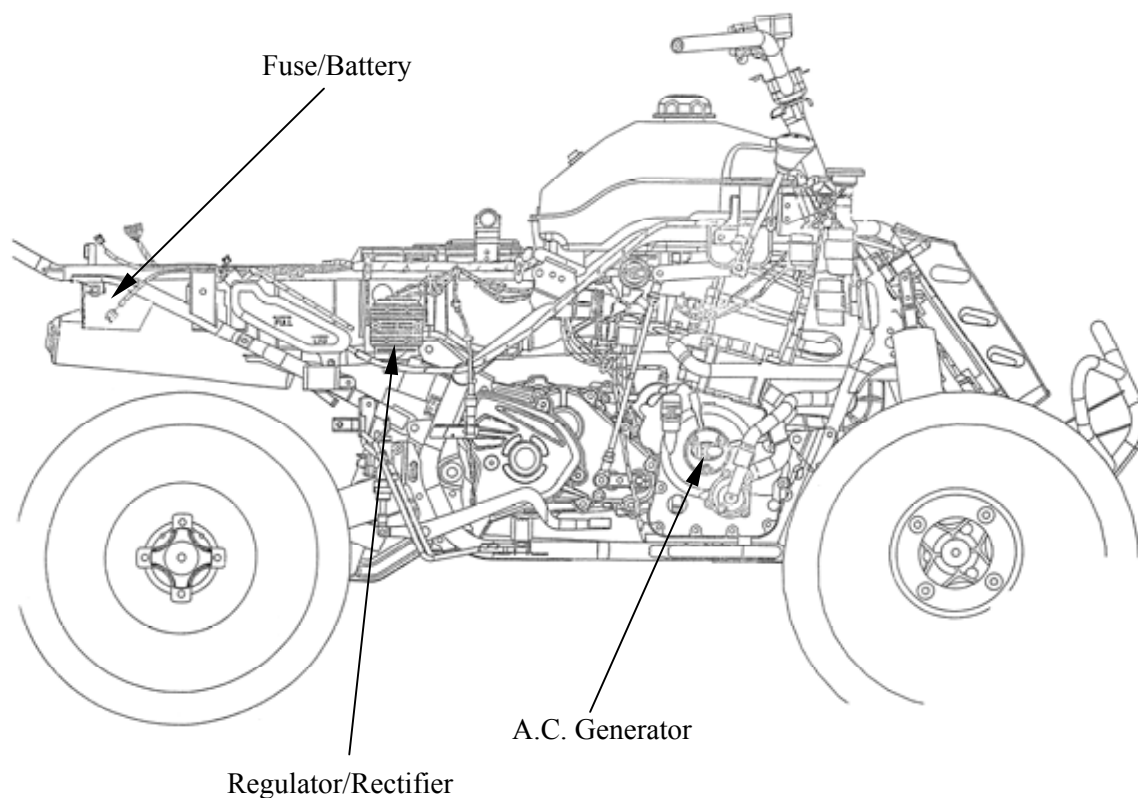
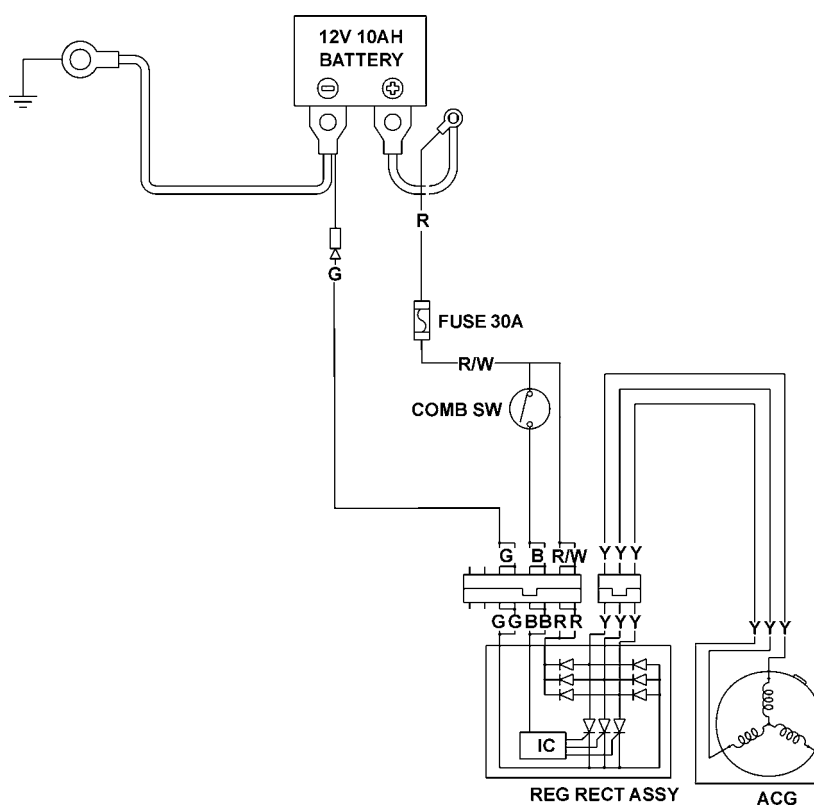


