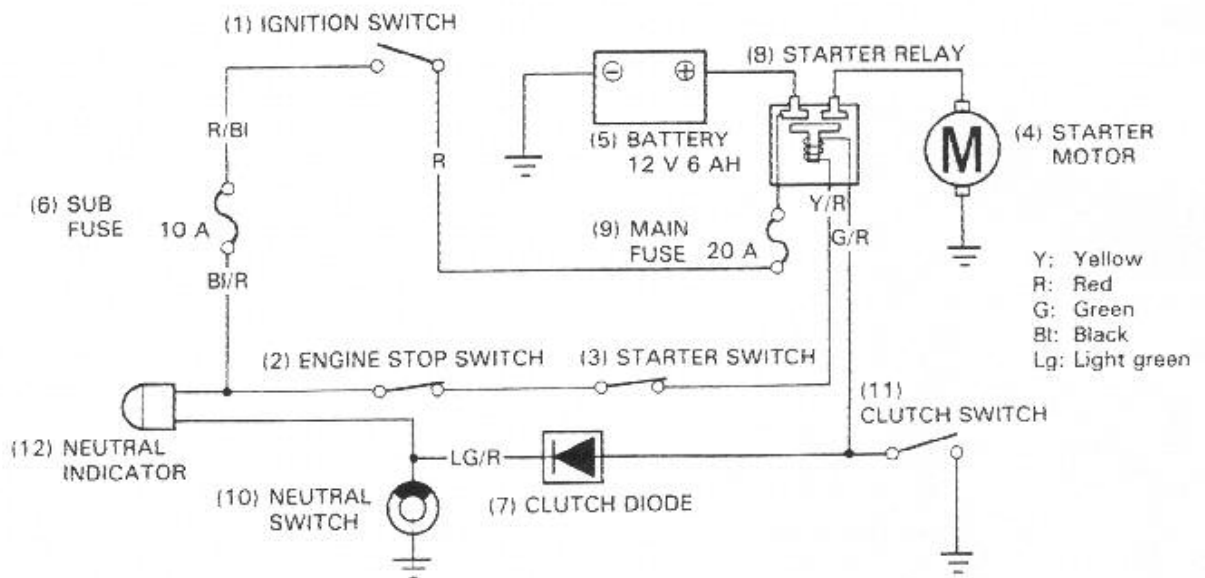
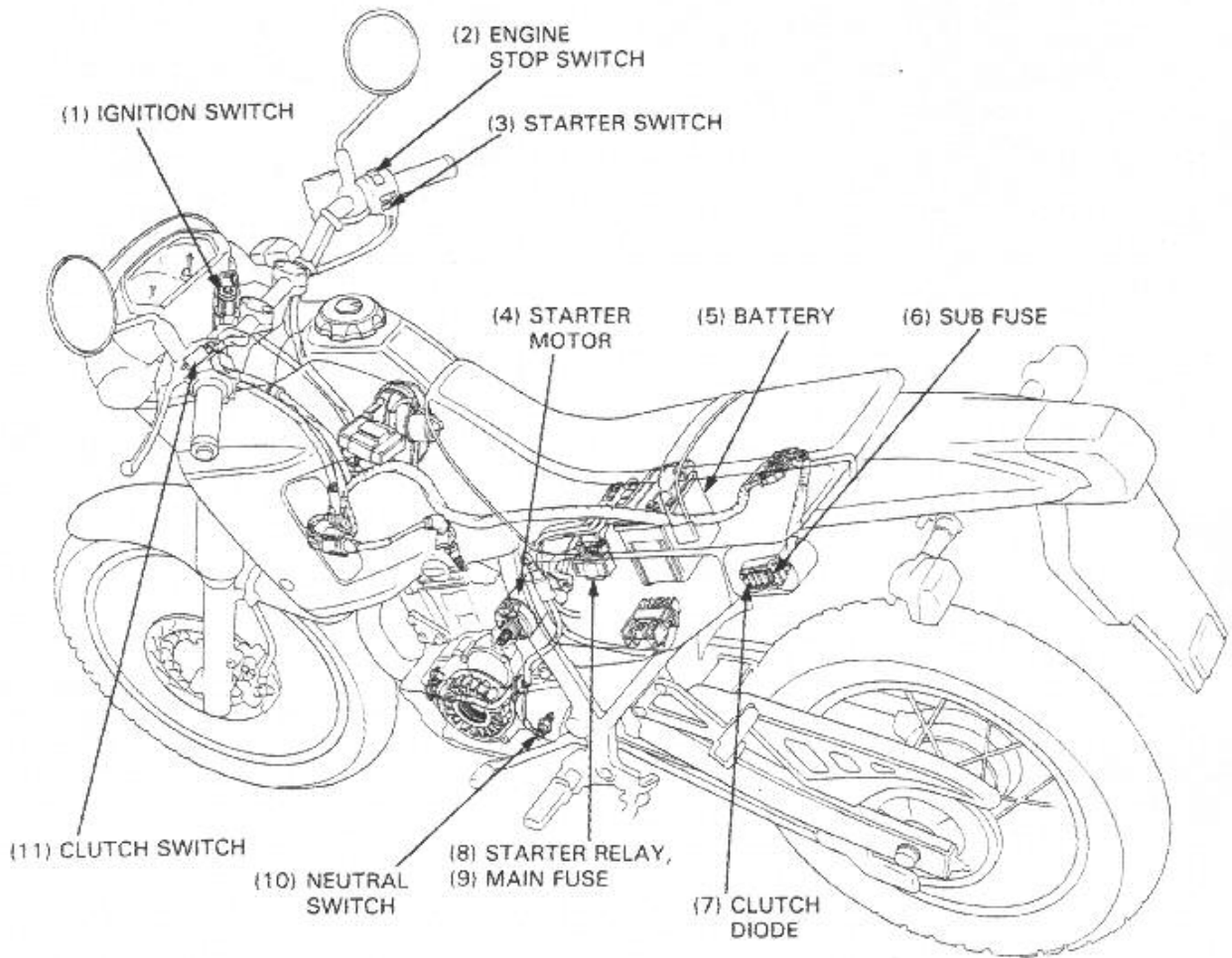
- (1) CONTACTEUR D'ALLUMAGE
- (2) INTERRUPTEUR D'ARRET DU MOTEUR
- (3) CONTACTEUR DE DEMARREUR
- (4) DEMARREUR
- (5) BATTERIE 12 V 6 AH
- (6) FUSIBLE AUXILIAIRE
- (7) DIODE
- (8) RELAIS DE DEMARREUR
- (9) FUSIBLE PRINCIPAL 20 A
- (10) CONTACTEUR DE POINT MORT
- (11) CONTACTEUR D'EMBAYAGE
- (12) TEMOIN DE POINT MORT

