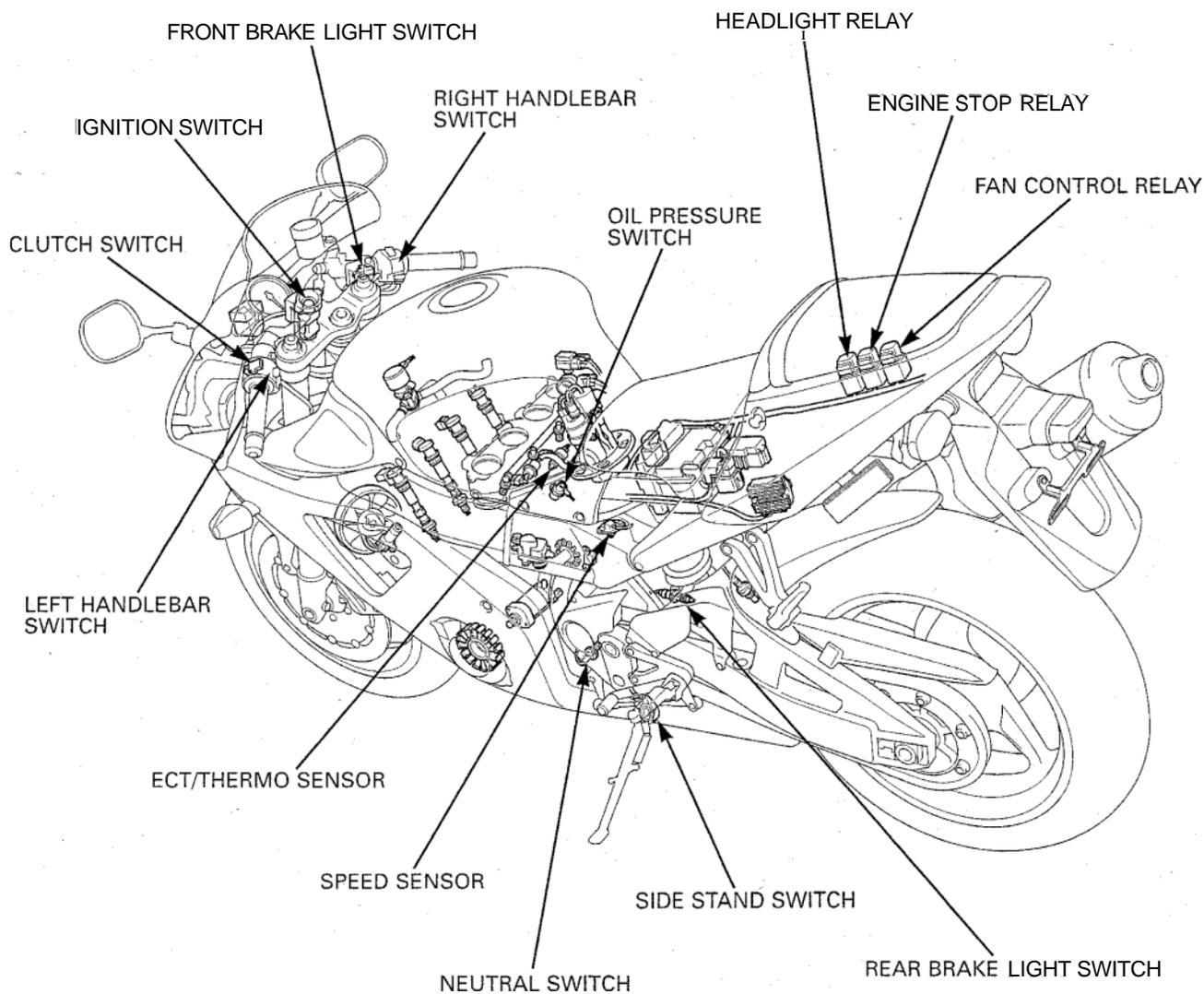


SYSTEM LOCATION



19. LIGHTS/METERS/SWITCHES

SYSTEM LOCATION	19-0	OIL PRESSURE SWITCH	19-14
SERVICE INFORMATION	19-1	FUEL RESERVE SENSOR	19-15
TROUBLESHOOTING	19-3	IGNITION SWITCH	19-16
HEADLIGHT	19-4	HANDLEBAR SWITCHES	19-17
TURN SIGNAL	19-6	BRAKE LIGHT SWITCH	19-18
BRAKE/TAIL LIGHT	19-6	CLUTCH SWITCH	19-18
LICENSE LIGHT	19-7	NEUTRAL SWITCH	19-18
COMBINATION METER	19-7	SIDE STAND SWITCH	19-19
SPEEDOMETER/VEHICLE SPEED SENSOR	19-9	HORN	19-20
TACHOMETER	19-12	TURN SIGNAL RELAY	19-21
ECT/THERMO SENSOR	19-12		

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.
- 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.
- Use an electric heating element to heat the water/coolant mixture for the ECT/thermo sensor inspection. Keep flammable materials away from the electric heating element. Wear protective clothing, insulated gloves and eye protection.
- 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

LIGHTS/METERS/SWITCHES

SPECIFICATIONS

ITEM		SPECIFICATIONS	
Bulbs	Headlight	Hi	12v - 55w x 2
		Lo	12V - 55W
	Brake/tail light		LED
	Front turn signal light		12V - 32/3cp (23/8W) x 2
	Rear turn signal light		12V - 32cp (23W) x 2
	License light		12V - 5W
	Instrument light		LED
	Turn signal indicator		LED x 2
	High beam indicator		LED
	Neutral indicator		LED
	Oil pressure indicator		LED
	Malfunction indicator lamp		LED
	Fuel reserve indicator		LED
	Main fuse		30 A
PGM-FI fuse		20 A	
Sub fuse		20A x 2, 10A x 3	
Tachometer peak voltage		10.5V minimum	
Thermo sensor resistance	80 °C (176 °F)	2.1 - 2.6 kΩ	
	120 °C (248 °F)	0.65 - 0.73 kΩ	

TORQUE VALUES

Ignition switch mounting one-way bolt	26 N•m (2.7 kgf•m, 20 lbf•ft)	
Side stand switch mounting bolt	10 N•m (1.0 kgf•m, 7 lbf•ft)	ALOC bolt
ECT/thermo sensor	23 N•m (2.3 kgf•m, 17 lbf•ft)	
Oil pressure switch	12 N•m (1.2 kgf•m, 9 lbf•ft)	Apply sealant to the threads.
Oil pressure switch wire terminal screw	2 N•m (0.2 kgf•m, 1.4 lbf•ft)	
Neutral switch	12 N•m (1.2 kgf•m, 9 lbf•ft)	

TOOLS

IgnitionMate 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)
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TROUBLESHOOTING

