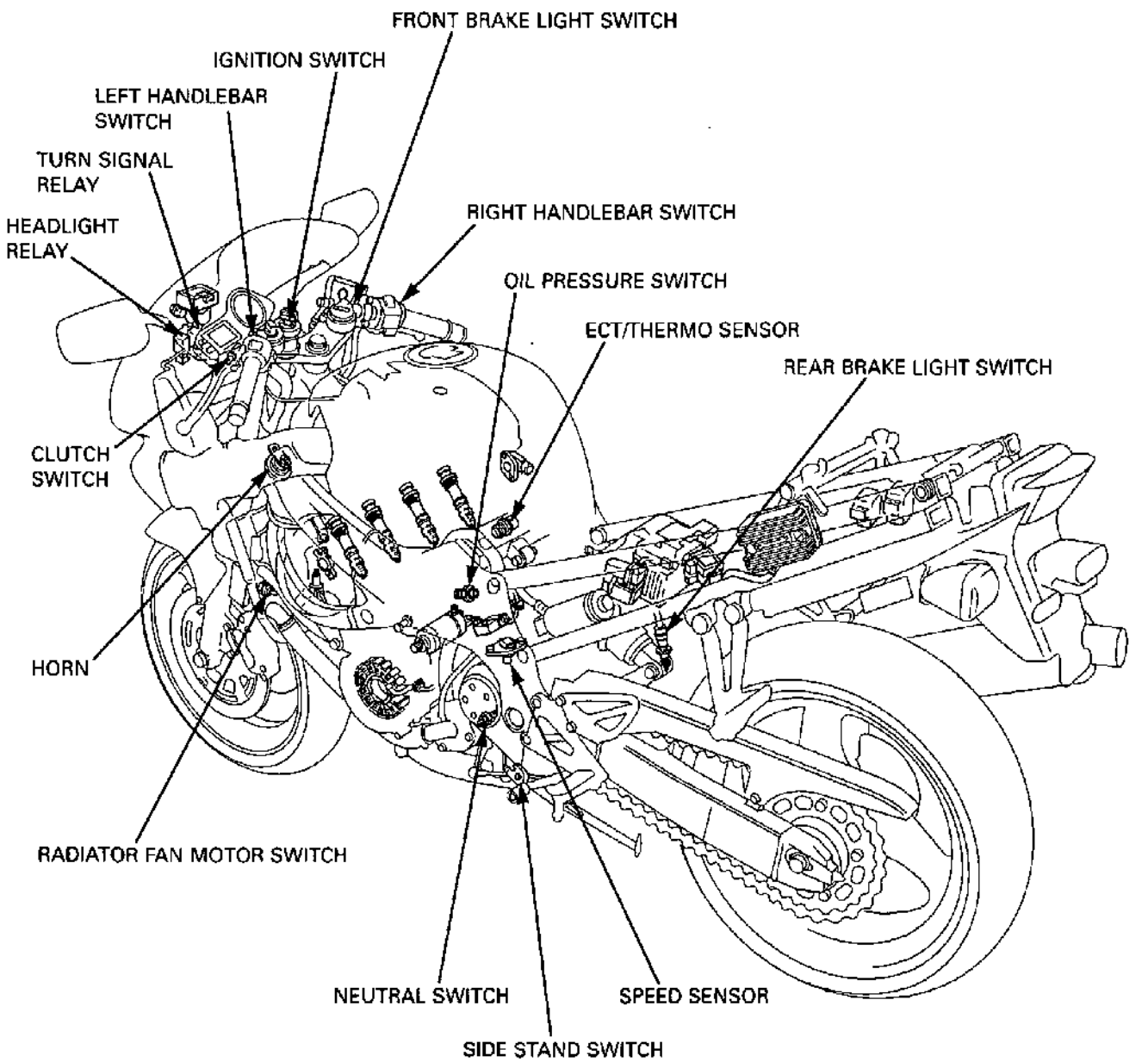
SYSTEM LOCATION



19. LIGHTS/METERS/SWITCHES

SERVICE INFORMATION

GENERAL

NOTICE

A halogen headlight bulb becomes very hot while the headlight is on, and remains hot for a while after it is turned off. Be sure to let it cool down before servicing.

- Use an electric heating element to heat the coolant for the fan motor switch inspection. Keep flammable materials away from the electric heating element. Wear protective clothing, insulated gloves and eye protection.
- Note the following when replacing the halogen headlight bulb.
  - Wear clean gloves while replacing the bulb. Do not put finger prints on the headlight bulb, as they may create hot spots on the bulb and cause it to fail.
  - If you touch the bulb with your bare hands, clean it with a cloth moistened with alcohol to prevent its early failure.
  - Be sure to install the dust cover after replacing the bulb.
- Check the battery condition before performing any inspection that requires proper battery voltage.
- A continuity test can be made with the switches installed on the motorcycle.
- The following color codes are used throughout this section.

Bu = Blue	G = Green	Lg = Light Green	R = Red
Bl = Black	Gr = Gray	O = Orange	W = White
Br = Brown	Lb = Light Blue	P = Pink	Y = Yellow

SPECIFICATIONS

ITEM			SPECIFICATIONS
Bulbs	Headlight	Hi	12V – 55 W
		Lo	12V – 55 W
	Brake/tail light		12V – 21/5 W x 2
	Front turn signal/running light		12V – 32/3 CP (23/8 W) x 2
	Rear turn signal light		12V – 32 CP (23 W) x 2
	License light		12V – 4 CP (5 W)
	Instrument light		LED
	Turn signal indicator		LED
	High beam indicator		LED
	Neutral indicator		LED
	Oil pressure indicator		LED
	PGM-FI warning indicator		LED
	Low fuel indicator		LED
Fuse	Main fuse		30 A
	PGM-FI fuse		20 A
	Sub fuse	'01 – '03:	10 A x 6
		After '03:	20 A x 1, 10 A x 5
Tachometer peak voltage			10.5 V minimum
Fan motor switch	Start to close (ON)		98 – 102 °C (208 – 216 °F)
	Stop to open		93 – 97 °C (199 – 207 °F)

TORQUE VALUES

Coolant temperature/ECT sensor	23 N·m (2.3 kgf·m, 17 lbf·ft)	
Side stand switch bolt	10 N·m (1.0 kgf·m, 7 lbf·ft)	ALOC bolt; replace with a new one.
Ignition switch mounting bolt	25 N·m (2.5 kgf·m, 18 lbf·ft)	
Fan motor switch	18 N·m (1.8 kgf·m, 13 lbf·ft)	Apply sealant to the threads.
Oil pressure switch	12 N·m (1.2 kgf·m, 9 lbf·ft)	Apply sealant to the threads.
Oil pressure switch wire terminal bolt/washer	2 N·m (0.2 kgf·m, 1.4 lbf·ft)	
Neutral switch	12 N·m (1.2 kgf·m, 9 lbf·ft)	

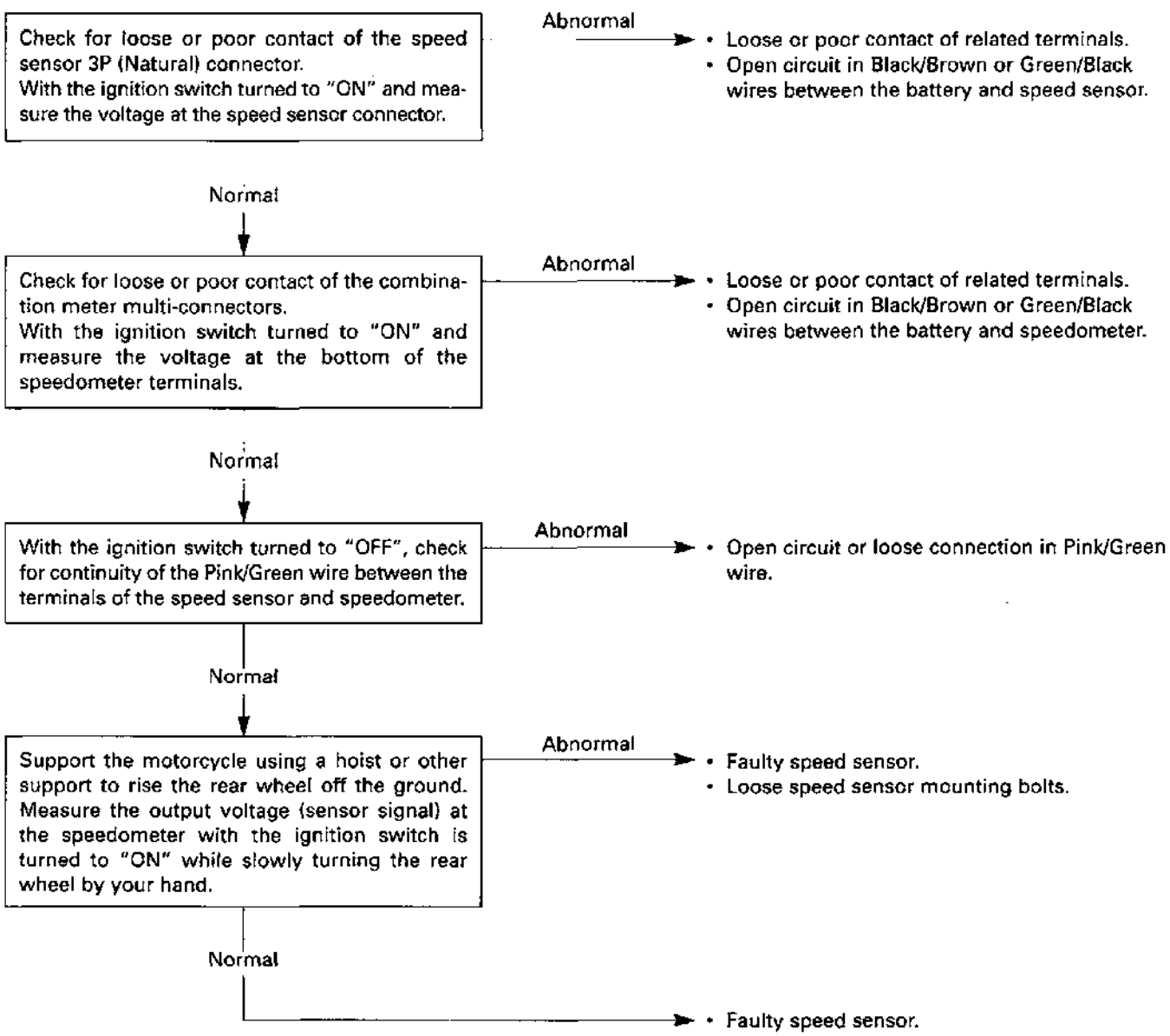
TROUBLESHOOTING

SPEED SENSOR/SPEEDOMETER

The odometer/trip meter operate normally, but the speedometer does not operate
- Faulty speedometer

The speedometer operate normally, but the odometer/trip meter does not operate
- Faulty odometer/trip meter

The speedometer operate is abnormal
- Check for the following before diagnosing.
  - Blown main or sub fuses
  - Loose or corroded terminals of the connectors
  - Discharged battery



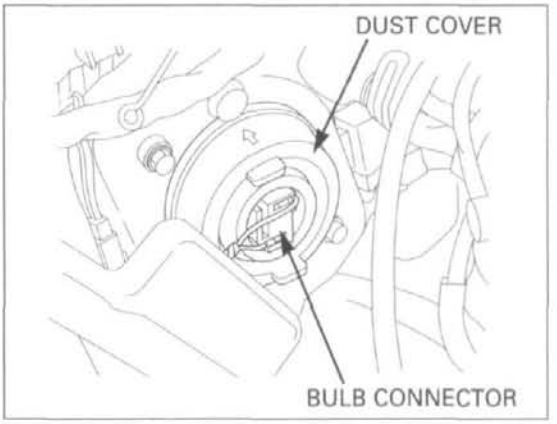
HEADLIGHT

BULB REPLACEMENT

Remove the air duct cover (page 2-9).