Y : Jaune
R : Rouge
G : Vert
Bl : Noir
Lg : Vert clair

- (1) ZÜNDSCHALTER
- (2) MOTORSTOPPSCHALTER
- (3) ANLASSERSCHALTER
- (4) ANLASSER
- (5) BATTERIE
- (6) NEBENSICHERUNG
- (7) KUPPLUNGSDIODE
- (8) ANLASSERRELAIS, HAUPTSICHERUNG
- (9)
- (10) LEERLAUFSCHALTER
- (11) KUPPLUNGSSCHALTER

- (1) ZÜNDSCHALTER
- (2) MOTORSTOPPSCHALTER
- (3) ANLASSERSCHALTER
- (4) ANLASSER
- (5) BATTERIE 12 V 6 AH
- (6) NEBENSICHERUNG 10 A
- (7) DIODE
- (8) ANLASSERRELAIS
- (9) HAUPTSICHERUNG 20 A
- (10) LEERLAUFSCHALTER
- (11) KUPPLUNGSSCHALTER
- (12) LEERLAUFANZEIGE

Y : Gelb
R : Rot
G : Grün
Bl : Schwarz
Lg : Hellgrün



ELECTRIC STARTER

SERVICE INFORMATION	18-1	STARTER MOTOR	18-3
TROUBLESHOOTING	18-2	STARTER RELAY SWITCH	18-6

SERVICE INFORMATION

GENERAL

- The starter motor can be removed with the engine in the frame.
- For the starter reduction gear removal/installation, see section 8.

