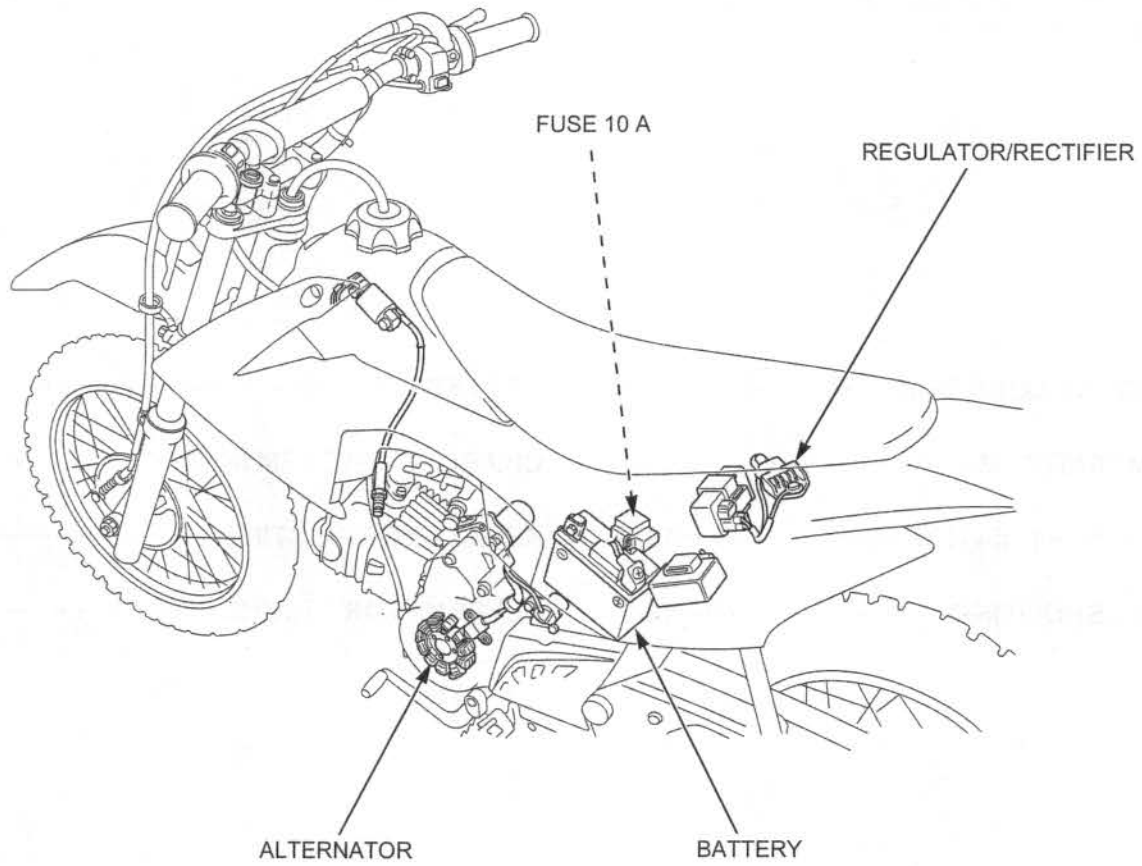


16. BATTERY/CHARGING SYSTEM

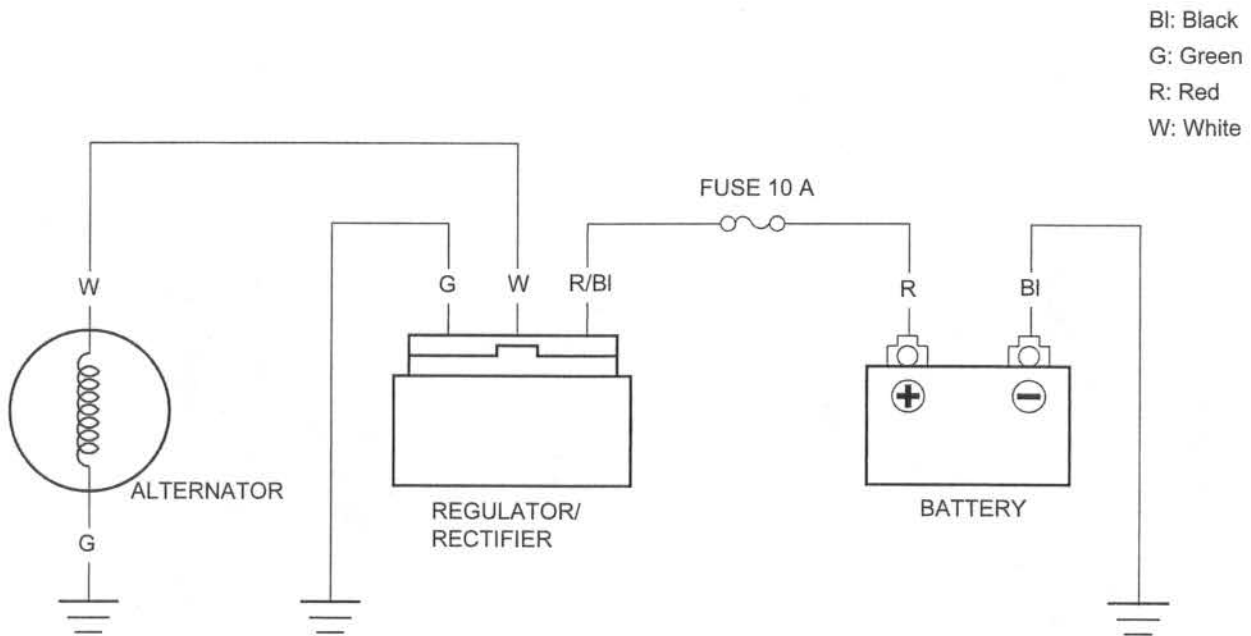
COMPONENT LOCATION	16-2	BATTERY	16-6
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BATTERY/CHARGING SYSTEM

COMPONENT LOCATION



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 physician immediately.

- Always turn OFF the ignition switch before disconnecting any electrical component.
- Some electrical components may be damaged if terminals or connectors are connected or disconnected while the ignition switch is ON and current is present.
- This model comes with a maintenance free (MF) battery. The maintenance free battery must be replaced when it reaches the end of its service life.
- For extended storage, remove the battery, give it a full charge, and store it in a cool, dry space.
- For a battery remaining in a stored motorcycle, disconnect the negative battery cable from the battery terminal.
- The battery sealing caps should not be removed. Attempting to remove the sealing caps from the cells may damage the battery.
- The battery can be damaged if overcharged or undercharged, or if left to discharge for a 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.
- The battery will self-discharge when the motorcycle is not in use. For this reason, charge the battery every 2 weeks to prevent sulfation from occurring.
- Filling a new battery with electrolyte will produce some voltage, but in order to achieve its maximum performance, always charge the battery. Also, the battery life is lengthened when it is initially charged.
