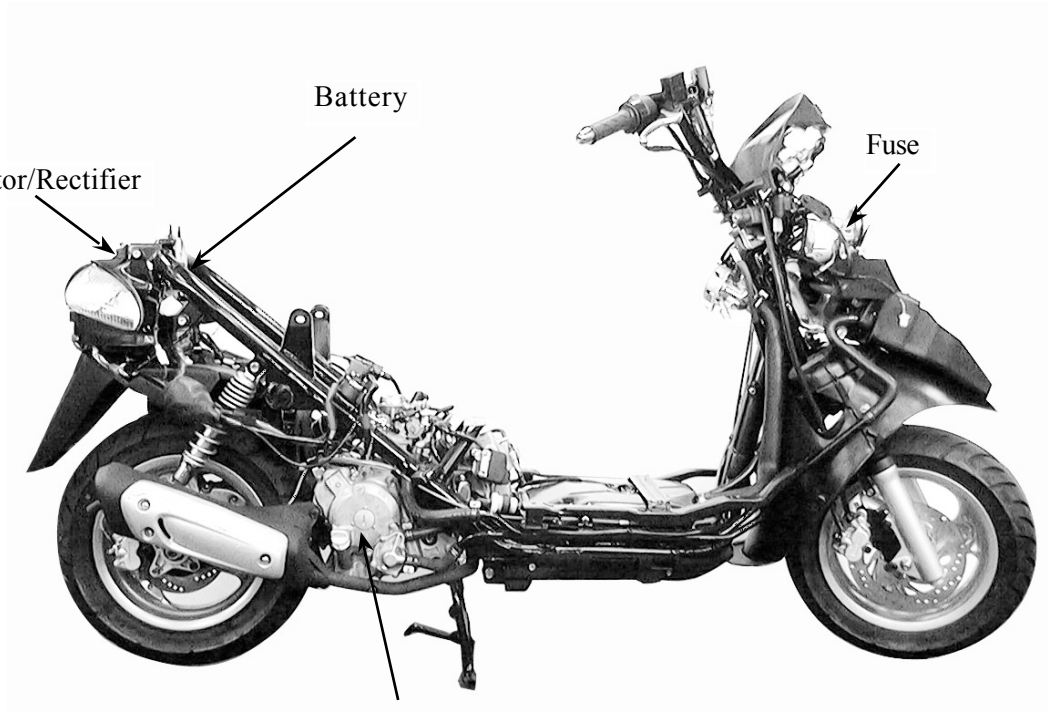
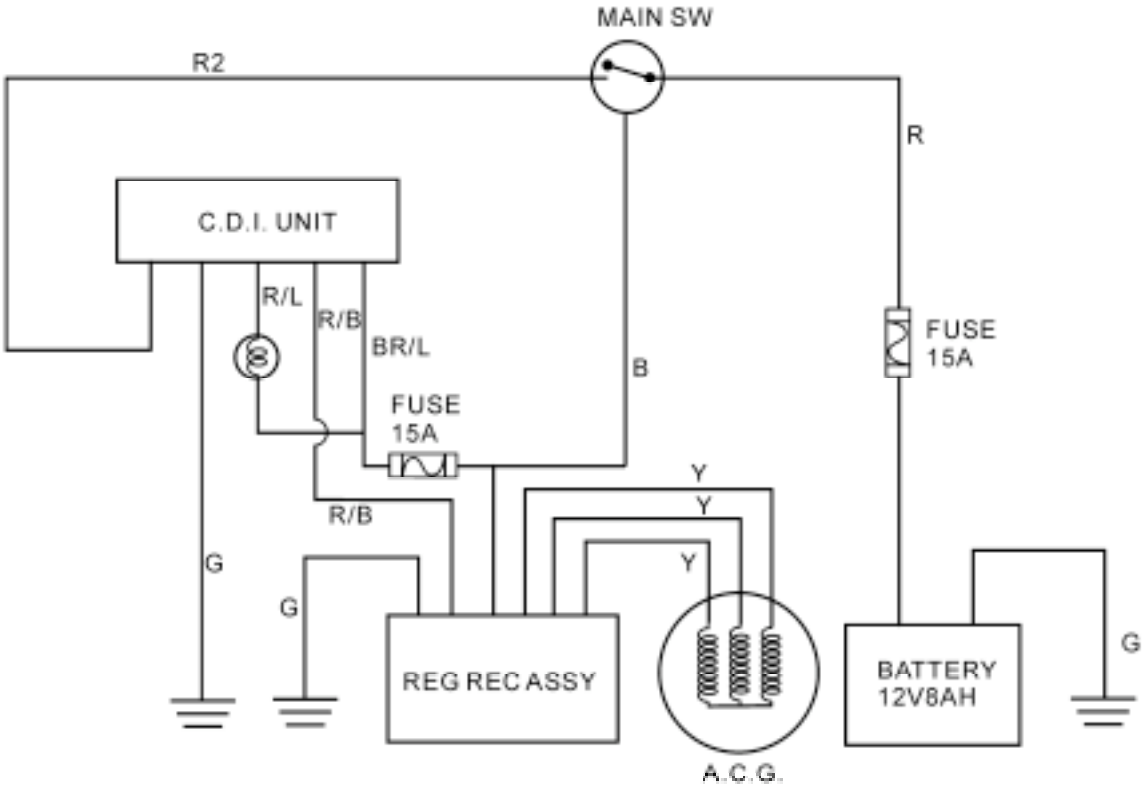
16