SPECIFICATIONS

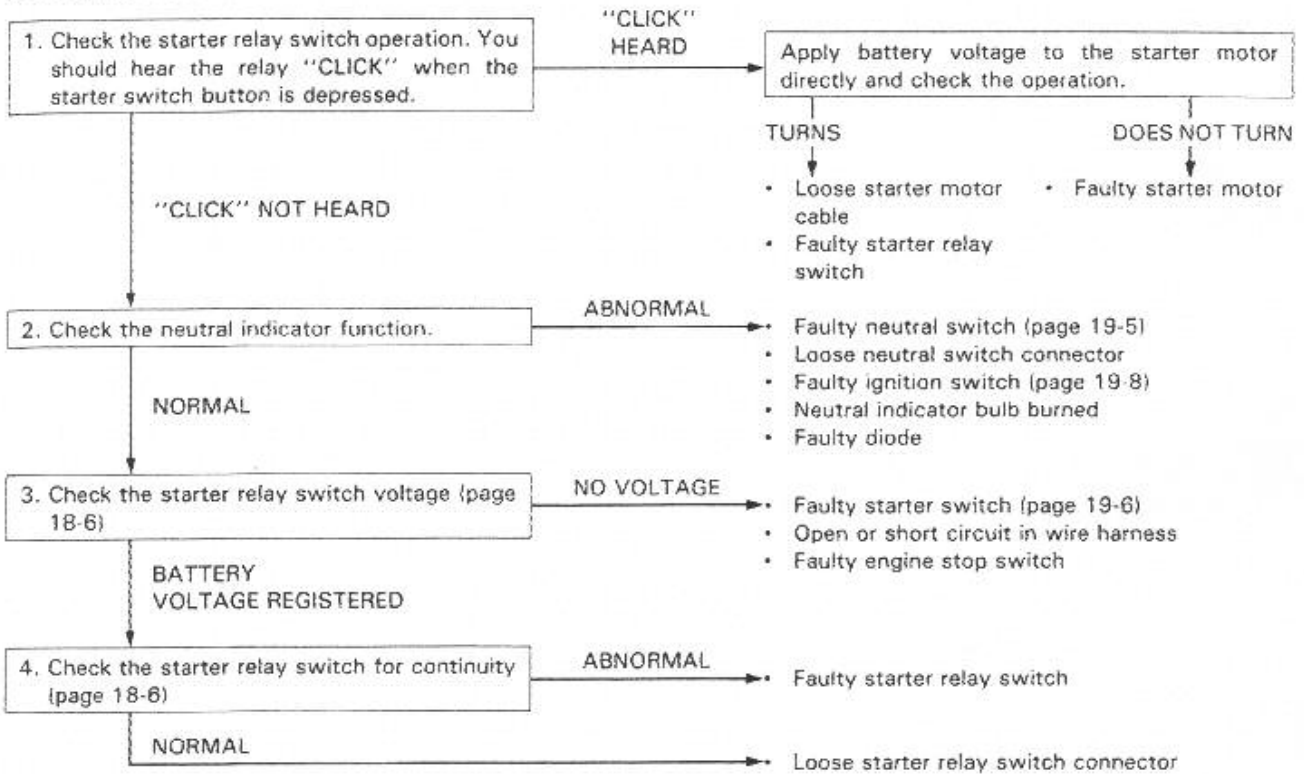
ITEM	STANDARD	SERVICE LIMIT
Starter motor brush length	12.5 mm (0.49 in)	8.5 mm (0.33 in)

TROUBLESHOOTING

NOTE

- The starter motor could turn when the transmission is in neutral.
- Check the following items before troubleshooting the system.
 - Burned fuse.
 - Battery and starter motor cables for loose connection.
 - Battery discharged.

Starter motor does not turn



Starter motor turns engine slowly

- Battery undercharged
- Excessive resistance in circuit
- Binding in starter motor

Starter motor turns, but engine does not turn

- Faulty starter clutch
- Faulty starter reduction gears

Starter motor and engine turns, 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 following:

- exhaust pipe (page 15-1).
- cam chain tensioner (page 9-3).

