

Suzuki GT750 Charging System

Description

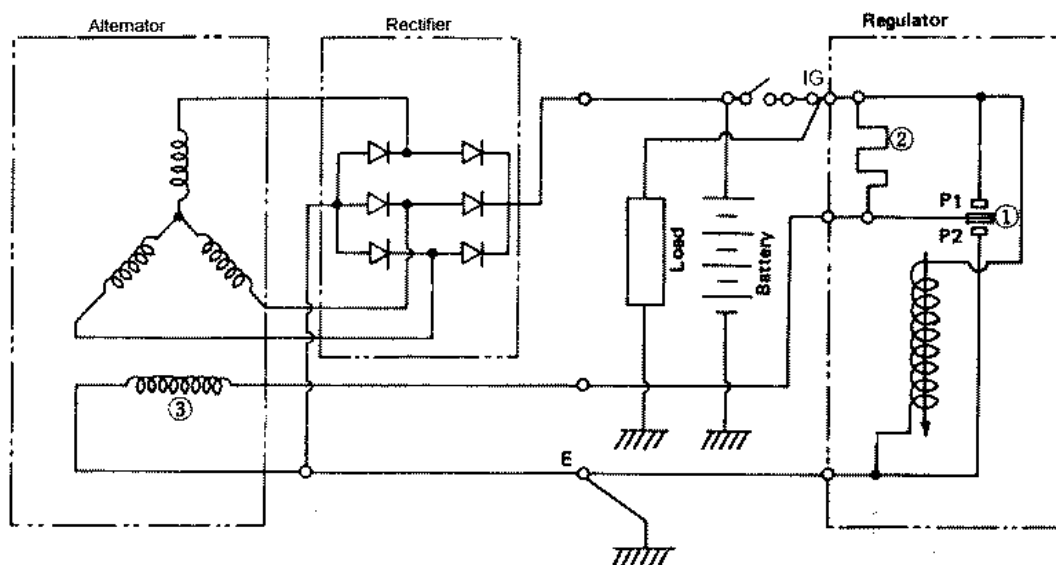


Fig. 10-23 Charging system wiring

The alternator induces a three phase alternating current within the stator coil in proportion to the engine speed, provided that the excitation current supplied from the battery to the rotor coil is constant.

In order to charge the battery, the output current from the alternator should be rectified to a direct current and regulated to a constant voltage (13.5~14.5 volts) in any engine speed.

The silicon rectifier and the voltage regulator are equipped on this system to meet the above demands. The rectifier which consists of six silicon diodes converts an alternating current from the alternator into a direct current.

The voltage regulator which comprises a control resistor, contact points and pull-in coil controls the excitation current in the rotor coil.

Operation

When the engine switch is turned on, the current flows through the contact points (1) and the control resistance (2) in parallel and the rotor coil (3), and the rotor coil is excited. Under this condition, when the engine is started and the rotor is rotated, the three phase alternating current is generated within the stator coil and then rectified to the direct current by the rectifier.

As the charging in the battery is developed, the voltage at the battery terminal naturally becomes higher and also the voltage to the point „IG” increases. Therefore the pull-in force is increased and it pulls the point lever downward so as to open the points from the low speed side (P1). As the point opens, the current flows through the control resistance (2) and the excitation current is decreased, resulting in decreasing also alternator output.

Under light load at high revolution, point contacts the high speed side (P2), and the current to the rotor coil is further decreased to control output voltage.

Thus the charging voltage is controlled by regulating the excitation current with the control resistance and pull-in coil. On the other hand, stator coil has a self-limiting characteristic in limiting the current flow to the coil to press the value when the revolution increases.

Specification

Alternator:

Voltage	12 volts
Max. output current	20 amperes
Max. output power	280 Watts
No-load revolution	14V, 0 Amp. @ 1050±150 rpm
Output revolution	14V, 20 Amp. @ 3000 rpm
Weight	3.4 kg (7.5 lb)

Voltage regulator:

Regulated voltage	13.5~14.5 volts
Weight	0.22 kg (0.485 lb)

Alternator

Removal

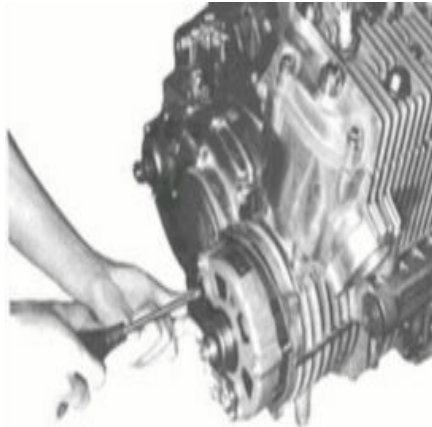


Fig.10-24 Loosening brush holder fitting screw

1. Remove the generator cover.
2. Loosen the brush holder fitting screws while firmly pressing the brush holder and then remove, otherwise the brush would spring up and the wire comes off.
3. Remove the alternator stator.
4. Pull out the rotor with the Rotor Remover (09930-33110).

