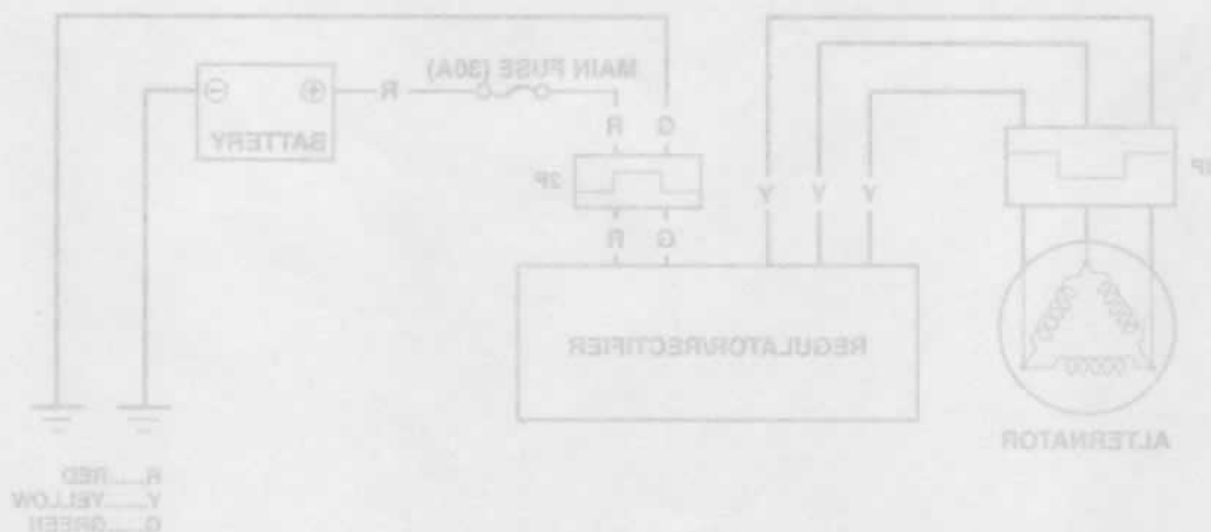
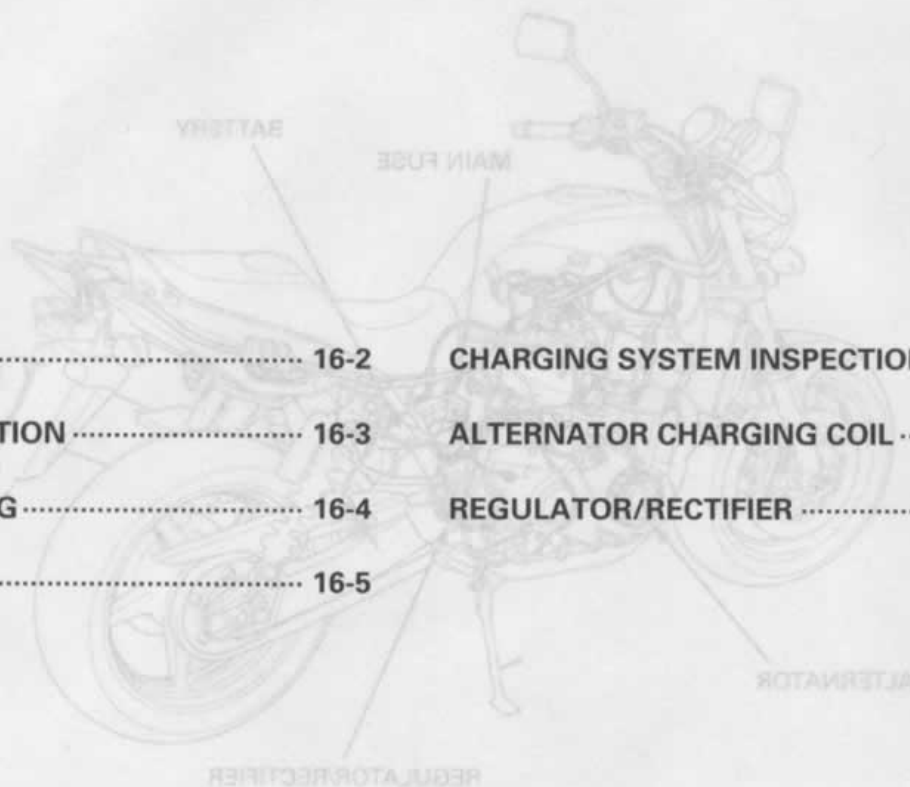


