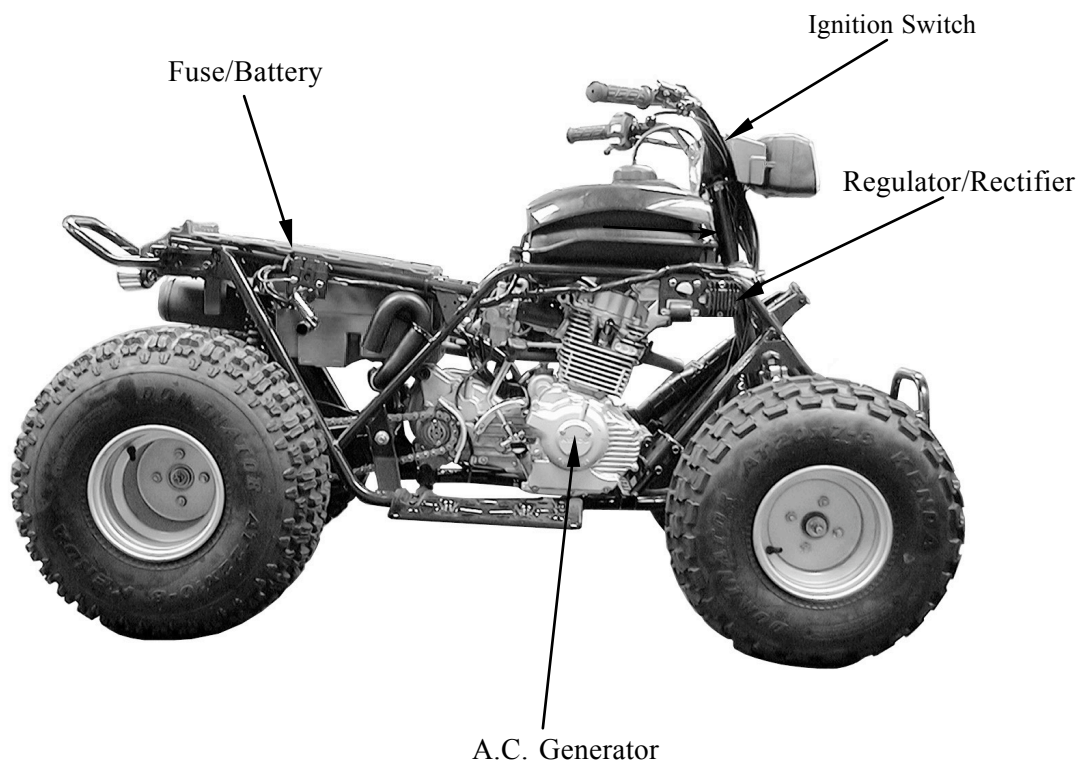


BATTER/CHARGING SYSTEM/ A.C. GENERATOR

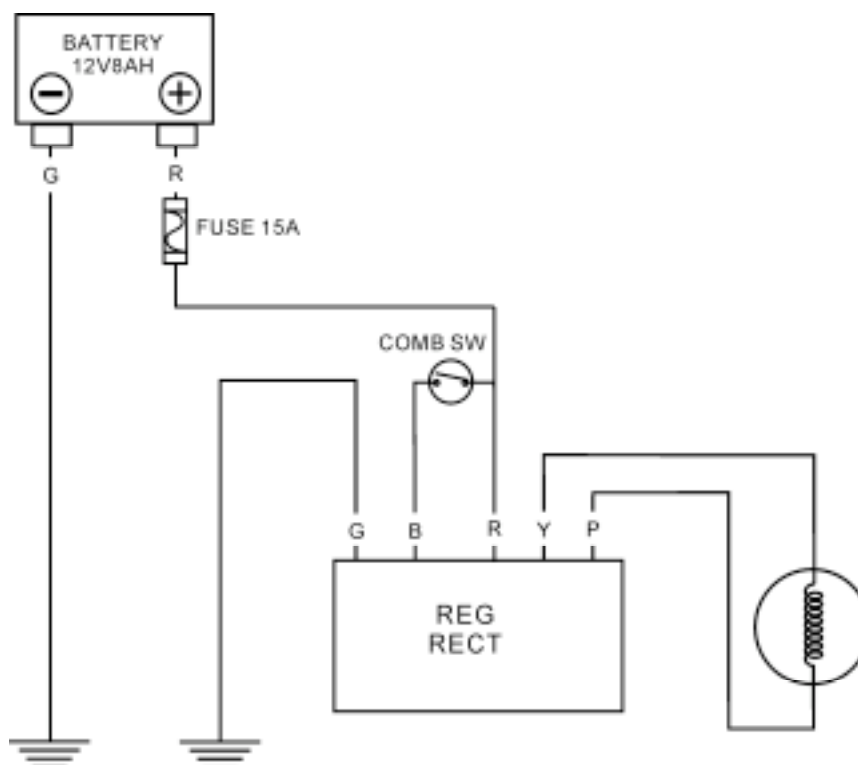
| | |
|------------------------------------|-------|
| SERVICE INFORMATION ----- | 14- 2 |
| TROUBLESHOOTING ----- | 14- 3 |
| BATTERY REMOVAL ----- | 14- 4 |
| CHARGING SYSTEM ----- | 14- 5 |
| REGULATOR/RECTIFIER ----- | 14- 6 |
| A.C. GENERATOR CHARGING COIL ----- | 14- 7 |

