

ELECTRICAL SYSTEM

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CAUTIONS IN SERVICING

CONNECTORS

- When disconnecting a connector, be sure to hold the terminals; do not pull the lead wires.
- When connecting a connector, push it in so it is firmly attached.
- Inspect the connector for corrosion, contamination and any breakage in the cover.

COUPLERS

- With a lock-type coupler, be sure to release the lock before disconnecting it. When connecting a coupler, push it in until the lock clicks shut.
- When disconnecting a coupler, be sure to hold the coupler; do not pull the lead wires.
- Inspect each terminal on the coupler for looseness or bends.
- Inspect each terminal for corrosion and contamination.

CLAMPS

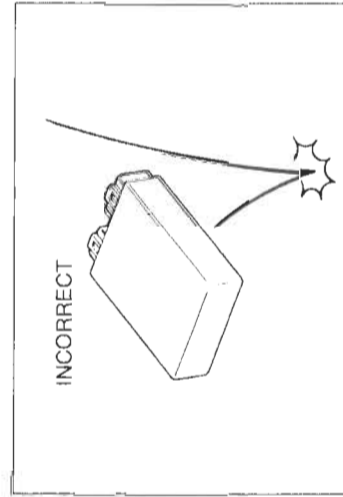
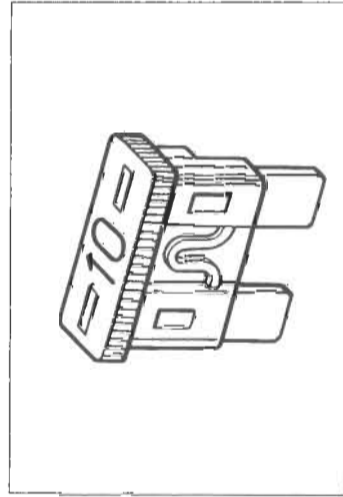
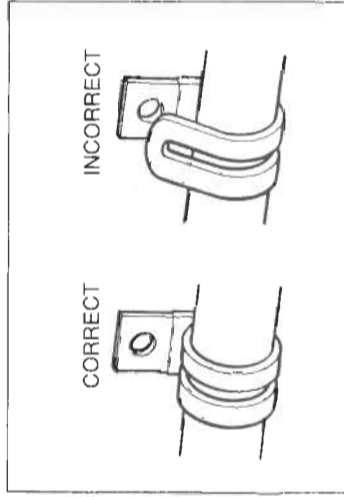
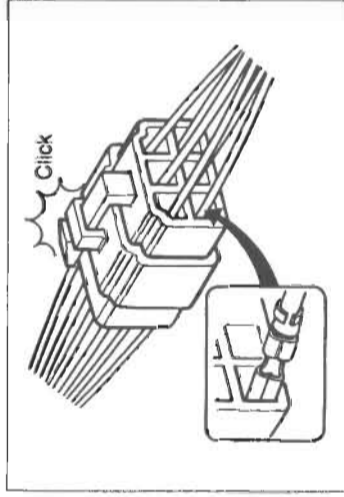
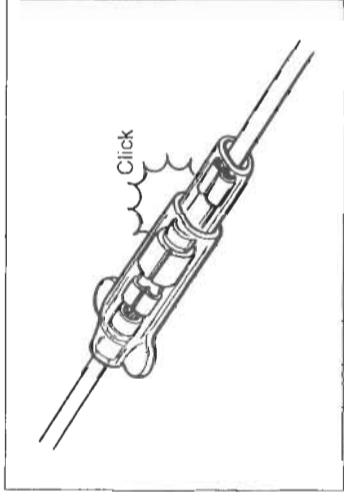
- Refer to the "WIRE HARNESS ROUTING" section for proper clamping procedures. (9-13 and 9-14)
- Bend the clamp properly, as shown in the illustration.
- When clamping the wire harness, do not allow it to hang down.
- Do not use wire or any substitutes for the band-type clamp.

FUSES

- When a fuse blows, always investigate the cause, correct the problem, and then replace the fuse.
- Do not use a fuse of a different capacity.
- Do not use any substitutes for the fuse (e.g., wire).

SEMICONDUCTOR EQUIPPED PARTS

- Do not drop any part that contains a semiconductor (e.g., ignitor unit, regulator/rectifier).
- When inspecting the part, follow the inspection instructions carefully. Neglecting proper procedures may cause this part to be damaged.

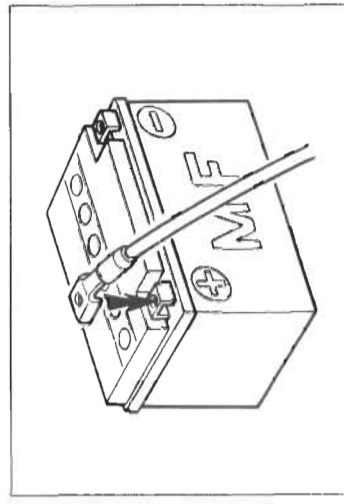
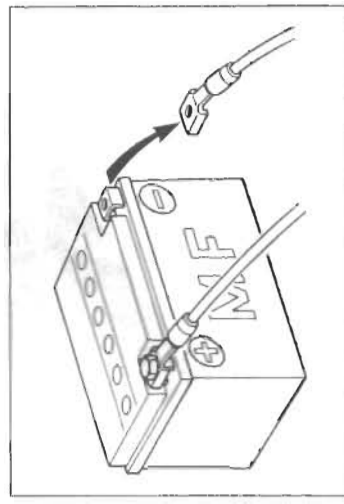


BATTERY

- The MF battery used in this motorcycle does not require maintenance (e.g., electrolyte level inspection, distilled water replenishment).
 - During normal charging, no hydrogen gas is produced. However, if the battery is overcharged, hydrogen gas may be produced. Therefore, be sure there are no fire or spark sources (e.g., short circuit) nearby when charging the battery.
 - Be sure to recharge the battery in a well-ventilated and open area.
 - Note that the charging system for the MF battery is different from that of a conventional battery. Do not replace the MF battery with a conventional battery.
- ### CONNECTING THE BATTERY
- When disconnecting terminals from the battery for disassembly or servicing, be sure to disconnect the \ominus battery lead wire, first.
 - When connecting the battery lead wires, be sure to connect the \oplus battery lead wire, first.
 - If the terminal is corroded, remove the battery, pour warm water over it and clean it with a wire brush.
 - After connecting the battery, apply a light coat of grease to the battery terminals.
 - Install the cover over the \oplus battery terminal.

WIRING PROCEDURE

- Properly route the wire harness according to the "WIRE ROUTING" section. (9-13 to 9-14)



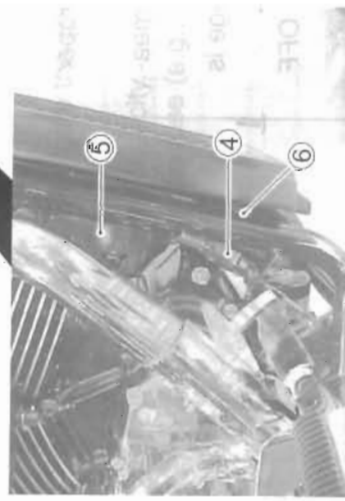
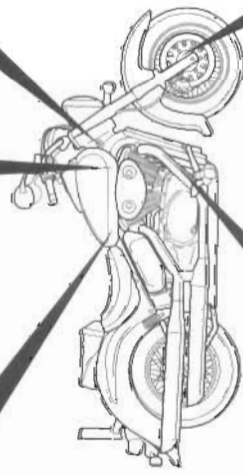
USING THE MULTI CIRCUIT TESTER

- Properly use the multi circuit tester \oplus and \ominus probes. Improper use can cause damage to the motorcycle and tester.
- If the voltage and current values are not known, begin measuring in the highest range.
- When measuring the resistance, make sure that no voltage is applied. If voltage is applied, the tester will be damaged.
- After using the tester, be sure to turn the switch to the OFF position.

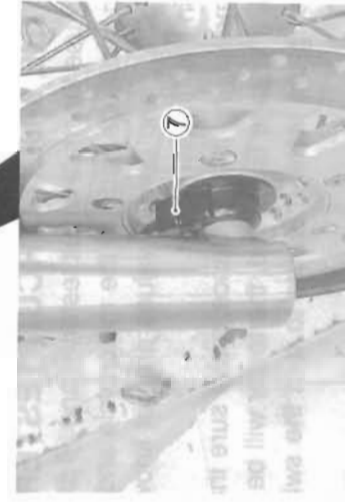
CAUTION

Before using the multi circuit tester, read its instruction manual.

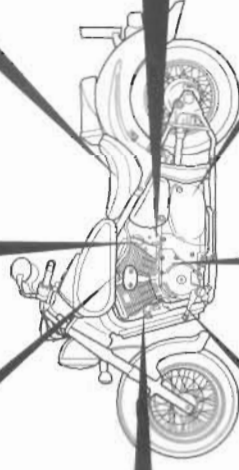
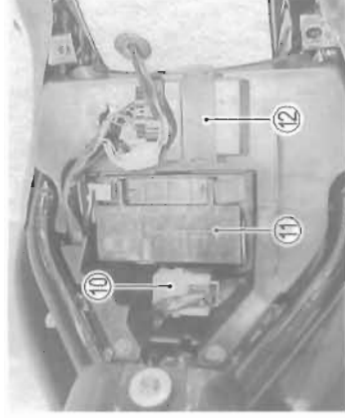
LOCATION OF ELECTRICAL COMPONENTS



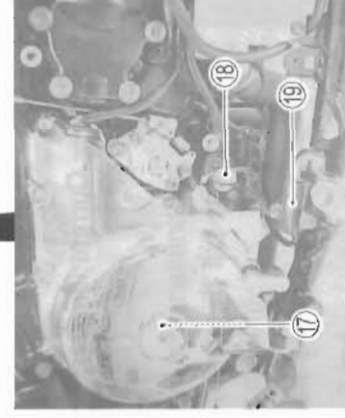
- 1 Ignition switch
- 2 Ignition coil #2
- 3 Fuel level gauge
- 4 Rear brake switch



