15. Charging System/Battery

Service Information

General Safety

The maintenance-free (MF) battery does not require battery acid level inspection. Do not replenish distilled water.

To charge the battery, remove the battery from the frame, and charge it with its seal-cap closed.

Unless required in an emergency, do not carry out battery quick-charging.

Always charge battery based on the current and time specified on top of the battery.

Use a tester to check the charging status (open voltage).

Do not replace the battery with a general-type battery.

Check the charging system in sequence based on troubleshooting table.

Test-charging systems while they are mounted on the motorcycle.

For information on generator disassembly, refer to section 8.

Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Standard values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery</td>
<td></td>
</tr>
<tr>
<td>Capacity</td>
<td>12V 6AH(MF)</td>
</tr>
<tr>
<td>Terminal-to-terminal voltage</td>
<td>13.0 13.2V</td>
</tr>
<tr>
<td>Charging current</td>
<td>0.9A</td>
</tr>
<tr>
<td>Leakage current</td>
<td>Not to exceed 1mA</td>
</tr>
<tr>
<td>Generator</td>
<td></td>
</tr>
<tr>
<td>Charging coil resistance</td>
<td>0.1~1.0 (20)</td>
</tr>
<tr>
<td>rpm at charging start</td>
<td>1,600rpm(night load)</td>
</tr>
<tr>
<td>Regulator/rectifier</td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>Thyristor system</td>
</tr>
<tr>
<td>Regulator voltage</td>
<td>14.5 0.5V/5.000/rpm</td>
</tr>
</tbody>
</table>

Tools

Measuring instruments
Digital circuit tester
PVA Multi-tester.
Troubleshooting

No power - key turned on
- Dead battery
- Low fluid level
- Low specific gravity
- Charging system failure
  - Disconnected battery cable
  - Main fuse burned out
  - Faulty ignition switch

Low voltage - key turned on
- Weak battery
- Low fluid level
- Low specific gravity
- Charging system failure
  - Loose battery connection

Low power - engine running
- Battery undercharged
  - Low fluid level
  - One or more dead cells
  - Charging system failure

Intermittent power
- Loose battery connection
- Loose charging system connection
- Loose starting system connection
- Loose connection or short circuit in ignition system

Charging System Failure
- Loose, broken or shorted wire or connection
- Faulty voltage regulator
- Faulty rectifier
- Faulty alternator
Battery

Removal
Remove the floor panel mat.
Loosen the 2 battery cover setting bolts.
Remove the battery cover.

Charging Status (Open Voltage) Inspection
Remove the battery terminal from the battery.
Check the battery terminal voltage.
**Fully charged: 13.0-13.2V**
**Under charged: Not to exceed 12.3V**

NOTE
Use a PVA multi-tester to check the status of charging.

Charging System Inspection

Leakage Test
Turn off the main switch, and remove the earth cable from the battery. Connect an ampere meter between the battery terminal and the earth cable, and check current when the main switch is turned off.

NOTE
Use an ampere meter while sequentially changing its measuring range from large to small. If the current level greater than the measuring limit is measured, the ampere meter fuse may be cut.
Do not turn on the main switch while current is being measured.

**Leakage current: Not to exceed 1mA**
Charging System/Battery

Charging Status Inspection

NOTE
Current level changes according to the status of battery charging. Inspect the fully charged battery with its voltage running at 13.0~13.2V between battery terminal.
If the engine is started by a starter motor, large level of current may flow sometimes because the battery power is consumed during starting.

Warm up the engine, and install a fully charged battery.
Connect a voltmeter between battery terminals.
**Tester: PVA multi-tester**
Connect an ampere meter between the main fuse terminals. Start engine increase the engine speed slowly, and check the charging voltage and current.

**Charging current: 0-0.14 A/5,000rpm**
**Controlled voltage (Charger side): 13.0-15.0V / 5,000rpm**
**(Lamp side): 12.0-14.0V / 5,000rpm**

Lighting System Control voltage Check
Remove the front cover. (14-3)
Loosen the 4 headlight setting screws, and remove the headlight.

NOTE
Check voltage with the headlight coupler connected.
Start engine turn the light switch on set the dimmer switch to Hi, and check voltage between the blue (+) and green (-) (lamp side).

NOTE
Use an AC range for checking.

**If the digital tester used: 10.0~13.0V / 5,000rpm**

NOTE
Contact with the tester handle bar during test may induce electric-shock.

**Tester: PVA multi-tester**
Regulator/Rectifier

Harness side circuit inspection
Remove the regulator / rectifier coupler, and check the wiring circuits at each terminal of the main harness coupler.