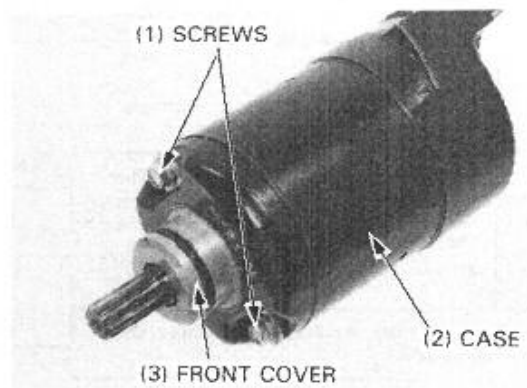
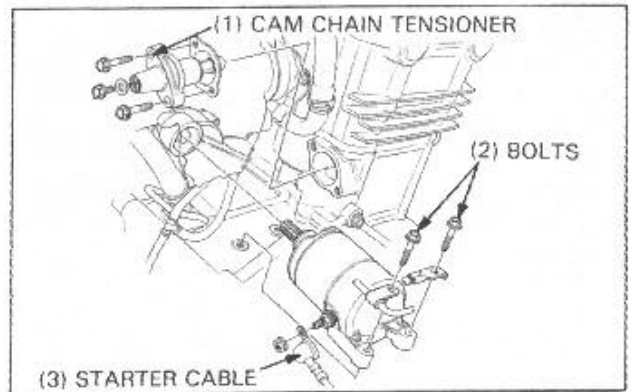
Disconnect the starter cable from the starter motor.
Remove the two mounting bolts and the starter motor.

DISASSEMBLY

Remove the two starter motor case screws and remove the front cover, motor case and armature coil.

NOTE

- Record the number and location of shims for correct assembly.



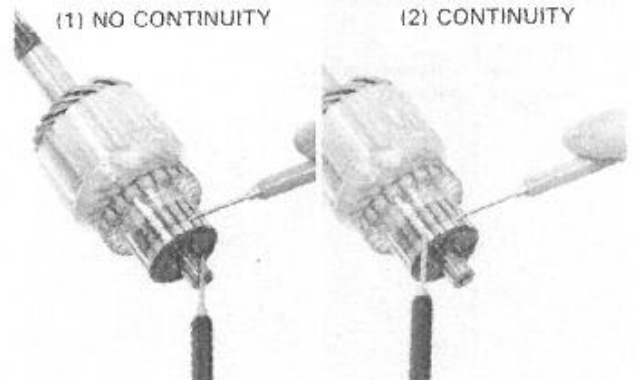
INSPECTION

Inspect the commutator bars for discoloration. Bars discolored in pairs indicate grounded armature coils, in which case the starter motor must be replaced.



Check for continuity between individual commutator bars and the armature shaft; there should be no continuity.

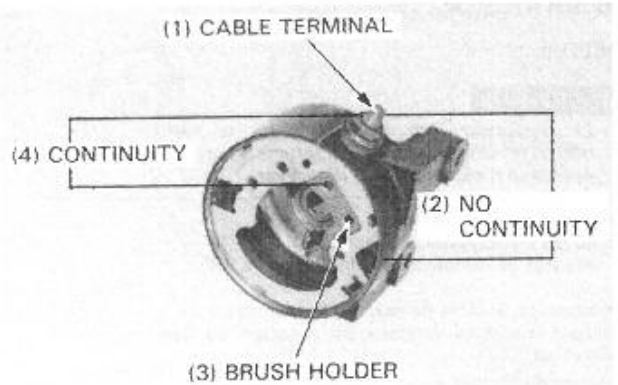
Also, check for continuity between pair of commutator bars; there should be continuity.



ELECTRIC STARTER

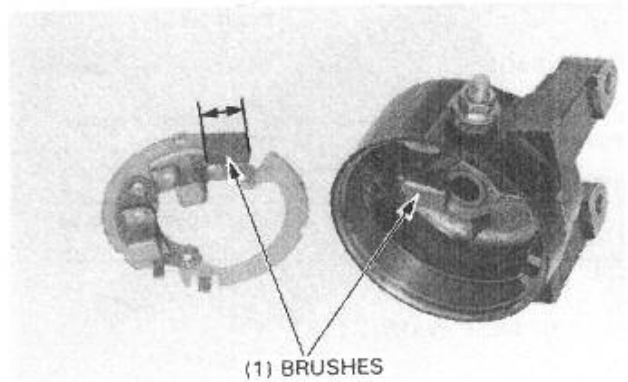
Check for continuity between the cable terminal and the brush wire (the indigo colored wire or the insulated brush holder). There should be continuity.

Check for continuity between the rear cover and the brush wire (the indigo colored wire or the insulated brush holder). There should be no continuity.