- 5 Cooling fan
- 6 Cooling fan thermo-switch
- 7 Speedometer sensor



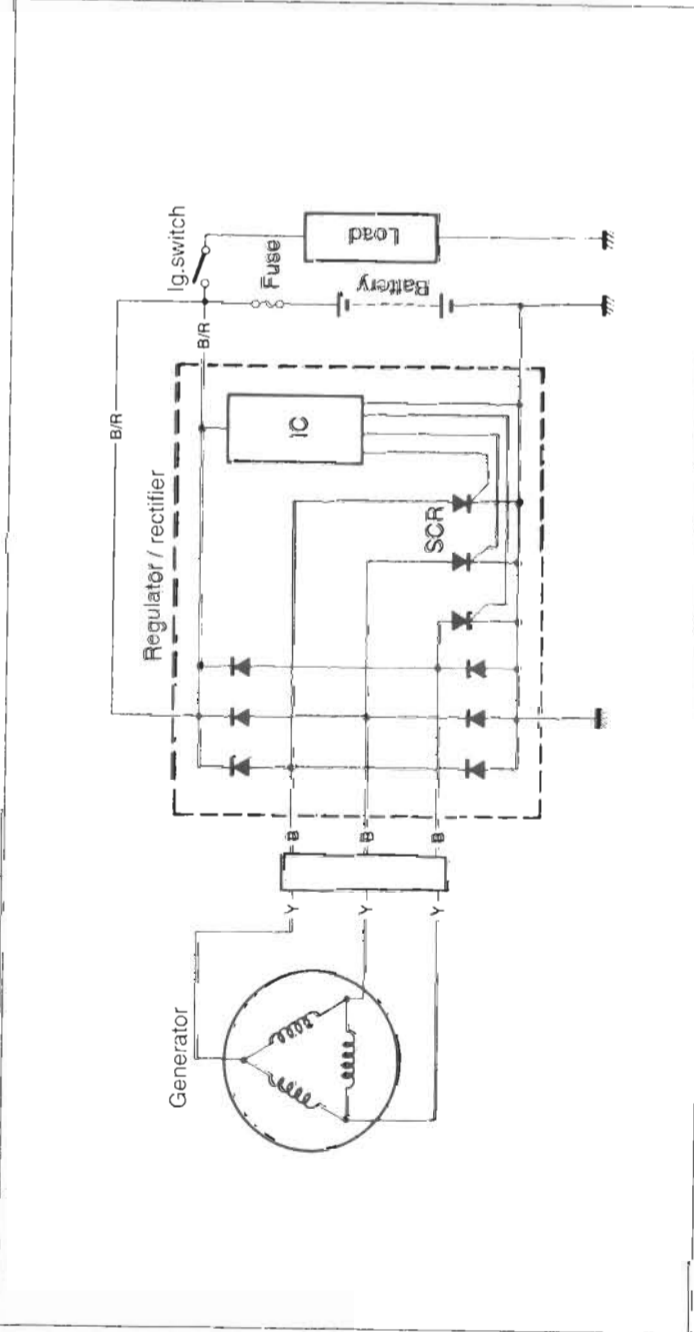
- 8 Ignition coil #1
- 9 Throttle position sensor
- 10 Starter relay/main fuse
- 11 Battery
- 12 Ignitor
- 13 Engine coolant temperature sensor
- 14 Horn
- 15 Starter motor



- 16 Oil pressure switch
- 17 Generator
- 18 Gear position switch
- 19 Side-stand switch
- 20 Fuse box
- 21 Turn signal side-stand relay
- 22 Regulator/rectifier



CHARGING SYSTEM



TROUBLESHOOTING

Battery runs down quickly.

```

    graph TD
        A[Check accessories which use excessive amounts of electricity.] --> B[Accessories are installed]
        A --> C[No accessories]
        B --> D[Remove accessories.]
        C --> E[Check the battery for current leaks. (8-7)]
        E --> F[Current leaks]
        E --> G[No current leaks]
        F --> H[Short circuit of wire harness  
Faulty electrical equipment]
        G --> I[Measure the charging voltage between the battery terminals. (8-8)]
        I --> J[Correct]
        I --> K[Incorrect]
        J --> L[Faulty battery  
Abnormal driving condition]
        K --> M[Measure the continuity of the generator coil. (8-8)]
        M --> N[Continuity]
        M --> O[No continuity]
        N --> P[Continued on next page]
        O --> Q[Faulty generator coil or disconnected lead wires]
    
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Continued on next page

```

    graph TD
        A[Measure the generator no-load voltage. (8-8)] --> B[Correct]
        A --> C[Incorrect]
        B --> D[Inspect the regulator/rectifier. (8-9)]
        C --> E[Faulty generator]
        D --> F[Correct]
        D --> G[Incorrect]
        F --> H[Inspect wirings.]
        G --> I[Faulty regulator/rectifier]
        H --> J[Correct]
        I --> K[Short circuit of wire harness  
Poor contact of couplers]
        J --> L[Faulty battery]
    