Inspection Items

<table>
<thead>
<tr>
<th>Item</th>
<th>Judgment criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery (red)</td>
<td>Battery voltage must be between red(+) and earth(-)</td>
</tr>
<tr>
<td>Ground wire (green)</td>
<td>Power must be connected between the green and the earth.</td>
</tr>
<tr>
<td>Charging coil lead(yellow)</td>
<td>Yellow-to-yellow standard</td>
</tr>
<tr>
<td></td>
<td>Resistance value. Power should not be connected between The yellow and the earth.</td>
</tr>
<tr>
<td>Voltage detection Lead(black)</td>
<td>The battery must carry voltage when the main switch is turned ON between the black (+) and green(-)</td>
</tr>
</tbody>
</table>

Regulator/Rectifier Inspection
If the inspection of the harness side proves to be satisfactory, check the regulator / rectifier coupler for faulty connection, and measure the resistance between the terminals of the regulator / rectifier.

NOTE
If the metal part of the tester knob makes contact with fingers during test, body resistance will be displayed. Take due precautions. Use designated testers for the inspection. If nondesignated testers are used, accurate testing cannot be carried out because abnormal resistance values are displayed.

Tester: PVA multi-tester
If the terminal-to-terminal resistance values deviate from the specified values, replace the regulator / rectifier.
Replacement
Remove the front cover. (4-3)
Disconnect the regulator / rectifier wire coupler.
Remove the 2 regulator / rectifier setting bolts attached to the headlight stay.
Install in the reverse order of removal.

A.C Generator Inspection

NOTE

Disconnect the 4P coupler of the generator cord.
Measure the resistance between the yellow leads.
Resistance value: 0.1-1.0 Ω (20°C/68 °F)
Measure the resistance between the yellow leads and the engine earth.
If the resistance value is great, or if power is connected between terminals and the earth terminals, replace the stator with a new one.
16. Ignition system

Service Information

Troubleshooting 16-1
Service Information 16-1
Troubleshooting 16-2
CDI Unit Inspection 16-3
Ignition Coil Inspection 16-4
Pulse Generator Inspection 16-5
A.C Generator Inspection 16-5
Ignition Timing Check 16-6
Side Stand Cut-off Switch 16-6

Service Information

General Safety

Carry out inspection in sequence based on the troubleshooting table.
If the CDI unit is dropped, or if strong shock is applied thereto, CDI unit malfunction may result. Take due precautions when handling it. Also, if the connector or coupler is connected or disconnected when there is current flowing, overvoltage may occur on the unit leading to circuit damage. Always turn off the main switch prior to servicing.

Ignition timing cannot be adjusted because the ignition system is of CDI type.

Spark plug check. (3 - 5)
Connect the same color cords. Pay particular attention to colors prior to removing wiring. Connect the same color couplers.

The resistance value may slightly differ from the standard values depending on each measuring situation.

Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Standard value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ignition coil Resistance value</strong> 20 (68 )</td>
<td></td>
</tr>
<tr>
<td>Primary coil</td>
<td>0.1~0.2</td>
</tr>
<tr>
<td>Secondary coil With plug cap</td>
<td>7.3~11k</td>
</tr>
<tr>
<td>Without plug cap</td>
<td>3.6~4.6K</td>
</tr>
<tr>
<td>Pulse generator coil resistance value 20 (68 )</td>
<td>50~170</td>
</tr>
<tr>
<td>A.C. generator coil resistance value 20 (68 )</td>
<td>50~350</td>
</tr>
</tbody>
</table>

Tools

Measuring instruments
Digital circuit tester
PVA multi-tester
Inspection adapter
Spark adapter
Ignition System

Troubleshooting

No spark at plug
Poorly connected, broken or shorted wires
- Between the A.C. generator and CDI unit
- Between the CDI unit and ignition coil
- Between the CDI unit and main switch
- Between the ignition coil and plug
Faulty main switch
Faulty ignition coil
Faulty CDI unit
Faulty A.C. generator
Faulty pulse generator

Poor Engine Running
Primary ignition circuit
- Faulty ignition coil
- Faulty wire connection
- Faulty CDI unit
Secondary ignition circuit
- Faulty plug
- Faulty high-tension cord
- Faulty pulse generator
- Faulty spark plug cord
Ignition timing
- Faulty A.C. generator
- Faulty CDI unit
- Faulty pulse generator
CDI Unit Inspection

CDI ignition circuit inspection

NOTE

Inspect the ignition system in proper sequence based on the troubleshooting table.