Inspection & Repair

1. Check the rotor coil for open or short circuit by placing the tester prods on each slip ring, and then read the resistance. If the reading is less than the standard (around 10 ohms), the rotor coil has a short circuit or grounded.
If the reading is much higher than the standard, the coil has an open circuit. Replace the rotor with new one if differences in the reading are found.

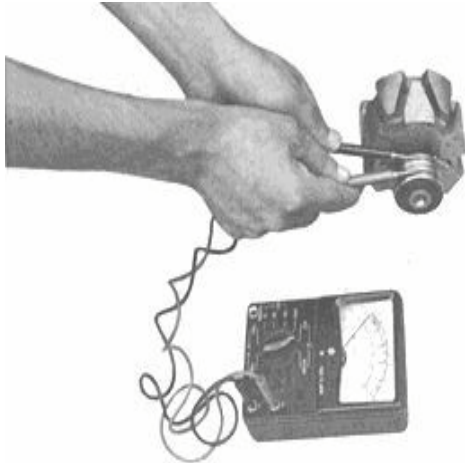


Fig. 10-25 Checking rotor coil for open and short circuit

2. Check the rotor coil for insulation by connecting one tester prod to either slip ring and the other to the rotor core finger. If the ohm meter pointer moves, the rotor or slip ring is defective and the rotor assembly should be replaced.
3. Check the stator coil for insulation by connecting one tester prod to either stator coil terminal and the other to the stator core. If the ohmmeter pointer moves, the stator assembly should be replaced.

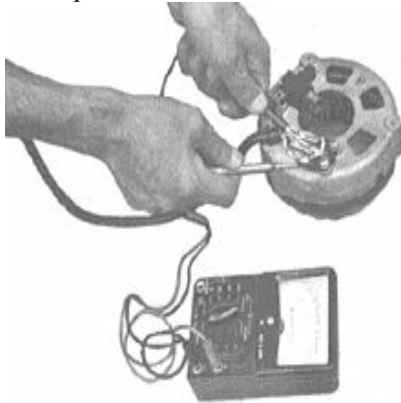


Fig. 10-26 & 10-27 Checking stator coil for open circuit and insulation

4. Check the stator coil for open circuit by placing the tester prods to each stator coil terminal alternately. If the ohmmeter pointer does not move, the stator coil has an open circuit and should be replaced.

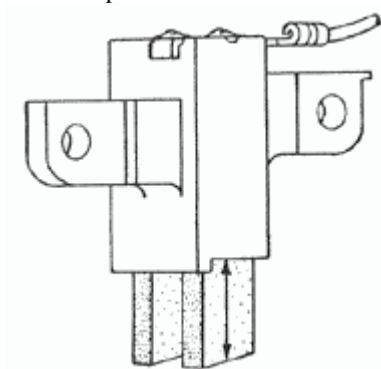


Fig. 10-28 Carbon brush length

5. Check the carbon brush for clack or wear. If it is worn out beyond 5.5 mm (0.217"), replace the brushes. The overall length of brand-new brush is 12.5 mm (4.93").

Note: When replacing the brushes, replace with the brush holder assembly which includes the brush, spring, and holder.

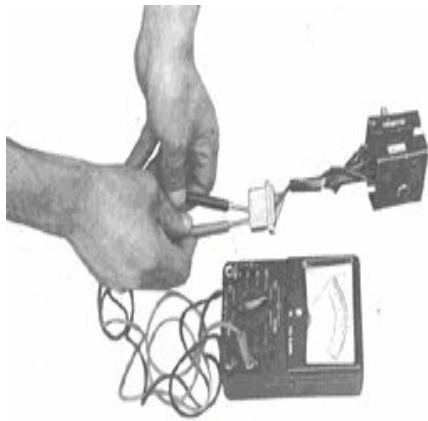


Fig. 10-29 Checking silicon rectifier for open and short circuit

6. Check the silicon rectifier for open. Measure the resistance between each terminal. If the silicon rectifier is in good condition, less resistance is measured in the normal direction (for example, Yellow->Red) and no current flows in the inverse direction. Caution: The ordinal ohmmeter has an inverse polarity, so that a current flows from (-) lead to (+) lead.