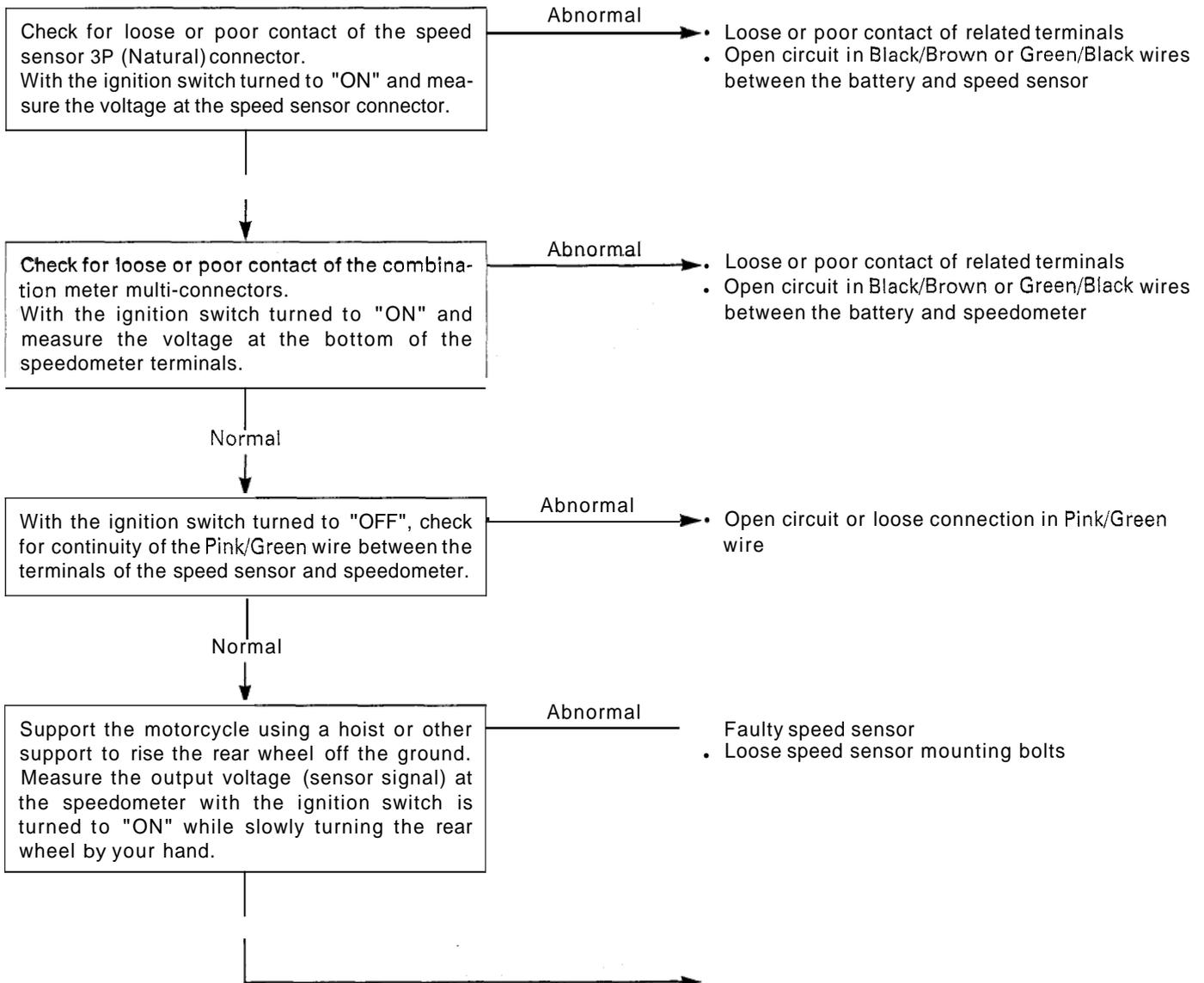
SPEED SENSOR/SPEEDOMETER

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

- Faulty speedometer

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

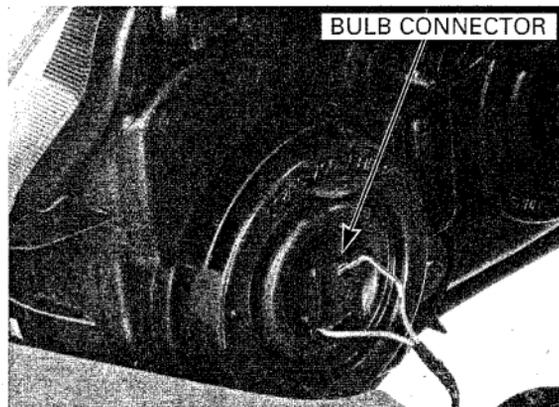
- Faulty odometer/trip meter



HEADLIGHT

BULB REPLACEMENT

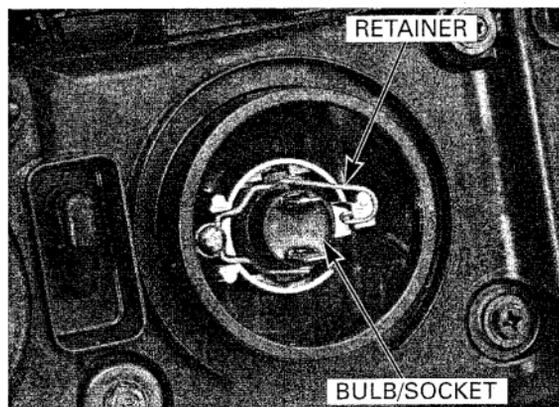
Disconnect the headlight bulb connector.
Remove the dust cover.



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

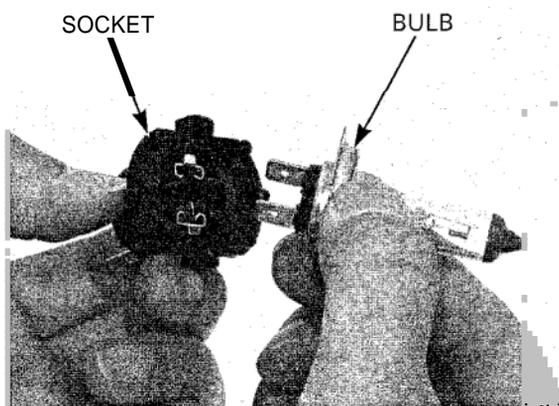
Unhook the bulb retainer and remove the headlight bulb/socket.

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

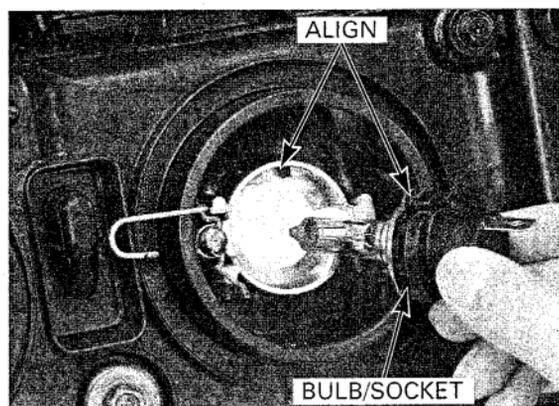


Remove the headlight bulb from the socket.

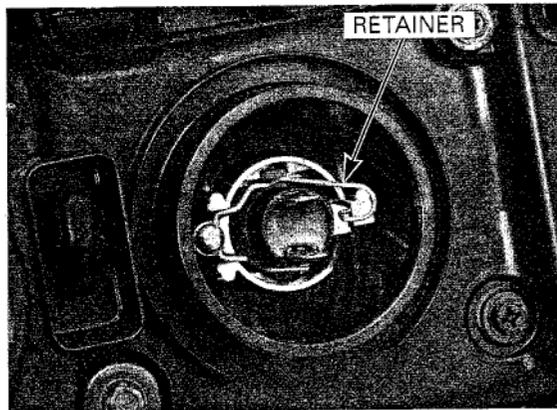
install a new bulb into the socket.



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



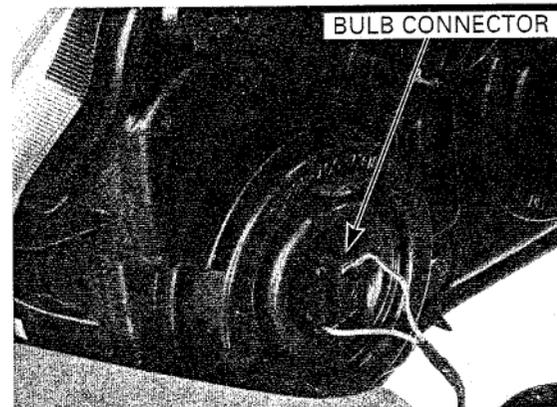
Hook the bulb retainer into the headlight unit groove.



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



Connect the headlight connector.

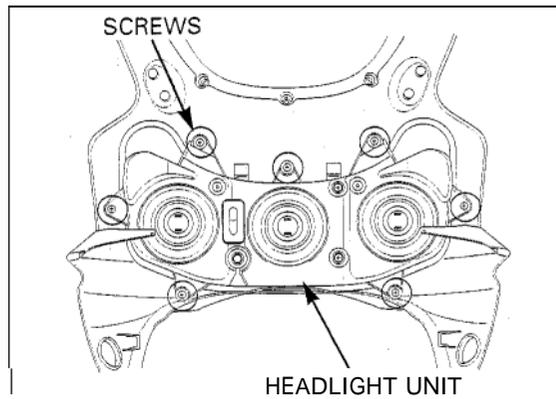


REMOVAL/INSTALLATION

Remove the upper cowl (page 2-5).

Remove the seven screws and headlight unit.

Install the headlight unit in the reverse order of removal.



TURN SIGNAL

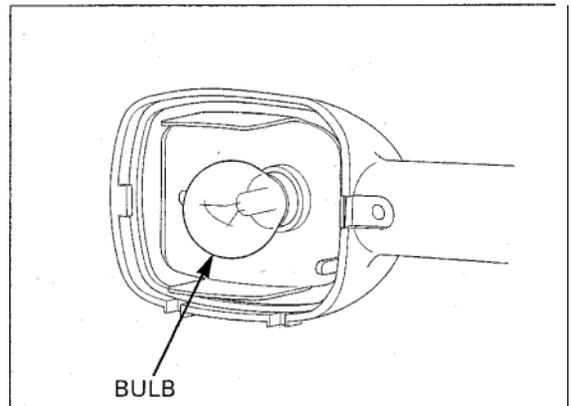
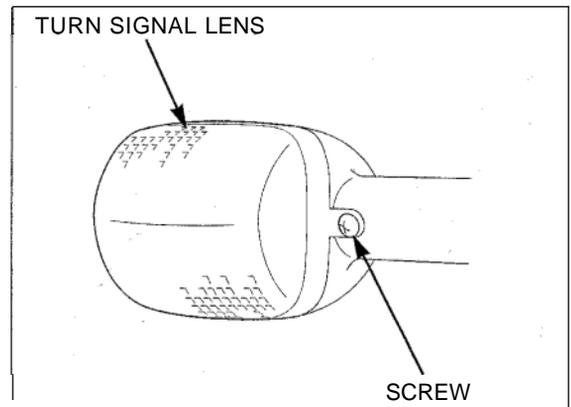
For turn signal light unit removal/installation, see page 2-5 and 2-9

BULB REPLACEMENT

Remove the screw and turn signal lens.