- Remove the luggage box. (4-5)
- Remove the body cover. (4-6)
Remove the coupler from the CDI unit, and check the ignition system circuits from the wiring coupler side.

<table>
<thead>
<tr>
<th>Inspection item</th>
<th>Terminal</th>
<th>Standard value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulse generator</td>
<td>Blue/yellow and green/white</td>
<td>50-170 20 (68)</td>
</tr>
<tr>
<td>Ignition coil</td>
<td>Black/yellow and earth</td>
<td>3.6-4.6 20 (68)</td>
</tr>
<tr>
<td>A.C. generator</td>
<td>Black/red and earth</td>
<td>50-350 20 (68)</td>
</tr>
<tr>
<td>Main switch</td>
<td>Black/white (+) and earth(-)</td>
<td>No power connection when the main switch is ON</td>
</tr>
<tr>
<td>Wire harness earth</td>
<td>Green and earth</td>
<td>Power connected</td>
</tr>
</tbody>
</table>

Testing by CDI Tester

Check the CDI unit spark performance by using a CDI tester.

Tool: Inspection adaptor

NOTE

Read tester manual carefully prior to using the tester.

Replace defective CDI unit.
Ignition System

Ignition Coil Inspection

Remove the luggage box. (4-5)
Remove the body cover. (4-6)
Remove the center cover. (4-4)
Remove the primary wire.

NOTE

This test is inaccurate. Conduct the ignition coil performance test with an ignition coil tester.

Measure the primary resistance between the ignition coil terminal and earth.
Standard value: 0.1-0.2 Ω

Remove the spark plug cap from the plug. Measure the secondary resistance between the ignition coil spark plug cap and earth.
Standard value: 7.3-11K Ω

If the measured value deviates from the prescribed value, remove the plug cap from the high-tension cord, and measure the secondary resistance.
Standard value: 3.6-4.6K Ω

Replacement

Remove the high-tension cord from plugs and clamps. Remove the primary wire from the ignition coil. Loosen 2 bolts to disassemble the ignition coil. Install in the reverse order of removal.
**Performance Test**
Remove the ignition coil.
Use a CDI unit to test spark performance of the ignition coil. If there is no spark from the spark cap of the spark adaptor, replace coil.

**Tools:** Spark adaptor
        Inspection adaptor

**NOTE**
Read the tester manual carefully prior to using the tester.

**Pulse Generator Inspection**
Remove the luggage box. (4-5)
Disconnect the A.C. generator 4P coupler and the green/white wire connector.
Measure the resistance between the green/white and blue/yellow wire.

**Standard value: 50-170 Ω (20°C/68°F)**

**NOTE**
Even if the resistance value slightly deviates from the standard value, sometimes performance is not affected. In such case, check all related parts to determine if the cause of trouble exists in other areas.
For information on pulse generator change, refer to section 8.

**A.C. Generator Inspection**
Disconnect the A.C. generator coil wire (black/red).
Measure the resistance between the black/red wire and the earth.

**Standard value: 50-350 Ω (20°C/68°F)**

**NOTE**
Even if the resistance value slightly deviates from the standard value, sometimes function is not affected. In such case, check all related parts to determine if the cause of trouble exists in other areas.
Carry out this test with the stator mounted on the engine.
The tester measuring range is 1
Ignition System

Ignition Timing Check

NOTE

As the system uses the CDI unit, the ignition timing need not be adjusted. Check the ignition system if the ignition timing is incorrect.

Start and warm up the engine.
Connect the timing light to the high-tension cord.

NOTE

Read the timing light manual prior to using it.

Remove the timing hole cap from the shroud, and start the engine.
Align the “F” mark on the rotor with the index mark on the case when the engine is idling to specified rpm.

Idle speed: 8°BTDC 1,600 rpm.

Gradually increase the engine speed. If the index mark is set within the advanced “F” mark at the engine speed greater than 3,900(rpm), it indicates the advance system is correct.