Release the resonator chamber from the hook arm.

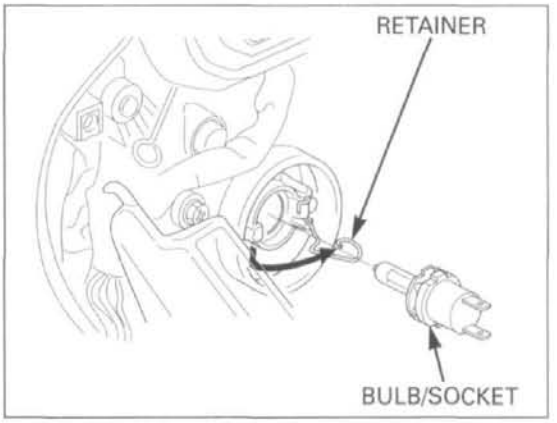
Disconnect the headlight bulb connectors.
Remove the dust cover.



Avoid touching the halogen headlight bulb. Finger prints can create hot spots that cause a bulb to break.

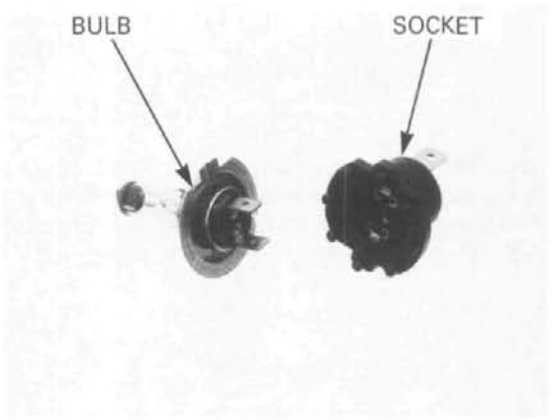
Unhook the bulb retainer and remove the headlight bulb/socket.

If you touch the bulb with your bare hands, clean it with cloth moistened with denatured alcohol to prevent early bulb failure.

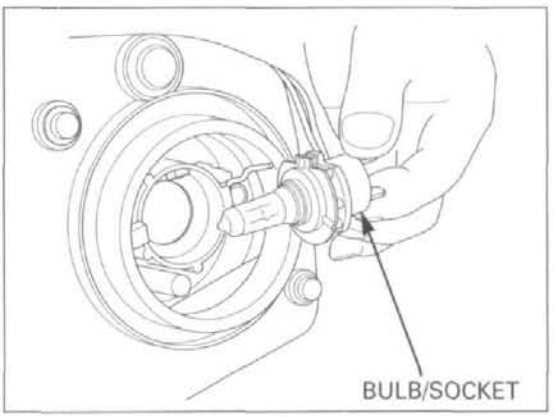


Remove the headlight bulb from the socket.

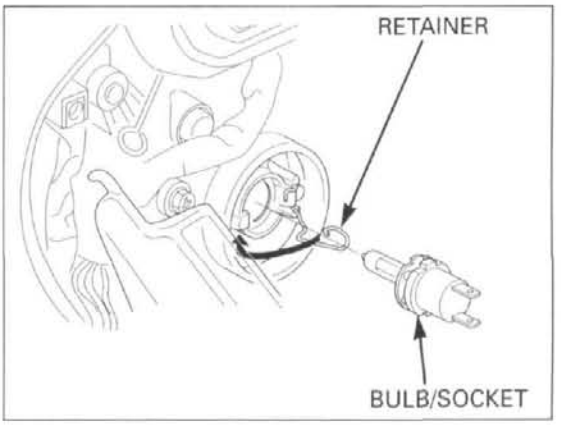
Install a new bulb into the socket.



Install the new headlight bulb/socket aligning its tabs with the groove in the headlight unit.

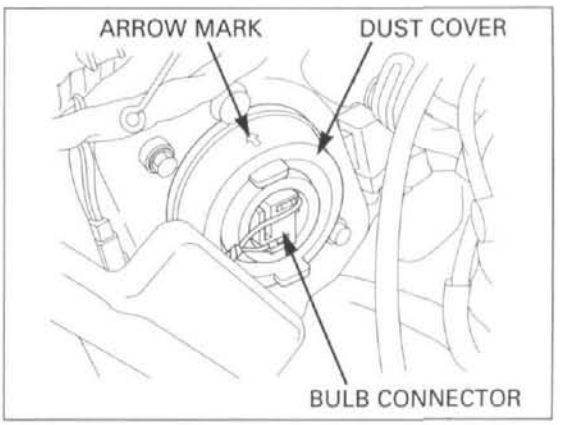


Hook the bulb retainer into the headlight unit groove.



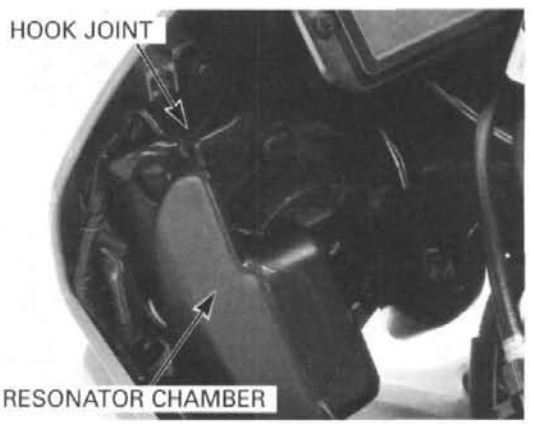
Install the dust cover tightly against the headlight unit with its arrow mark facing up.

Connect the headlight connectors.



Hook the resonator chamber to the hook joint.

Install the air duct cover (page 2-14).

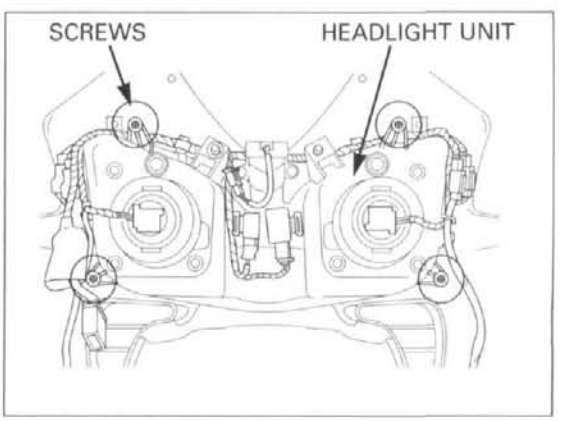


REMOVAL/INSTALLATION

Remove the upper cowl (page 2-7).

Disconnect the turn signal/running light connectors. Remove the four screws and headlight unit.

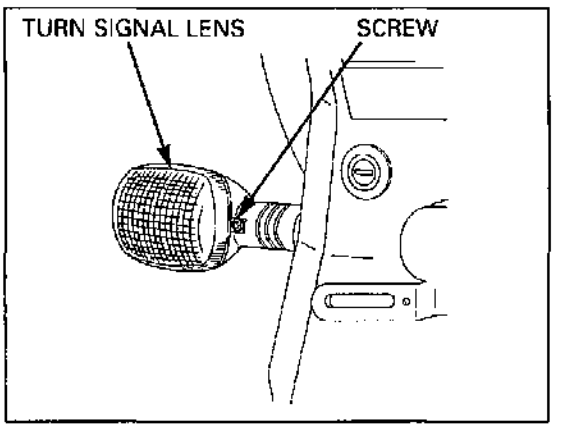
Install the headlight unit in the reverse order of removal.



TURN SIGNAL

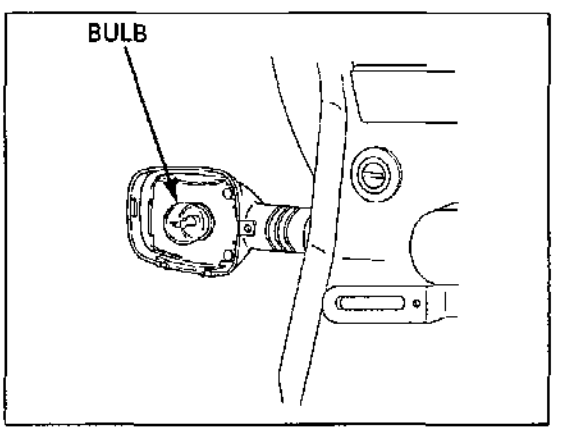
BULB REPLACEMENT

Remove the screw and turn signal lens.



While pushing in the bulb, turn it counterclockwise, remove it and replace with a new one.

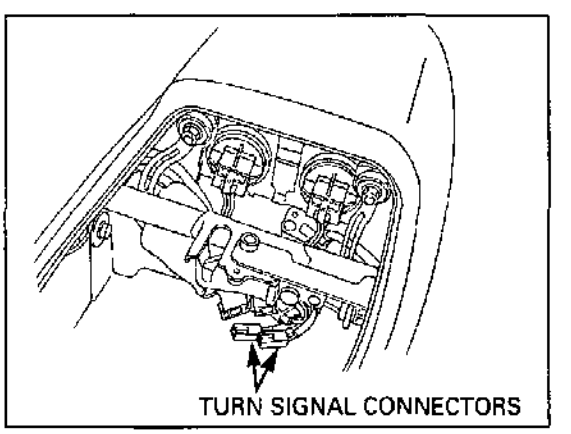
Install the turn signal lens in the reverse order of removal.