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

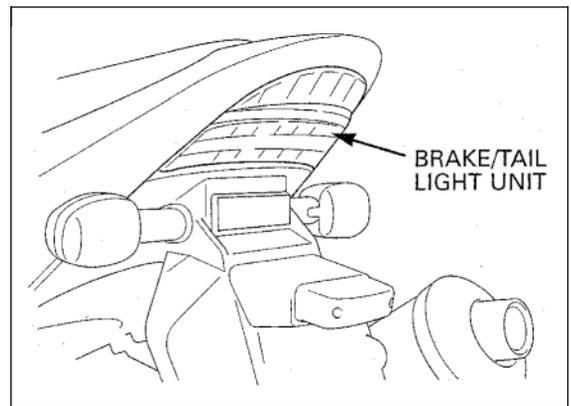
Install the turn signal lens in the reverse order of removal.

**BRAKE/TAIL LIGHT****INSPECTION**

Turn the ignition switch to "ON", and check the tail light operation.

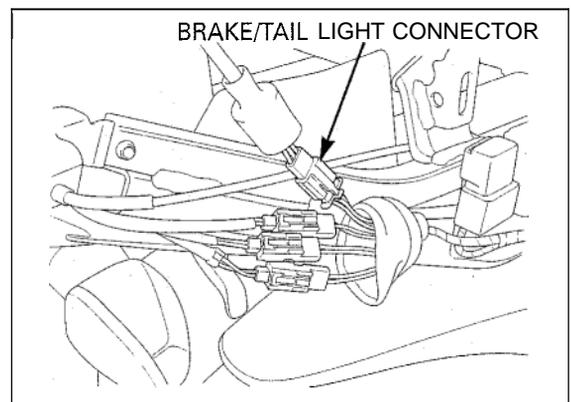
Check that all LED in the brake/tail light unit light on with the front brake lever and/or rear brake pedal applied.

When even any one diode does not turn on, replace the brake/tail light assembly (refer to next procedure).

**REMOVAL/INSTALLATION**

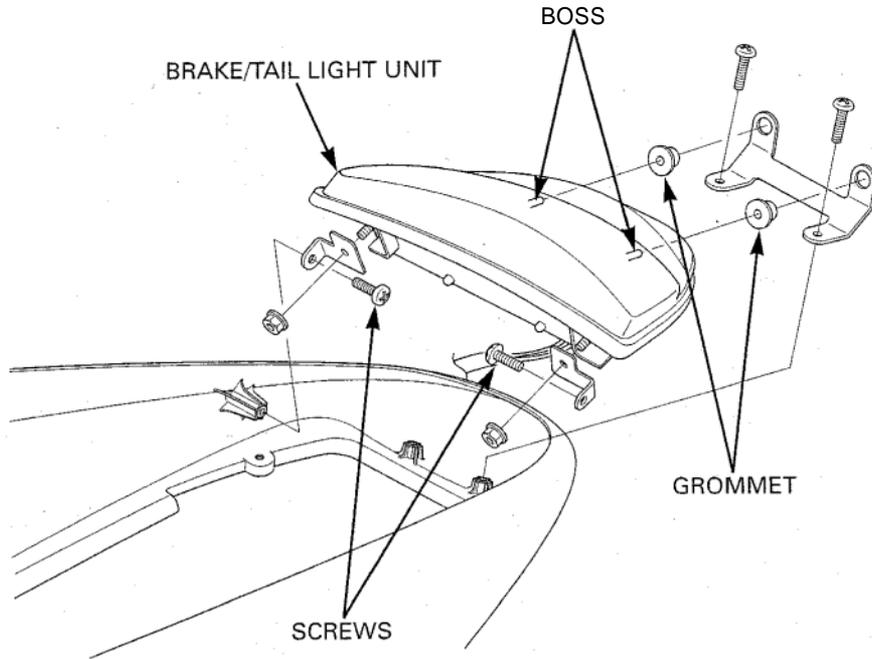
Remove the rear cowl (page 2-2).

Disconnect the brake/tail light 3P connector.



Remove the brake/tail light unit mounting screws.
Pull out the bosses from the grommet, then remove the brake/tail light unit.

Installation is in the reverse order of removal.



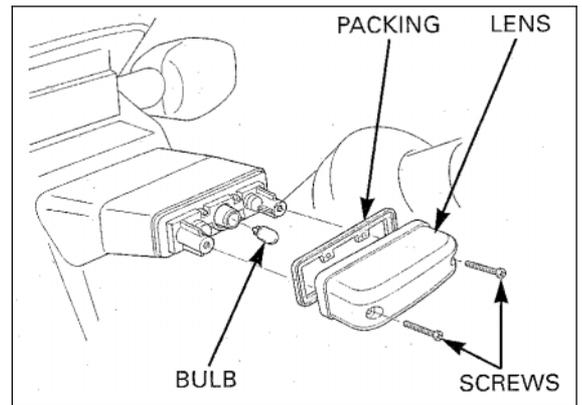
LICENSE LIGHT

BULB REPLACEMENT

Remove the screws, packing and lens.

Pull out the license light bulb and replace it with a new one.

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

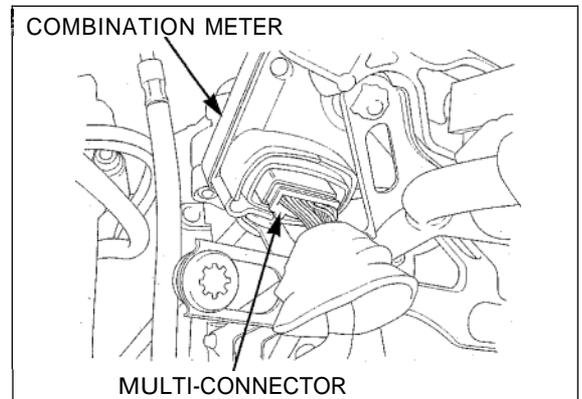


COMBINATION METER

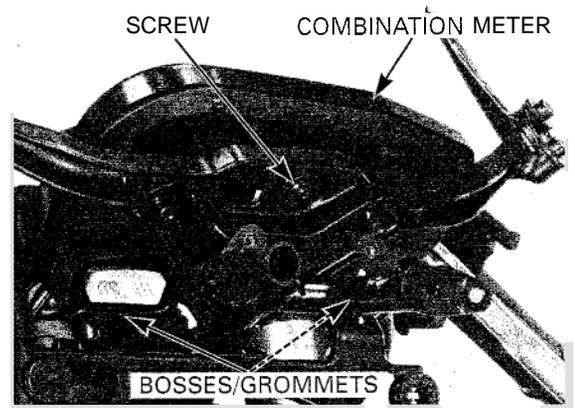
REMOVAL

Remove the upper cowl (page 2-5).
Remove the bank angle sensor (page 5-86).

Disconnect the combination meter multi-connector.

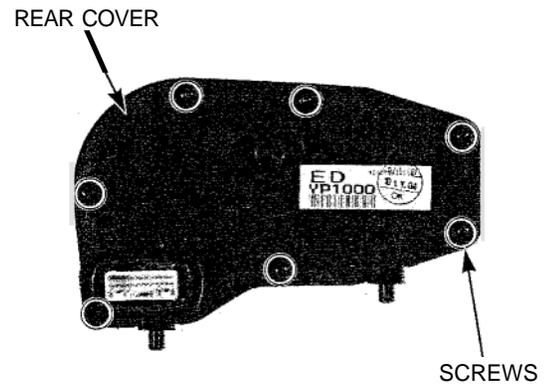


Remove the combination meter mounting screw.
Release the combination meter case bosses from the bracket grommets, then remove the combination meter.



DISASSEMBLY

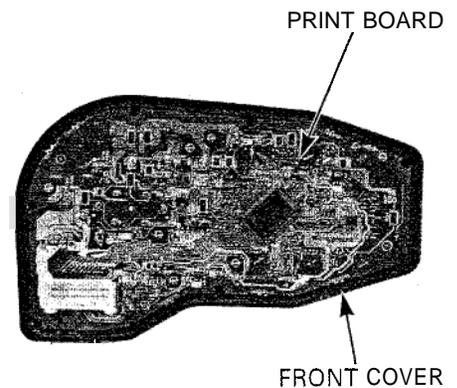
Remove the screws and combination meter rear cover.