- When checking the charging system, always follow the steps in the troubleshooting flow chart (page 16-5).
- For alternator removal (page 11-5).

BATTERY CHARGING

- Turn power ON/OFF at the charger, not at the battery terminal.
- For battery charging, do not exceed the charging current and time specified on the battery. Use excessive current or extending the charging time may damage the battery.
- Quick charging should only be done in an emergency; slow charging is preferred.

BATTERY TESTING

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

Recommended battery tester Micro 404XL (U.S.A. only)

SPECIFICATIONS

ITEM		SPECIFICATIONS	
Battery	Type	YTX4L-BS	
	Capacity	12 V – 3 Ah (10 HR)	
	Current leakage	0.1 mA max.	
	Voltage	Fully charged	13.0 – 13.2 V
		Needs charging	Below 12.4 V
	Charging current	Normal	0.4 A/5 – 10 h
Quick		4.0 A/0.5 h	
Alternator	Capacity	0.063 kW/5,000 rpm	
	Charging coil resistance (20°C/68°F)	0.2 – 1.4 Ω	

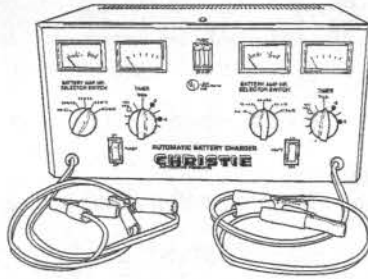
BATTERY/CHARGING SYSTEM

TOOLS

Motorcycle battery analyzer
Micro 404XL



Christie battery charger
MC1012/2T (U.S.A. only)



TROUBLESHOOTING

BATTERY IS DAMAGED OR WEAK

1. BATTERY TEST

Remove the battery (page 16-6).

Check the battery condition using the recommended battery tester.

RECOMMENDED BATTERY TESTER:

Micro 404XL (U.S.A. only) or equivalent

Is the battery in good condition?

YES – GO TO STEP 2.

NO – Faulty battery.

2. CURRENT LEAKAGE TEST

Install the battery (page 16-6).

Check the battery current leakage test (Leak test; (page 16-7)).