REMOVAL/INSTALLATION

For front turn signal unit removal, see upper cowl removal (page 2-9).
For rear turn signal removal, remove the seat/rear cowl (page 2-2)

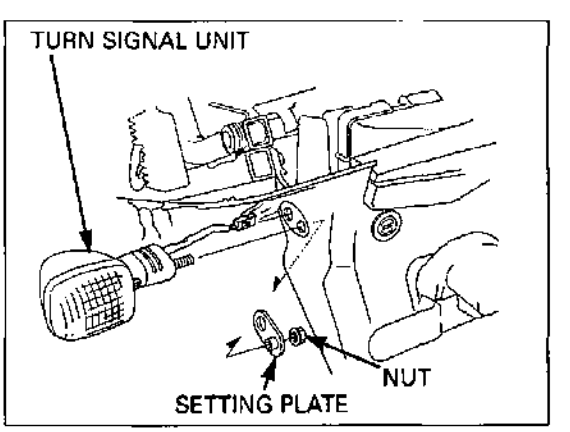
Disconnect the turn signal connector.



Remove the turn signal mounting nut.
Release the turn signal wire and remove the turn signal unit.

Route the turn signal wire properly (page 1-24).

Install the turn signal unit in the reverse order of removal.



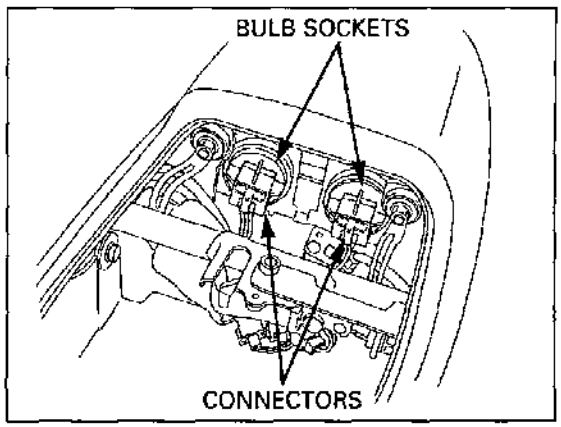
TAIL/BRAKE LIGHT

BULB REPLACEMENT

'01 – '03: Remove the pillion seat (page 2-3).

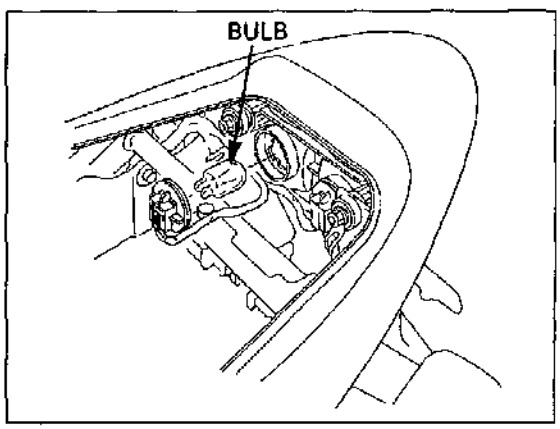
After'03: Remove the seat (page 2-2).

Disconnect the tail/brake light connectors.
Turn the bulb socket counterclockwise, then remove the bulb socket.



While pushing in the bulb, turn them counterclockwise, remove them and replace with new ones.

Install the tail/brake light sockets in the reverse order of removal.

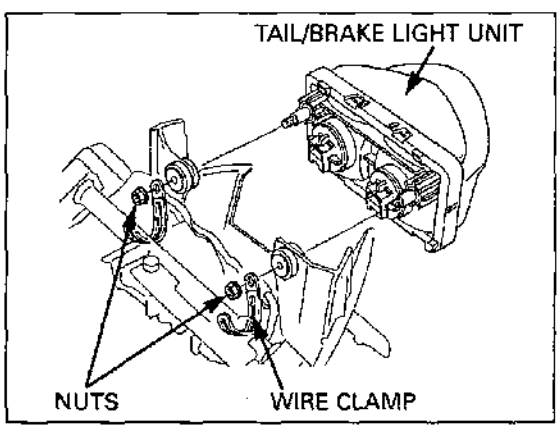


REMOVAL/INSTALLATION

'01 – '03: Remove the rear cowl (page 2-3).

Remove the two nuts, wire clamps and tail/brake light unit.

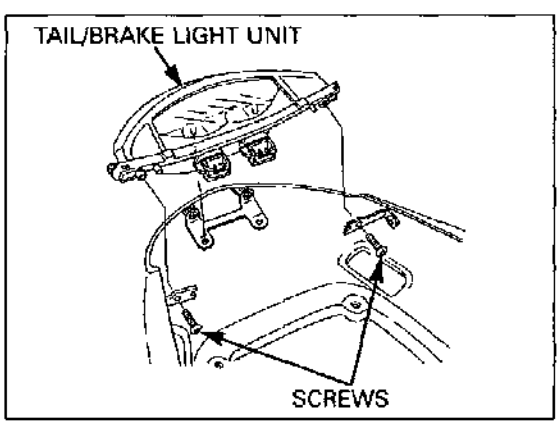
Installation is in the reverse order of removal.



After '03: Remove the rear cowl (page 2-5).

Remove the two screws and tail/brake light unit.

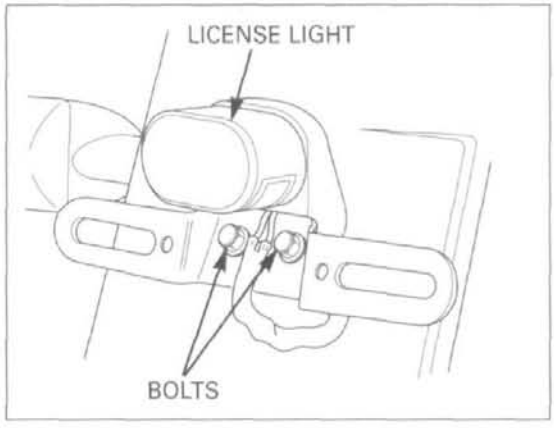
Installation is in the reverse order of removal.



LICENSE LIGHT

BULB REPLACEMENT

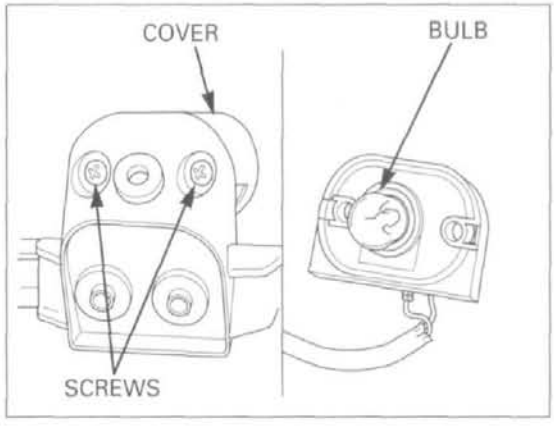
Remove the license light bracket bolts and the license light assembly.



Remove the screws, license light cover and lens.

While pushing in the bulb, turn it counterclockwise, remove it and replace with a new one.

Install the license light assembly in the reverse order of removal.

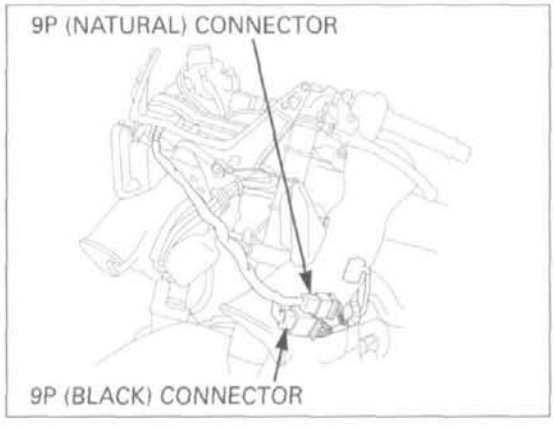


COMBINATION METER

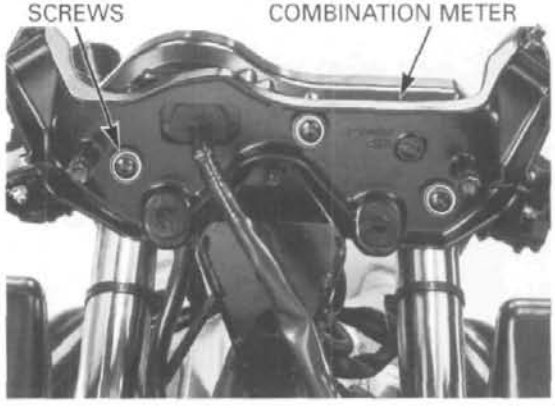
REMOVAL

Remove the upper cowl (page 2-9).

Disconnect the combination meter 9P (Natural) and 9P (Black) connectors.

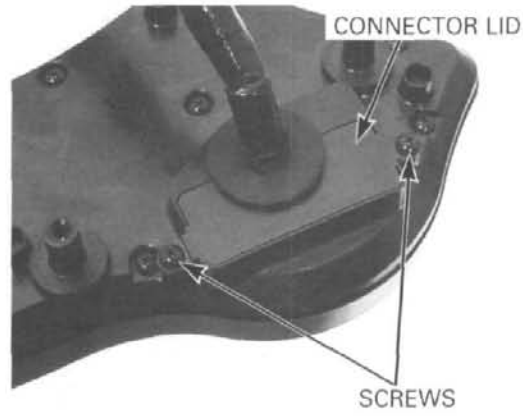


Remove the combination meter mounting screws and combination meter.