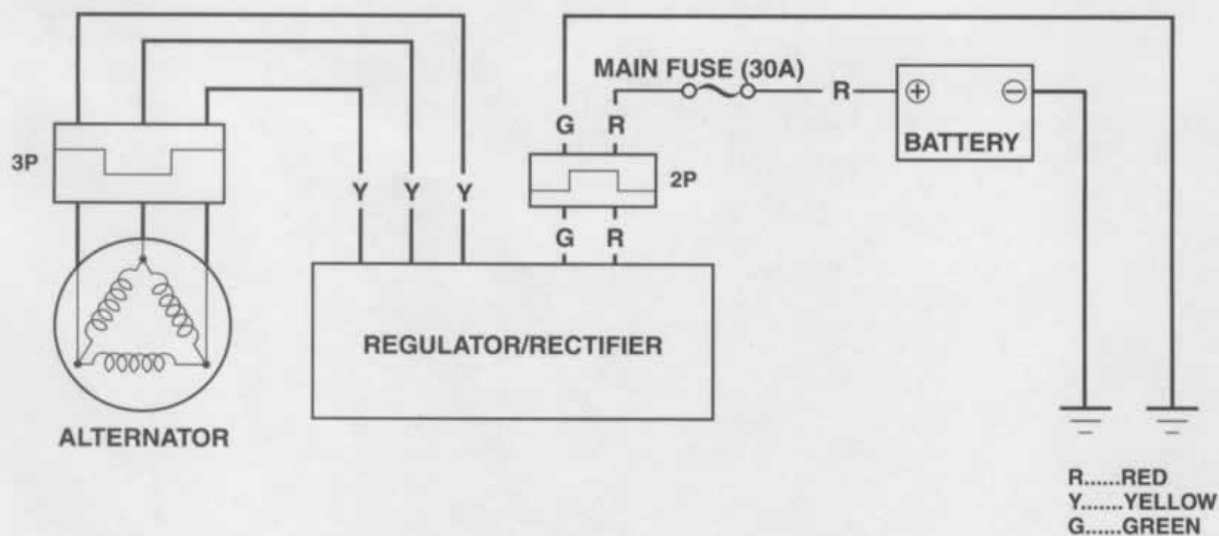
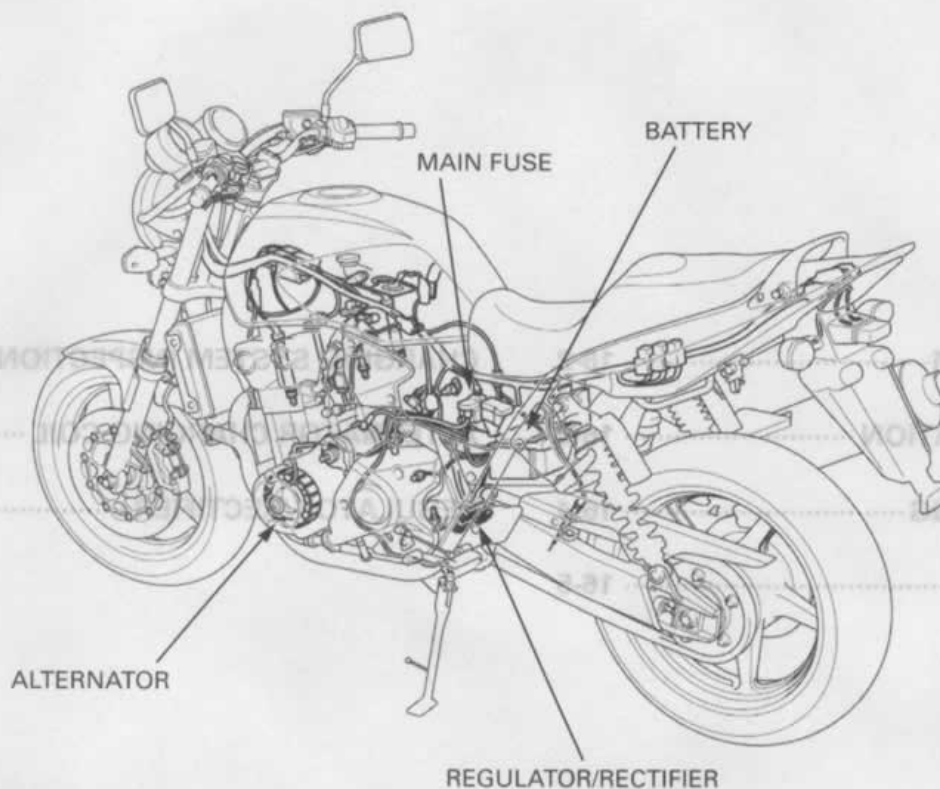
16. BATTERY/CHARGING SYSTEM