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## 16. BATTERY/CHARGING SYSTEM/ A.C. GENERATOR



### CHARGING CIRCUIT



## SERVICE INFORMATION

### GENERAL INSTRUCTIONS

The battery electrolyte (sulfuric acid) is poisonous and may seriously damage the skin and eyes. Avoid contact with skin, eyes, or clothing. In case of contact, flush with water and get prompt medical attention

- The battery can be charged and discharged repeatedly. If a discharged battery is not used for a long time, its service life will be shortened. Generally, the capacity of a battery will decrease after it is used for 2~3 years. A capacity-decreased battery will resume its voltage after it is recharged but its voltage decreases suddenly and then increases when a load is added.
- When a battery is overcharged, some symptoms can be found. If there is a short circuit inside the battery, no voltage is produced on the battery terminals. If the rectifier won't operate, the voltage will become too high and shorten the battery service life.
- If a battery is not used for a long time, it will discharge by itself and should be recharged every 3 months.
- A new battery filled with electrolyte will generate voltage within a certain time and it should be recharged when the capacity is insufficient. Recharging a new battery will prolong its service life.
- Inspect the charging system according to the sequence specified in the Troubleshooting.
- Do not disconnect and soon reconnect the power of any electrical equipment because the electronic parts in the regulator/rectifier will be damaged. Turn off the ignition switch before operation.
- It is not necessary to check the MF battery electrolyte or fill with distilled water.
- Check the load of the whole charging system.
- Do not quick charge the battery. Quick charging should only be done in an emergency.
- Remove the battery from the machine for charging.
- When replacing the battery, do not use a traditional battery.
- When charging, check the voltage with a voltmeter.

### SPECIFICATIONS

Item			Standard
Battery	Capacity/Model		12V-12AH
	Voltage (20°C)	Fully charged	13.1V
		Undercharged	12.3V
	Charging current		STD: 1.2A Quick: 3.0A
	Charging time		STD: 5~10hr Quick: 30min
A.C. Generator	Capacity		150W
Regulator/Rectifier	Limit voltage	Lighting	12.0~14.0V
		Charging	13.5~15.5V

## TESTING INSTRUMENTS

Electric tester

## TROUBLESHOOTING

### No power

- Dead battery
- Disconnected battery cable
- Fuse burned out
- Faulty ignition switch

### Low power

- Weak battery
- Loose battery connection
- Charging system failure
- Faulty regulator/rectifier

### Intermittent power

- Loose battery cable connection
- Loose charging system connection
- Loose connection or short circuit in lighting system

### Charging system failure

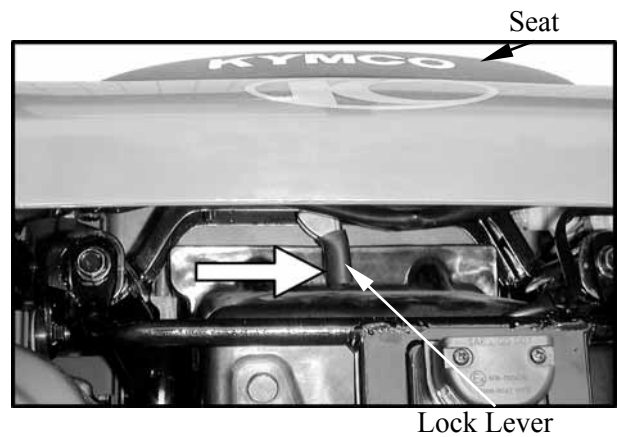
- Loose, broken or shorted wire or connector
- Faulty regulator/rectifier
- Faulty A.C. generator