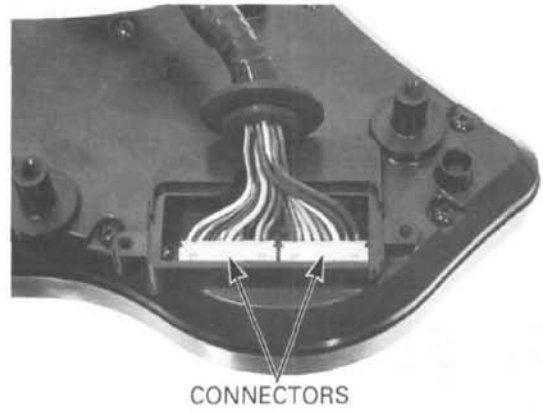


DISASSEMBLY

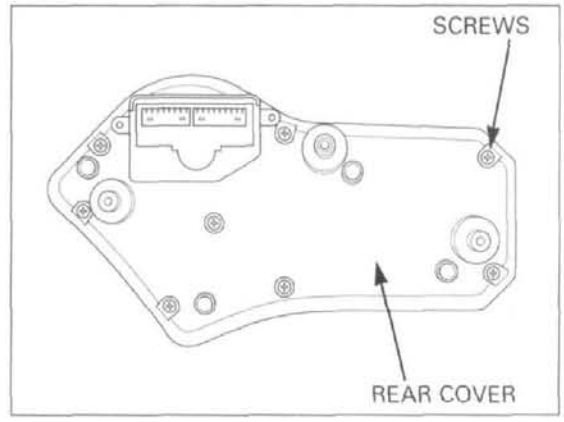
Remove the screws and combination meter harness connector lid.



Disconnect the combination meter sub-harness connectors.



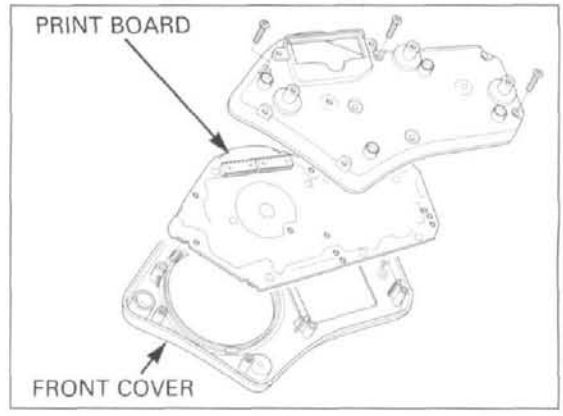
Remove the screws and combination meter rear cover.



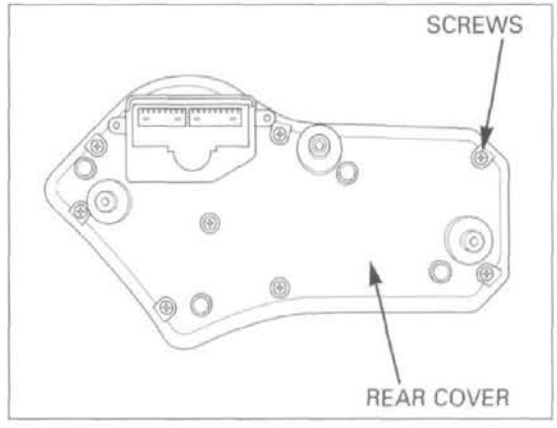
Remove the combination meter print board assembly from the front cover.

ASSEMBLY

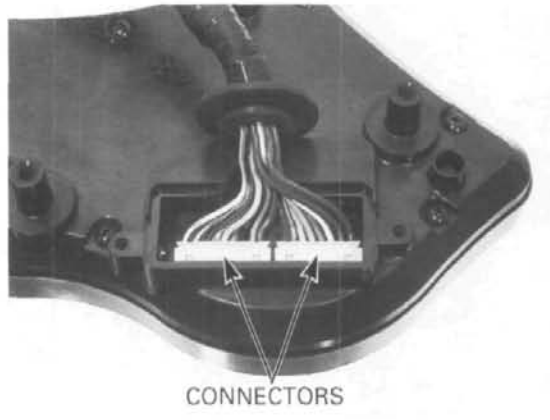
Install the print board assembly into the front cover.



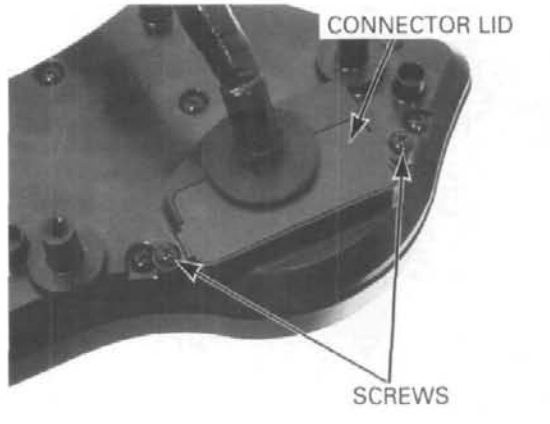
Install the rear cover and tighten the screws securely.



Connect the combination meter sub-harness to the print board.



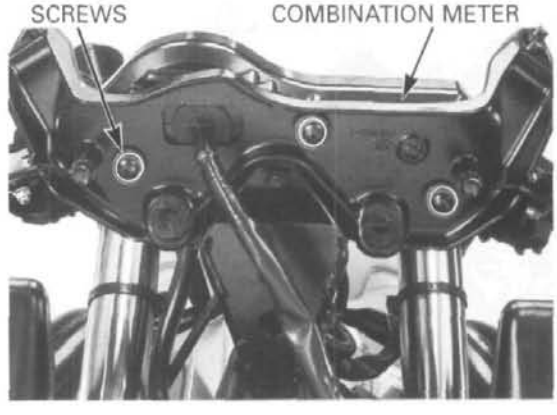
Install the harness connector lid while installing the grommet into the grooves of the rear cover and harness lid.



INSTALLATION

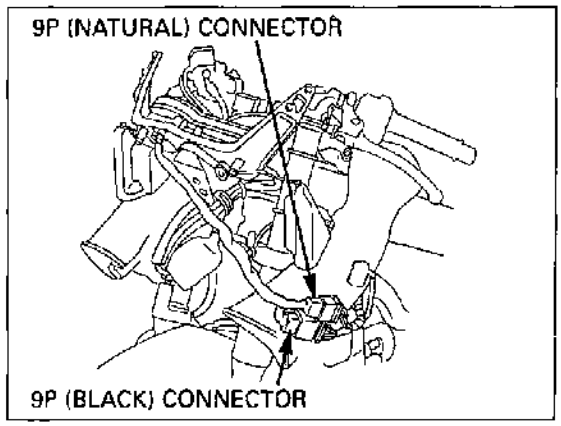
Install the combination meter onto the bracket aligning the bosses with the grommets on the bracket.

Install and tighten the mounting screws.



Connect the combination meter 9P (Natural) and 9P (Black) connectors.

Install the upper cowl (page 2-12).



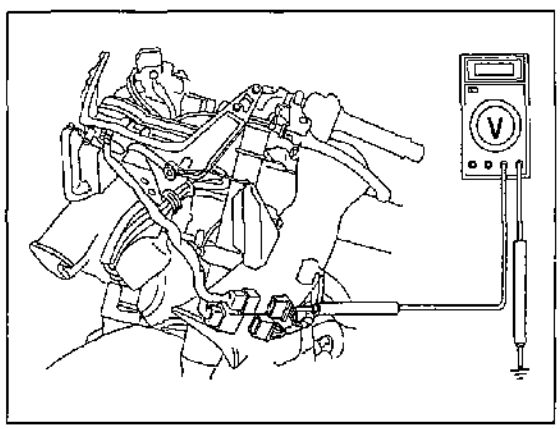
POWER/GROUND LINE INSPECTION

Disconnect the combination meter multi-connector.
Check the following at the wire harness side connector terminals of the combination meter.

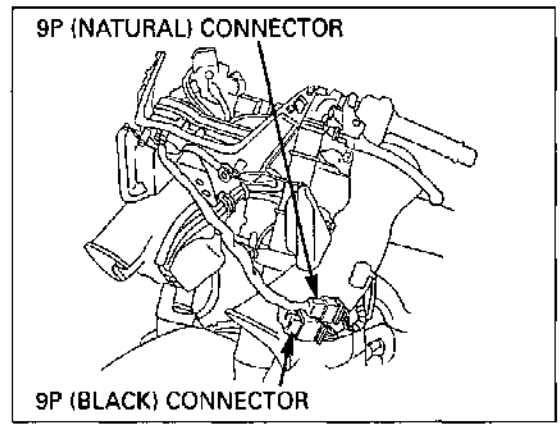
Power input line
Measure the voltage between the Black/Brown wire terminal (+) and Ground (–).
There should be battery voltage with the ignition switch turned to "ON".
If there is no voltage, check for an open circuit in Black/Brown wire.

Back-up voltage line
Measure the voltage between the Red/Green wire terminal (+) and Ground (–).
There should be battery voltage at all times.
If there is no voltage, check for an open circuit in Red/Green wire.

Sensor ground line
Measure the voltage between the Green/Black wire terminal (+) and Ground (–).
There should be battery voltage at all times.
If there is no voltage, check for an open circuit in Green/Black wire.



SPEEDOMETER/VEHICLE SPEED SENSOR



SYSTEM INSPECTION

Check that the tachometer and coolant temperature meter function properly.

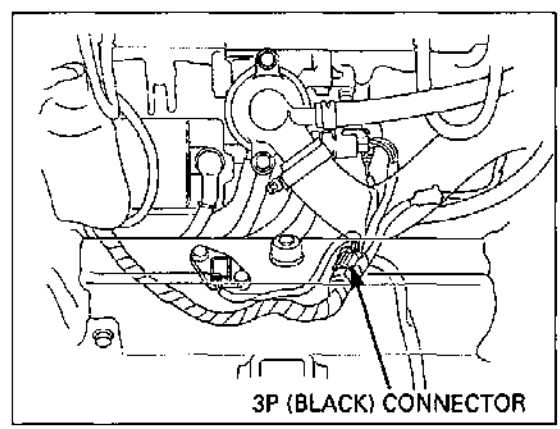
- If they do not function, perform the power and ground line inspection of the combination meter (see above).
- If they function, shift the transmission into neutral, disconnect the combination meter combination meter 9P (Natural) and 9P (Black) connectors and turn the ignition switch to "ON".
  Measure the voltage between the Pink/Green (+) and Green/Black (–) wire terminals of the wire harness side connector.
  Slowly turn the rear wheel by hand.
  There should be 0 to 5 V pulse voltage.

– If pulse voltage appears, replace the combination meter print circuit board.
– If pulse voltage does not appear, check for an open or short circuit in Pink/Green wire.
  If the Pink/Green wire is OK, check for the speed sensor (see below).

SPEED SENSOR INSPECTION

Remove the throttle body (page 5-62).