```

Others

Battery overcharge

- Faulty regulator/rectifier
- Faulty battery
- Poor contact of generator lead wire coupler

INSPECTION

BATTERY CURRENT LEAKAGE

- Remove the two seats. (7-2)
- Turn the ignition switch to the OFF position.
- Disconnect the battery (-) lead wire.

Measure the current between (-) battery terminal and the (+) battery lead wire using the multi circuit tester. If the reading exceeds the specified value, leakage is evident.

TOOL 09900-25008: Multi circuit tester set

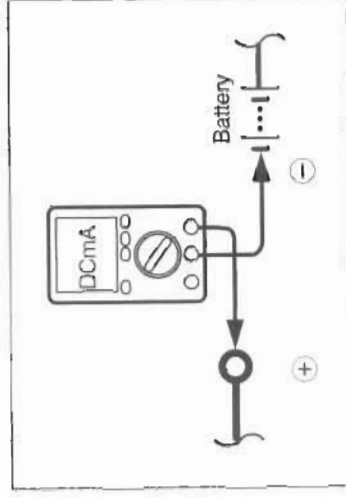
DATA Battery current (leak): Under 3 mA

TEST Tester knob indication: Current (A, 20 mA)

CAUTION

- * Because the current leak might be large, turn the tester to high range first to avoid tester damage.
- * Do not turn the ignition switch to the "ON" position when measuring current.

When checking to find the excessive current leakage, remove the couplers and connectors, one by one, checking each part.



REGULATED VOLTAGE

- Remove the two seats. (🔧 7-2)
 - Start the engine and keep it running at 5 000 r/min. with lighting switch turned ON (except for E-03, 28, 24, 33 models) and dimmer switch turned HI position.
- Measure the DC voltage between the ⊕ and ⊖ battery terminals using the multi circuit tester. If the voltage is not within the specified value, inspect the generator and regulator/rectifier. (🔧 8-8 and 8-9)

NOTE:

When making this test, be sure that the battery is in fully-charged condition.

🔧 09900-25008: Multi circuit tester set

🔧 Tester knob indication: Voltage (---)

📊 Charging output (Regulated voltage):

14.0 – 15.5 V at 5 000 r/min.

GENERATOR COIL RESISTANCE

- Remove the secondary gear case cover.
 - Disconnect the generator coupler.
- Measure the resistance between the three lead wires. If the resistance is not specified value, replace the stator with a new one. Also, check that the generator core is insulated.

🔧 09900-25008: Multi circuit tester set

🔧 Tester knob indication: Resistance (Ω)

📊 Generator coil resistance: 0.2 – 1.5 Ω (Yellow – Yellow) ∞ Ω (Yellow – Ground)

NOTE:

When making above test, it is not necessary to remove the generator.

GENERATOR NO-LOAD PERFORMANCE

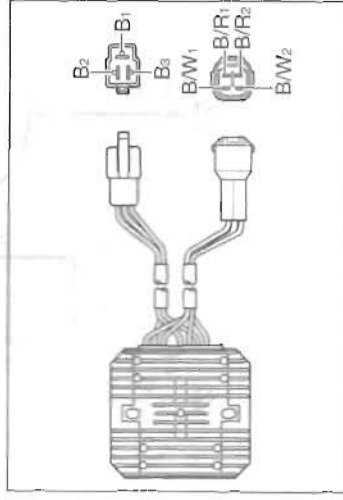
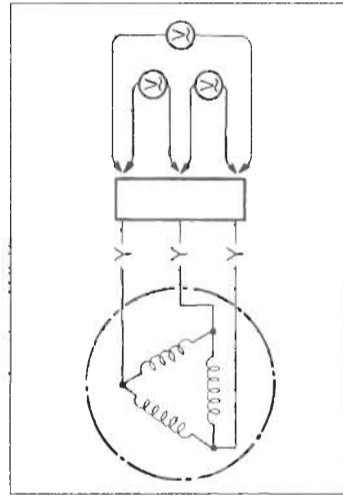
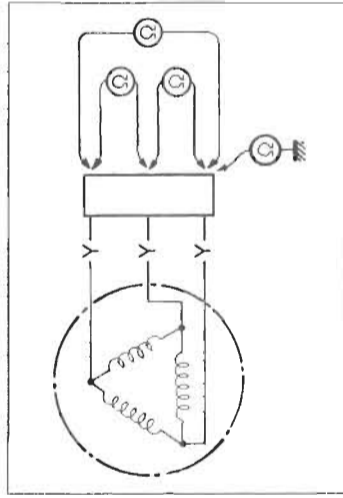
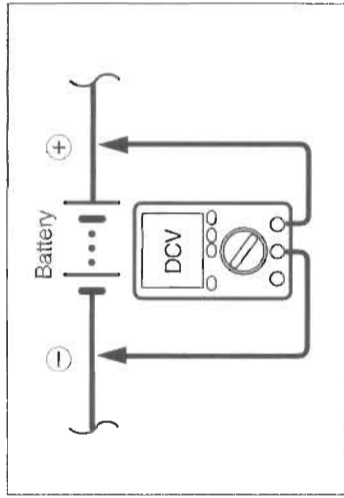
- Start the engine and keep it running at 5 000 r/min.
- Using the multi circuit tester, measure the voltage between three lead wires.

If the tester reads under the specified value, replace the generator with a new one.

🔧 09900-25008: Multi circuit tester set

🔧 Tester knob indication: Voltage (–)

📊 Generator no-load performance (When engine is cold): More than 70 V at 5 000 r/min

**WIRE COLOR**

B: Black, B/R: Black with Red tracer,
B/W: Black with White tracer

REGULATOR/RECTIFIER

- Remove the secondary gear case cover.
 - Disconnect the regulator/rectifier couplers.
- Measure the voltage between the lead wires using the multi circuit tester as indicated in the table below. If the voltage is not within the specified value, replace the regulator/rectifier with a new one.

🔧 09900-25008: Multi circuit tester set

🔧 Tester knob indication: Diode test (←←)

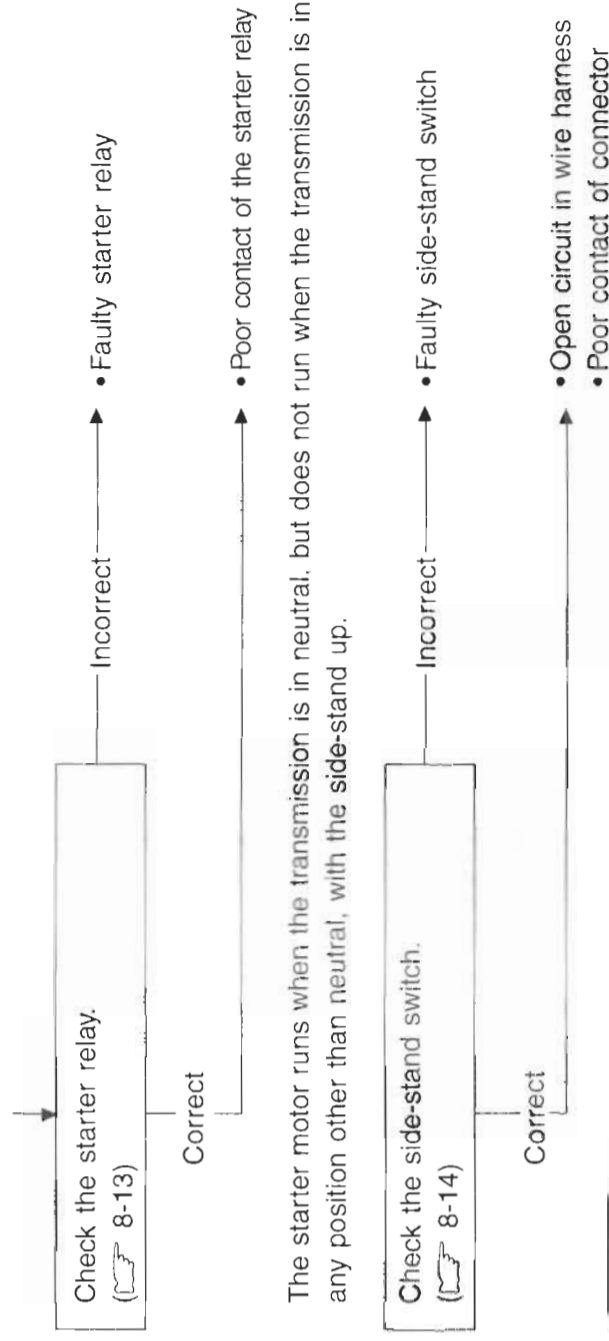
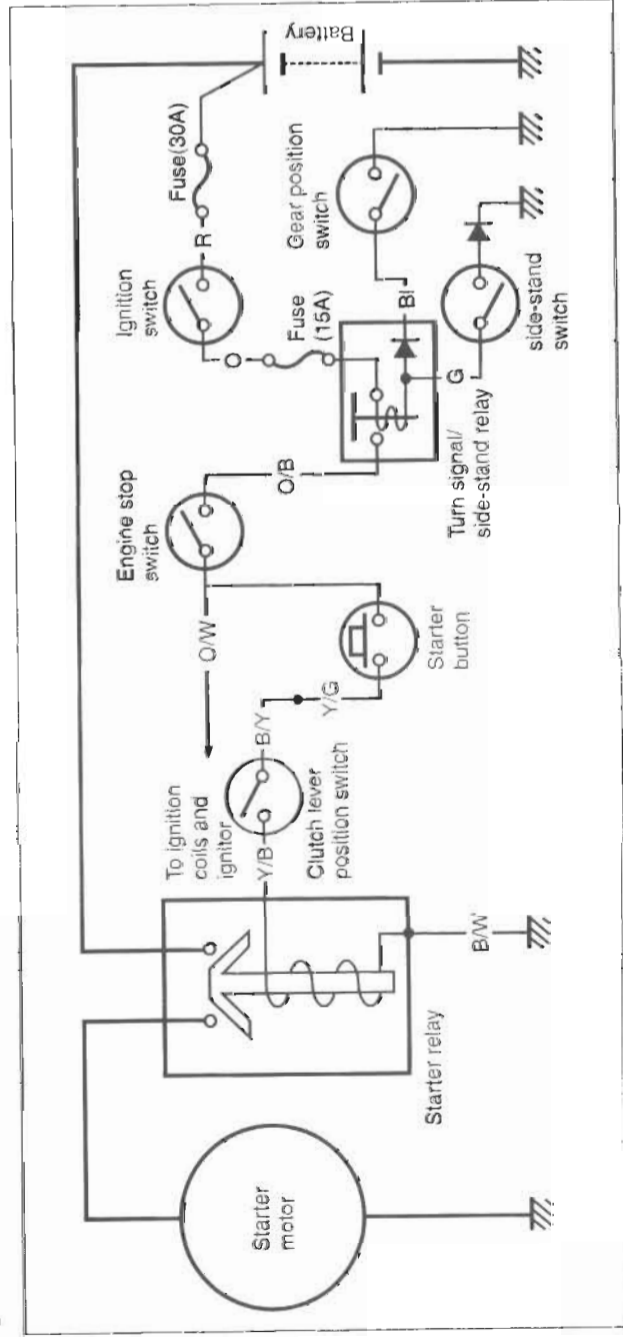
		⊕ Tester probe						Unit: V
		B/R ₁	B/R ₂	B ₁	B ₂	B ₃	B/W ₁	B/W ₂
⊖ Tester probe	B/R ₁	0	0.4 – 0.7	0.4 – 0.7	0.4 – 0.7	0.4 – 0.7	0.5 – 1.2	0.5 – 1.2
	B/R ₂	0	0.4 – 0.7	0.4 – 0.7	0.4 – 0.7	0.4 – 0.7	0.5 – 1.2	0.5 – 1.2
B ₁	*	*	*	*	*	*	0.4 – 0.7	0.4 – 0.7
B ₂	*	*	*	*	*	*	0.4 – 0.7	0.4 – 0.7
B ₃	*	*	*	*	*	*	0.4 – 0.7	0.4 – 0.7
B/W ₁	*	*	*	*	*	*	0	0
B/W ₂	*	*	*	*	*	*	0	0

* More than 1.4 V (tester's battery voltage)

NOTE:

If the tester reads under 1.4 V when the tester probes are not connected, replace the battery of multi circuit tester.

STARTER SYSTEM AND SIDE-STAND/IGNITION INTERLOCK SYSTEM

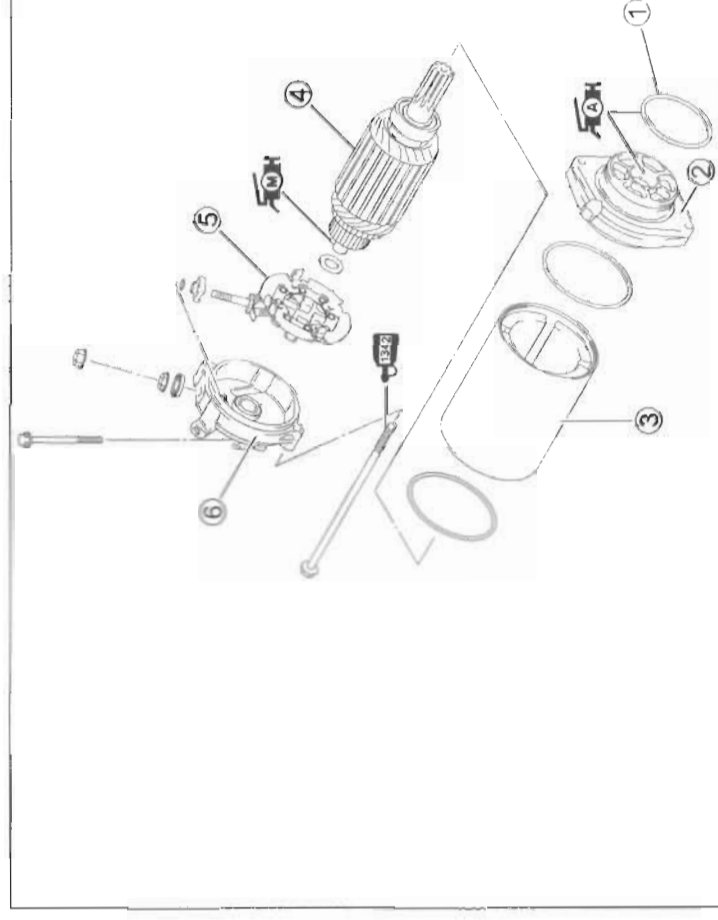
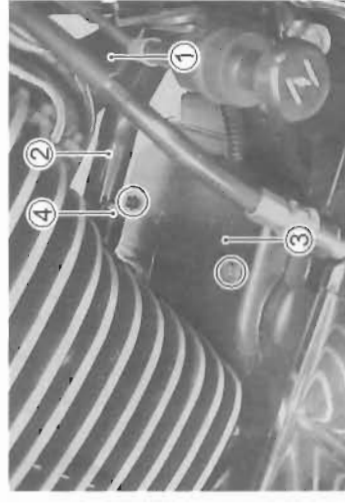


Others

- Engine does not turn though the starter motor runs.
- Faulty starter clutch

STARTER MOTOR REMOVAL AND DISASSEMBLY

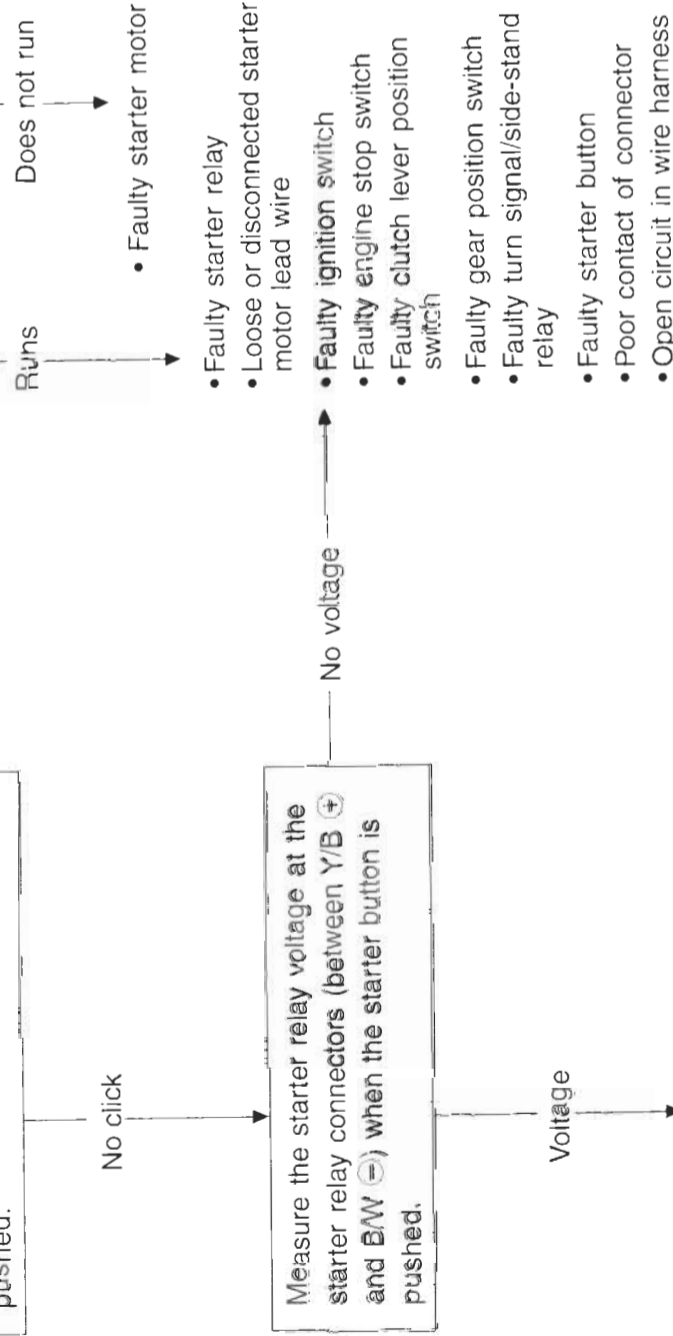
- Drain engine coolant. (2-13)
- Remove the muffler (No.1) ①. (3-5)
- Remove the engine coolant pipe ②. (3-13)
- Remove the starter motor cover ③.
- Remove the engine coolant inlet ④.
- Remove the starter motor. (3-14)
- Disassemble the starter motor as shown in the illustration.



TROUBLESHOOTING

Starter motor will not run.

The transmission is in neutral. Grasp the clutch lever, turn on the ignition switch with the engine stop switch in the "RUN" position and listen for a click from the starter relay when the starter button is pushed.

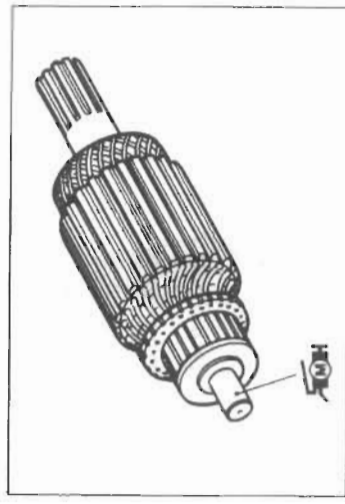


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STARTER MOTOR INSPECTION

CARBON BRUSH