Side Stand Ignition Cut-off Switch

Inspection

Remove the front cover.( 4-3)
Remove the headlight.( 18-2)
Remove the coupler of the side stand switch.
Check for continuity between the terminal as shown below ;

<table>
<thead>
<tr>
<th>ITEM</th>
<th>TERMINAL</th>
<th>SPECIFICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON (side stand is lowered)</td>
<td>BLACK/WHITE AND GREEN</td>
<td>NO CONTINUITY</td>
</tr>
<tr>
<td>OFF (side stand is retracted)</td>
<td>BLACK/WHITE AND GREEN</td>
<td>CONTINUITY</td>
</tr>
</tbody>
</table>

Timing light
Hole cap

“F” mark

Headlight
Front cover

Timing light
Hole cap
**Removal**

Remove the front cover. (4-3)
Remove the headlight. (18-2)
Remove the coupler of the side stand switch.
Remove the L. side cover. (4-5)
Loosen the side stand switch mounting 2 bolts.
Release the wire clamps and remove the side stand switch.

**Installation**

Install in the reverse order of removal.
17. Starter System

Service Information 17-1
Starter Motor 17-2
Troubleshooting 17-1
Starter Magnetic Switch 17-3

Service Information

General Safety
The starter motor can be maintained without removing the engine from the vehicle.

Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Standard value</th>
<th>Service limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starter motor brush length</td>
<td>-</td>
<td>6.5mm (0.255)</td>
</tr>
<tr>
<td>Starter motor brush spring tension</td>
<td>-</td>
<td>680g</td>
</tr>
</tbody>
</table>

Troubleshooting

Starter motor will not turn
- Battery discharged
- Faulty ignition switch
- Faulty starter switch
- Faulty starter magnetic switch
- Loosen or disconnected wire or cable

Starter motor turns engine slowly
- Low specific gravity
- Excessive resistance in circuit
- Binding in starter motor

Starter motor turns, but engine does not turn
- Faulty starter clutch
- Faulty starter motor gears
- Faulty starter motor or idle gear

Starter motor and engine turns, but engine does not start
- Faulty ignition system
- Engine problems
Starter System

Starter Motor

Removal
- Remove the luggage box. (4-5)
- Remove the body cover (4-6)
Remove the starter motor cable from the motor.
Unfasten the 2 starter motor mounting bolts, and remove the starter motor.

NOTE
Turn off the main switch prior to servicing the starter motor. If power is connected, the starter motor may be activated and damaged.

Inspection
Check the starter motor terminal with a tester to determine if power is connected.
Tester: PVA multi-tester

Installation
Install a new O-ring and apply oil. Insert the starter motor, and tighten the 2 bolts completely.

NOTE
Accurately connect the earth terminal to the starter motor mounting bolts.
Assemble the luggage box and body cover.
**Starter Magnetic Switch**

**Inspection**

Turn on the main switch, and press the starter button. If the starter magnet switch generates operation signal tone at this time, it indicates satisfactory condition.

**Voltage Check**

Measure the voltage between the yellow/red wire (+) of the starter magnetic switch and the vehicle earth.

Turn main switch on and press the starter switch.

If there is battery voltage displayed, it indicates operation condition is satisfactory.

**Earth Circuit Inspection**

Disconnect the green/yellow wire connector of the starter magnetic switch. If power is connected between the harness terminal and the vehicle earth, it indicates satisfactory condition.

**Operation Inspection**

Disconnect the magnetic switch wire connector. If power is connected between terminals, as shown in the figure, when the yellow/red wire is connected to the positive (+) battery terminal and the green/yellow wire to the negative (-) battery terminal, it indicates the switch is functioning satisfactorily.
18. Light/Switch/Horn

<table>
<thead>
<tr>
<th>Service Information</th>
<th>Troubleshooting</th>
<th>Handle Bar Switch</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-1</td>
<td>18-1</td>
<td>18-4</td>
</tr>
<tr>
<td>Troubleshooting</td>
<td>18-1</td>
<td>Front Stop Light Switch</td>
</tr>
<tr>
<td>Headlight</td>
<td>18-2</td>
<td>18-5</td>
</tr>
<tr>
<td>Front Winker</td>
<td>18-2</td>
<td>Fuel Gauge/Fuel Sensor</td>
</tr>
<tr>
<td>Tail-Stop Light/Rear Winker</td>
<td>18-2</td>
<td>Horn/Clock</td>
</tr>
<tr>
<td>Meters(Measuring instruments)</td>
<td>18-3</td>
<td>Clock</td>
</tr>
<tr>
<td>Main Switch</td>
<td>18-4</td>
<td>18-6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Trunk Lamp</td>
</tr>
</tbody>
</table>

Service Information

General Safety

Connect the same color wires together. Connect couplers carrying the same color and the same number of pins together.

All couplers are equipped with tabs which can be locked. Remove these locks prior to disassembling; and insert these tabs all the way until locked when assembling.

