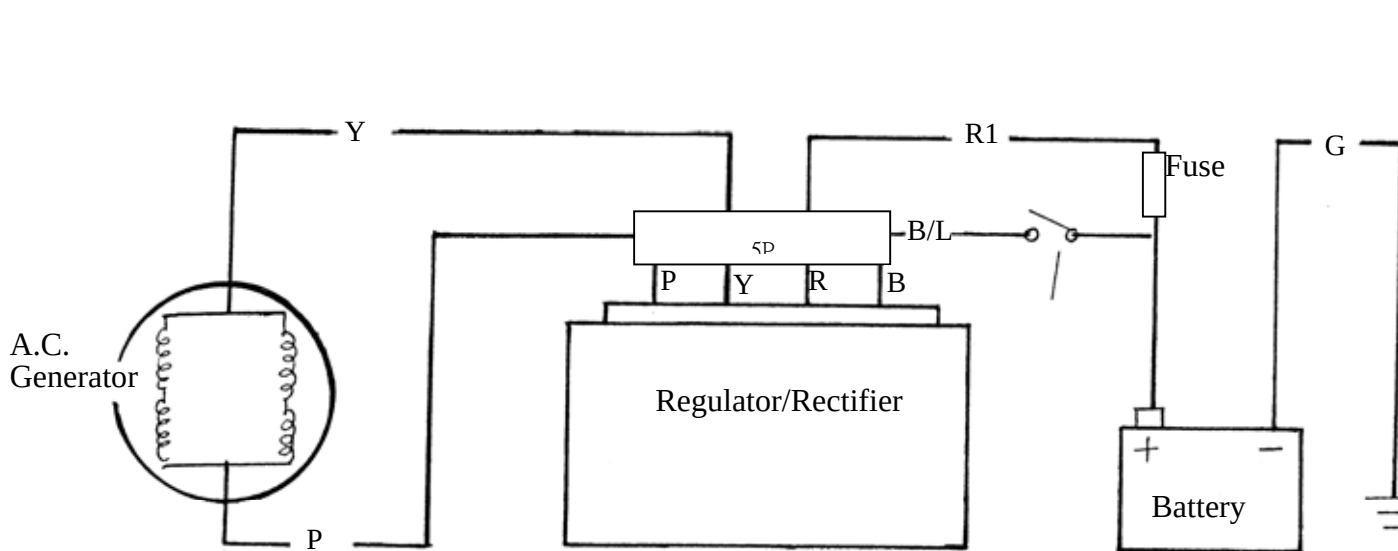
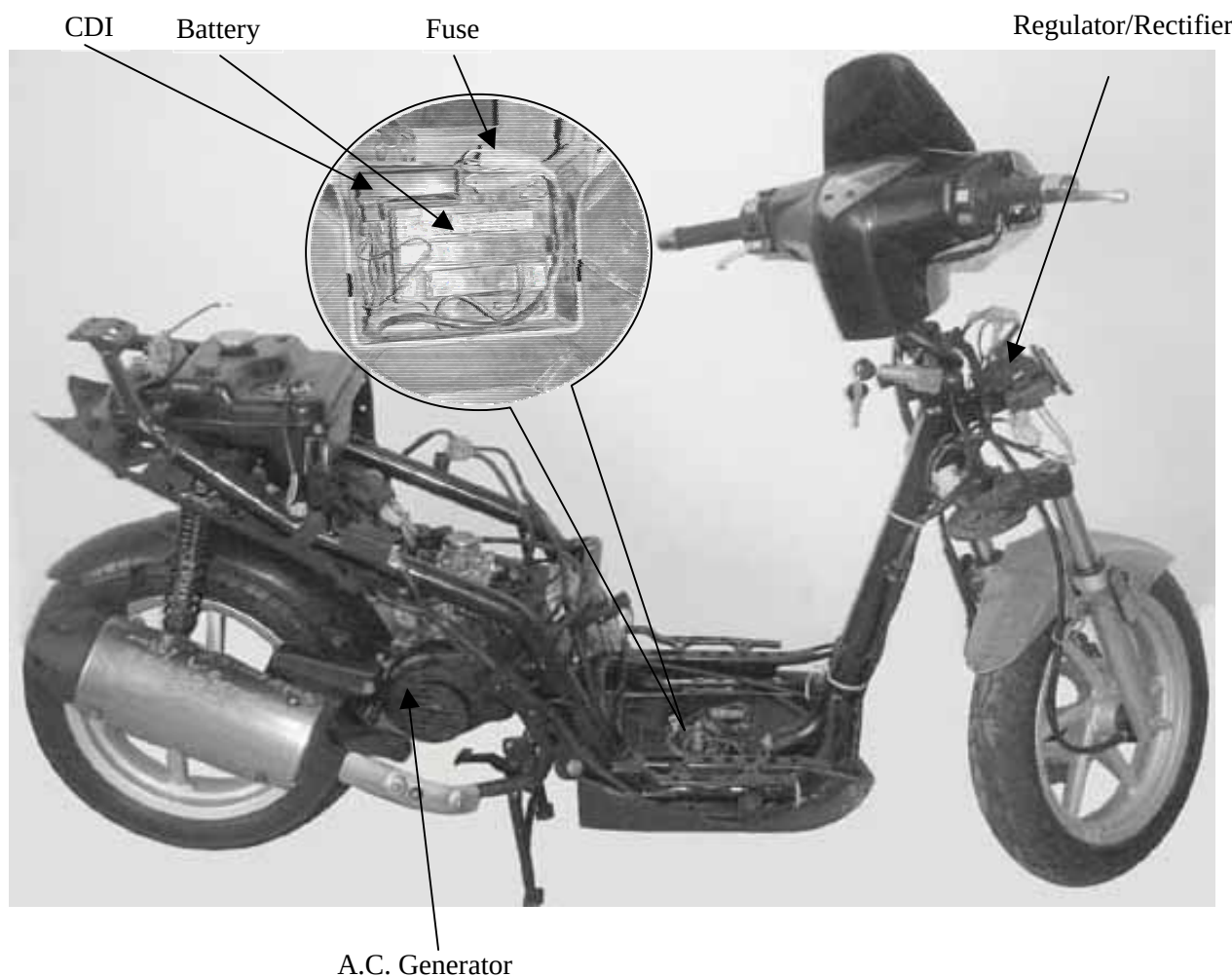