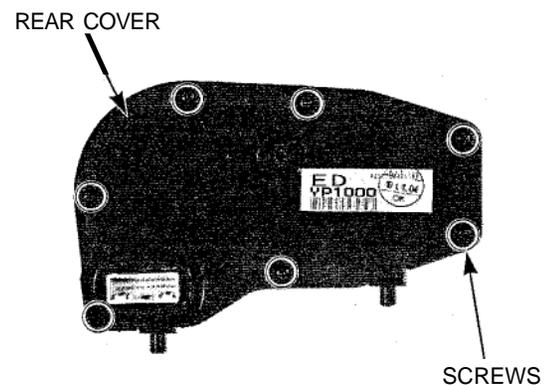
Remove the combination meter print board assembly from the front cover.

ASSEMBLY

Install the print board assembly into the front cover.



Install the rear cover and tighten the screws securely.

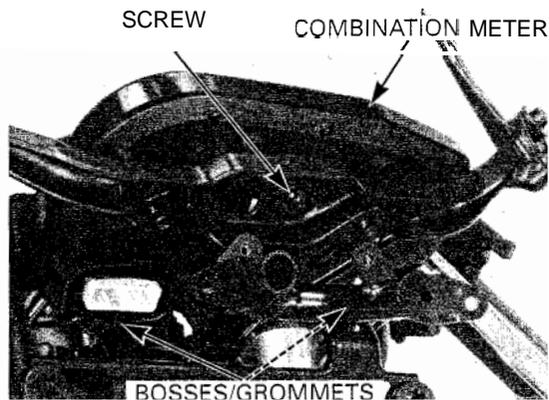


INSTALLATION

Align the combination meter case bosses with the grommets on the meter bracket.

Install the combination meter onto the bracket.

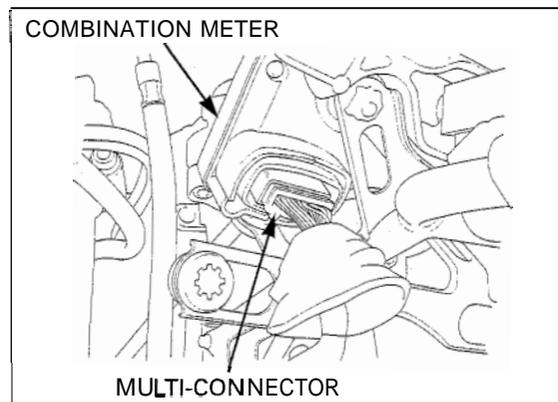
Install and tighten the mounting screw.



Connect the combination meter multi-connector.

Install the bank angle sensor (page 5-86)

Install the upper cowl (page 2-6).

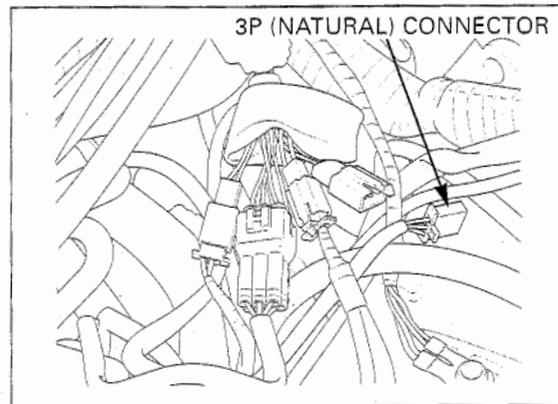


SPEEDOMETER/VEHICLE SPEED SENSOR

VOLTAGE INSPECTION

Open and support the front end of the fuel tank (page 3-4).

Disconnect the speed sensor 3P (Natural) connector and check for loose or poor contact of the connector.

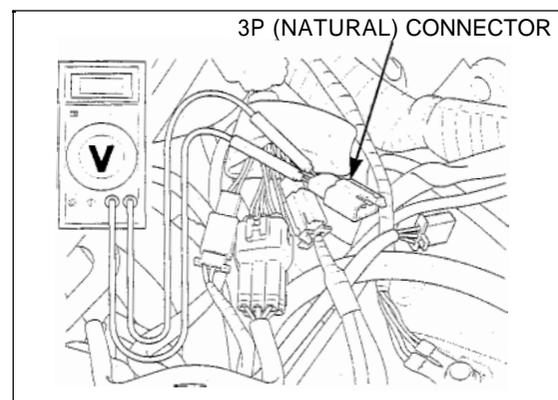


With the ignition switch turned to "ON" and measure the voltage at the 3P (Natural) connector of the wire harness side.

Connection: Black/Brown (+) - Green/Black (-)

Standard: Battery voltage

If there is no voltage, repair or replace the wire harness.



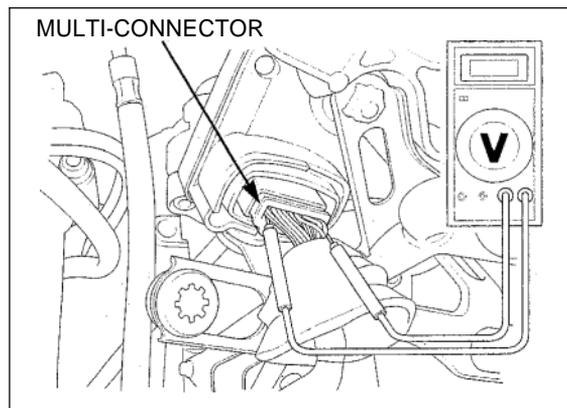
Remove the upper cowl (page 2-5).

Check for loose or poor connection of the combination meter multi-connector.

With the ignition switch turned to "ON" and measure the voltage at the multi-connector terminals.

Connection: Black/Brown (+) - Green/Black (-)
Standard: Battery voltage

If there is no voltage, repair or replace the wire harness.

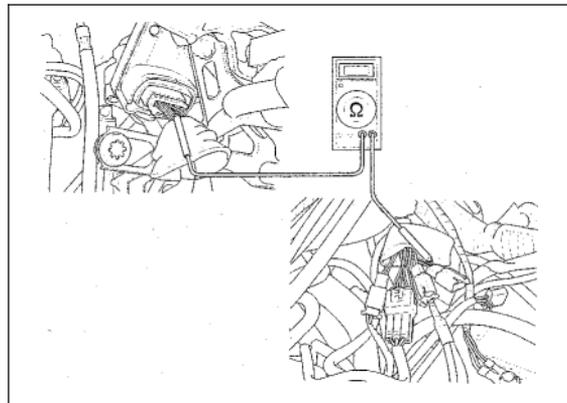


OUTPUT SIGNAL INSPECTION

With the ignition switch is OFF, check for continuity of the Pink/Green wire between the speed sensor connector and combination meter multi-connector.

There should be continuity

If there is no continuity, repair or replace the wire harness.

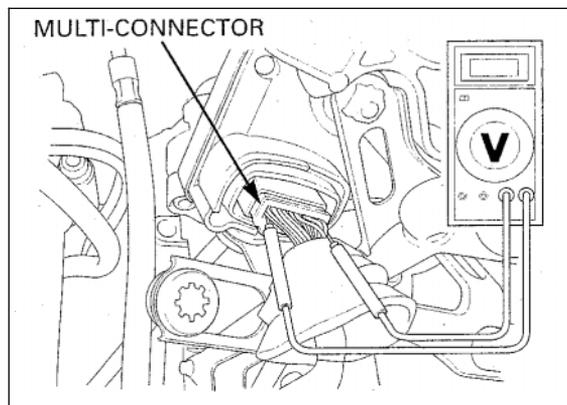


Support the motorcycle securely and place the rear wheel off the ground.
Shift the transmission into neutral.

Connect the speed sensor 3P (Natural) connector.
Measure the voltage at the combination meter terminals with the ignition switch is ON while slowly turning the rear wheel by hand.

CONNECTION: Pink/Green (+) - Green/Black (-)
STANDARD: Repeat 0 to 5V

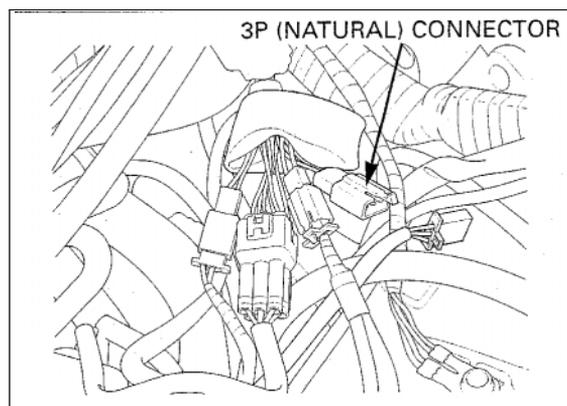
If the measurement is out of specification, inspect the open circuit in wire harness.