Inspect the brushes for abnormal wear, cracks, or smoothness in the brush holder. If any damages are found, replace the brush assembly with a new one.

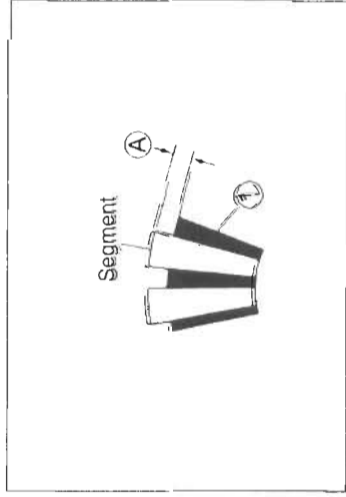


- Apply a small quantity of SUZUKI MOLY PASTE to the armature shaft.

99000-25140: SUZUKI MOLY PASTE

COMMUTATOR

Inspect the commutator for discoloration, abnormal wear or undercut (A). If abnormal wear is found, replace the armature with a new one. If the commutator surface is discolored, polish it with #400 sand paper and wipe it using a clean dry cloth. If there is no undercut, scrape out the insulator (1) with a saw blade.



- Align the tongue (1) on the brush holder with the groove (2) on the housing end.
- Align the threaded parts (3) on the housing end.
- Apply a small quantity of THREAD LOCK "1342" to the starter motor housing bolts.

1342 99000-32050: THREAD LOCK "1342"

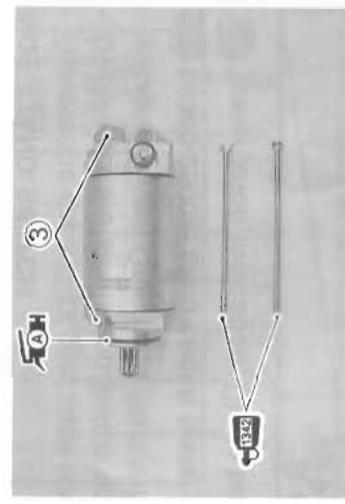
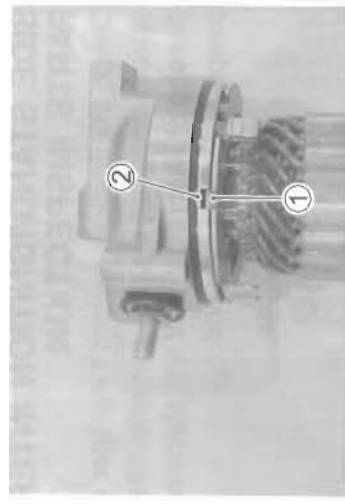
- Apply SUZUKI SUPER GREASE "A" to the O-ring.

For U.S.A.

99000-25030: SUZUKI SUPER GREASE "A"

For the others

99000-25010: SUZUKI SUPER GREASE "A"

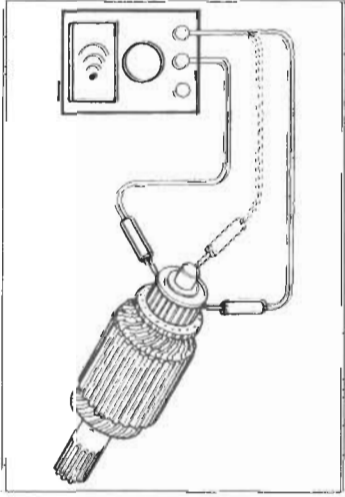


ARMATURE COIL INSPECTION

Check for continuity between each segment and between each segment and the armature shaft using the multi circuit tester. If there is no continuity between the segments or there is continuity between the segments and shaft, replace the armature with a new one.

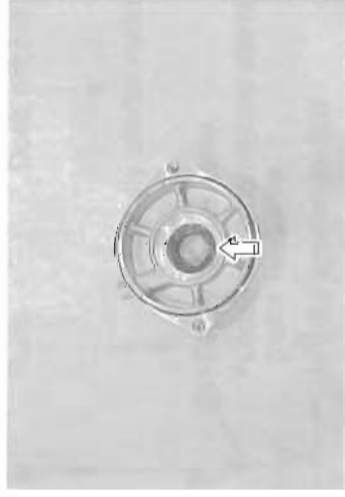
99900-25008: Multi circuit tester set

Tester knob indication: Continuity test (•|||)



OIL SEAL INSPECTION

Check the oil seal lip for damage or leakage. If any damage is found, replace the housing end.



STARTER MOTOR REASSEMBLY

Reassemble the starter motor in the reverse order of disassembly. Pay attention to the following points:

- Apply grease to the lip of the oil seal.

For U.S.A.

99000-25030: SUZUKI SUPER GREASE "A"

For the other countries

99000-25010: SUZUKI SUPER GREASE "A"

STARTER RELAY INSPECTION

- Remove the two seats. (□ 7-2)
- Disconnect the battery (-) lead wire from the battery.
- Remove the starter relay cover.
- Disconnect the starter motor lead wire (1), battery lead wire (2) and starter relay coupler (3).
- Remove the starter relay (4).

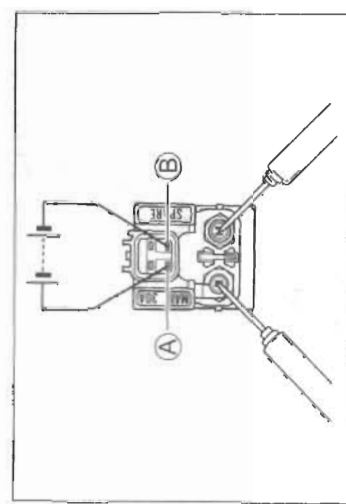
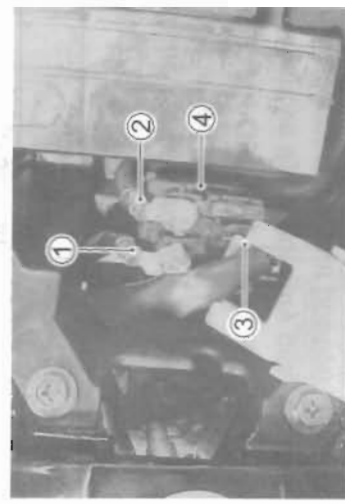
Apply 12 V to (A) and (B) terminals and check for continuity between the positive and negative terminals using the multi circuit tester. If the starter relay clicks and continuity is found, the relay is ok.

09900-25008: Multi circuit tester set

Tester knob indication: Continuity test (•|||)

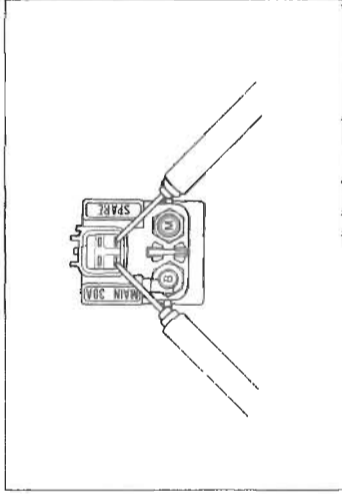
CAUTION

Do not apply a battery voltage to the starter relay for more than five seconds, since the relay coil may overheat and damaged.



Measure the relay coil resistance between the terminals using the multi circuit tester. If the resistance is not within the specified value, replace the starter relay with a new one.

TOOL 09900-25008: Multi circuit tester set
DATA Starter relay resistance: 3 – 7 Ω



SIDE STAND/IGNITION INTERLOCK SYSTEM PARTS INSPECTION

Check the interlock system for proper operation. If the interlock system does not operate properly, check each component for damage or abnormalities. If any abnormality is found, replace the component with a new one.

SIDE-STAND SWITCH

- Remove the secondary gear case cover.
- Disconnect the side-stand switch coupler and measure the voltage between Green and Black/White lead wires.

TOOL 09900-25008: Multi circuit tester set
Tester knob indication: Diode test (→←)

	Green (⊕ Probe)	Black/White (⊖ Probe)
ON (Side-stand up)	0.4–0.6 V	
OFF (Side-stand down)	More than 1.4 V (Tester's battery voltage)	

NOTE:
 If the tester reads under 1.4V when the tester probes are not connected, replace its battery.

GEAR POSITION SWITCH

- Remove the secondary gear case cover.
- Disconnect the gear position switch coupler and check the continuity between Blue and Black/White with the transmission in "NEUTRAL".

	Blue	Black/White
ON (Neutral)	○	
OFF (Except neutral)	○	

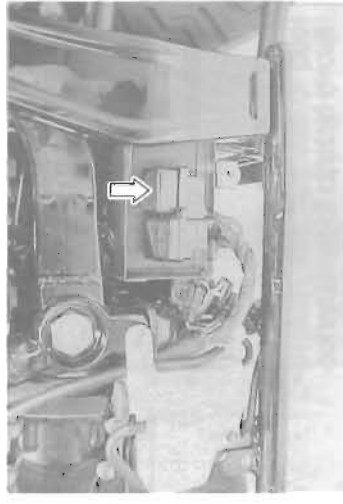
▲ CAUTION

When disconnecting and connecting the gear position switch coupler, make sure to turn OFF the ignition switch, or electronic parts may get damaged.

TURN SIGNAL/SIDE-STAND RELAY

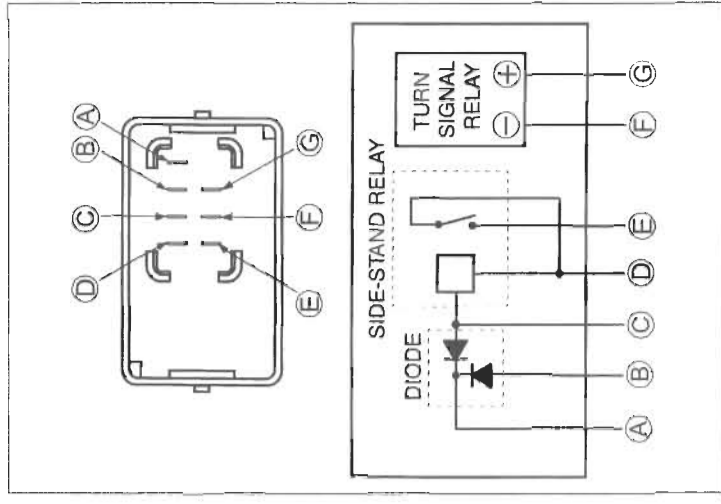
The turn signal/side-stand relay is composed of the turn signal relay, and the side-stand relay and diode.

- Remove the secondary gear case cover.
- Remove the turn signal/side-stand relay.



SIDE-STAND RELAY INSPECTION

First check the insulation between D and E terminals with the tester. Then apply 12V to terminals D and C (⊕ to D and ⊖ to C) and check the continuity between D and E. If there is no continuity, replace the turn signal/side-stand relay with a new one.



DIODE INSPECTION