Carry out continuity test on circuits or parts to diagnose electric systems. The continuity test on normal parts can be carried out without removing the parts from the vehicle. Simply disconnect the wires and connect a continuity tester or an ohmmeter to the coupler terminals or connectors.

The continuity test is conducted to check if electric power is connected between 2 terminals. If there is coil resistance within circuits, or to check the large resistance resulting from the connector corrosion, an ohmmeter is required to check the circuit resistance value.

Troubleshooting

Lights not turned on when the main switch is ON

- Faulty light bulb
- Faulty switch
- Faulty or disconnected wiring
- Fuse cut
- Battery discharged

Dim headlight

- Battery discharged
- Wiring and switch resistance high

Headlight Hi-Low bean cannot be changed

- Faulty light bulb
- Faulty dimmer switch
Light/Switch/Horn

Headlight

Removal
Remove the front cover. (4-3)
Loosen the 4 headlight setting bolts.
Remove the headlight wiring
Check the headlight wiring for disconnection. (15-3)

Bulb Replacement
Remove the headlight socket and position light socket, and replace the light bulb.
Install in the reverse order of removal.

Front Winker

Bulb Replacement
Remove the front handle cover. (4-8)
Remove the R/L winker light bulb socket from the handle cover, and replace bulbs.

Tail-Stop Light/Rear Winker

Bulb Replacement
Remove the rear undercover.
Loosen the 2 screws from the tail stop light lens, and replace the tail stop light and rear winker light bulbs.
Meters (Measuring Instruments)

Bulb Replacement
Remove the front handle cover. (4-8)
Disconnect the winker and headlight wiring.

Remove the bulb socket, and replace bulbs.

Meter Replacement
Loosen the speedometer setting screws, and remove the front wheel side speedometer.
Remove the speedometer cable from the meter, and remove the speedometer.

To disassemble the meter, release the hook from the meter upper case, and loosen the speedometer and fuel meter assembly screws.
Install in the reverse order of removal.

NOTE
The fuel meter and wire must be connected accurately.
Main Switch

Inspection
Remove the front cover. ( 4-3)
Remove the headlight case.
Remove the main switch terminal.
Carry out continuity test between the following the same-color wires, as shown on the following table.

<table>
<thead>
<tr>
<th>Color</th>
<th>Black/White</th>
<th>Green</th>
<th>Red</th>
<th>Black</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terminal</td>
<td>IG</td>
<td>E</td>
<td>BAT1</td>
<td>BAT2</td>
</tr>
<tr>
<td>OFF</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
</tr>
<tr>
<td>ON</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
</tr>
</tbody>
</table>

Removal
- Remove inner box. ( 4-4)
Loosen the 3 main switch socket bolts, and remove the main switch.
Install in the reverse order of removal.

Handle Bar Switch

Remove the front handle cover. ( 4-8)
Loosen the headlight, and remove the handle bar switch terminals. Carry out inspection based on the following table.

<table>
<thead>
<tr>
<th>Lighting switch</th>
<th>Starter switch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>Black</td>
</tr>
<tr>
<td>Terminal</td>
<td>BAT</td>
</tr>
<tr>
<td>(N)</td>
<td>_____</td>
</tr>
<tr>
<td>P</td>
<td>_____</td>
</tr>
<tr>
<td>H</td>
<td>_____</td>
</tr>
</tbody>
</table>

Dimmer switch

<table>
<thead>
<tr>
<th>Color</th>
<th>Green/black</th>
<th>W</th>
<th>Blue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terminal</td>
<td>HL</td>
<td>Lo</td>
<td>Hi</td>
</tr>
<tr>
<td>Lo</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
</tr>
<tr>
<td>(N)</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
</tr>
<tr>
<td>Hi</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
</tr>
</tbody>
</table>
Winker switch

<table>
<thead>
<tr>
<th>Color</th>
<th>Sky blue</th>
<th>Grey</th>
<th>Orange</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terminal</td>
<td>R</td>
<td>WR</td>
<td>L</td>
</tr>
<tr>
<td>R</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Horn switch

<table>
<thead>
<tr>
<th>Color</th>
<th>Light green</th>
<th>Black</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terminal</td>
<td>HO</td>
<td>BAT</td>
</tr>
<tr>
<td>Before operation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Push</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Hazard switch

<table>
<thead>
<tr>
<th>Color</th>
<th>Sky blue</th>
<th>Grey</th>
<th>Orange</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terminal</td>
<td>R</td>
<td>WR</td>
<td>L</td>
</tr>
<tr>
<td>Before operation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Push</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Front Stop Light Switch

Remove the front handle cover. (4-8)
Remove the black wire and green/yellow wire terminals inside the headlight case, and check the following.
When the brake lever is pulled-power connected
When the brake lever is released-power is not connected

Fuel Gauge/Fuel Sensor

Removal
Open the seat, and remove the retainer and fuel sensor from the fuel tank.