14. BATTERY/CHARGING SYSTEM/ A.C. GENERATOR

KYMCO
MX'er SYSTEM



CHARGING CIRCUIT



14. BATTERY/CHARGING SYSTEM/ A.C. GENERATOR

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 motorcycle 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□8AH |
| | Voltage (20°C) | Fully charged | 13.1V |
| | | Undercharged | 12.3V |
| | Charging current | | STD: 0.9A Quick: 3.0A |
| | Charging time | | STD: 5 10hr Quick: 30min |
| A.C. Generator | Capacity | | 0.114KW/5000rpm |
| | | | |
| | Charging coil resistance | | Yellow Pink |
| Regulator/Rectifier | Type | | Single-phase half-wave SCR |
| | Limit voltage | Lighting | 12.0 14.0V/5000rpm (Electric tester, |
| | | | 10 13.0V/5000rpm |
| | | Charging | 13.5 15.5V/5000rpm |

14. BATTERY/CHARGING SYSTEM/ A.C. GENERATOR



TORQUE VALUES

Regulator/Rectifier lock nut

0.7~1.1kgf-m

TESTING INSTRUMENTS

Kowa electric tester

Sanwa 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

14. BATTERY/CHARGING SYSTEM/ A.C. GENERATOR

BATTERY REMOVAL

Pull backward the lock lever, then pull up the seat at the rear.

Remove the battery by removing the bolt. First disconnect the battery negative (-) cable and then the positive (+) cable.

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.

The installation sequence is the reverse of removal.

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

BATTERY VOLTAGE (OPEN CIRCUIT VOLTAGE) INSPECTION

Remove the seat.

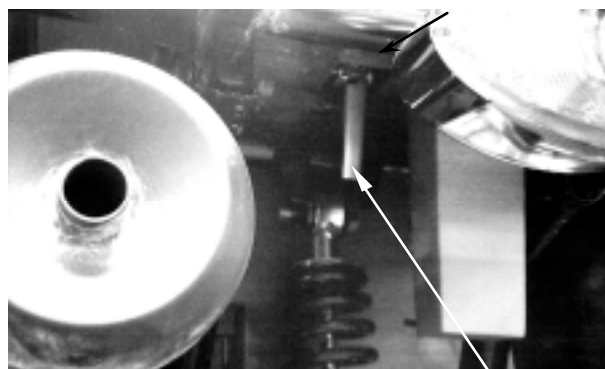
Disconnect the battery cables.

Measure the voltage between the battery terminals.

Fully charged : 13.1V

Undercharged : 12.3V max

* Battery charging inspection must be performed with a voltmeter.



Lock Lever



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

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

Charging current : Standard : 0.9A

Quick : 3.0A

Charging time : Standard : 5_ 10 hours

Quick : 30 minutes

After charging Open circuit voltage: 12.8V min.



14. BATTERY/CHARGING SYSTEM/ A.C. GENERATOR

CHARGING SYSTEM

SHORT CIRCUIT TEST

Disconnect the ground wire from the battery and connect an ammeter across the battery negative (-) terminal and the ground wire. Turn the ignition switch OFF and check for short circuit.

- * Connect the electric tester positive (+) terminal to ground wire and the tester negative (-) terminal to the battery negative (-) terminal.

If any abnormality is found, check the ignition switch and wire harness for short circuit.

CURRENT TEST

This inspection must be performed with an electric tester when the battery is fully charged.

Warm up the engine for inspection.

Connect the electric tester across the battery terminals. Disconnect the red wire from the fuse terminal and connect an ammeter between the red wire lead and the fuse terminal as shown.

Attach a tachometer to the engine.

Start the engine and gradually increase the engine speed to measure the limit voltage and current.