BATTERY/CHARGING SYSTEM

CHARGING SYSTEM LAYOUT



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 motorcycle for charging.
- When replacing the battery, do not use a traditional battery.
- When charging, check the voltage with an electric tester.

SPECIFICATIONS

Item			Standard
Battery	Capacity		12V8AH
	Voltage (20℃)	Fully charged	13.2V
		Undercharged	12.3V
	Charging current		STD: 0.9A Quick: 4.0A
	Charging time		STD: 5-10hr Quick: 30min
A.C. Generator	Capacity		160W/500rpm
	Charging coil resistance (20℃)		Yellow_ Yellow 0.6_ 1.6Ω
	Charging rpm		1300rpm max (14V)
	Charging performance		6A min/2500rpm 8A min/5000rpm
Regulator/Rectifier	Limit voltage		14.5±0.5V

TESTING INSTRUMENTS

Ammeter
Electric tester
Tachometer

TORQUE VALUES

Pulser coil bolt	0.5kg-m
Coil lock bolt	0.9kg-m
Flywheel nut	3.5_ 4.5kg-m

SPECIAL TOOLS
Universal holder
Flywheel puller

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 ignition system

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

BATTERY

Remove the seat and met-in box. (⇨2-3)
Remove the battery cover screw and the battery cover.
Remove the battery.
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 INSPECTION (OPEN CIRCUIT VOLTAGE)

Disconnect the battery cables.
Measure the voltage between the battery terminals.
Fully charged : 13.2V
Undercharged : 12.3V max.

✱ Battery charging inspection must be performed with a voltmeter.

CHARGING

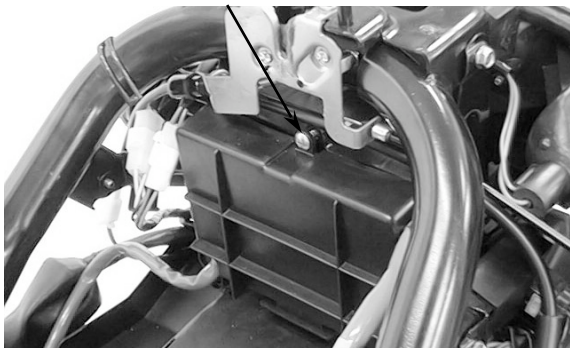
Connect the charger positive (+) cable to the battery positive (+) terminal.
Connect the charger negative (-) cable to the battery negative (-) terminal.