Fuel gauge
Turn the ignition switch on.
Remove the fuel tank. (5-3)

NOTE
Check the winker operation condition to check if the battery is in satisfactory condition.

Check the fuel gauge while moving the fuel sensor float up and down.
Up: No fuel
Down: Fuel amount sufficient
Fuel Sensor
Remove the fuel sensor terminal, and connect the resistance tester to each terminal. Check the resistance while moving the float up and down.

Resistance Ratio Calculation

<table>
<thead>
<tr>
<th>Float position</th>
<th>Resistance ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel amount sufficient</td>
<td>0.02-0.1</td>
</tr>
<tr>
<td>Reserve</td>
<td>2.5-4.5</td>
</tr>
<tr>
<td>No fuel</td>
<td>13-25.5</td>
</tr>
</tbody>
</table>

Horn

Inspection
Remove the front cover. ( 4-3)
Remove the headlight.
Remove the horn wiring, and connect a fully charged 12V battery. Check the sound quality for any abnormalities.

Clock
The current time is displayed at the bottom of the combination-meter.
If the time is incorrect, make adjustments with the setting rubber.

Replacement
- Remove the front handle cover. ( 4-8)
- Open the battery (for clock) cover inside the meter-case, and replace the battery.
Trunk Lamp

Replace bulb.
Remove the luggage box. ( 4-5)
Replace the trunk lamp bulb socket from the trunk lamp of out side.

<table>
<thead>
<tr>
<th>Color</th>
<th>Green</th>
<th>Red</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terminal</td>
<td>G</td>
<td>R</td>
</tr>
<tr>
<td>Push</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Projection</td>
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20. Troubleshooting

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<tr>
<td>Engine Output Insufficient</td>
<td>(2) Fuel tube up to the fuel tank clogged, or the vacuum tube or fuel tube up to the inlet pipe clogged</td>
</tr>
<tr>
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<td>(3) Float valve clogged</td>
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<tr>
<td>Poor Performance at High Speed</td>
<td>(4) Fuel tank cap air hole clogged</td>
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<td>(5) Fuel supply pipe frozen</td>
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<td>(6) Fuel strainer clogged</td>
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<td>Starter Motor</td>
<td></td>
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**Engine Does Not Start or Is Hard to Start**

1. Open the drain screw, and check fuel flow to the carburetor. 
   - **Fuel is supplied.**

2. Check spark plugs 
   - **Good spark**

3. Test cylinder pressure. 
   - **Pressure normal**

4. Start engine in the following procedure 
   - **Engine will not start.**

5. Remove spark plugs. 
   - **Dry plugs**

**Cause of Trouble**

1. Fuel not supplied to the carburetor 
   - (1) Fuel tank empty
   - (2) Fuel tube up to the fuel tank clogged, or the vacuum tube or fuel tube up to the inlet pipe clogged
   - (3) Float valve clogged
   - (4) Fuel tank cap air hole clogged
   - (5) Fuel supply pipe frozen
   - (6) Fuel strainer clogged.

2. Check spark plugs weak or no spark 
   - (1) Faulty spark plug
   - (2) Contaminated spark plug
   - (3) Faulty CDI unit
   - (4) Faulty A.C. generator
   - (5) Disconnected or shorted high tension cord
   - (6) Disconnected or shorted ignition coil
   - (7) Faulty main switch

3. Test cylinder pressure. Low cylinder pressure 
   - (1) Piston ring seized
   - (2) Cylinder and piston ring won
   - (3) Cylinder and cylinder head cracked
   - (4) Crank case air leaks
   - (5) Cylinder head gasket damaged

4. Start engine in the following procedure Engine start but stops immediately 
   - (1) Manifold air leaks
   - (2) Inadequate ignition timing

5. Remove spark plugs. Plugs wet 
   - (1) Carburetor flooded
   - (2) Faulty control box
   - (3) Throttle valve excessively opened
## Engine output Insufficient

1. Gently accelerate engine.  
   - Engine speed increases.  
   - Engine speed does not increase sufficiently  
     - (1) Air cleaner clogged  
     - (2) Insufficient fuel supply  
     - (3) Fuel tank cap air hole clogged  
     - (4) Muffler clogged