SYSTEM DIAGRAM

SYSTEM DIAGRAM.....	16-2	CHARGING SYSTEM INSPECTION.....	16-6
SERVICE INFORMATION	16-3	ALTERNATOR CHARGING COIL	16-6
TROUBLESHOOTING	16-4	REGULATOR/RECTIFIER	16-7
BATTERY.....	16-5		



SYSTEM DIAGRAM



SERVICE INFORMATION

GENERAL

⚠ WARNING

- The battery gives off explosive gases; keep sparks, flames and cigarettes away. Provide adequate ventilation when charging.
- The battery contains sulfuric acid (electrolyte). Contact with skin or eyes may cause severe burns. Wear protective clothing and a face shield.
 - If electrolyte gets on your skin, flush with water.
 - If electrolyte gets in your eyes, flush with water for at least 15 minutes and call a physician immediately.
- Electrolyte is poisonous.
 - If swallowed, drink large quantities of water or milk and call your local Poison Control Center or a call a physician immediately.

NOTICE

- Always turn OFF the ignition switch before disconnecting any electrical components.
- Some electrical components may be damaged if terminals or connectors are connected or disconnected while the ignition switch is ON and current is present.
- For extended storage, remove the battery, give it a full charge, and store it in a cool, dry space. For maximum service life, charge the stored battery every two weeks.
- For a battery remaining in a stored motorcycle, disconnect the negative battery cable from the battery terminal.
- The maintenance free battery must be replaced when it reaches the end of its service life.
- The battery can be damaged if overcharged or undercharged, or if left to discharge for long period. These same conditions contribute to shortening the "life span" of the battery. Even under normal use, the performance of the battery deteriorates after 2–3 years.
- Battery voltage may recover after battery charging, but under heavy load, battery voltage will drop quickly and eventually die out. For this reason, the charging system is often suspected as the problem. Battery overcharge often results from problems in the battery itself, which may appear to be an overcharging symptom. If one of the battery cells is shorted and battery voltage does not increase, the regulator/rectifier supplies excess voltage to the battery. Under these conditions, the electrolyte level goes down quickly.
- Before troubleshooting the charging system, check for proper use and maintenance of the battery. Check if the battery is frequently under heavy load, such as having the headlight and taillight ON for long periods of time without riding the motorcycle.
- The battery will self-discharge when the motorcycle is not in use. For this reason, charge the battery every two weeks to prevent sulfation from occurring.
- When checking the charging system, always follow the steps in the troubleshooting flow chart page 16-4.
- For battery charging, do not exceed the charging current and time specified on the battery. Use of excessive current or charging time may damage the battery.

BATTERY TESTING

Refer to the instruction of the Operation Manual for the recommended battery tester. The recommended battery tester puts a "load" on the battery so that the actual battery condition of the load can be measured.

Recommended battery tester **BM-210 or BATTERY MATE or equivalent**

SPECIFICATIONS

ITEM			SPECIFICATIONS
Battery	Capacity		12V – 11 Ah
	Current leakage		2.0 mA max.
	Voltage (20° C/68° F)	Fully charged	13.0 – 13.2 V
		Needs charging	Below 12.3 V
	Charging current	Normal	0.9 A/5 – 10 h
		Quick	4.5 A/0.5 h
Alternator	Capacity		0.421 kW/5,000 min ⁻¹ (rpm)
	Charging coil resistance (20° C/68° F)		0.1 – 1.0 Ω

TROUBLESHOOTING

BATTERY IS DAMAGED OR WEAK

1. BATTERY TEST

Remove the battery (page 16-5).

Check the battery condition using the recommended battery tester.

RECOMMENDED BATTERY TESTER:

BM210 or BATTERY MATE or equivalent

Is the battery good condition?

No – Faulty battery

YES – GO TO STEP 2.

2. CURRENT LEAKAGE TEST

Install the battery (page 16-5).

Check the battery current leakage test (Leak test; page 16-6).

Is the current leakage below 2.0mA?

YES – GO TO STEP 4.

NO – GO TO STEP 3.

3. CURRENT LEAKAGE TEST WITHOUT REGULATOR/RECTIFIER CONNECTOR

Disconnect the regulator/rectifier connector and recheck the battery current leakage.

Is the current leakage below 2.0mA?

YES – Faulty regulator/rectifier

NO – • Shorted wire harness

• Faulty ignition switch

4. ALTERNATOR CHARGING COIL INSPECTION

Check the alternator charging coil (page 16-6).

Is the alternator charging coil resistance within 0.1 – 1.0 Ω (20°C/68°F)?

No – Faulty charging coil

YES – GO TO STEP 5.