# 14. BATTERY/CHARGING SYSTEM/ A.C. GENERATOR



|                          |      |                                  |      |
|--------------------------|------|----------------------------------|------|
| SERVICE INFORMATION..... | 14-1 | A.C. GENERATOR CHARGING COIL ... | 14-6 |
| TROUBLESHOOTING .....    | 14-2 | RESISTOR INSPECTION.....         | 14-6 |
| BATTERY.....             | 14-3 | A.C. GENERATOR REMOVAL .....     | 14-6 |
| CHARGING SYSTEM .....    | 14-4 | A.C. GENERATOR INATALLATION ...  | 14-8 |
| REGULATOR/RECTIFIER..... | 14-5 |                                  |      |

## 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 voltmeter.

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



**SUPER8 50**

## SPECIFICATIONS

| Item                |                                 |               | Standard                   |          |
|---------------------|---------------------------------|---------------|----------------------------|----------|
| Battery             | Capacity/Model                  |               | 12V-4AH                    |          |
|                     | Voltage (20°C)                  | Fully charged | 13.1V                      |          |
|                     |                                 | Undercharged  | 12.3V                      |          |
|                     | Charging current                |               | STD: 0.4A Quick: 4.0A      |          |
|                     | Charging time                   |               | STD: 5~10hr Quick: 30min   |          |
| A.C. Generator      | Capacity                        |               | 0.144KW/5000rpm            |          |
|                     |                                 |               |                            |          |
|                     | Charging coil resistance (20°C) |               | Yellow~Peach               | 0.1~1.0Ω |
| Regulator/Rectifier | Type                            |               | Single-phase full-wave SCR |          |
|                     | Limit voltage                   |               |                            |          |
|                     |                                 | Charging      | 14.5±0.5V/5000rpm          |          |
| Resistor            | Resistance (20°C)               |               | 5W12Ω                      |          |
|                     |                                 |               |                            |          |

## TORQUE VALUES

|                  |               |
|------------------|---------------|
| Pulser coil bolt | 0.45~0.6kgf-m |
| Stator bolt      | 0.8~1.2kgf-m  |
| Flywheel nut     | 3.5~4.5kgf-m  |
| Cooling fan bolt | 0.8~1.2kgf-m  |

## SPECIAL TOOLS

Universal holder  
Flywheel puller

## 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



SUPER8 50

## BATTERY

### REMOVAL

Remove the battery cover screws on the floor board.

Open the battery cover and remove the battery by removing the bolt and band.

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 the negative (-) cable to avoid short circuit.

### BATTERY VOLTAGE (OPEN CIRCUIT VOLTAGE) INSPECTION

Remove the floor board.