7. Measure the resistance between „IG” (orange lead) and „F” (green lead) terminals. The resistance should be none. If the resistance is there, the voltage regulator low speed point is defective. Open the cover and press the regulator lever (1) to open the points, then measure the resistance again. The specified resistance is 10 ohms.

If the resistance is excessively higher than the specified value, the control resistor is defective.

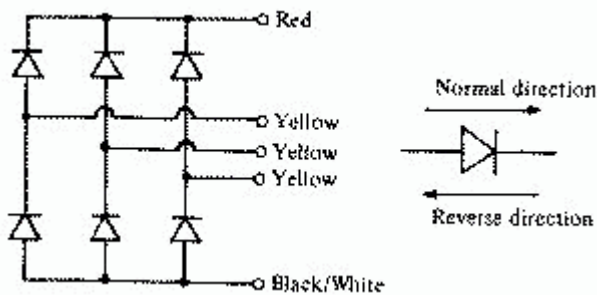


Fig. 10-30 Silicon rectifier

Caution: The voltage regulator cover is sealed to keep the inside mechanism free from dust and moisture, and further more the unnecessary adjustment at ordinal service. In case it is adjusted from lack of replacement in market, open the cover - and inspect it as follows, keeping in mind once it is serviced it will not be guaranteed.

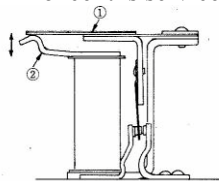


Fig. 10-31 Adjusting regulator

8. Measure the regulated voltage. Insert one tester prod into a cell of the coupler where the orange lead is connected and the other to the engine for grounding. Set the engine to run at 2,000~3,000

rpm and check the voltmeter reading. The specified regulated voltage is 13.5~14.5 volts.



Fig. 10-32 Measuring alternator output If the reading is excessively different from the above specified voltage, adjust the regulator by so bending the lever (2) as to have a meter reading of 13.5~14.5 volts.

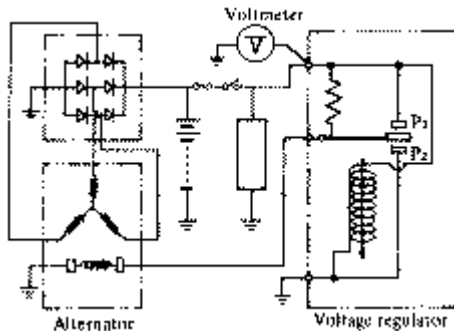


Fig. 10-33 Voltmeter connection

9. Check the alternator no-load performance according to the following procedures.

- a. Disconnect the starter switch relay lead which is coloured red from the connector, and also the fuse lead at the connector side where the white tape is wound. Then connect the fuse lead with the relay lead connector, and the voltmeter between the red lead which was connected to the starter switch relay lead originally and the crankcase.

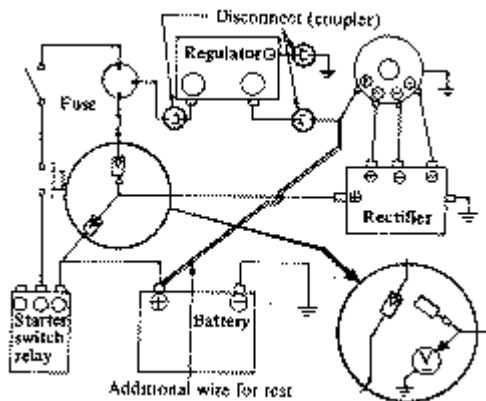


Fig. 10-34 Wiring for measuring output

- b. Disconnect the regulator coupler, and then connect the green lead in the coupler and the battery positive terminal with a suitable lead. This is done to supply a constant current from the battery to the rotor coil directly without being regulated by the voltage regulator.
- c. Start the engine and set it to run at 1,500 rpm and 2,500 rpm. Check the voltmeter reading.

The specified voltage:

- 1,500 rpm: more than 16 volts
- 2,500 rpm: more than 27 volts

In case that the no-load voltage is in good condition but the battery is discharged, check the voltage regulator or battery. If the voltage reading is less than the specified value, the connection of coupler, silicon rectifier or alternator is defective. Repair or replace them.