5. CHARGING VOLTAGE INSPECTION

Measure and record the battery voltage using a digital multimeter (page 16-5).

Start the engine.

Measure the charging voltage (page 16-6).

Compare the measurement to result of the following calculation.

STANDARD:

Measured battery Voltage < Measured charging voltage < 15.5 V

Is the measured charging voltage within the standard voltage?

YES – Faulty battery

NO – GO TO STEP 6.

6. REGULATOR/RECTIFIER SYSTEM INSPECTION

Check the voltage and resistance at the regulator/rectifier connector (page 16-7).

Are the results of checked voltage and resistance correct?

YES – Faulty regulator/rectifier

NO – • Open circuit in related wire
• Loose or poor contacts of related terminal
• Shorted wire harness

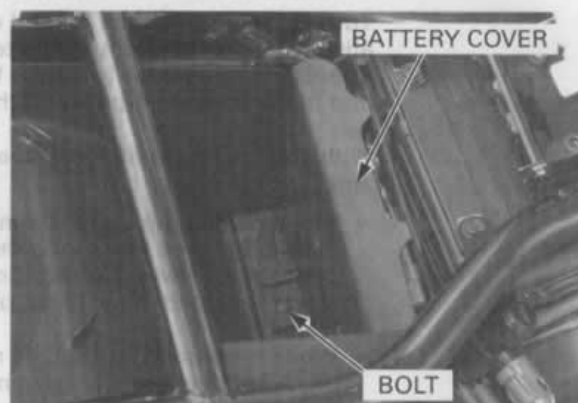
BATTERY

REMOVAL/INSTALLATION

Always turn the ignition switch OFF before removing the battery.

Remove the seat (page 3-4).

Remove the battery cover retaining bolt, then remove the battery cover.



Disconnect the negative cable and then the positive cable, and remove the battery.

Install the battery in the reverse order of removal with the proper wiring as shown.

After installing the battery, coat the terminals with clean grease.

Connect the positive terminal first and then the negative cable.



VOLTAGE INSPECTION

Measure the battery voltage using a digital multimeter.

VOLTAGE:

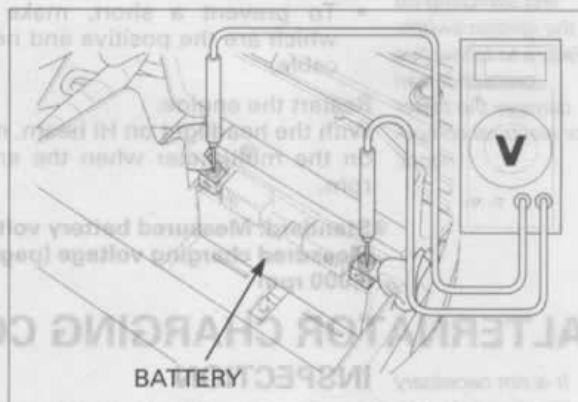
Fully charged: 13.0 – 13.2V

Under charged: Below 12.3V

TOOL:

Digital multimeter

Commercially available



BATTERY CHARGING

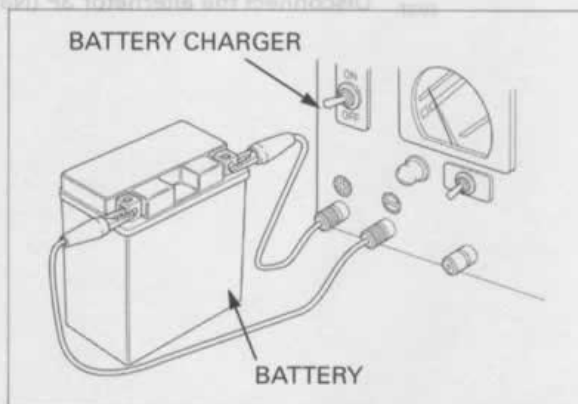
Remove the battery (page 16-5).

Turn power ON/OFF at the charger, not at the battery terminal.

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

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

- Quick-charging should only be done in an emergency; slow charging is preferred.
- For battery charging, do not exceed the charging current and time specified on the battery. Using excessive current or extending the charging time may damage the battery.



CHARGING SYSTEM INSPECTION

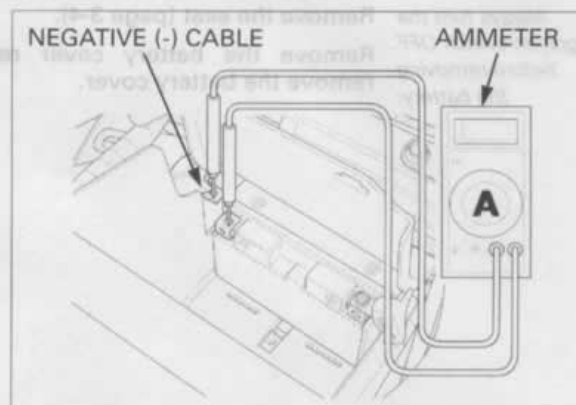
CURRENT LEAKAGE INSPECTION

Turn the ignition switch off and disconnect the negative battery cable from the battery.