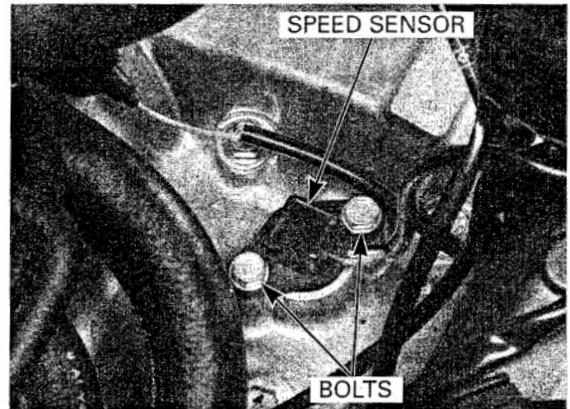
REMOVAL/INSTALLATION

Remove the fuel tank (page 5-59).

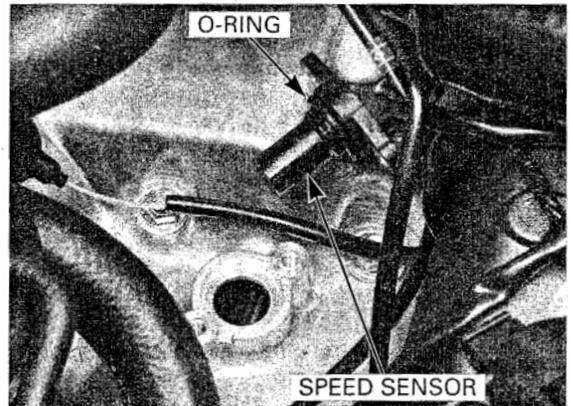
Disconnect the speed sensor 3P (Natural) connector.



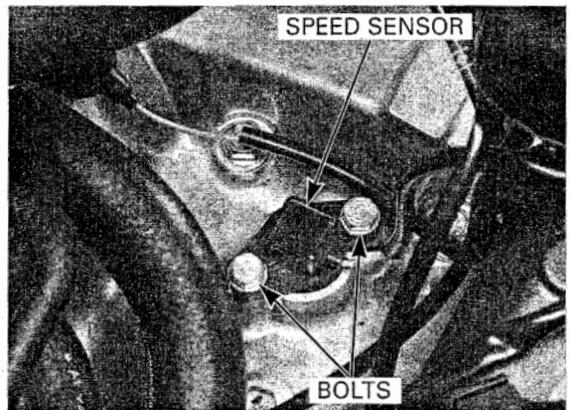
Remove the bolts and speed sensor.



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

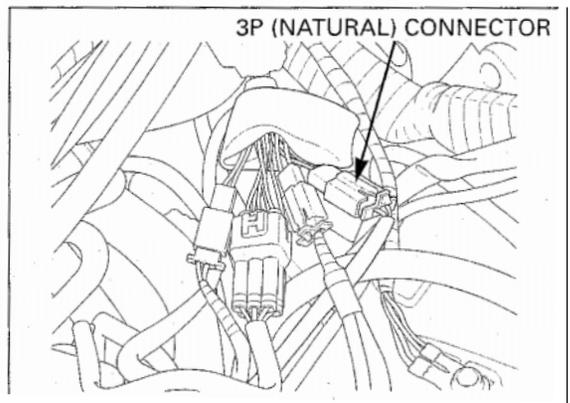


Install and tighten the mounting bolts securely.



Route the sensor wire.

Connect the speed sensor 3P (Natural) connector.



TACHOMETER

INSPECTION

Remove the upper cowl (page 2-5).

Check for loose or poor contact terminals of the combination meter multi-connector.

Connect the peak voltage adaptor to the tachometer Black/Yellow terminal and ground.

TOOLS:

IgnitionMate 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 Ground (-)

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, perform the following:

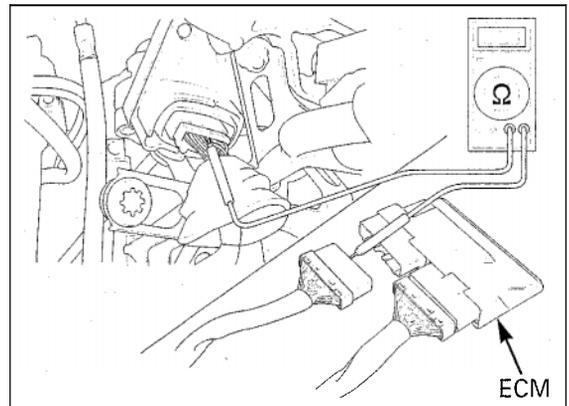
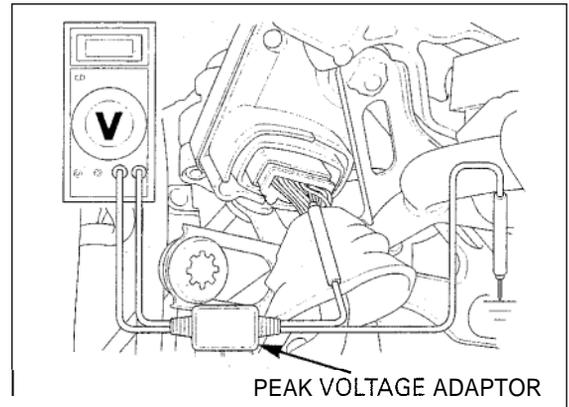
Remove the ECM cover (page 5-87) and disconnect the ECM multi-connector.

Check for continuity between the tachometer terminal and the ECM (26P/Black) connector Yellow/Green terminals.

If there is no continuity, check the wire harness for an open circuit.

If there is continuity, replace the combination meter print board.

For tachometer replacement, see page 19-8; combination meter disassembly and assembly.

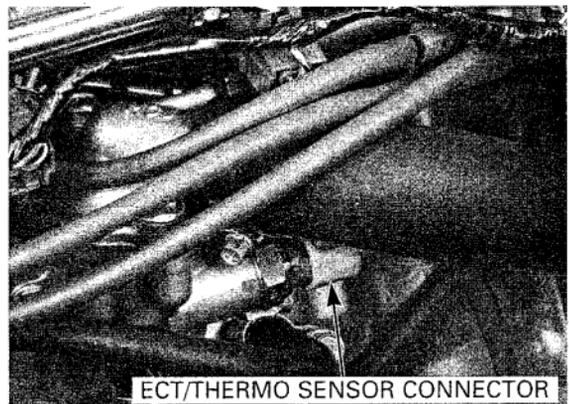


ECT/THERMO SENSOR

INSPECTION

Remove the fuel tank (page 5-59).
Drain the coolant (page 6-4).

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

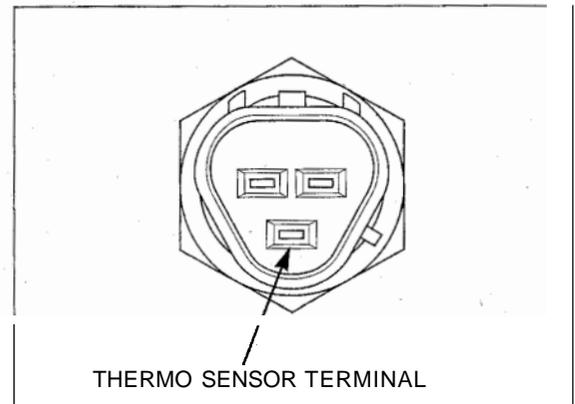
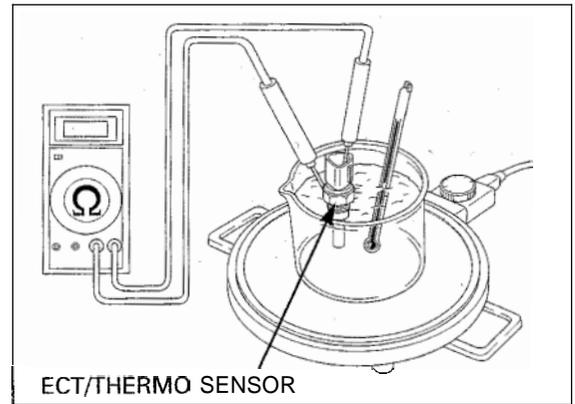


Suspend the ECT/thermo sensor in a pan of coolant (50 - 50 mixture) an electric heating element and measure the resistance through the sensor as the coolant heats up.