Is the current leakage below 0.1 mA?

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 0.1 mA?

YES – Faulty regulator/rectifier

NO – • Shorted wire harness
• Faulty ignition switch

4. CHARGING VOLTAGE INSPECTION

Measure and record the battery voltage using a digital multimeter (page 16-6).

Start the engine.

Measure the charging voltage (page 16-7).

Compare the measurements to the results of the following calculation.

STANDARD: Measured BV < Measured CV < 15.5 V

BV: Battery Voltage

CV: Charging Voltage

Is the measured charging voltage within the standard voltage?

YES – Faulty battery

NO – GO TO STEP 5.

5. REGULATOR/RECTIFIER SYSTEM INSPECTION

Check the voltage and resistance at the regulator/rectifier connector (page 16-8).

Are the measurements correct?

YES – Faulty regulator/rectifier

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

BATTERY

REMOVAL/INSTALLATION

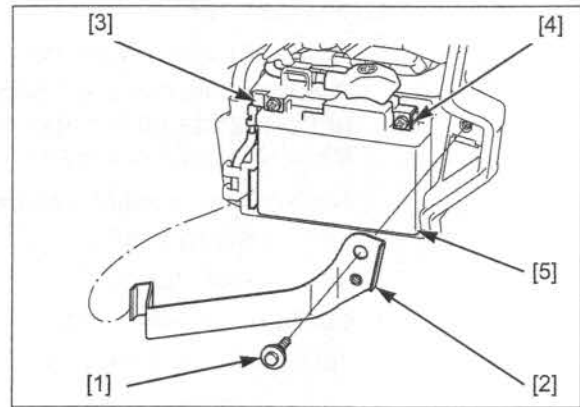
Remove the left side cover (page 2-4).

Remove the bolt [1] and battery holder plate [2].

Disconnect the negative (-) cable [3] and then the positive (+) cable [4], remove the battery [5].

Install the battery in the reverse order of removal.

- Connect the positive (+) terminal first and then the negative (-) cable.



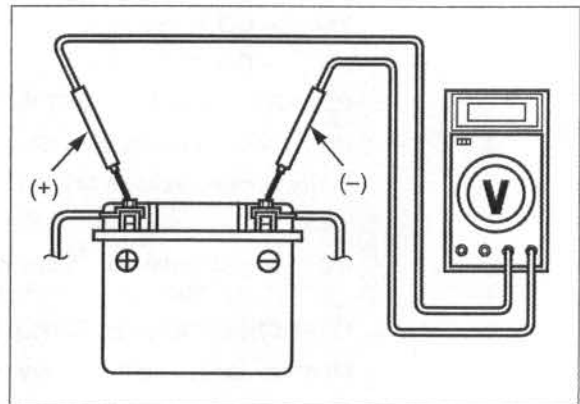
VOLTAGE INSPECTION

Measure the battery voltage using a digital multimeter.

VOLTAGE:

Fully charged: 13.0 – 13.2 V

Under charged: Below 12.4 V



BATTERY TESTING

Refer to the instructions that are appropriate to the battery testing equipment available to you.

TOOL:

Battery tester

Micro 404XL
(U.S.A. only)

BATTERY CHARGING (U.S.A. only)

Remove the battery (page 16-6).

Refer to the instructions that are appropriate to the battery charging equipment available to you.

TOOL:

Christie battery charger

MC1012/2T
(U.S.A. only)

CHARGING SYSTEM INSPECTION

CURRENT LEAKAGE INSPECTION

Remove the left side cover (page 2-4).

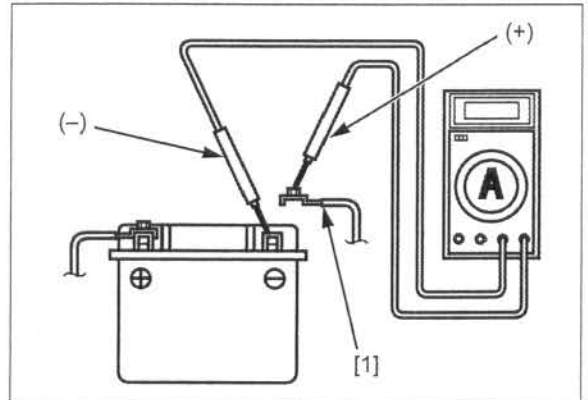
With the ignition switch turned to OFF, disconnect the negative (-) cable [1] from the battery.

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

With the ignition switch turned to OFF, check for current leakage.