Connect the ammeter (+) probe to the ground 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 on. A sudden surge of current may blow out the fuse in the tester.



SPECIFIED CURRENT LEAKAGE: 2.0 mA max.

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

Be sure the battery is in good condition before performing this test.

Warm up the engine to normal operating temperature.

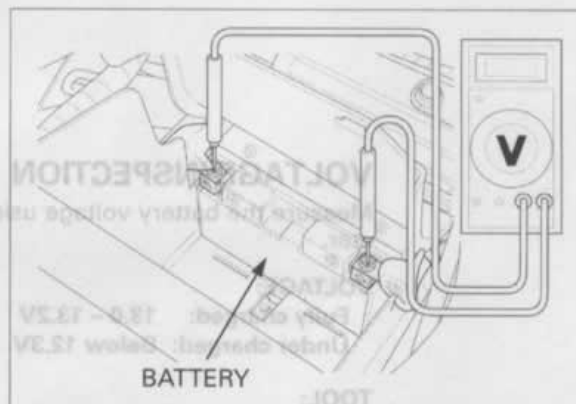
Stop the engine, and connect the multimeter as shown.

- To prevent a short, make absolutely certain which are the positive and negative terminals or cable.

Restart the engine.

With the headlight on Hi beam, measure the voltage on the multimeter when the engine runs at 5,000 rpm.

Standard: Measured battery voltage (page 16-5) < Measured charging voltage (page 16-6) < 15.5 V at 5,000 rpm



Do not disconnect the battery or any cable in the charging system with out first switching off the ignition switch. Failure to follow this precaution can damage the tester or electrical components.

ALTERNATOR CHARGING COIL

INSPECTION

It is not necessary to remove the stator coil to make this test.

Remove the right side cover (page 3-4).

Disconnect the alternator 3P (Natural) connector.



Check the resistance between all three Yellow terminals.

STANDARD: 0.1 – 1.0 Ω (at 20° C/68° F)

Check for continuity between all three Yellow terminals and Ground.

There should be no continuity.

If readings are far beyond the standard, or if any wire has continuity to ground, replace the alternator stator.

Refer to section 10 for stator removal.

3P (NATURAL) CONNECTOR



REGULATOR/RECTIFIER

SYSTEM INSPECTION

Remove the right side cover (page 3-4).

Disconnect the regulator/rectifier 3P (Natural) and 2P (Natural) connectors, and check it for loose contact or corroded terminals.

2P (NATURAL) CONNECTOR



3P (NATURAL) CONNECTOR

If the regulated voltage reading (page 16-6) is out of the specification, measure the voltage between connector terminals (wire harness side) as follows:

Item	Terminal	Specification
Battery charging line	Red (+) and ground (-)	Battery voltage should register
Charging coil line	Yellow and Yellow	0.1 – 1.0 Ω at (20° C/68° F)
Ground line	Green and ground	Continuity should exist

2P (NATURAL) CONNECTOR



3P (NATURAL) CONNECTOR

If all components of the charging system are normal and there are no loose connections at the regulator/rectifier connectors, replace the regulator/rectifier unit.

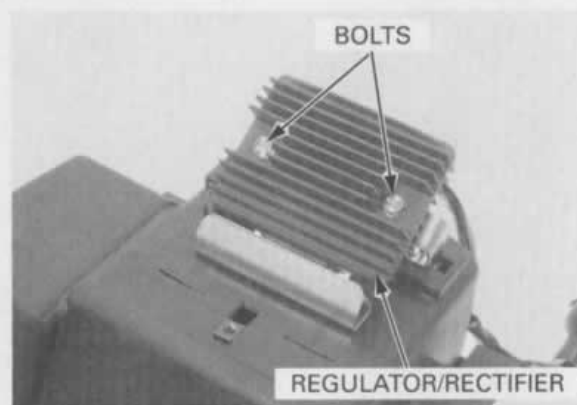
REMOVAL/INSTALLATION

Remove the rear fender B (page 3-8).

Remove the regulator/rectifier unit mounting bolts, regulator/rectifier and plate.

Install the regulator/rectifier unit in the reverse order of removal.

BOLTS



REGULATOR/RECTIFIER