## 16. BATTERY/CHARGING SYSTEM/ A.C. GENERATOR

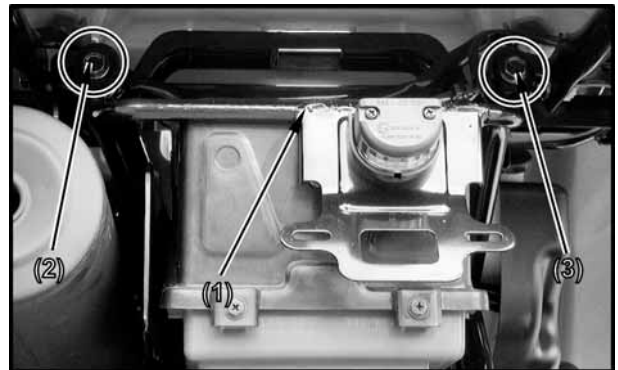
### BATTERY

#### REMOVAL/INSTALLATION

1. Make sure the ignition switch is OFF.
2. Pull right the lock lever and pull up the seat at the rear.



3. ON ROAD:  
Hang license light holder (1), by removing the left mount bolt (2) and loosen the right mount bolt (3)



4. Remove the battery cover (4) by removing the screws (5).

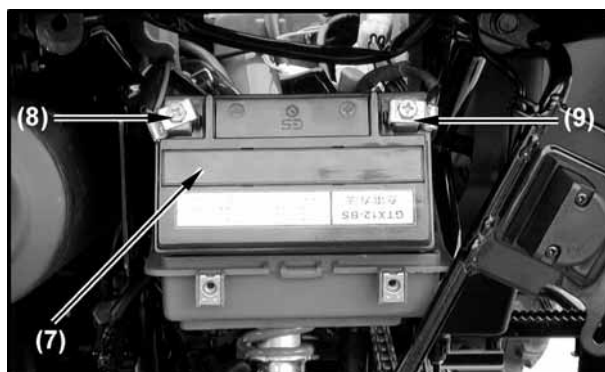


## 16. BATTERY/CHARGING SYSTEM/ A.C. GENERATOR

5. Release the rings and remove the rubber band (6).



6. Shift the battery (7) and the terminal leads face you.
7. Disconnect the negative (-) terminal lead (8) from the battery first, then disconnect the positive (+) terminal lead (9).
8. Remove the battery.



When disconnecting the battery positive (+) cable, do not touch the frame with tool; otherwise it will cause short circuit and sparks to fire the fuel.

### INSTALLATION

1. Installation is in the reverse order of removal.



First connect the positive (+) cable and then negative (-) cable to avoid short circuit.

2. Make sure the battery is installed upright as shown
3. Check all bolts and other fasteners are secure.
4. After installing the battery, check to see if the battery cables are routed correctly.



## 16. BATTERY/CHARGING SYSTEM/ A.C. GENERATOR

### BATTERY VOLTAGE (OPEN CIRCUIT VOLTAGE) INSPECTION

Remove the seat.

Disconnect the battery cables.

Measure the voltage between the battery terminals.

**Fully charged** : 13.1V

**Undercharged** : 12.3V max

- \* Battery charging inspection must be performed with a voltmeter.



### CHARGING

Connect the charger positive (+) cable to the battery positive (+) terminal.

Connect the charger negative (-) cable to the battery negative (-) terminal.

- Keep flames and sparks away from a charging battery.
- Turn power ON/OFF at the charger, not at the battery terminals to prevent sparks near the battery to avoid explosion.
- Charge the battery according to the current specified on the battery.

- \* Quick charging should only be done in an emergency.
- Measure the voltage 30 minutes after the battery is charged.



Charging current: Standard : 1.2A

Quick : 3.0A

Charging time : Standard : 5~10 hours

Quick : 30 minutes

After charging: Open circuit voltage: 12.8V min.

## CHARGING SYSTEM

### CURRENT LEAKAGE TEST

Remove the seat (see page 2-3).

Turn the ignition switch "OFF", and disconnect the negative (-) cable from the battery.

Connect the ammeter (+) probe to the negative (-) cable and the ammeter (-) probe to the battery (-) terminal.

With the ignition switch "OFF", check for current leakage.

\*

- When measuring current using a tester, set it to a high range, and then bring the range down to an appropriate level. Current flow higher than the range selected may blow out the fuse in the tester.
- While measuring current, do not turn the ignition switch "ON". A sudden surge of current may blow out the fuse in the tester.



### Specified current leakage:

**1 mA maximum**

If current leakage exceeds the specified value, a shorted circuit is likely.

Locate the short by disconnecting connections one by one and measuring the current.

### CHARGING VOLTAGE INSPECTION

Start the engine and warm it up to operating temperature; stop the engine.

Connect the multi-meter between the positive and negative terminals of the battery.

\*

- Make sure the battery is in good condition before performing this test.
- To prevent a short, make absolutely certain which are the positive and negative terminals or cable.