- 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

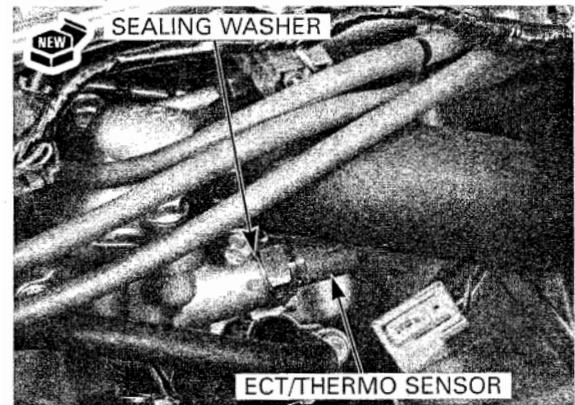
Replace the sensor if it is out of specification by more than 10% at any temperature listed.



Always replace the sealing washer with a new one.

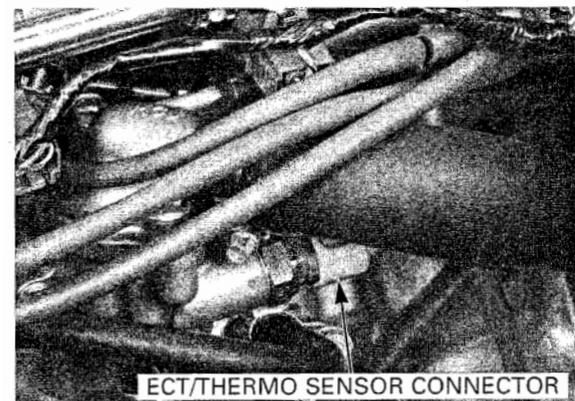
Install and tighten the ECT/thermo sensor to the specified torque.

TORQUE: 23 N·m (2.3kgf·m, 17 lbf·ft)



Connect the ECT/thermo sensor connector.

Fill the system with recommended coolant and bleed the air (page 6-5).

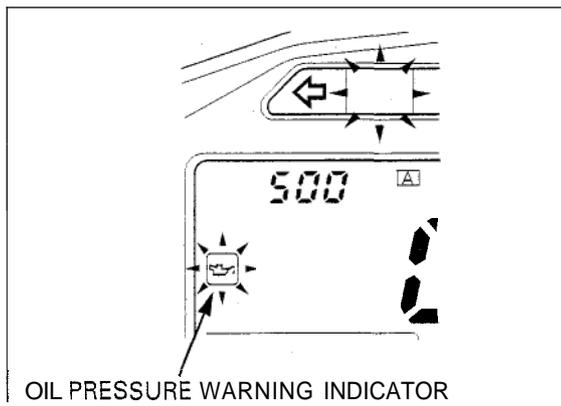


OIL PRESSURE SWITCH

INSPECTION

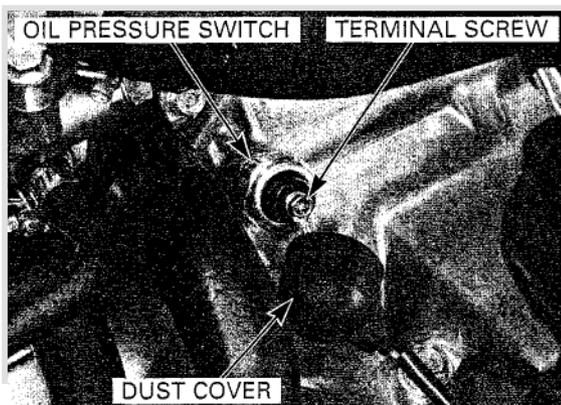
If the oil pressure warning indicator stays on while the engine is running, check the engine oil level before inspection.

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



If the indicator does not come on, inspect as follows:
Remove the fuel tank (page 5-59).

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



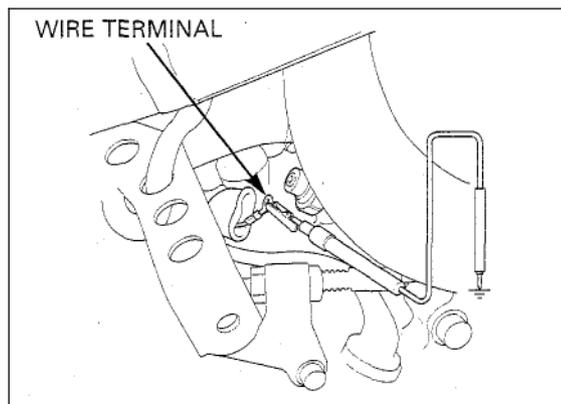
Short the oil pressure switch wire terminal with the ground using a jumper wire.

The oil pressure warning indicator comes on with the ignition switch turned to "ON".

If the indicator 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 indicator goes out.
If the indicator does not go out, check the oil pressure (page 4-3).

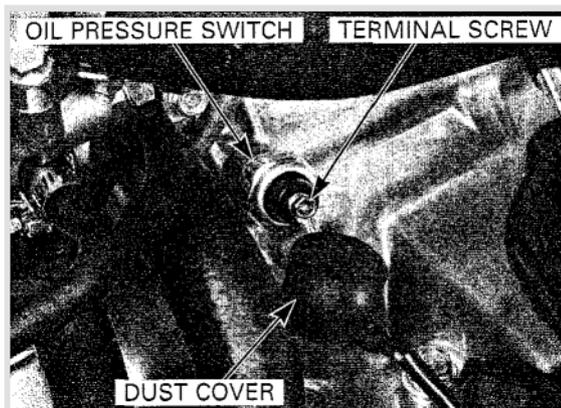
If the oil pressure is normal, replace the oil pressure switch (see below).



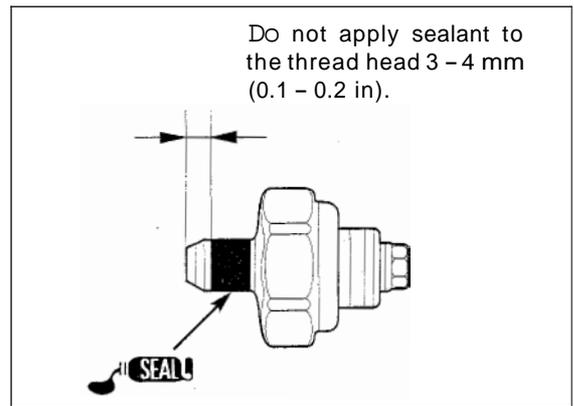
REMOVAL/INSTALLATION

Remove the dust cover, terminal screw and wire terminal.

Remove the oil pressure switch from the crankcase.



Apply sealant to the oil pressure switch threads as shown.



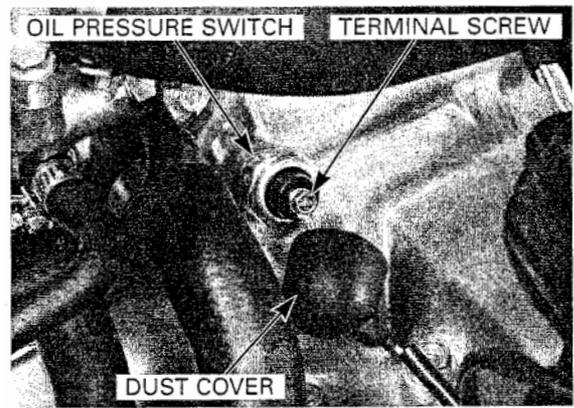
Install the oil pressure switch onto the crankcase, tighten it to the specified torque.

TORQUE: 12 N•m (1.2 kg•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 kg•m, 1.4 lbf•ft)

Install the dust cover.



FUEL RESERVE SENSOR

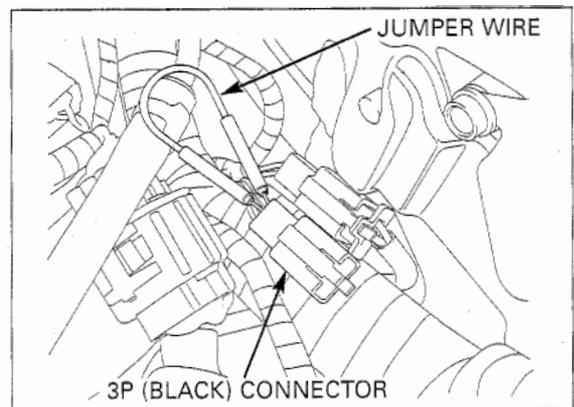
INSPECTION

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

Open and support the front end of the fuel tank (page 3-4).

Disconnect the fuel reserve sensor 3P (Black) connector.