Measure the voltage between the terminals using the multi circuit tester. Refer to the following table.

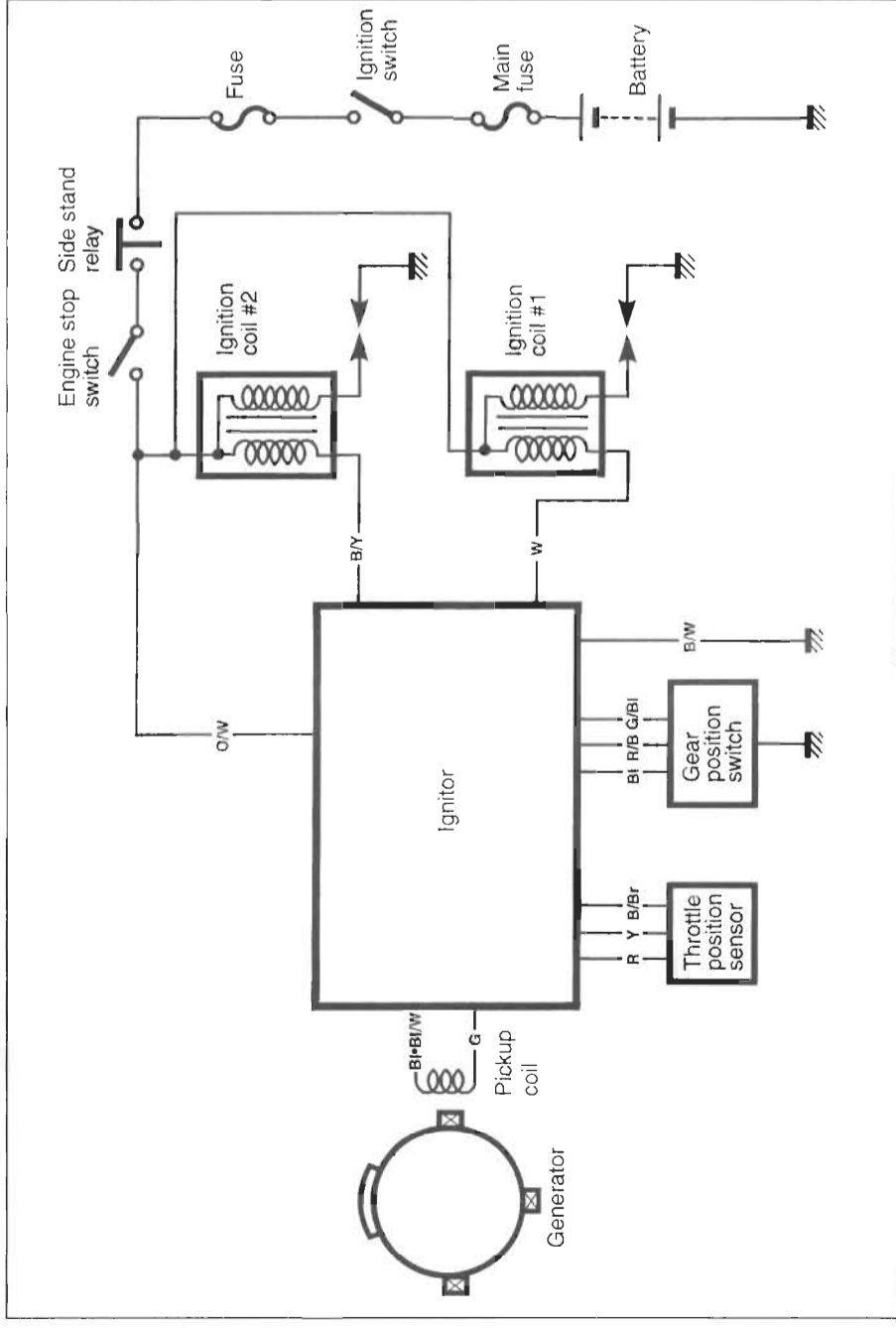
tester to: ⊖ Probe of	⊕ Probe of tester to:	C, B	A
		C, B	A
		0.4–0.6 V	More than 1.4 V (Tester's battery voltage)

TOOL 09900-25008: Multi circuit tester set
Tester knob indication: Diode test (→←)

NOTE:
 If the multi circuit tester reads under 1.4V when the tester probes are not connected, replace its battery.



IGNITION SYSTEM



NOTE:

The ignition cut-off circuit is incorporated in this ignitor to prevent over-running of engine. If engine rpm reaches 8 000 r/min., this circuit cuts off the ignition primary current for all spark plugs.

CAUTION

Under no load, the engine can run over 8 000 r/min, even if the ignition cut-off circuit is effective, and it may cause engine damage. Do not run the engine without load over 8 000 r/min at anytime.

TROUBLESHOOTING

No spark or poor spark

Check the ignition system couplers for poor connections.

Correct →

Continued on next page

Make sure the transmission is in neutral and the engine stop switch is in the "RUN" position. Grasp the clutch lever. Make sure the fuse is not blown and the battery is fully-charged before diagnosing.

Loose →

- Improper coupler connection

Measure the battery voltage between input lead wires (O/W and B/W) at the ignitor with the ignition switch in the "ON" position.

Incorrect →

- Faulty ignition switch
- Faulty turn signal/side-stand relay
- Faulty engine stop switch
- Broken wire harness or poor connection of related circuit couplers

Correct →

Measure the ignition coil primary peak voltage. (8-18)

NOTE: The ignition coil peak voltage inspection method is applicable only with the multi circuit tester and the peak volt adaptor.

Incorrect →

Inspect the spark plugs. (2-5)

Correct →

- Faulty spark plug (-s)

Incorrect →

- Improper spark plug connection
- Faulty ignition coil (-s)

Correct →

Inspect the ignition coils. (8-19)

Incorrect →

- Faulty pickup coil

Correct →

Measure the pickup coil peak voltage and resistance. (8-19, -20)

NOTE: The pickup coil peak voltage inspection is applicable only with the multi circuit tester and peak volt adaptor.

Correct →

- Faulty ignitor
- Faulty wire harness
- Improper ignition coupler connection.

INSPECTION

IGNITION COIL PRIMARY PEAK VOLTAGE

- Remove the fuel tank. (☞ 5-3)
- Disconnect the two spark plug caps.
- Connect the new spark plug caps to the each spark plug cap and ground them on the cylinder head.

NOTE:

Make sure that the each spark plug cap and spark plug are connected properly.

Measure the ignition coil primary peak voltage using the multi circuit tester in the following procedure.

- Connect the multi circuit tester with the peak volt adaptor as follows.

No.1 Ignition coil ⊕ Probe: White lead wire connector

⊖ Probe: Ground

No.2 Ignition coil ⊕ Probe: Black/Yellow lead wire connector

⊖ Probe: Ground

NOTE:

Do not disconnect the ignition coil primary lead wires.

09900-25008: Multi circuit tester set

CAUTION

Before using the multi circuit tester and peak volt adaptor, be sure to refer to the appropriate instruction manual.

- Shift the transmission into neutral, and then turn the Ignition switch to the "ON" position.
- Pull the clutch lever.
- Press the starter button and allow the engine to crank for a few seconds, and then measure the ignition coil primary peak voltage.
- Repeat the above procedure a few times and measure the highest ignition coil primary peak voltage.

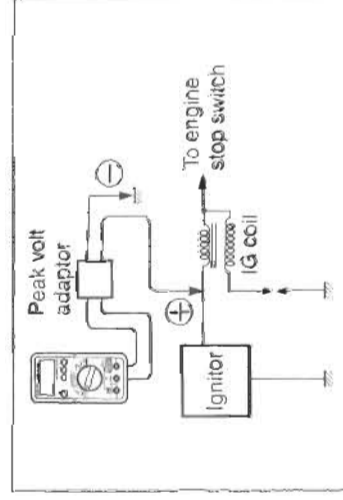
Tester knob indication: voltage (V)

DATA Ignition coil primary peak voltage: More than 200 V

WARNING

While testing, do not touch the tester probes and spark plugs to prevent receiving an electric shock.

If the peak voltage is lower than the specified values, inspect the ignition coil. (☞ 8-19)



IGNITION COIL RESISTANCE

- Remove the fuel tank. (☞ 5-3)
- Disconnect the ignition coil lead wires and plug caps. Measure the ignition coil resistance in both the primary and secondary windings. If the resistance is not within the standard range, replace the ignition coil with a new one.

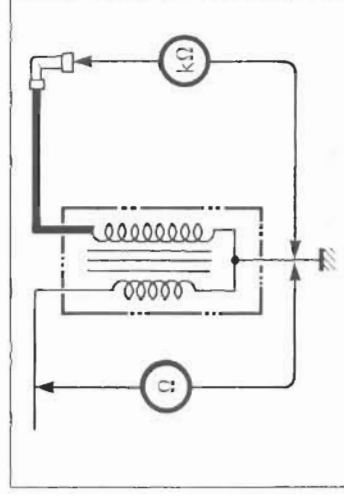
09900-25008: Multi circuit tester set

Tester knob indication: Resistance (Ω)

DATA Ignition coil resistance

Primary : 2 – 6 Ω (Terminal – Terminal)

Secondary : 15 – 30 kΩ (Plug cap – Terminal)



PICKUP COIL PEAK VOLTAGE

- Remove the two seats. (☞ 7-2)
- Disconnect the wire harness coupler ① at the ignitor.

NOTE:

Make sure that all of the couplers are connected properly.

Measure the pickup coil peak voltage in the following procedure.

- Connect the multi circuit tester with the peak volt adaptor as follows.

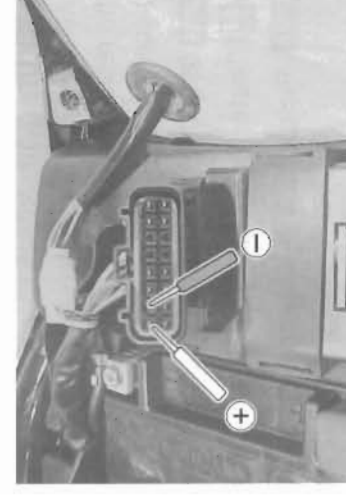
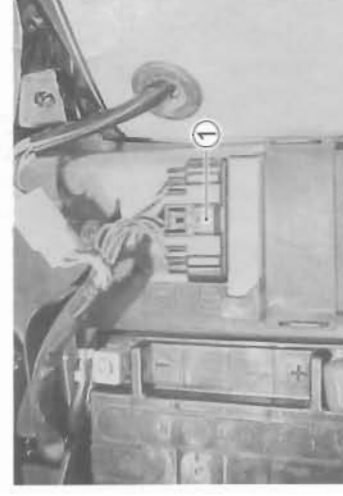
⊕ Probe: Blue/White lead wire