With the headlight on high beam, restart the engine. Measure the voltage on the multimeter when the engine runs at 5000 rpm.

**Limit Voltage/Current:** 13.5 ~ 15.5V/0.5A max.

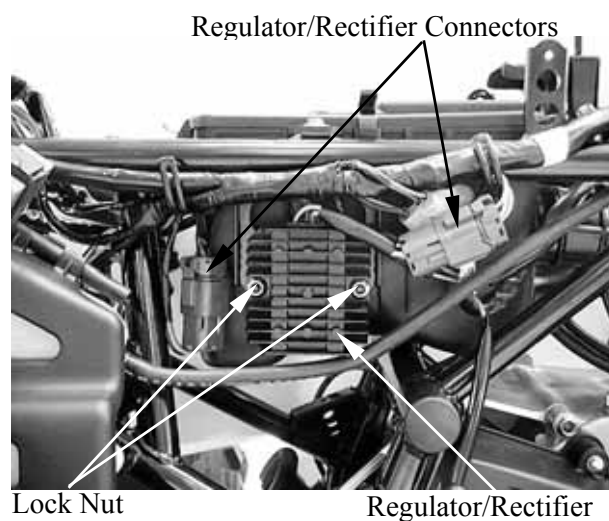


# 16. BATTERY/CHARGING SYSTEM/ A.C. GENERATOR

## REGULATOR/RECTIFIER

### INSPECTION

Remove the right side cover. (Refer to chapter 2)  
Remove the regulator/rectifier wire connectors.  
Check the continuity between the wire terminals.

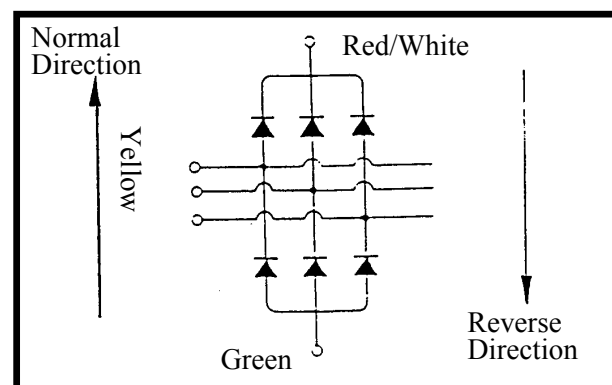


Normal Direction: Continuity

	(+) Probe	(-) Probe
I	Yellow	Green
II	Red/White	Yellow

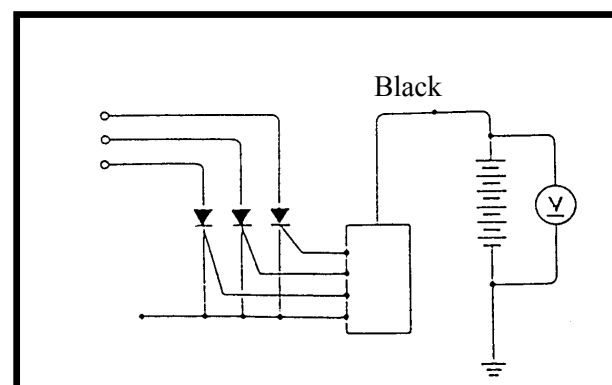
Reverse Direction: No Continuity

	(+) Probe	(-) Probe
I	Green	Yellow
II	Yellow	Red/White



## VOLTAGE REGULATION TEST

Connect a voltmeter across the battery terminals.  
Start the engine and gradually increase the engine speed.  
The battery terminal voltage should be within 14.0~15.0V.



## 16. BATTERY/CHARGING SYSTEM/ A.C. GENERATOR

### A.C. GENERATOR INSPECTION

- \* This test can be made without removing the stator from the engine.

Disconnect the A.C. generator connector. Check the continuity between the yellow wires and ground.

There should be continuity between the yellow wires and no continuity between each yellow wire and ground.

**Resistance** (at 20°C):

Yellow ~ Yellow	1.6 ~ 2.5Ω
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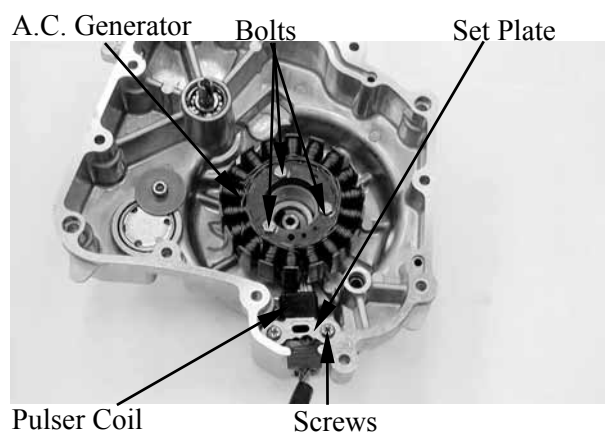


### A.C. GENERATOR/FLYWHEEL REMOVAL

Remove the right crankcase cover. (Refer to the "WATER PUMP SHAFT REMOVAL" section in the chapter 12)

Remove the pulser coil screws and then remove the A.C. generator wire set plate. Remove the A.C. generator bolts and then remove A.C. generator and pulser coil from right crankcase cover.