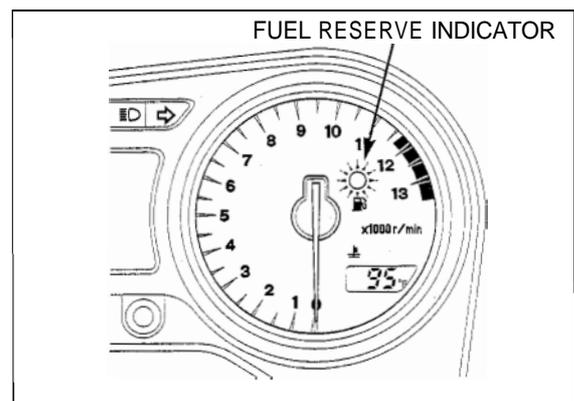
Short the wire harness side connector Brown/Black and Green/Black terminals with a jumper wire.



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

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 the wire harness.



IGNITION SWITCH

INSPECTION

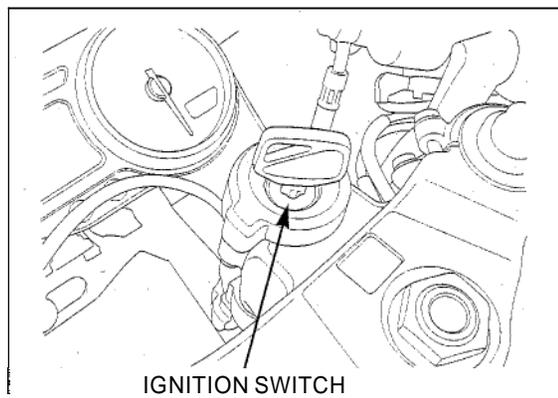
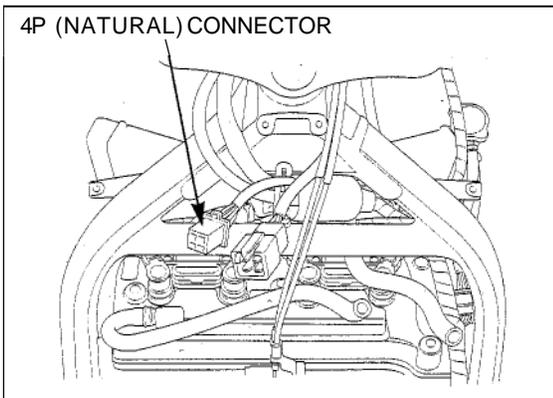
Remove the air cleaner housing (page 5-64).

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

Check for continuity between the wire terminals of the ignition switch 4P (Natural) connector in each switch position. Continuity should exist between the color coded wires as follows:

IGNITION SWITCH

	FAN	IG	BAT1	KEY
ON	○	○	○	KEY ON
OFF				KEY OFF
LOCK				KEY OFF LOCK PIN
LEADCOLOR	P	R/BI	R	—

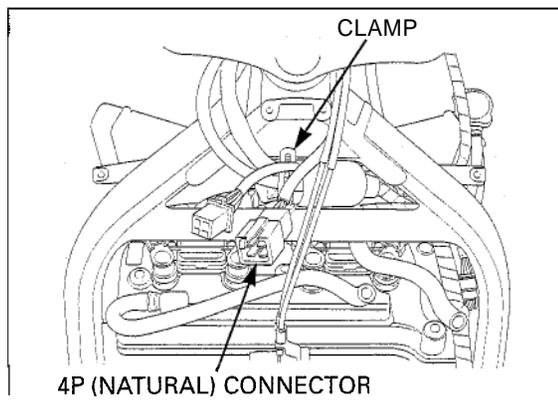


REMOVAL/INSTALLATION

Remove the air cleaner housing (page 5-64).

Release the connector boot from the wire clamp. Disconnect the ignition switch wire 4P (Natural) connector.

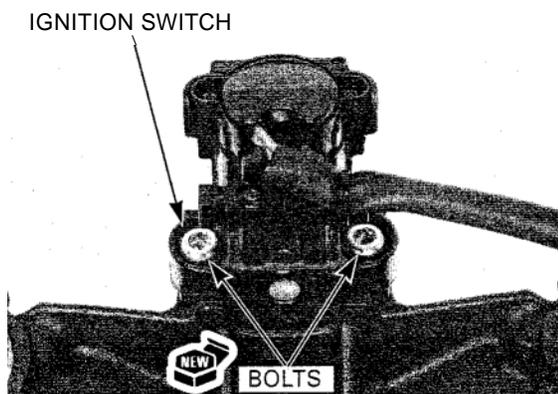
Remove the top bridge (page 13-5).



Remove the bolts and ignition switch.

Install the ignition switch to the top bridge. Install the new main switch mounting bolts and tighten the bolts to the specified torque.

TORQUE: 26 N•m (2.7kgf•m, 20 lbf•ft)



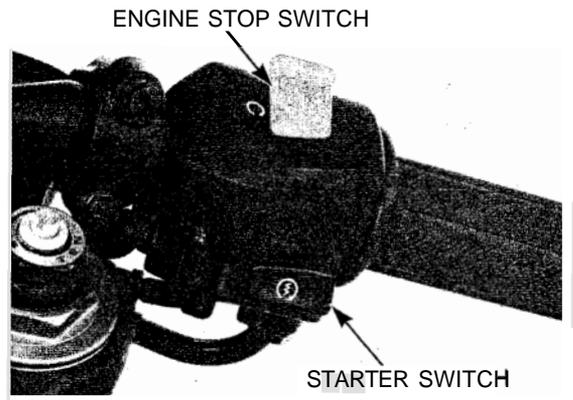
HANDLEBAR SWITCHES

Remove the air cleaner housing (page 5-64).

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:



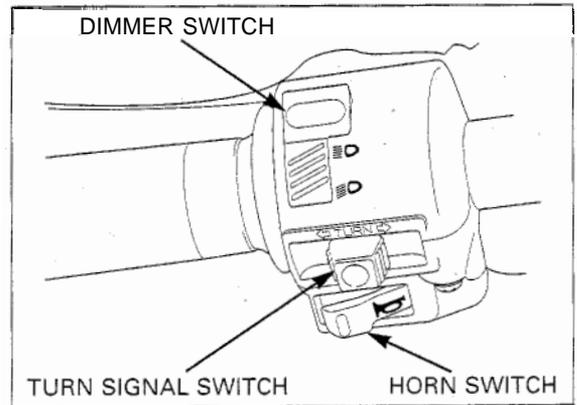
OFF		

	ST	IG	BAT3	HL
FREE			○	○
PUSH	○	○		
LEAD COLOR	Y/R	Bl	Bl/Br	W

	HL	Lo	Hi
Lo			
(N)			
Hi	○		○
LEADCOLOR	W		Bu

HORN SWITCH

	Ho	BAT5
FREE		
PUSH	○	○
LEAD COLOR	Lg	Bl/Br

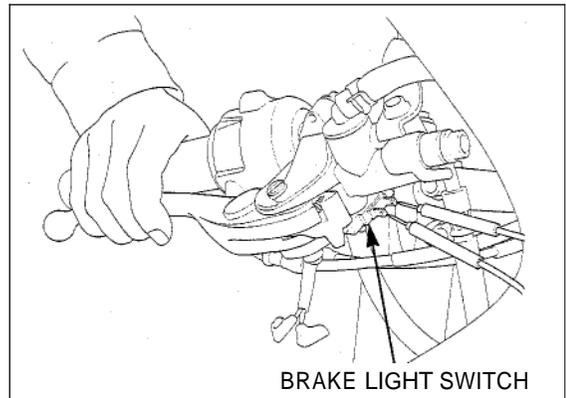


	W	R	L	BAT5	PR	PL
R	○	○		○		
N				○	○	○
L	○		○	○	○	
LEADCOLOR	Gr	Lb	O	Bl/Br	Lb/W	O/W

BRAKE LIGHT SWITCH**FRONT**

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

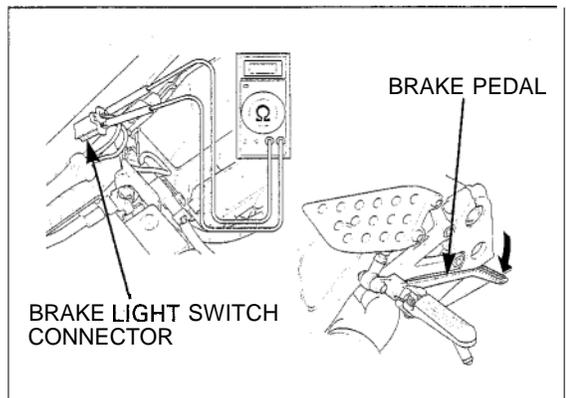
There should be continuity with the brake lever applied, and there should be no continuity with the brake lever released.

**REAR**

Remove the seat (page 2-2).