Disconnect the speed sensor 3P (Black) connector and check for loose or poor contact of the connector.
Also check for loose or poor contact of the engine sub-harness 12P (Gray) connector.

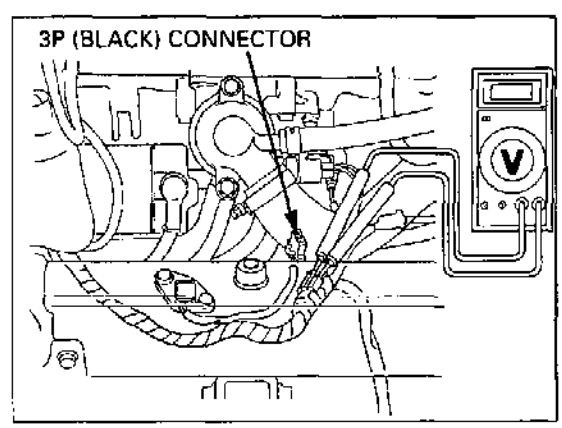


Connect the engine sub-harness 12P (Gray) connector and speed sensor 3P (Black) connector.

Turn the ignition switch is to "ON" and measure the voltage at the 3P (Black) connector with the connector connected.

Connection: Black (+) – Green (–)
Standard: Battery voltage

If there is no voltage, check for an open circuit in the Black and Green wires and loose contact of the wire harness connectors.

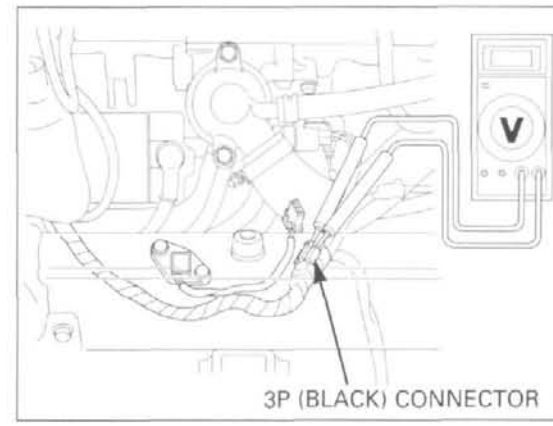


Support the motorcycle securely and place the rear wheel off the ground.
Shift the transmission into neutral.

Measure the voltage at the sensor connector terminals with the ignition switch is turned to "ON" while slowly turning the rear wheel by hand.

CONNECTION: Pink (+) – Green (–)
STANDARD: Repeat 0 to 5V

If the measurement is out of specification, replace the speed sensor.

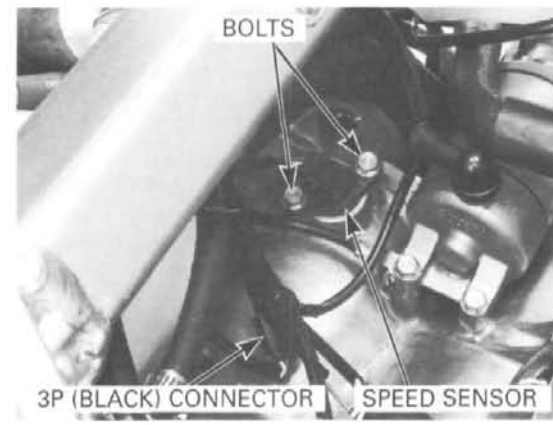


REMOVAL/INSTALLATION

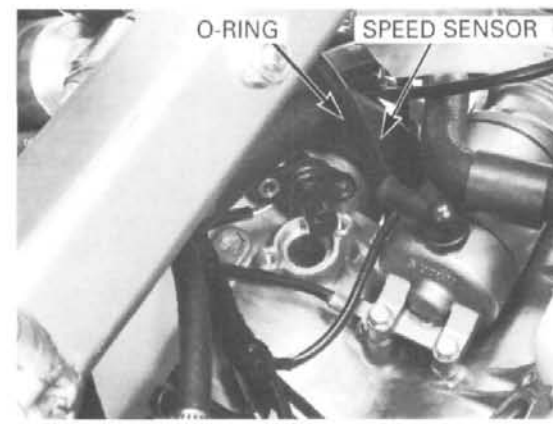
Remove the throttle body (page 5-62).

Disconnect the speed sensor 3P (Black) connector from the engine sub-harness.

Remove the bolts and speed sensor.



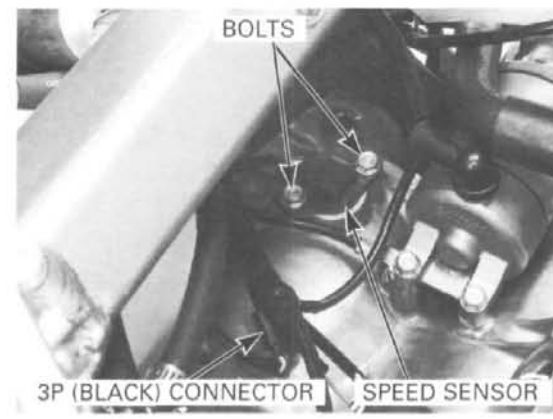
Check that the O-ring is in good condition, replace if necessary.
Install the speed sensor into the upper crankcase.



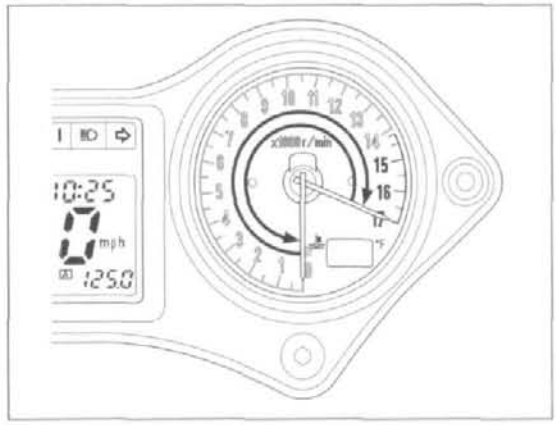
Install and tighten the mounting bolts securely.

Route the sensor wire.

Connect the speed sensor 3P (Black) connector.



TACHOMETER



SYSTEM INSPECTION

Turn the ignition switch to "ON" and check that the tachometer needle move to full scale and then returns to zero.

If the needle does not show initial function, check for combination meter power input line (page 19-11).

Disconnect the combination meter 9P (Natural) and 9P (Black) connectors (page 19-8).
Connect the peak voltage adaptor to the tachometer Yellow/Green (+) terminal and Green (–).

TOOLS:
Peak voltage tester (U.S.A. only) or
Peak voltage adaptor 07HGJ–0020100
(not available in U.S.A.)
with commercially available digital multimeter (impedance 10 MΩ/DCV minimum)

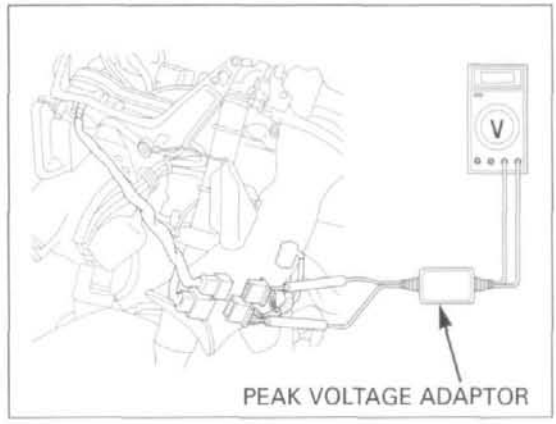
CONNECTION: Yellow/Green (+) and Green (-)

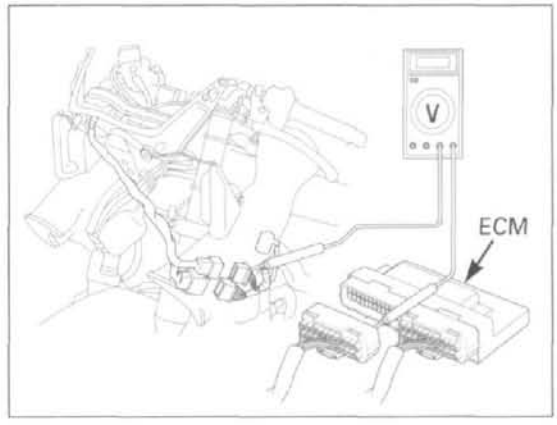
Start the engine and measure the tachometer input peak voltage.

PEAK VOLTAGE: 10.5 V minimum

If the value is normal, replace the tachometer.
If the measured value is below 10.5 V, replace the ECM.

If the value is 0 V, check for continuity between the combination meter 9P (Black) connectors terminal and the ECM multi-connector Yellow/Green terminals.
If there is no continuity, check the wire harness and combination meter sub-harness for an open circuit.
If there is continuity, replace the combination meter printed circuit board (page 19-8).





COOLANT TEMPERATURE GAUGE/SENSOR

THERMO SENSOR UNIT INSPECTION

Drain the coolant (page 6-3).

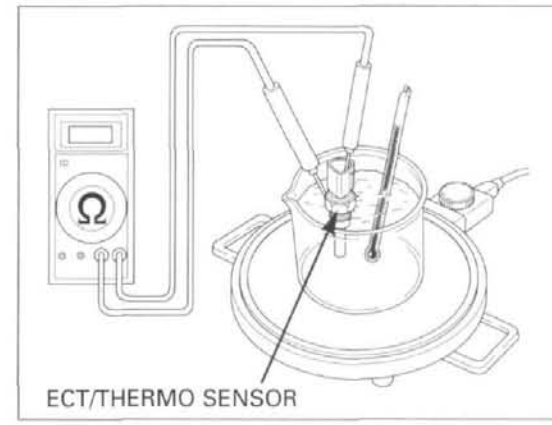
Disconnect the wire connector from the ECT/thermo sensor and remove the sensor.

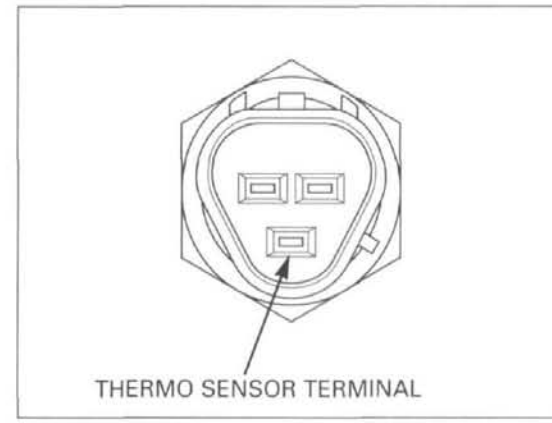
Suspend the ECT/thermo sensor in a pan of coolant (1:1 mixture) on an electric heating element and measure the resistance through the sensor as the coolant heats up.