2. Check ignition timing.  
   - Normal  
   - Abnormal  
     - (1) Faulty CDI unit  
     - (2) Faulty A.C. generator

3. Press the kick starter pedal to check the cylinder pressure.  
   - Normal  
   - Low  
     - (1) Cylinder and piston ring worn  
     - (2) Cylinder head gasket damaged  
     - (3) Cylinder and cylinder head cracked

4. Check the carburetor for clogging  
   - Not clogged.  
   - Clogged  
     - (1) Unsatisfactory Carburetor maintenance

5. Remove spark plugs  
   - Not contaminated or discolored.  
   - Contaminated or discolored  
     - (1) Unsatisfactory plug maintenance  
     - (2) Plugs with incorrect heat value used

6. Check for engine overheating  
   - Not overheated.  
   - Overheated  
     - (1) Cylinder or piston worn  
     - (2) Lean fuel mixture  
     - (3) Poor quality fuel used  
     - (4) Carbon deposit inside the combustion chamber excessive  
     - (5) Ignition timing incorrect.

7. Accelerate suddenly or run at  
   - Engine does not knock.  
   - Engine knocks  
     - (1) Carbon deposit inside the combustion chamber excessive  
     - (2) Poor quality fuel used  
     - (3) Lean fuel mixture
Troubleshooting

**Poor Performance at Low Speed and Idling**

1. Check ignition timing.  
   - Normal

2. Check the carburetor air screw  
   - Correct

3. Check the area around the manifold for air leakage.  
   - No leak

4. Check sparks.  
   - Sparks normal.

**Cause of Trouble**

- Abnormal  
  - (1) Faulty CDI unit  
  - (2) Faulty A.C. generator

- Incorrect  
  - (1) Excessive fuel mixture  
    (Loosen screw to correct adjustment level)  
  - (2) Lean fuel mixture  
    (Tighten screw to correct adjustment level)

- Leaking  
  - (1) Faulty insulator packing  
  - (2) Loose carburetor  
  - (3) Faulty inlet pipe packing  
  - (4) Faulty insulator O-ring

- Weak or intermittent sparks  
  - (1) Carbon deposited on spark plugs or spark plugs contaminated  
  - (2) Faulty CDI unit  
  - (3) Faulty ignition coil  
  - (4) Faulty A.C. generator  
  - (5) Disconnected or shorted high tension cord  
  - (6) Faulty main switch

**Poor Performance at High Speed**

1. Check ignition timing  
   - Correct

2. Remove the fuel tube from the fuel valve.  
   - Fuel flows

3. Remove the carburetor, and Check for clogged jets.  
   - Not clogged

**Cause of Trouble**

- Incorrect  
  - (1) Faulty CDI unit  
  - (2) Faulty A.C. generator

- Insufficient fuel supply  
  - (1) Fuel tank empty  
  - (2) Fuel tube or fuel filter clogged  
  - (3) Fuel tank cap air hole clogged

- Clogged  
  - (1) Clean
Troubleshooting

Unsatisfactory Operation

**Clutch Drive/Driven Pulley**

1. Engine starts but motorcycle does not move.
   - Cause of Trouble:
     1. Drive belt worn or slips
     2. Ramp plate damaged
     3. Drive face spring damaged
     4. Clutch lining came off
     5. Driven pulley shaft spline damaged
     6. Faulty transmission
     7. Transmission seized

2. Vehicle moves slow, engine starts but stops immediately
   - Cause of Trouble:
     1. Shoe spring damaged
     2. Clutch outer and weight seized
     3. Pivot seized

3. Engine weak at start.
   - Cause of Trouble:
     1. Drive belt worn or slips
     2. Weight roller worn
     3. Drive pulley bearing seized
     4. Weak drive face spring
     5. Drive pulley bearing worn or seized

4. Engine weak at high speed.
   - Cause of Trouble:
     1. Drive belt worn or slips
     2. Weight roller worn
     3. Drive pulley bearing worn

5. Abnormal noise or odor.
   - Cause of Trouble:
     1. Oil or grease spilled on the drive belt and inside pulley
     2. Drive belt worn
     3. Weak drive face spring
     4. Driven pulley bearing worn or seized

**Poor Mechanical Performance**

Check tire pressure

1. Steering is heavy
   - Cause of Trouble:
     1. Steering head adjuster excessively tightened
     2. Steering cone race or steel ball damaged