NOTE:

- 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 the fuse in the tester.
- While measuring current, do not turn the ignition switch to ON. A sudden surge of current may blow the fuse in the tester.



SPECIFIED CURRENT LEAKAGE: 0.1 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

Remove the left side cover (page 2-4).

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

Warm up the engine to normal operating temperature. Connect the multimeter between the battery positive (+) and negative (-) terminals.

NOTICE

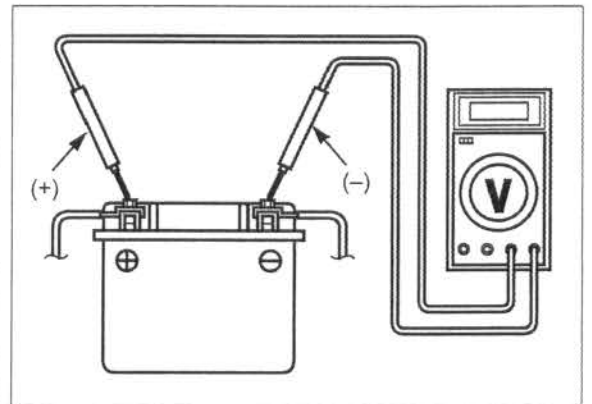
- To prevent a short, make absolutely certain which are the positive (+) and negative (-) terminals or cables.
- Do not disconnect the battery or any cable in the charging system without first turning the ignition switch to OFF. Failure to follow this precaution can damage the tester or electrical components.

Measure the voltage on the multimeter when the engine runs at 5,000 rpm.

STANDARD: Measured BV < Measured CV < 15.5 V

BV = Battery voltage (page 16-6)

CV = Charging voltage



BATTERY/CHARGING SYSTEM

REGULATOR/RECTIFIER

SYSTEM INSPECTION

Remove the fuel tank (page 6-5).

Disconnect the regulator/rectifier 4P (Black) connector [1] and check it for loose contacts or corroded terminals.

Check the following at the wire harness side connector. If the charging voltage reading is out of the specification (page 16-7):

Item	Terminal	Specification
Battery charging line	Red/black (+) and ground (-)	Battery voltage should register
Charging coil line	White and ground	0.2 – 1.4 Ω at (20° C/68° F)
Ground line	Green and ground	Continuity should exist

If all lines are normal and there are no loose connections at the regulator/rectifier connector, replace the regulator/rectifier.

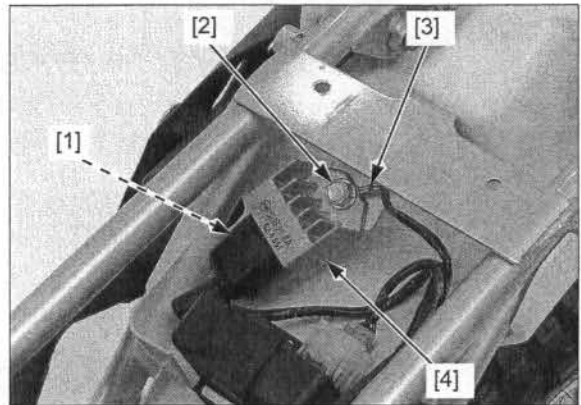
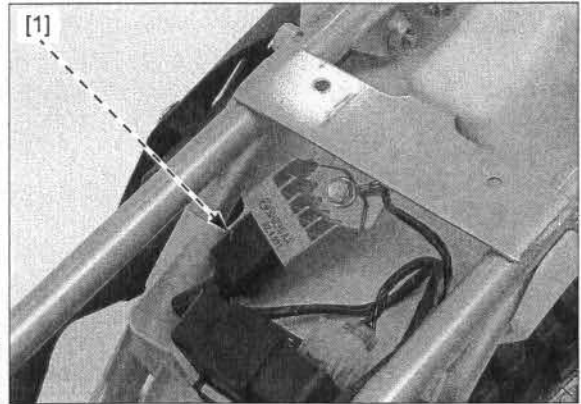
REMOVAL/INSTALLATION

Remove the seat (page 2-4).

Disconnect the regulator/rectifier 4P (Black) connector [1].

Remove the bolt [2], ground cable [3] and regulator/rectifier [4].

Installation is in the reverse order of removal.



ALTERNATOR CHARGING COIL

INSPECTION

Disconnect the alternator 2P connector [1]. Measure the resistance between the White wire terminal of the alternator side connector and ground.

STANDARD: 0.2 – 1.4 Ω (20°C/68°F)

Replace the alternator stator if resistance is out of specification.

Refer to replacement for alternator stator (page 11-5).