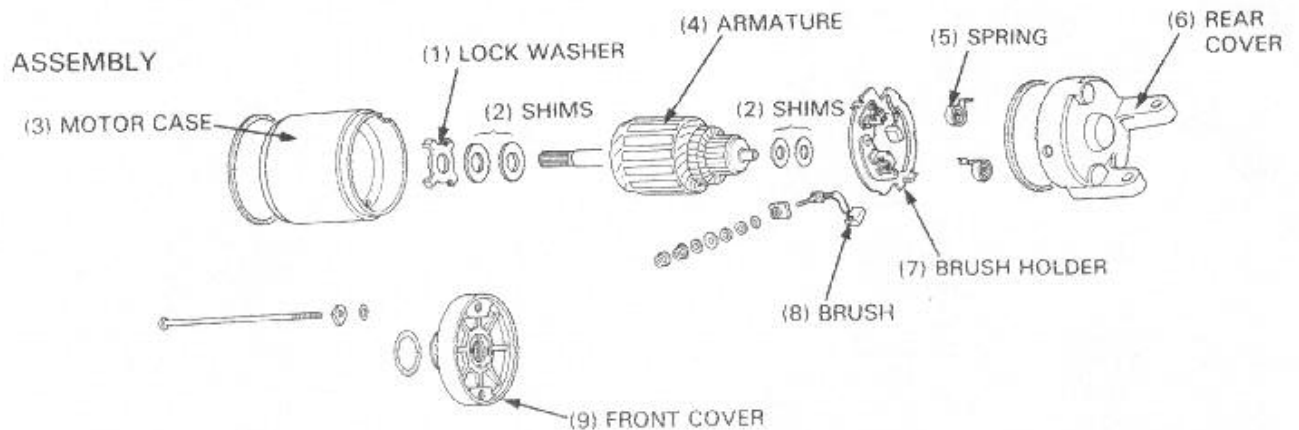
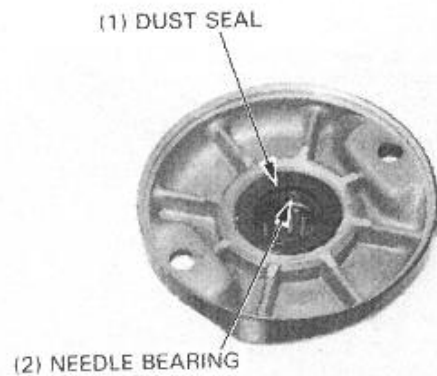


Disassemble the rear cover.
Inspect the brushes for damage and measure the brush length.

SERVICE LIMIT: 8.5 mm (0.33 in)



Check the needle bearing of the front cover for smooth rotation.
Check the dust seal for wear or damage.



ELECTRIC STARTER

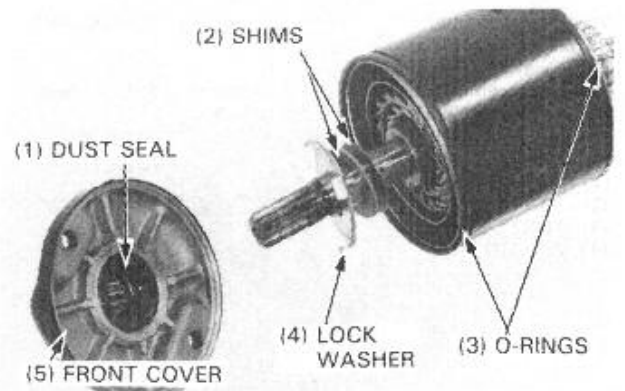
Install a new O-ring onto the starter motor case and insert the armature in the case as shown.

Apply grease to the front cover dust seal.

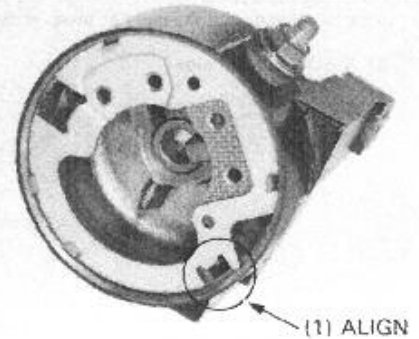
Install the lock washer and shims to the shaft then install the front cover.

NOTE

- Install the shims in the correct positions as recorded.
- Do not damage the front cover dust seal at installation.



Install the brushes in the brush holder then install the holder assembly to the rear cover, aligning the tab of the holder with the groove of the rear cover.