⊖ Probe: Green lead wire

09900-25008: Multi circuit tester set

CAUTION

Before using the multi circuit tester and peak volt adaptor, be sure to refer to the appropriate instruction manual.



- Shift the transmission into the neutral, and then turn the ignition switch to the "ON" position.
- Pull the clutch lever.
- Press the starter button and allow the engine to crank for a few seconds, and then measure the pickup coil peak voltage.
- Repeat the above procedure a few times and measure the highest peak voltage.

 **Tester knob indication: Voltage (---)**

 **Pickup coil peak voltage: More than 1.5 V**

If the peak voltage is lower than the specified values, check the peak voltage at the pickup coil lead wire coupler.

- Remove the secondary gear case cover.
- Disconnect the pickup coil lead wire coupler and connect the multi circuit tester with the peak volt adaptor.

- ⊕ Probe: Blue lead wire
- ⊖ Probe: Green lead wire

Measure the pickup coil peak voltage at the pickup coil lead wire coupler, in the same manner as on the ignitor coupler.

 **Tester knob indication: Voltage (---)**

 **Pickup coil peak voltage: More than 1.5 V**


If the peak voltage on the pickup coil lead wire coupler is ok but on the ignitor coupler is out of specification, the wire harness must be replaced. If both peak voltages are out of specification, the generator must be replaced and re-checked.

PICKUP COIL RESISTANCE

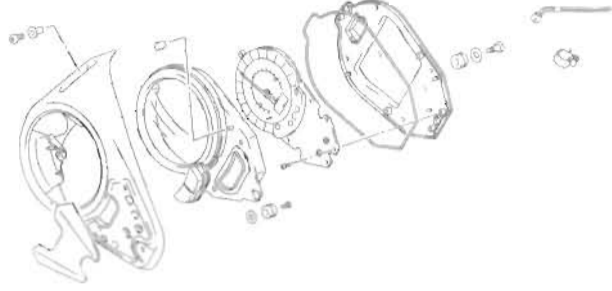
Measure the resistance between the lead wires and ground. If the resistance is not specified value, the pickup coil must be replaced.

 **09900-25008: Multi circuit tester set**

 **Tester knob indication: Resistance (Ω)**

 **Pickup coil resistance : 160 – 300 Ω (Green – Blue)
: ∞ Ω (Green – Ground)**

SPEEDOMETER



REMOVAL

- Remove the screws.



- Disconnect the cover and coupler.

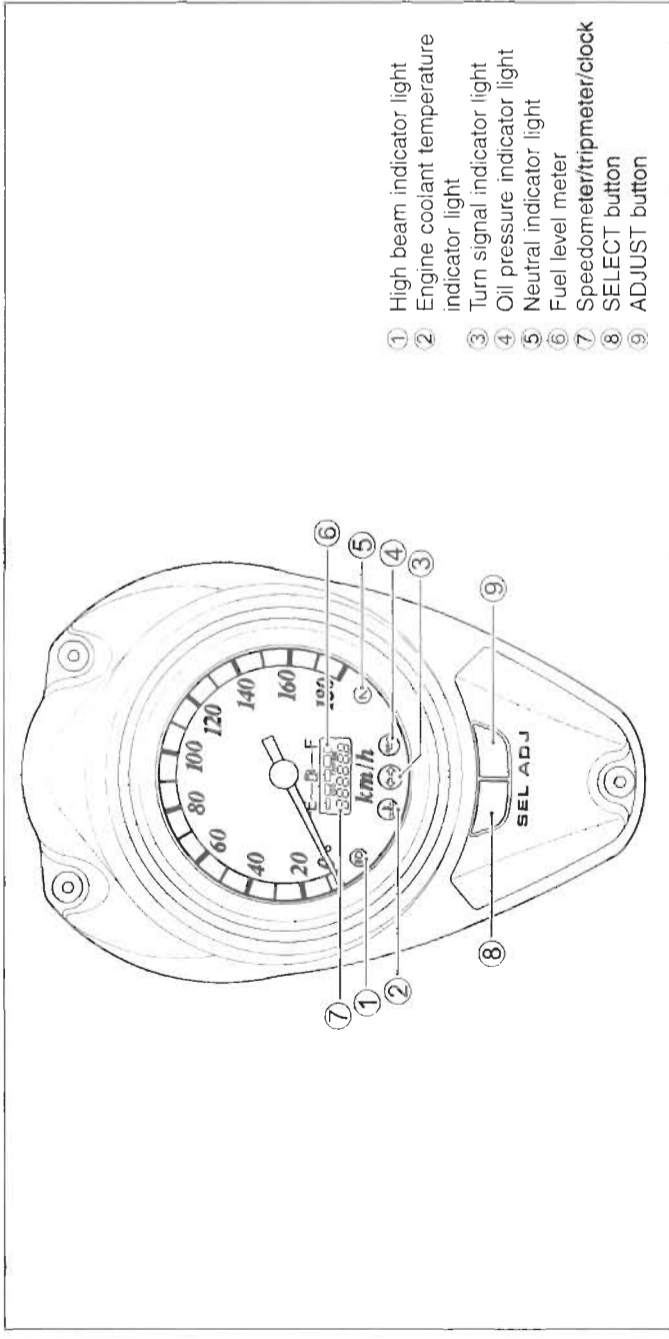
CAUTION

When disconnecting and connecting the combination meter coupler, make sure to turn OFF the ignition switch, or electronic parts may get damaged.

- Remove the speedometer.



PARTS NAMES



OPERATING PROCEDURE

INITIAL DISPLAY

When the ignition switch is set to ON, all indicators light up for three seconds.

NOTE:

If the power supply is cut (e.g. when the battery is replaced):

- * The odometer, tripmeter and clock are displayed after the initial display appears.
- * Since the clock resets to "1:00", it will need to be readjusted.

CHANGE THE DISPLAY MODE

With each press of the SELECT button, the display changes between odometer, tripmeter A, tripmeter B and clock as shown.



▲ WARNING

To avoid riding with only one hand, do not operate the buttons while riding.

ODOMETER

- Displays the total distance travelled.

TRIPMETER

- Displays the distance travelled since the tripmeter was last reset.

NOTE:

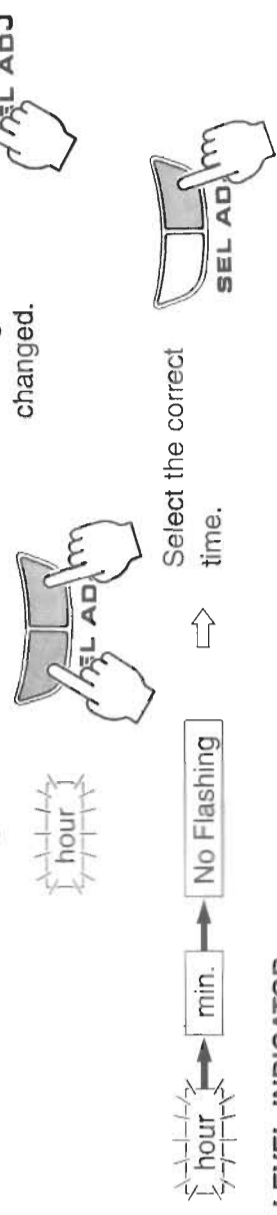
The tripmeters A and B can be used independently.

- Hold down the ADJUST button for two seconds to reset the tripmeter.

CLOCK

- Displays the time (hours and minutes) on a 12-hour clock.
- Setting the time.

Hold down the ADJUST button for two seconds while pressing the SELECT button and then flashing the hour display.



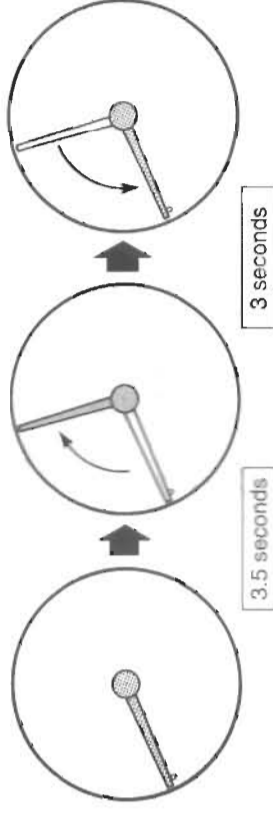
FUEL LEVEL INDICATOR

- Displays the amount of fuel remaining in the fuel tank.

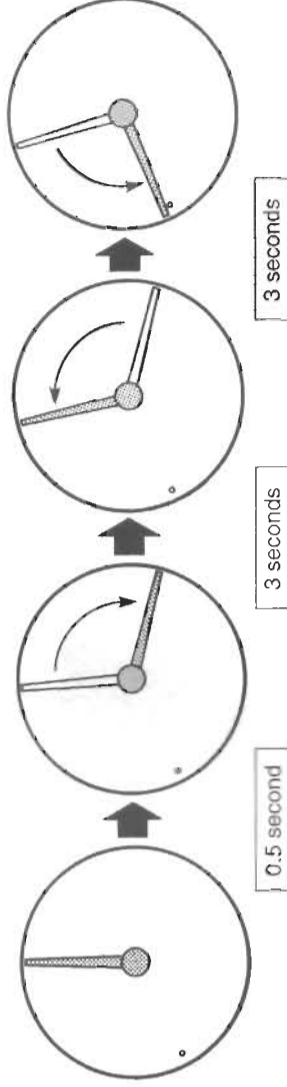
SPEEDOMETER

- The speedometer pointer operates onetime as shown below to reset speedometer pointer, when connecting the battery or speedometer coupler.

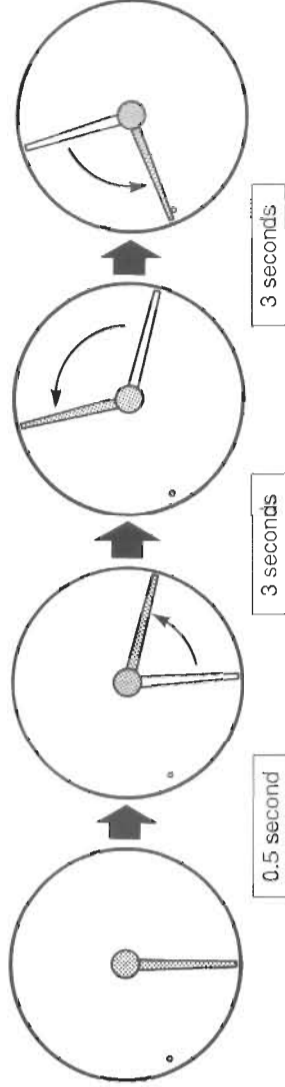
1. When the speedometer pointer is normal position.



2. When the speedometer pointer is top position.



3. When the speedometer pointer is bottom position.



NOTE:

The speedometer pointer can indicate case 2 or case 3 if the battery terminal or speedometer lead wire coupler is disconnected while riding.

INSPECTION

LED (LIGHT EMITTING DIODE)

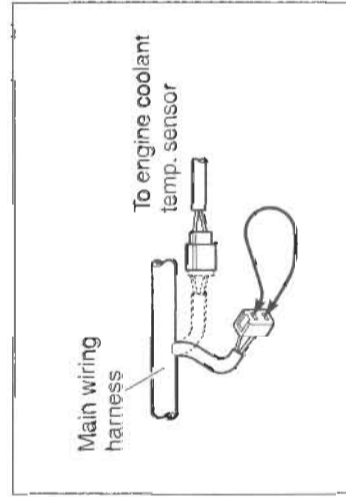
Check that the LED lights immediately after turning the ignition switch on. If the LED fails in operation, replace the speedometer unit with a new one after checking its wire harness coupler.

ENGINE COOLANT TEMPERATURE INDICATOR LIGHT

Engine coolant temperature sensor inspection: (☞ 6-8)

- Remove the fuel tank. (☞ 5-3)
- Disconnect the engine coolant temperature sensor coupler.
- Connect the jumper wire to the wire harness coupler.

Check that the LED light immediately after turning the ignition switch on. If the LED fail in operation, replace the speedometer unit with a new one.

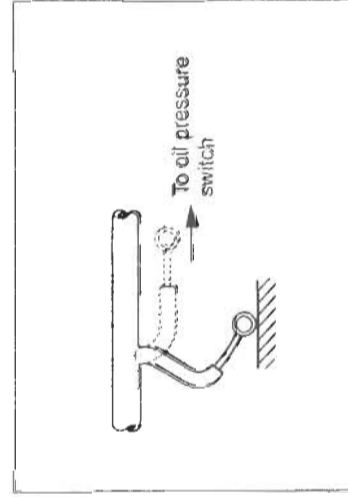


OIL PRESSURE INDICATOR LIGHT

NOTE:

Before inspecting the oil pressure switch, check if the engine oil level is enough. (☞ 2-8)

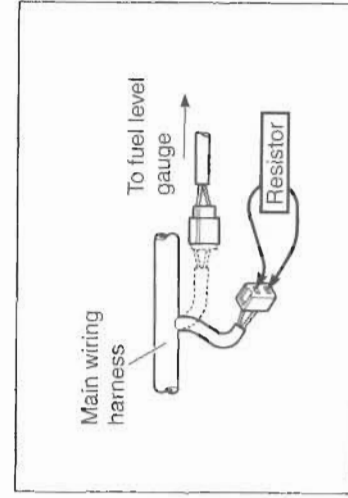
- Disconnect the oil pressure switch lead wire from the oil pressure switch.