- \* When removing the pulser coil and stator, be careful not to damage them to avoid shorted or broken wire.



Remove the oil through guide and spring.

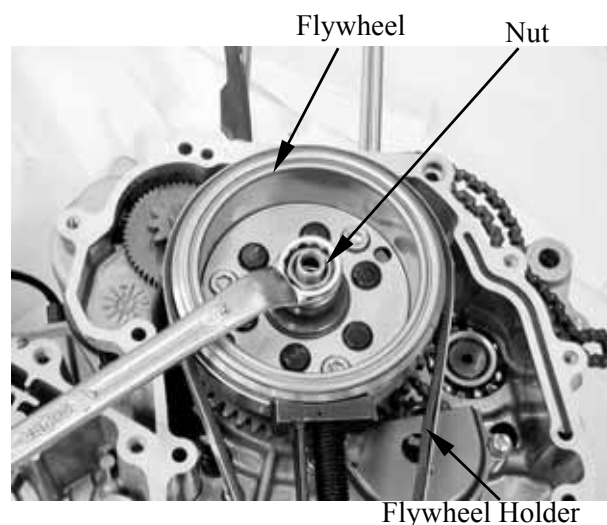


## 16. BATTERY/CHARGING SYSTEM/ A.C. GENERATOR

Hold the flywheel with a flywheel holder and remove flywheel nut and wash.

**Special**

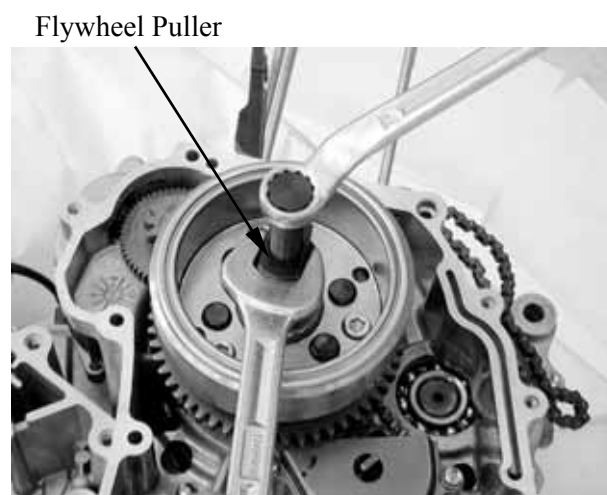
Flywheel holder E021



Remove the flywheel with a flywheel puller.

**Special**

Flywheel puller E003



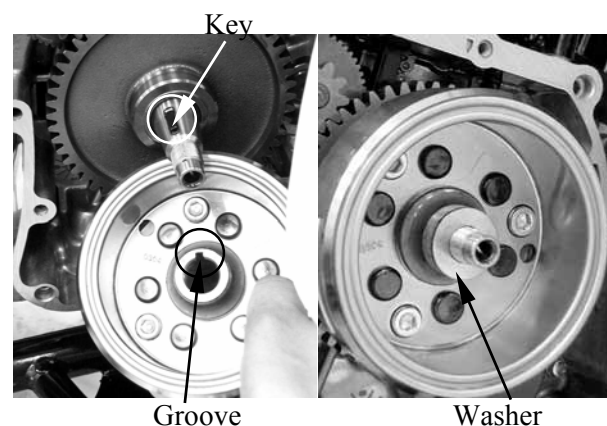
### INSTALLATION

Reverse the “REMOVAL” procedures.  
Install the flywheel, washer and tighten the nut.

**Torque:** 6 kgf-m (60 Nm, 43 lbf-ft)

**\***

- Before installation, check and make sure that the inside of the flywheel is not contaminated.
- Make sure install the flywheel onto the crankshaft by aligning the key on the crankshaft with the groove in the flywheel.



Install the oil through guide and spring.  
Install the A.C. generator onto the right crankcase cover and tighten the bolts.

**Torque:** 0.9 kgf-m (9 Nm, 6.5 lbf-ft)

Install the right crankcase cover.