2. Wheels wobbling
   - Cause of Trouble:
     1. Excessive wheel bearing play
     2. Rim bent
     3. Axle nut loose

3. Motorcycle pulls to one side
   - Cause of Trouble:
     1. Front wheel and rear wheel not aligned
     2. Front fork bent

**Poor Front/Rear Suspension Performance**

Check tire pressure

1. Suspension excessively soft
   - Cause of Trouble:
     1. Cushion spring weak
     2. Overloaded
     3. Damper oil leaks

2. Suspension excessively Hard
   - Cause of Trouble:
     1. Fork pipe or cushion rod bent

3. Noise from the suspension
   - Cause of Trouble:
     1. Sliders stuck
     2. Cushion stopper rubber damaged
**Poor Brake Performance**  
Check brake adjustment

1. If the arrow were mark and the brake panel mark match with each other
   (1) Brake shoe worn  
   (2) Brake cam worn  
   (3) Shoe and cam contact surface worn  
   (4) Brake drum worn

2. Brake noise
   (1) Brake shoe worn  
   (2) Foreign matter in the brake lining  
   (3) Brake drum and shoe contact surface curved

3. Poor braking
   (1) Brake wire defective or expanded  
   (2) Only part of the brake shoe makes contact with the brake drum.  
   (3) Clay or moisture inside the brake drum  
   (4) Brake lining contaminated by grease or oil.
## Fuel Gauge

### Gauge Reading Inaccurate (Ignition switch ON)

1. Operate the turn signal to check the battery circuit.
   - **Signal operates satisfactorily**
   - **Signal continuously operates dim or does not operate at all**

2. Remove the fuel level sensor, and move float to check the status of operation.
   - Float up: Full position
   - Float down: Empty position
   - **Needle not moving**

3. Short-circuit the tank unit terminal on the wire harness side.
   - **Needle not moving**

4. Terminal joints loose or faulty connection
   - **Unsatisfactory**
   - **Check**

### Cause of Trouble

1. (1) Fuse cut
2. (2) Battery weak or totally discharged
3. (3) Faulty ignition switch
4. (4) Faulty terminal connection
5. (5) Wire harness damaged

### Gauge needle shakes or vertically wobbles. (Ignition switch ON)

1. Operate the turn signal to check the battery circuit
   - **Signal operates satisfactorily**
   - **Signal continuously operates dim or does not operate at all**

2. Remove the tank and operate the float
   - **Needle not moving**

3. Move the float rapidly.
   - One Up/down motion per second.
   - **Needle moving**

4. Start the engine, and measure the fuel level sensor resistance.
   - Resistance not changed

5. Check each joint
   - **Unsatisfactory**
   - **Satisfactory**

### Cause of Trouble

1. (1) Faulty fuel level sensor connection
2. (1) Damper oil inside the meter insufficient.
3. (1) Faulty connection between the sliding arm and the resistance
4. (1) Terminal connection loose or faulty connection
5. (1) Balance coil/lead shorted or damaged
**Starter Motor**

**Starting motor will not turn**

1. Apply the brake and check the brake stop light for operation

   - **Light not activated** → (1) Fuse cut
   - (2) Battery weak or totally discharged
   - (3) Faulty stop right switch
   - (4) Faulty terminal connection
   - (5) Ignition switch damaged or shorted

   - **Light is activated** → Operate the turn signal to check the battery circuit.

2. Operate the turn signal to check the battery circuit.

   - **Signal continuously operates dim or does not operate at all** → (1) Battery totally discharged.

3. Press the starter switch to check the starter magnetic.

   - **Unsatisfactory** → (1) Faulty starter switch connection
   - (2) Starter magnetic connector damaged or shorted
   - (3) Connector and terminals loose

4. Connect the starter to battery and check operation. Light not activated

   - **Starter turns** → Starter does not turn

   - **Starter turns** → (1) Worn Brush worn.
   - (2) Rotor winding damaged or shorted
   - (3) Starter motor subwire damaged
   - (4) Terminal loose

   - **(1) Wire harness damaged** → Starter Motor turns slow or fails to crank motor

   1. Operate the turn signal to check the battery circuit

   - **Signal continuously operates dim or does not operate at all** → (1) Battery totally discharged.

2. Connect the starter subwire to the battery.

   - **Operates satisfactory** → (1) Connector/terminal loose
   - (2) Faulty starter magnetic connector.

3. Operate the kick starter.

   - **Operates light** → (1) Engine seized
   - (1) Starter motor winding damaged or shorted

   - **(1) Engine seized** → Starter turns without stopping

1. Turn off the ignition switch

   - **Will not stop** → Starter magnet disconnected or seized