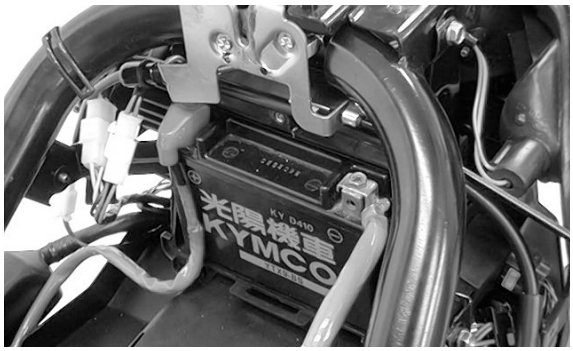
- Keep flames and sparks away from a charging battery.
- Turn power ON/OFF at the charger, not at the battery terminals to prevent sparks near the battery.
- Charge the battery according to the current specified on the battery.
- During quick charging, the battery temperature should not exceed 45℃ .

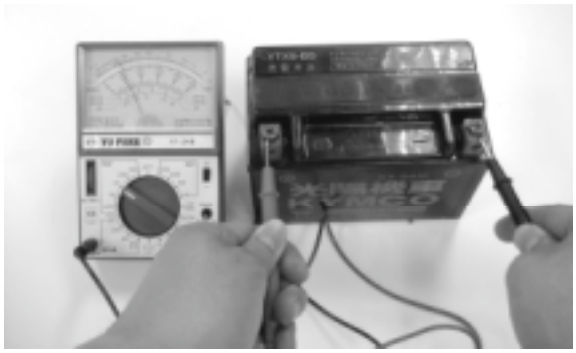
✱
- Quick charging should only be done in an emergency.
- Measure the voltage 30 minutes after the battery is charged.

Charging current : Standard : 0.9A
Quick : 4A
Charging time : Standard : 5_ 10 hours
Quick : 30 minutes
After charging: Open circuit voltage: 12.8V min.

Battery Cover Screw







CHARGING SYSTEM

CURRENT TEST

✱ Use a fully charged battery (12.8V min.) to check the charging system.

Warm up the engine before taking readings.
Connect an 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.
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: 14_ 15V/0.5A max. (5000rpm max.)

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

Red Wire

PERFORMANCE TEST

Engine Speed	2500rpm	5000rpm
Charging Current	6A min.	8A min.

✱ When measuring the charging current, disconnect the black wire from the regulator/rectifier wire coupler.

If the readings do not meet the specified values, check the regulator/rectifier.

A.C. GENERATOR INSPECTION

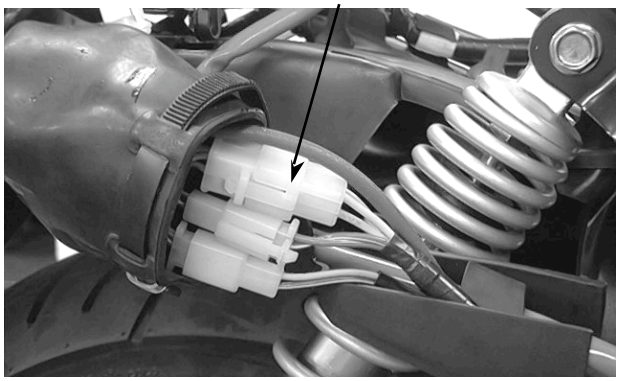
✱ This test can be made without removing the stator from the engine. Disconnect the yellow wire from the auto bystarter.

Remove the frame center cover.
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:

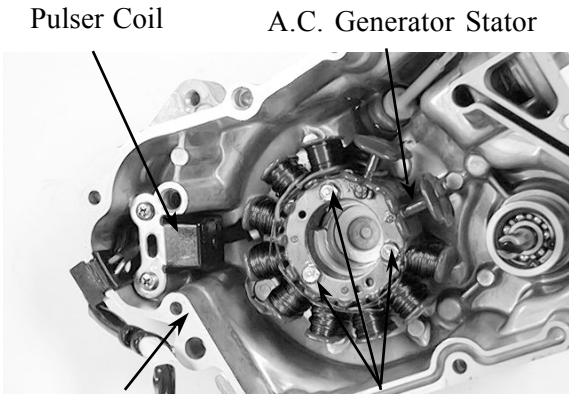
Yellow_	Yellow	0.6_	1.6Ω

A.C. Generator Connector



A.C. GENERATOR REMOVAL

A.C. generator removal (⇨10-3)
A.C. generator installation (⇨10-6)