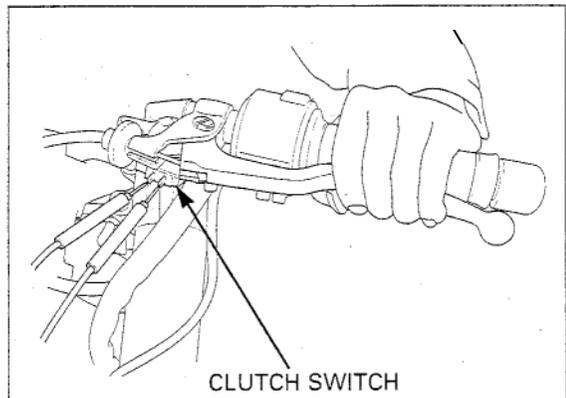
Disconnect the rear brake light switch connector and check for continuity between the terminals.

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

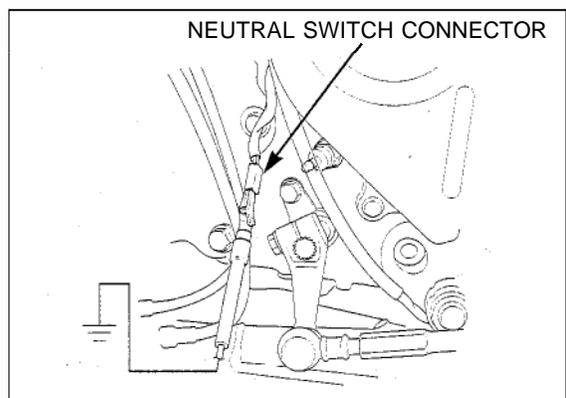
**NEUTRAL SWITCH**

Remove the lower cowl (page 2-7).

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 is in neutral, and no continuity when the transmission is into gear.

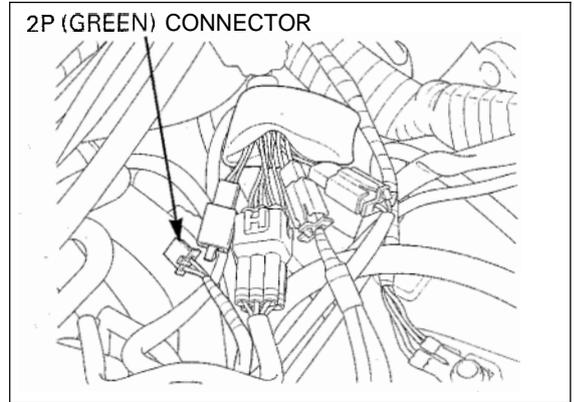


SIDE STAND SWITCH

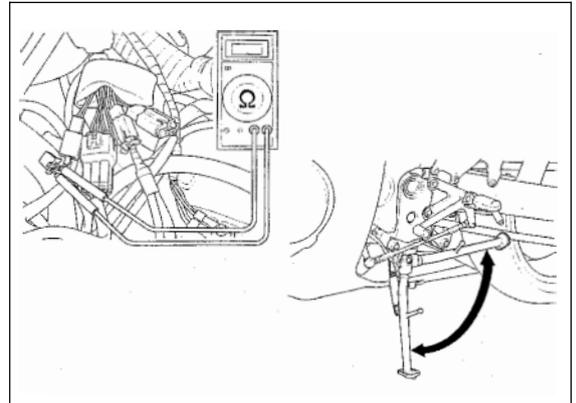
INSPECTION

Open and support the front end of the fuel tank (page 3-4).

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

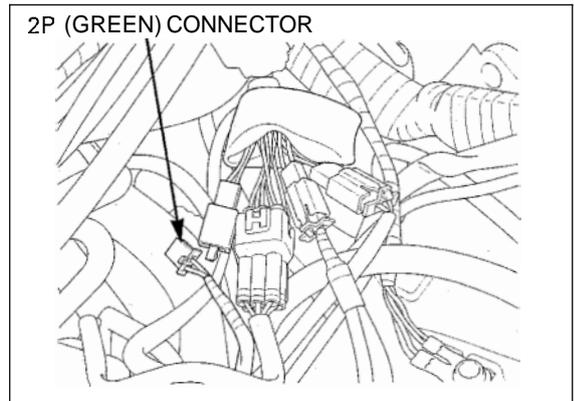


Check for continuity between the wire terminals of the side stand switch 2P (Green) connector. Continuity should exist only when the side stand is up.

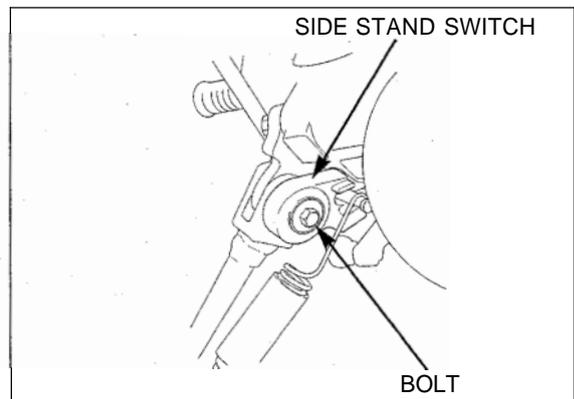


REMOVAL

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

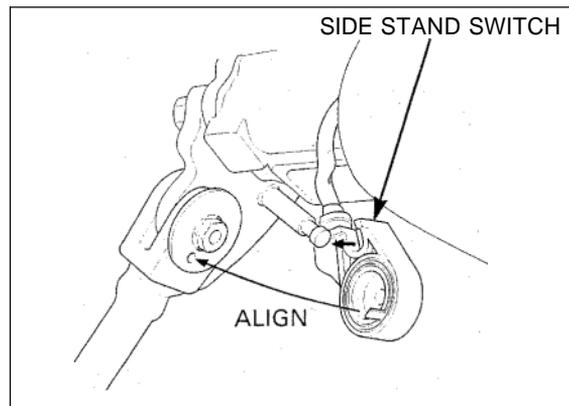


Remove the bolt and side stand switch.



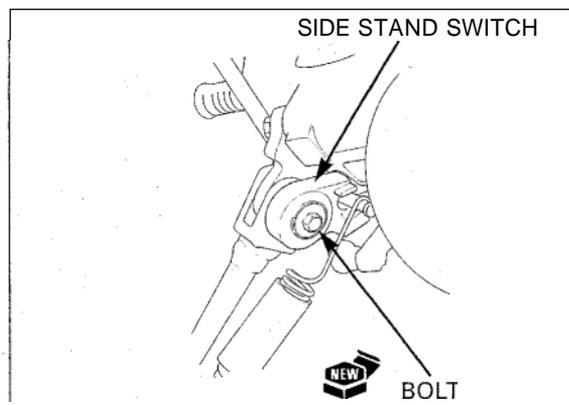
INSTALLATION

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.

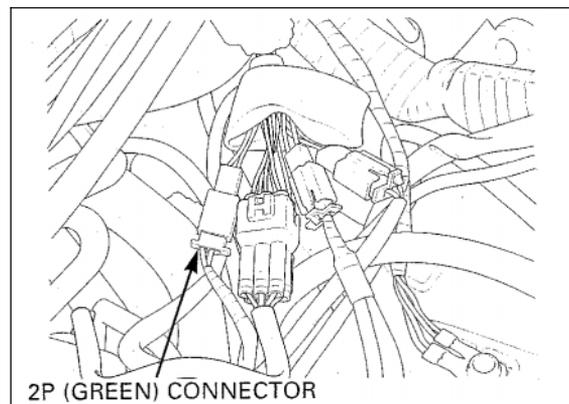


Secure the side stand switch with a new bolt.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)



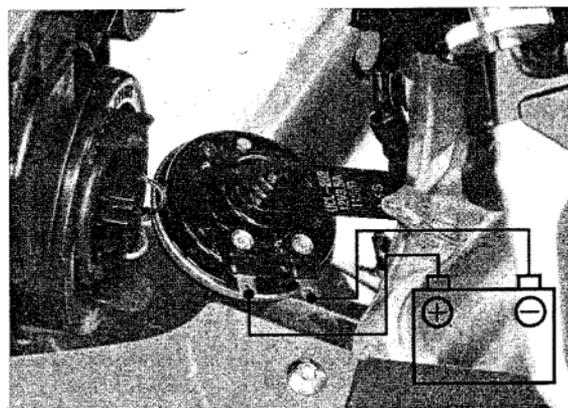
Connect the side stand switch 2P (Green) connector.



HORN

Disconnect the wire connectors from the horn.

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



TURN SIGNAL RELAY

INSPECTION

Remove the upper cowl (page 2-5).

Check the following:

- Battery condition
- Burned bulbs 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 combination meter multi-connector from the combination meter.

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