Limit Voltage/Current:

13.5_ 15.5V/0
.5A max (5000rpm
max)

If the limit voltage is not within the specified range, check the regulator/rectifier.

LIGHTING SYSTEM LIMIT VOLTAGE INSPECTION

Remove the front cover.

- * Measure the voltage with the electric tester in the DC range.

Limit Voltage: 14.7±0.4

If the limit voltage is not within the specified range, check the regulator/rectifier.

PERFORMANCE TEST

| RPM | 3000 | 8000 |
|----------|-------------------------|-------------------------|
| Position | | |
| Day | 4A 16V | 6.3A 16.7V |
| Night | 1.1A 14V (1.0A min.) | 2.1A 14V (3.7A max.) |

Perform this test with a fully charged battery



(-) Terminal



Headlight Wire Coupler



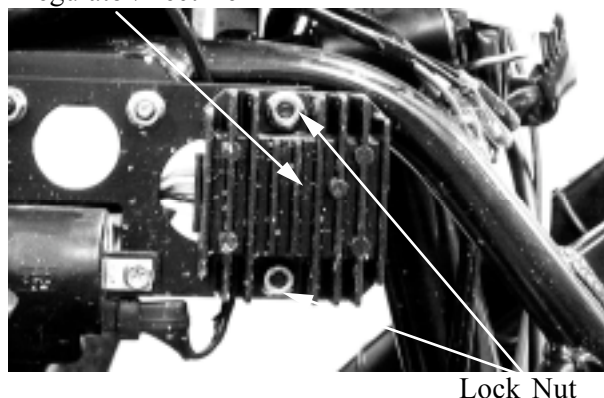
14. BATTERY/CHARGING SYSTEM/ A.C. GENERATOR

REGULATOR/RECTIFIER

MAIN HARNESS CIRCUIT INSPECTION

Remove the front fender.
Remove the regulator/rectifier lock nuts and 5P coupler.

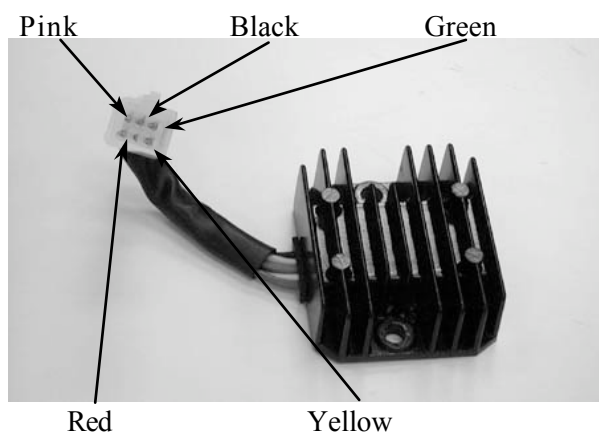
Regulator/Rectifier



REGULATOR/RECTIFIER INSPECTION

If the main harness terminals are normal, check the regulator/rectifier coupler for loose connection and measure the resistance between the regulator/rectifier terminals.

- Do not touch the tester probes with your finger because human body has resistance.
- Use the following specified testers for accurate testing. Use of an improper tester in an improper range may give false readings.
 - ☐ Kowa Electric Tester
 - ☐ Sanwa Electric Tester
 - ☐ Kowa Electric Tester TH-5H
- Proper range for testing:
 - ☐ Use XK range for Sanwa Tester
 - ☐ Use X100 range for Kowa Tester
- If the dry battery in the tester is weak, the readings will be incorrect. In this case, check the dry battery.
- The Kowa tester readings are 100 times the actual values. Be careful during testing.



| Probe⊕ Probe(-) | Black | Pink | Red | Yellow | Green |
|--------------------|-------|------|--------|--------|-------|
| Black | | 4-7K | 13-17K | 4-7K | 1-2K |
| Pink | ∞ | | 4-7K | ∞ | ∞ |
| Red | ∞ | ∞ | | ∞ | ∞ |
| Yellow | ∞ | ∞ | 4-7K | | ∞ |
| Green | 1-2K | 4-6K | 13-17K | 4-6K | |

Replace the regulator/rectifier if the readings are not within the specifications in the table.

14. BATTERY/CHARGING SYSTEM/ A.C. GENERATOR

A.C. GENERATOR CHARGING COIL

- * The inspection of A.C. generator charging coil can be made with the engine installed.

INSPECTION

Disconnect the A.C. generator pink and yellow wires and measure the resistance between the pink and yellow wires.

Resistance: 0.2 Ω (at 20°C)

Replace the A.C. generator charging coil if the reading is not within the specifications.