- Soak the ECT/thermo sensor in coolant up to its threads with at least 40 mm (1.6 in) from the bottom of the pan to the bottom of the sensor.
- Keep the temperature constant for 3 minutes before testing. A sudden change of temperature will result in incorrect readings. Do not let the thermometer or ECT/thermo sensor touch the pan.

Temperature	80°C (68°F)	120°C (248°F)
Resistance	2.1 – 2.6 kΩ	0.65 – 0.73 kΩ

Replace the sensor if it is out of specification by more than 10% at any temperature listed.





Always replace the sealing washer with a new one.

Install and tighten the ECT/thermo sensor to the specified torque.

TORQUE: 23 N·m (2.3 kgf·m, 17 lbf·ft)

Connect the ECT/thermo sensor connector.

Fill the system and bleed the air (page 6-4).

COOLING FAN MOTOR SWITCH

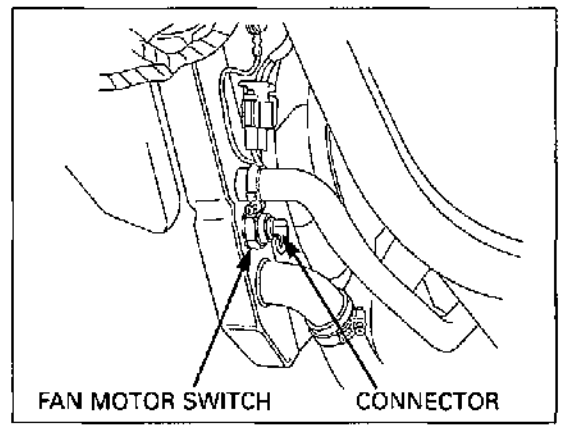
INSPECTION

Remove the following:
- Seat (page 2-2)
- Lower cowl (page 2-6)

Check for a blown fuse before inspection.

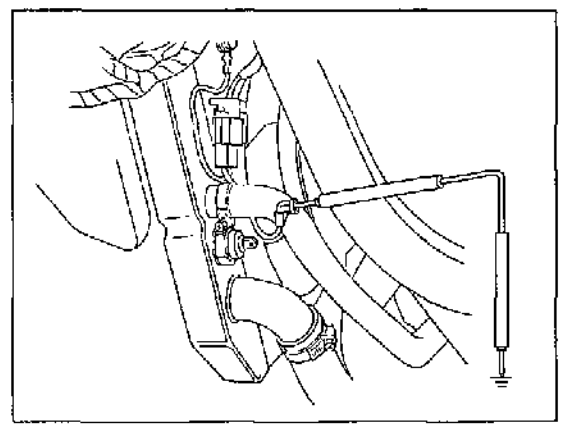
Fan motor does not stop
Turn the ignition switch to "OFF", disconnect the connector from the fan motor switch and turn the ignition switch to "ON" again.

If the fan motor does not stop, check for a shorted wire between the fan motor and switch.
If the fan motor stops, replace the fan motor switch.



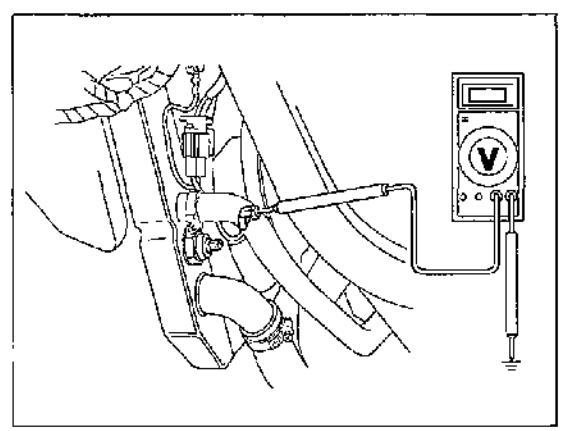
Fan motor does not start
Before testing, warm up the engine to operating temperature.

Disconnect the connector from the fan motor switch and ground the connector to the body with a jumper wire.
Turn the ignition switch to "ON" and check the fan motor.



If the motor starts, check the connection at the fan motor switch terminal.
If it is OK, replace the fan motor switch.

If the motor does not start, check for voltage between the fan motor switch connector and ground.
If battery voltage is measured, replace the fan motor.
If there is no battery voltage, check for poor connection of the connector or a damaged wire harness.



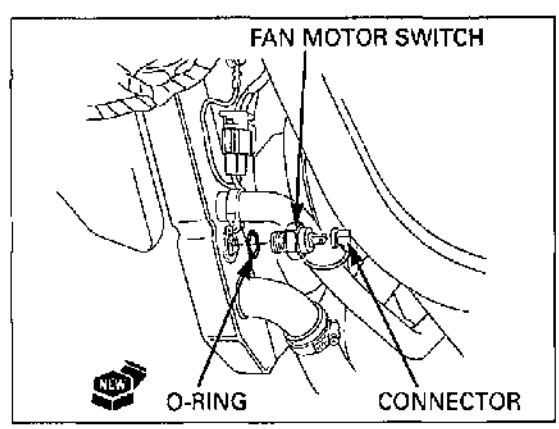
REMOVAL/INSTALLATION

Disconnect the fan motor switch connector and remove the switch.

Install a new O-ring onto the fan motor switch.
Apply sealant to the fan motor switch threads.
Install and tighten the fan motor switch.

TORQUE: 18 N·m (1.8 kgf·m, 13 lbf·ft)

Install the removed parts in the reverse order of removal.

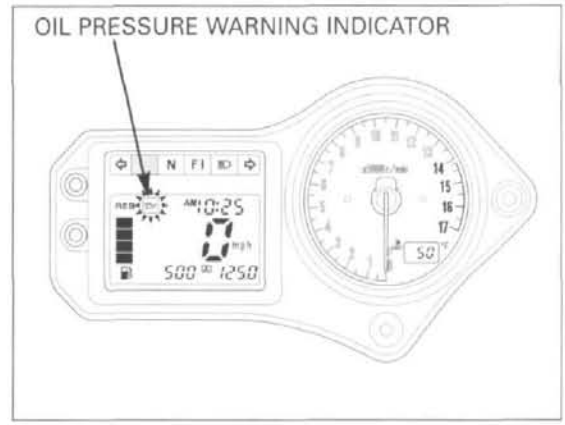


OIL PRESSURE SWITCH

INSPECTION

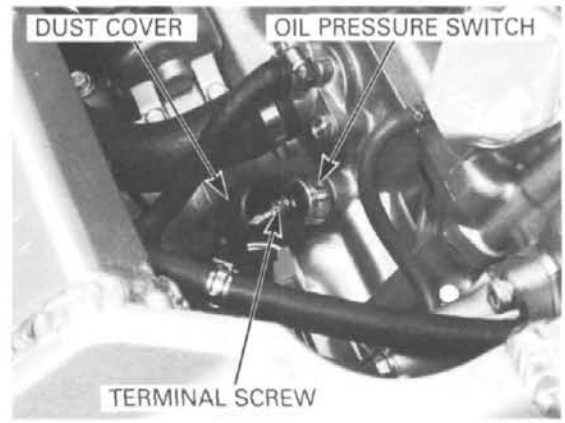
If the oil pressure warning indicator stays on while the engine is running, check the engine oil level before inspection.

Make sure the oil pressure warning indicator come on with the ignition switch turned to "ON".



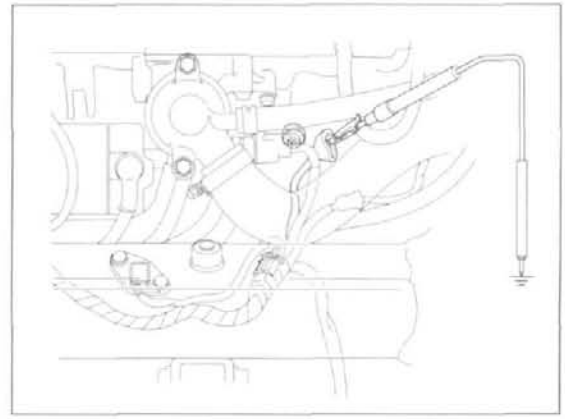
If the indicator does not come on, inspect as follow:
Remove the throttle body (page 5-62).

Remove the dust cover.
Remove the screw and oil pressure switch terminal.



Short the oil pressure switch wire terminal with the ground using a jumper wire.
The oil pressure warning indicator comes on with the ignition switch turned to "ON".
If the light does not come on, check the sub-fuse (10A) and wires for a loose connection or an open circuit.

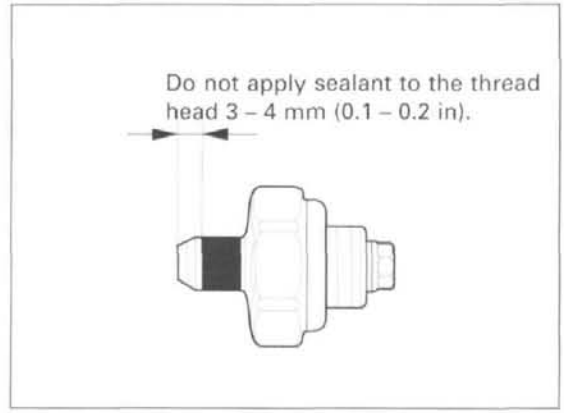
Start the engine and make sure the light goes out.
If the light does not go out, check the oil pressure (page 4-3).
If the oil pressure is normal, replace the oil pressure switch (see below).



REMOVAL/INSTALLATION

Remove the boot, terminal screw and wire terminal (see previous page).
Remove the oil pressure switch from the crankcase.

Apply sealant to the oil pressure switch threads as shown.



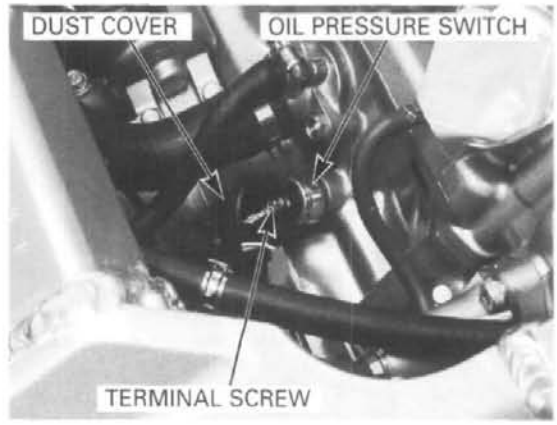
Install the oil pressure switch onto the crankcase, tighten it to the specified torque.