- Turn the ignition switch "ON" position. Check if the oil pressure indicator will light, when grounding the lead wire.



FUEL LEVEL METER

- Remove the fuel tank. (☞ 5-3)
- Connect the speedometer.
- Connect each resistor between the Yellow/Black and Black/White lead wire at the wire harness.
- Turn the ignition switch "ON" position and wait for approx. 13 seconds.

Check the display of fuel meter as shown below. If any abnormality is found, replace the speedometer with a new one.



Resistance	Less than 17 Ω	22 - 28 Ω	33 - 49 Ω	54 - 69 Ω	74 - 83 Ω	More than 94 Ω
Fuel level meter						

FUEL LEVEL GAUGE INSPECTION

- Remove the fuel tank. (☞ 5-3)
- Remove the fuel level gauge.

Measure the resistance at each fuel level gauge float position. If the resistance is incorrect, replace the fuel level gauge with a new one.

Float position	Resistance
A "F" (Full)	4 – 10 Ω
B "E" (Empty)	90 – 100 Ω

Remount the fuel level gauge in the reverse order of removal. Pay attention to the following points.

- Install the O-ring and apply grease to it.

For U.S.A.

 99000-25030: SUZUKI SUPER GREASE "A"

For the other countries

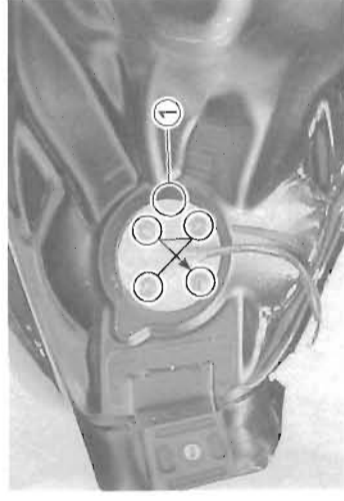
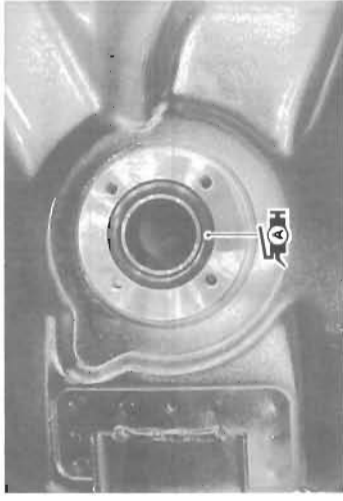
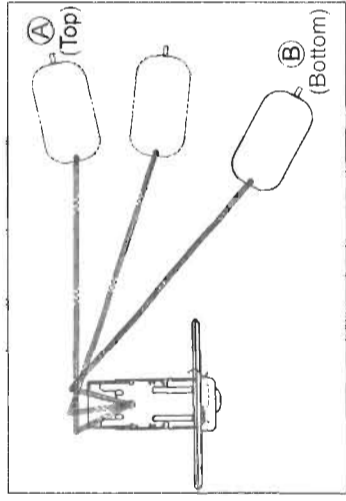
 99000-25010: SUZUKI SUPER GREASE "A"

▲ CAUTION

Use a new O-ring to prevent fuel leakage.

- Face the "Δ" mark ① on the fuel level gauge forward.
- Lightly tighten the bolts in a crisscross pattern, and then tighten them to the specified torque in the above manner.

 Fuel level gauge bolt: 10 N·m (1.0 kgf·m, 7.0 lb-ft)

**SPEED SENSOR INSPECTION**

If the speedometer, odometer or tripmeter does not function properly, inspect the speed sensor and connection of couplers. If the speed sensor and connection is all right, replace the unit with a new one.

- Remove the front wheel. (☞ 7-4)
- Remove the head light.
- Disconnect the speed sensor lead wire coupler.
- Remove the speed sensor.
- Connect 12V battery (between O/R and BW), 10 kΩ resistor (between O/R and P) and the multi circuit tester (⊕ probe of tester to O/R and ⊖ to P) as shown right illustration.

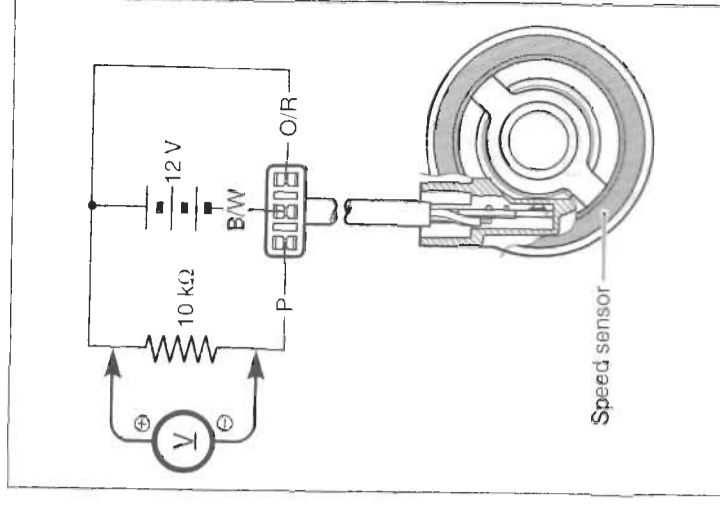
O/R : Orange with Red tracer

B/W : Black with White tracer

P : Pink

 09900-25008: Multi circuit tester set

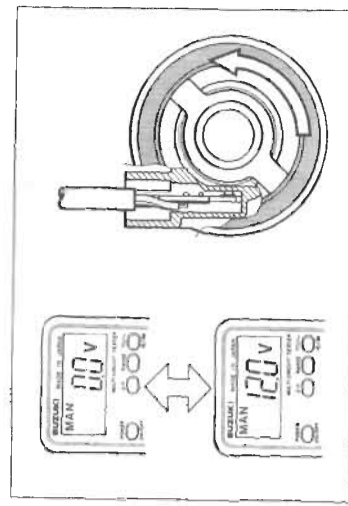
 Tester knob indication: Voltage (---)



Under above condition, by rotating the drive lugs of speed sensor slowly, the tester reading voltage relatively changes (0V → 12V or 12V → 0V). If the tester reading voltage does not change, replace the speed sensor with a new one.

NOTE:

The highest tester reading voltage (12V) while testing is same as battery voltage.

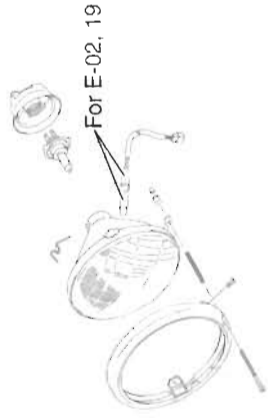


LAMPS

HEADLIGHT, BRAKE LIGHT/TAILLIGHT AND TURN SIGNAL LIGHT

HEADLIGHT

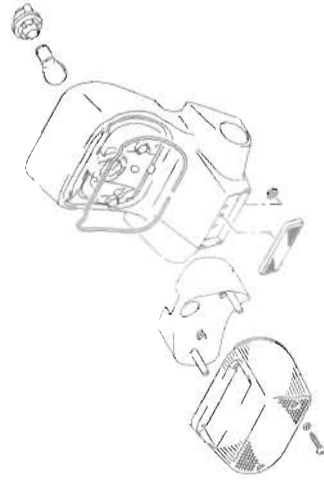
12 V 60/55 W For E-03, 24, 28, 33
 12 V 60/55 W + 4 W For E-02, 19



For E-02, 19

BRAKE LIGHT/TAILLIGHT

12 V 21/5 W



TURN SIGNAL LIGHT

Front

12 V 21/5 W For E-03, 28, 33

12 V 21 W For E-02, 19, 24

Rear

12 V 21 W



CAUTION

If you touch the bulb with your bare hands, clean the bulb with a cloth moistened with alcohol or soapy water to prevent premature bulb failure.

HEADLIGHT BEAM ADJUSTMENT

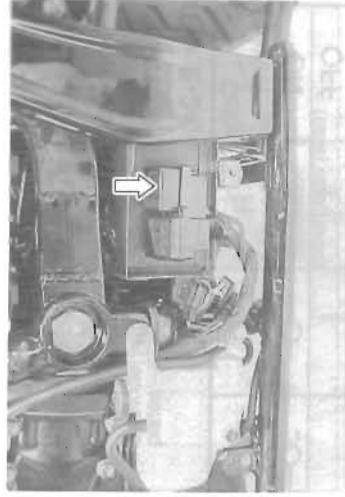
- Adjust the headlight beam, both vertical and horizontal.



RELAYS

TURN SIGNAL/SIDE-STAND RELAY

The turn signal/side-stand relay is composed of the turn signal relay, side-stand relay and diode.



INSPECTION

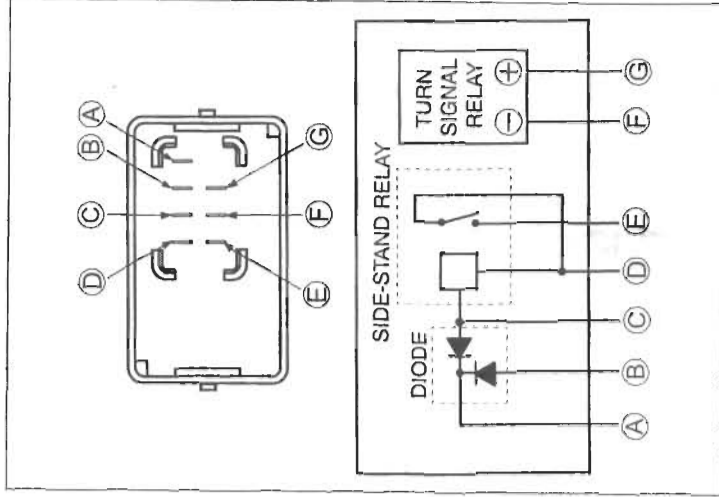
Before removing the turn signal/side-stand relay, check the operation of the turn signal light.

If the turn signal light does not illuminate, inspect the bulb, turn signal switch and circuit connection.

If the bulb, turn signal switch and circuit connection are OK, the turn signal relay may be faulty; therefore, replace the turn signal/side-stand relay with a new one.

NOTE:

- Make sure that the battery is fully charged.
- Refer to the page 8-15 for the side-stand relay and diode inspection.



STARTER RELAY

8-13

SWITCHES

IGNITION SWITCH REMOVAL

- Remove the fuel tank. (5-3)
- Remove the frame head covers. (6-4)
- Disconnect the coupler.
- Remove the ignition switch mounting bolts using the special tool.

09930-11920: Torx bit JT40H

09930-11940: Bit holder

CAUTION

When reusing the ignition switch bolt, clean thread and apply the THREAD LOCK SUPER "1303"

99000-32030: THREAD LOCK SUPER "1303"



Inspect each switch for continuity with a tester. If any abnormality is found, replace the respective switch assemblies with new ones.

IGNITION SWITCH

(For E-24)

Color	R	O	O/Y	B/W
Position	ON	OFF	LOCK	

(For Others)

Color	R	O	O/Y	B/W	Gr	Br
Position	ON	OFF	LOCK	P		

LIGHTING SWITCH

(Except for E-03, 24, 28 and 33)

Color	O/B	Gr	O/R	Y/W
Position	OFF (•)	S (300)	ON (•)	

DIMMER SWITCH

Color	W	Y	Y/W
Position	HI (ED)	LO (ED)	