REGULATOR/RECTIFIER

INSPECTION

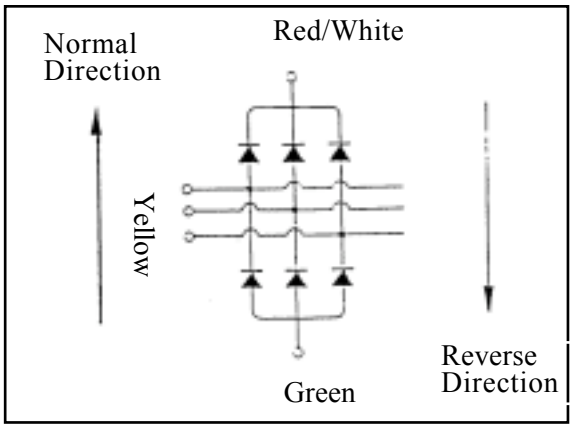
Remove the frame front cover. (⇨2-5)
Remove the regulator/rectifier wire coupler.
Check the continuity between the wire terminals.

Normal Direction: Continuity

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

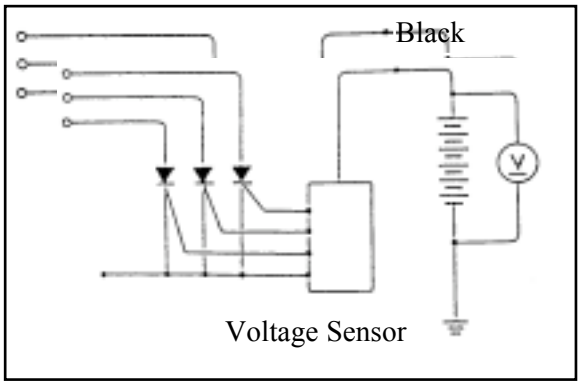
Reverse Direction: No Continuity

	(+) 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.

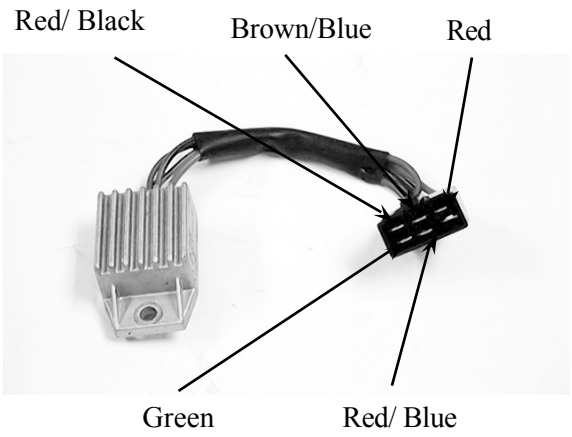


CHARGING INDICATOR INSPECTION

Use Sanwa electric tester for testing.
Take readings in XKΩ range.

Unit: D401

Probe (+) / Probe (-)	Red/ Black	Red	Brown /Blue	Red/ Blue	Green
Red/ Black		∞	35~65 KΩ	∞	21~41 KΩ
Red	3.4~5.8 mΩ		3.4~5.8 mΩ	∞	3.4~5.8 mΩ
Brown/ Blue	35~65 KΩ	∞		∞	14_ 2 6 KΩ
Red/ Blue	∞	∞	∞		∞
Green	21~41 KΩ	∞	14_ 2 6 KΩ	∞	



Charging indicator inspection：

1. Turn on the ignition switch. The Charging lamp should be lighten.
2. Start the engine. The Charging lamp should be went out.
3. Inspect the output voltage of Charging indicator：
   ~ Disconnect the battery（ +） cable.
   ~ Use the voltmeter.
   ~ Connect the voltage（ +） cable to the red wire of charging indicator.
   ~ Connect the voltage （ -） cable to the ground.
   ~ Start the engine. Open the throttle valve to keep at 8000 rpm.
   ~ Standard output voltage is 12~14V.