TORQUE: 12 N•m (1.2 kgf•m, 9 lbf•ft)

Connect the oil pressure switch terminal to the switch and tighten the screw to the specified torque.

TORQUE: 2 N•m (0.2 kgf•m, 1.4 lbf•ft)

Install the dust cover.



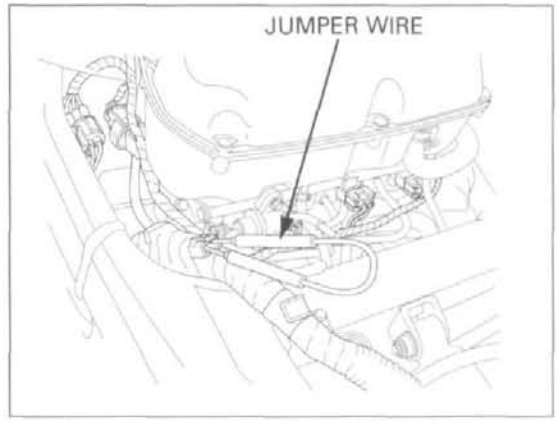
FUEL RESERVE SENSOR

INSPECTION

Turn the ignition switch to "ON" and make sure the fuel reserve indicator comes on.

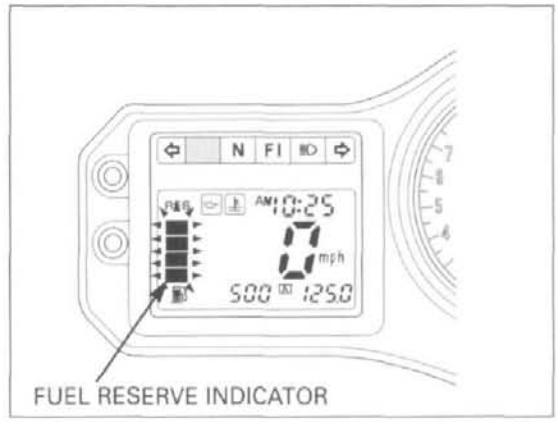
If the fuel reserve indicator does not indicate properly, check for the following.

Disconnect the fuel reserve sensor 3P (Black) connector.
Short the wire harness side connector Brown/Black and Green/Black terminals with a jumper wire.



Turn the ignition switch to "ON" and make sure the fuel reserve indicator comes on with the side stand retracted.

If the indicator comes on, replace the fuel pump assembly.
If the indicator still does not come on, check for an open or short circuit in wire harness.

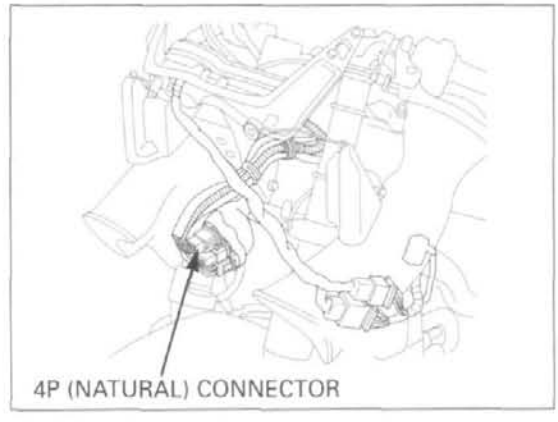


IGNITION SWITCH

INSPECTION

Remove the upper cowl (page 2-9).

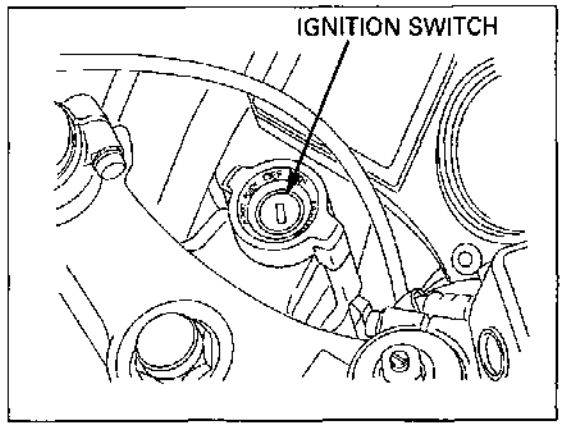
Disconnect the ignition switch wire 4P (Natural) connectors.



Check for continuity between the wire terminals of the ignition switch connector in each switch position.
Continuity should exist between the color coded wires as follows:

IGNITION SWITCH

	FAN	IG	BAT1	KEY
ON	O	O	O	KEY ON
OFF				KEY OFF
LOCK				KEY OFF LOCK PIN
COLOR	Bu/O	R/Bl	R	—



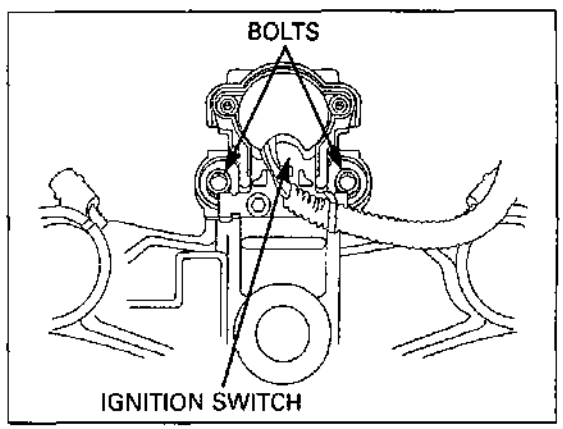
REMOVAL/INSTALLATION

Remove the top bridge (page 13-24).

Remove the bolts and ignition switch.

Install the ignition switch in the reverse order of removal.
Tighten the ignition switch mounting bolt to the specified torque.

TORQUE: 25 N·m (2.5 kgf·m, 18 lbf· ft)



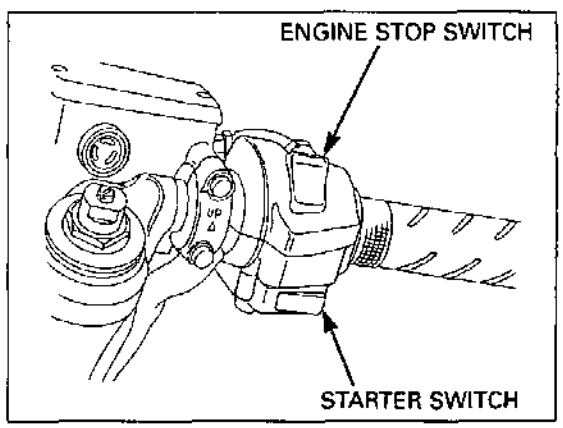
HANDLEBAR SWITCHES

Disconnect the handlebar switch connectors.

Check for continuity between the wire terminals of the handlebar switch connector.
Continuity should exist between the color coded wire terminals as follows:

STARTER SWITCH

	ST	IG	BAT3	HL
FREE			O	O
PUSH	O	O		
COLOR	Y/R	Bl	Bl/R	Bu/W

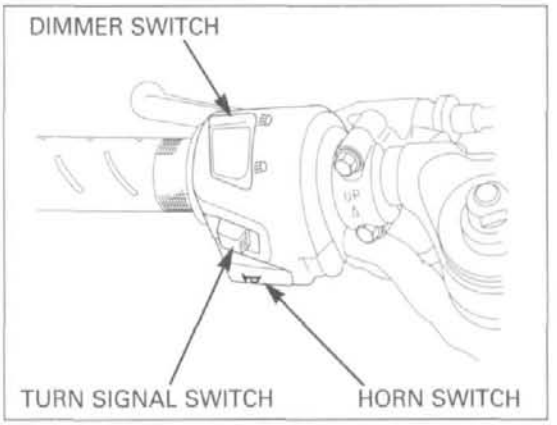


TURN SIGNAL SWITCH

	W	R	L	BAT5	PR	PL
R	O	O		O		O
N				O	O	O
L	O		O	O	O	
COLOR	GR	SB	O	Br/W	SB/W	O/W

DIMMER SWITCH

	HL	Lo	Hi
Lo			
(N)	O		O
Hi	O		O
COLOR	Bu/W		W



ENGINE STOP SWITCH

	IG	BAT
OFF		
RUN	O	O
COLOR	Bl	W/Bl

HORN SWITCH

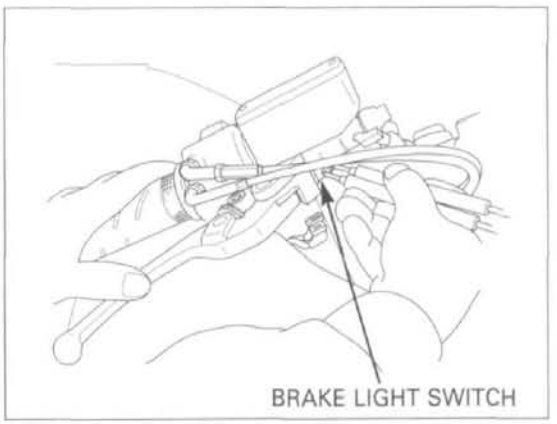
	Ho	BAT5
FREE		
PUSH	O	O
COLOR	Lg	Bl/Br

BRAKE LIGHT SWITCH

FRONT

Disconnect the front brake light switch connectors and check for continuity between the terminals.

There should be continuity with the brake lever applied, and there should be no continuity with the brake lever released.

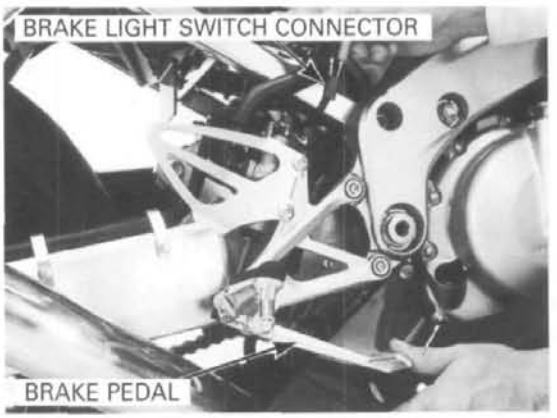


REAR

Remove the seat (page 2-2).