TURN SIGNAL SWITCH

Color	Lg	Lbl	B
Position	L	R	

PASSING LIGHT SWITCH

(Except for E-03, 28 and 33)

Color	O/R	Y
Position	PUSH	

ENGINE STOP SWITCH

Color	O/B	O/W
Position	OFF (X)	RUN (O)

STARTER BUTTON

Color	O/W	Y/G
Position	PUSH	

HORN BUTTON

Color	B/Bl	B/W
Position	PUSH	

FRONT BRAKE SWITCH

Color	B/R	B
Position	OFF	ON

REAR BRAKE SWITCH

Color	Terminal	Terminal
Position	OFF	ON

CLUTCH LEVER POSITION SWITCH

Color	B/Y	B/Y
Position	OFF	ON

OIL PRESSURE SWITCH

Color	G/Y	Ground
Position	ON (engine is stopped)	OFF (engine is running)

NOTE:

Before inspecting the oil pressure switch, check if the engine oil level is enough. (P 2-8)

WIRE COLOR

- B : Black
- Bl : Light blue
- Br : Brown
- Lg : Light green
- Gr : Gray
- O : Orange
- B/Bl : Black with Blue tracer
- B/W : Black with White tracer
- B/Y : Black with Yellow tracer
- B/R : Black with Red tracer
- G/Y : Green with Yellow tracer
- O/B : Orange with Black tracer
- O/Bl : Orange with Blue tracer
- O/R : Orange with Red tracer
- O/W : Orange with White tracer
- O/Y : Orange with Yellow tracer
- Y/G : Yellow with Green tracer
- Y/W : Yellow with White tracer
- R : Red
- Y : Yellow
- W : White

BATTERY SPECIFICATIONS

Type designation	FTX12-BS
Capacity	12V, 36 kC (10 Ah)/10HR

INITIAL CHARGING FILLING ELECTROLYTE

- Remove the aluminum tape ① which seals the battery filler holes ②.

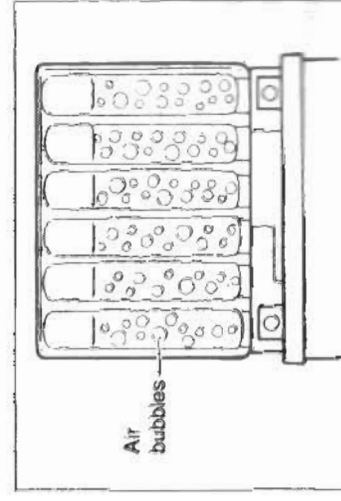
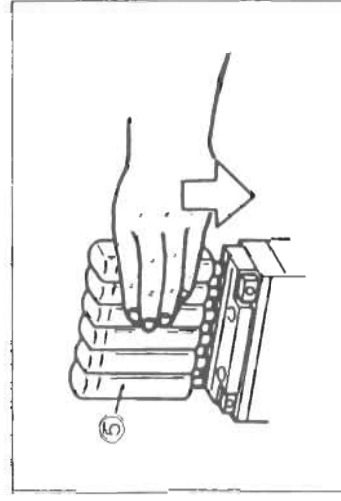
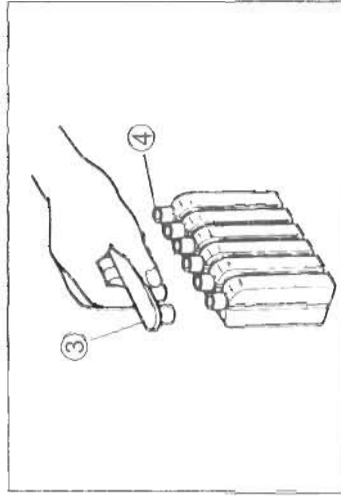
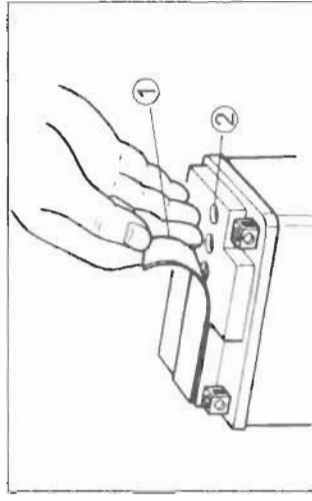
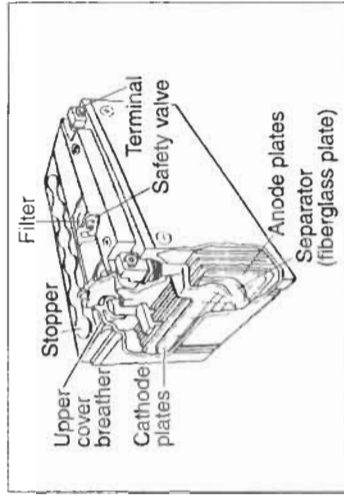
- Remove the caps ③ from the electrolyte container.

NOTE:

- Do not remove or pierce the sealed areas ④ of the electrolyte container.
- After completely filling the battery with electrolyte, use the caps ⑤ from the electrolyte container to seal the battery filler holes.

- Insert the nozzles of the electrolyte container ⑤ into the electrolyte filler holes of the battery. Hold the electrolyte container firmly so that it does not fall. Do not allow any of the electrolyte to spill.

- Make sure the air bubbles rise to the top of each electrolyte container and leave the electrolyte container in this position for more than 20 minutes.



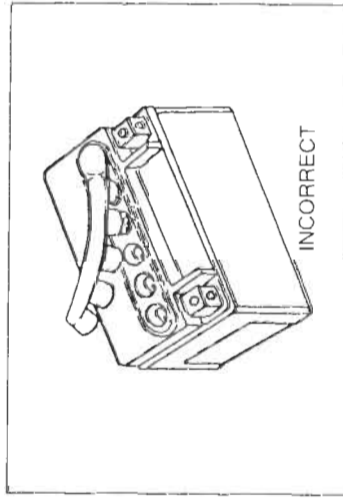
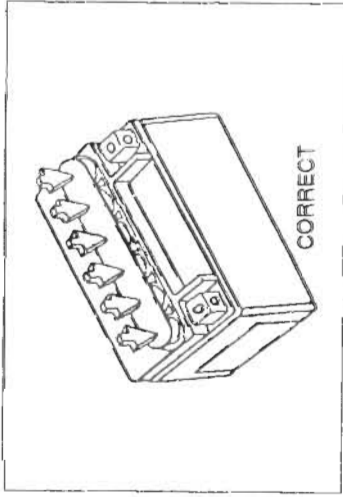
NOTE:

If air bubbles do not rise from any one of the filler ports, tap the bottom of the electrolyte container two or three times. Never remove the electrolyte container from the battery while there is still electrolyte in the container.

- After the electrolyte container is completely empty, remove it from the battery and wait about 20 minutes.
- Insert the caps ① firmly into the filler holes, so that the top of the caps do not protrude above the upper surface of the top cover of the battery.

CAUTION

- * Never use anything except the specified battery.
- * Do not remove the caps once they are installed in the battery.
- * Do not tap the caps with a hammer when installing them.



- Measure the battery voltage using multi circuit tester. The tester should indicate more than 12.5 – 12.6V (DC) as shown in the Fig. If the battery voltage is lower than the specification, charge the battery with a battery charger. (Refer to the recharging operation)

CAUTION

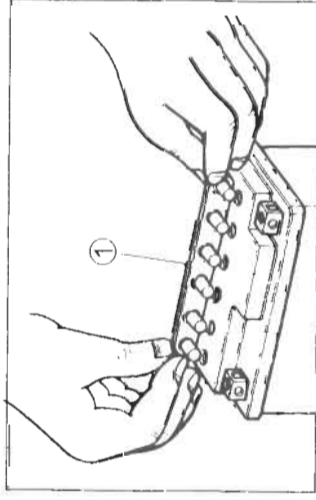
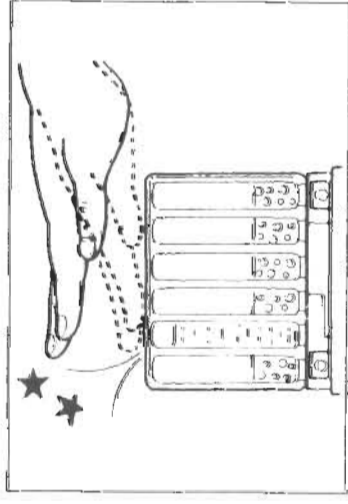
Do not remove the caps on the battery top while charging.

NOTE:

Initial charging for a new battery is recommended if two years have elapsed since the date of manufacture.

SERVICING

Visually inspect the surface of the battery container. If any signs of cracking or electrolyte leakage from the sides of the battery have occurred, replace the battery with a new one. If the battery terminals are found to be coated with rust or an acidic white powdery substance, clean the battery terminals with sandpaper.

**RECHARGING OPERATION**

- Measure the battery voltage using the multi circuit tester. If the voltage reading is less than the 12.0V (DC), recharge the battery with a battery charger.

CAUTION

- * When recharging the battery, remove the battery from the motorcycle.
- * Do not remove the caps on the battery top while recharging.

Recharging time: 1.2A for 5 to 10 hours or 5A for one hour

CAUTION

Be careful not to permit the charging current to exceed 5A at any time.

- After recharging, wait at least 30 minutes and then measure the battery voltage using the multi circuit tester. If the battery voltage is less than 12.5V, recharge the battery again. If battery voltage is still less than 12.5V after recharging, replace the battery with a new one. When a battery is left unused for a long time, its voltage needs to be regularly measured. When the motorcycle is not used for more than one month (especially during the winter season), measure the battery voltage at least once a month.