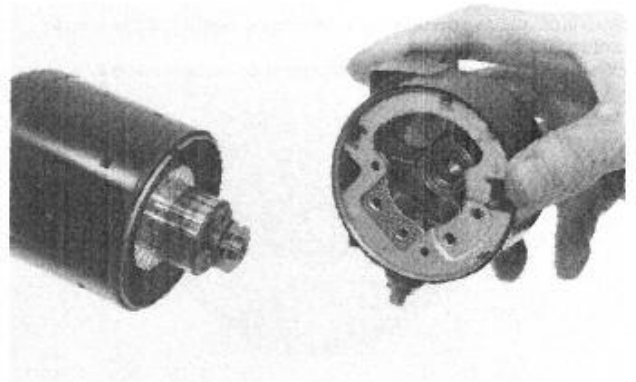


Install the shims to the shaft of the armature coil.

NOTE

- Install the shims in the correct positions as recorded.

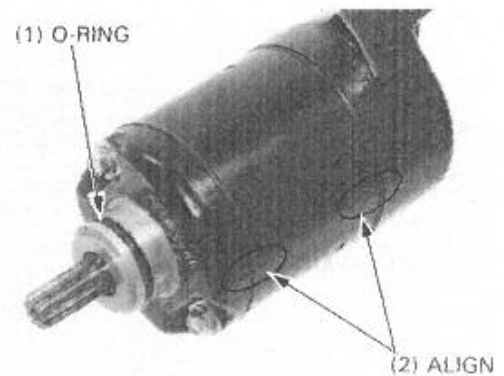
Install the rear cover to the armature, aligning the pin with the groove in the case.



Align the index marks of the front cover, motor case and rear cover.

Install the screws securely.

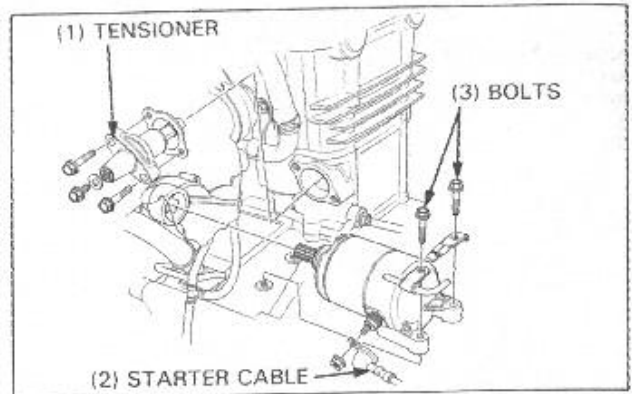
Apply oil to the O-ring and install it on the front cover.



ELECTRIC STARTER

INSTALLATION

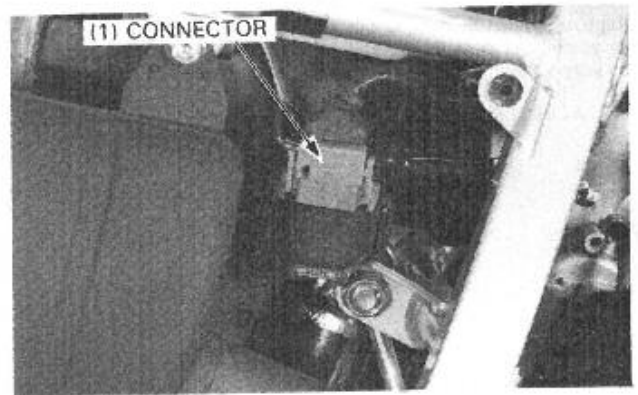
Install the starter motor with the two mounting bolts.
Connect the starter cable to the motor.
Install the cam chain tensioner.
Connect the negative cable to the battery.



STARTER RELAY SWITCH

INSPECTION

Shift the transmission into the neutral.
Disconnect the connector from the starter relay.
Measure the voltage between the yellow/red and green/red wire terminals of the connector at the harness side.
Turn the ignition switch "ON" and the engine stop switch to "RUN".
There should be battery voltage while the starter switch is depressed.
If there is no voltage, check for loose contact of the neutral switch, sub fuse and connector, or an open circuit in the wire harness.



Connect an ohmmeter to the starter relay switch terminals.
Connect a 12 V battery to the switch connector terminals with the positive wire to the yellow/red wire terminal and the negative wire to the green/red wire terminal. The switch is normal if there is continuity.