Disconnect the rear brake light switch connector and check for continuity between the terminals.

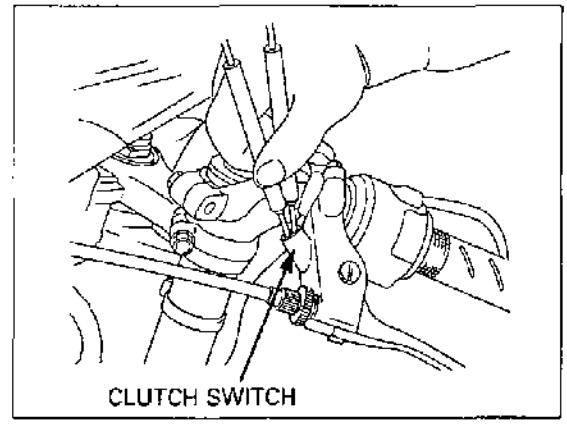
There should be continuity with the brake pedal applied, and there should be no continuity with the brake pedal released.



CLUTCH SWITCH

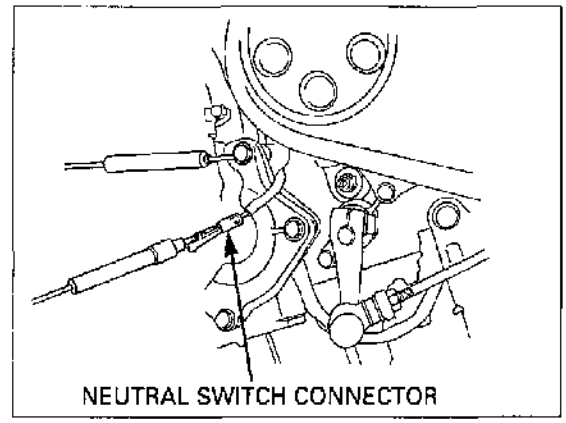
Disconnect the clutch switch connectors.

There should be continuity with the clutch lever applied, and there should be no continuity with the clutch lever released.


CLUTCH SWITCH

NEUTRAL SWITCH

Disconnect the neutral switch connector from the switch.
Shift the transmission into neutral and check for continuity between the Light green wire terminal and ground.
There should be continuity with the transmission in neutral, and no continuity when the transmission is in gear.

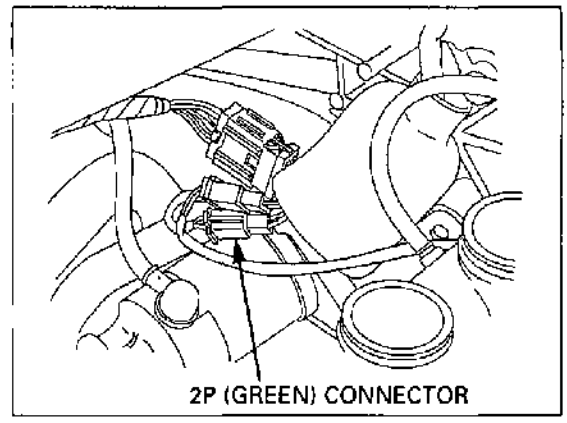

NEUTRAL SWITCH CONNECTOR

SIDE STAND SWITCH

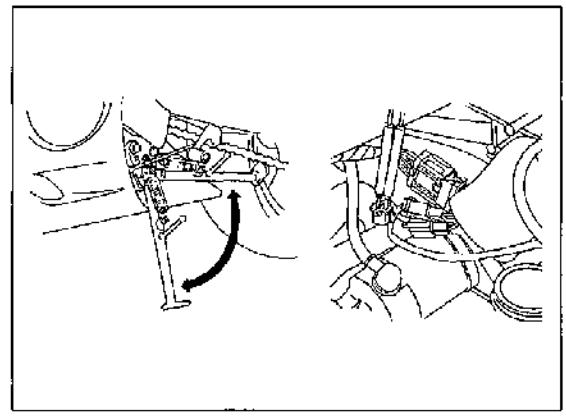
INSPECTION

Support the front end of fuel tank (page 3-4).

Disconnect the side stand switch 2P (Green) connector.


2P (GREEN) CONNECTOR

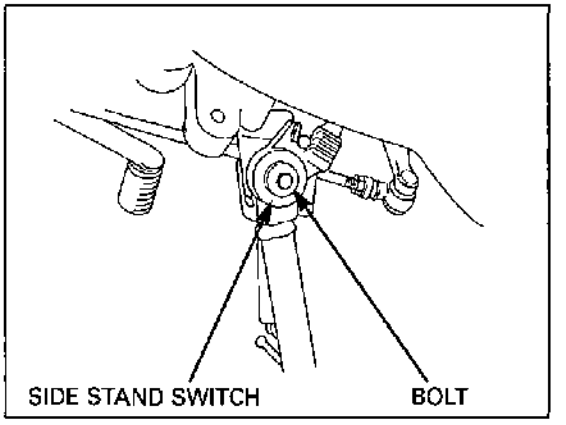
Check for continuity between the wire terminals of the side stand switch connector.
Continuity should exist only when the side stand is up.



REMOVAL

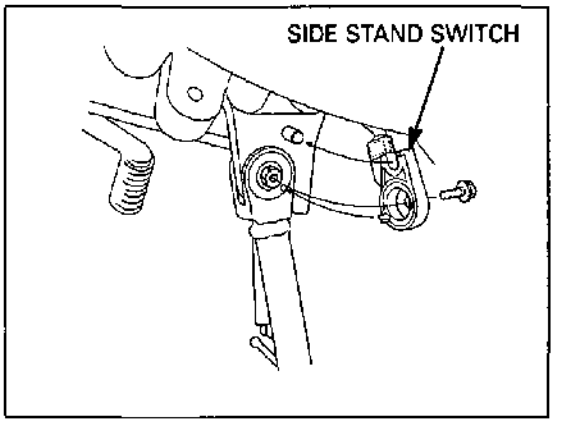
Disconnect the side stand switch 2P (Green) connector.

Remove the bolt and side stand switch.



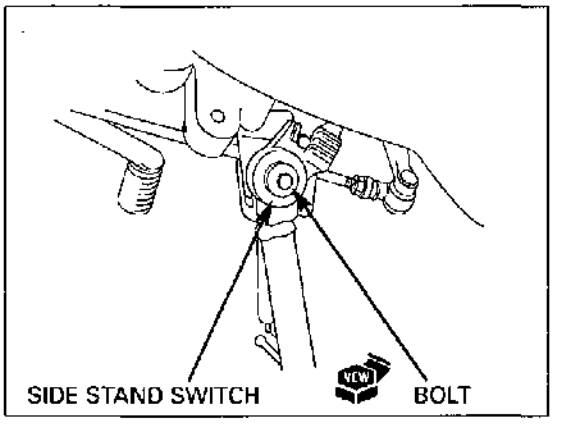
INSTALLATION

Install the side stand switch by aligning the switch pin with the side stand hole and the switch groove with the return spring holding pin.

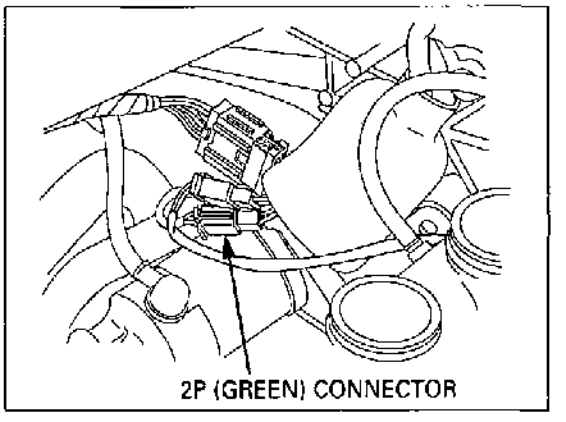


Secure the side stand switch with a new bolt.

TORQUE: 10 N•m (1.0 kgf-m, 7 lbf-ft)



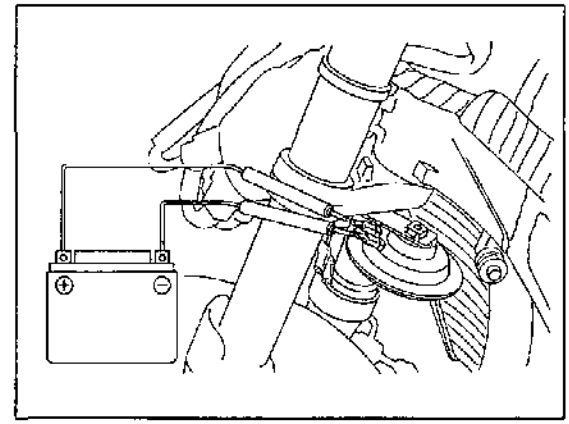
Connect the side stand switch 2P (Green) connector.



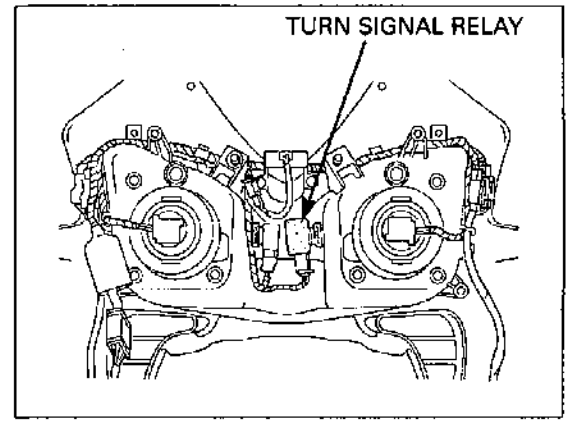
HORN

Disconnect the wire connectors from the horn.

Connect the 12-V battery to the horn terminal directly. The horn is normal if it sounds when the 12-V battery is connected across the horn terminals.



TURN SIGNAL RELAY



INSPECTION

Remove the upper cowl (page 2-9).

Check the following:
- Battery condition
- Burned out bulb or non-specified wattage
- Burned fuse
- Ignition switch and turn signal switch function
- Loose connectors

If the above items are all normal, check the following:
Disconnect the turn signal connectors from the relay.

Short the White/Green and Gray terminals of the turn signal relay connector with a jumper wire. Start the engine and check the turn signal light by turning the switch on.

↓ Light comes on
- Faulty turn signal relay.
- Poor connection of the connector.

↓ Light does not come on
- Broken wire harness.