Open the battery cover and 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.

### 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 the



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

Charging current: Standard : 0.4A

Quick : 4A

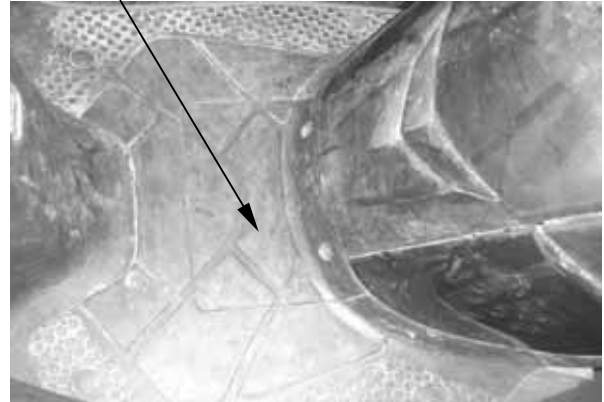
Charging time : Standard : 5 ~ 10 hours

Quick : 30 minutes

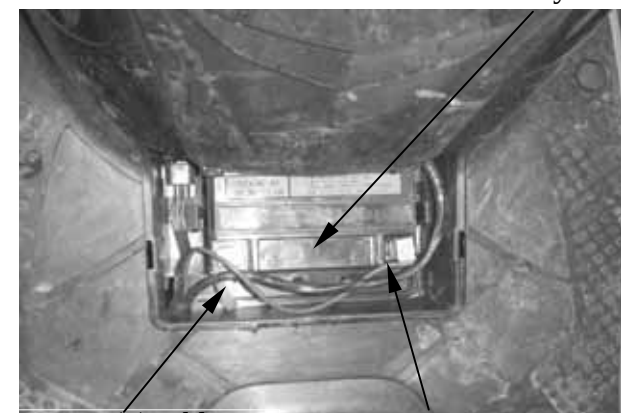
After charging: Open circuit voltage: 12.8V min.

Note: The battery temperature should not exceed 45°C during charging.

Battery Cover

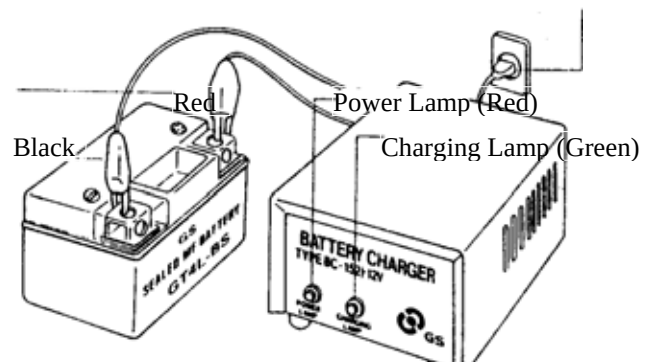
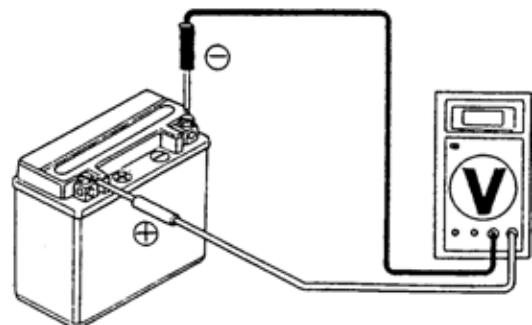


battery



positive (+) cable

negative (-) cable



### 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.

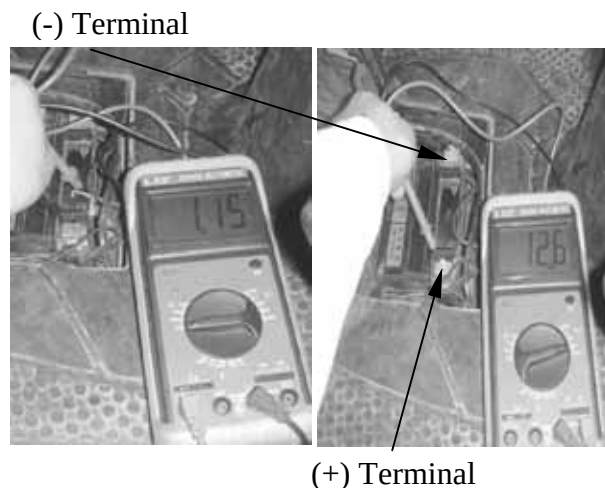
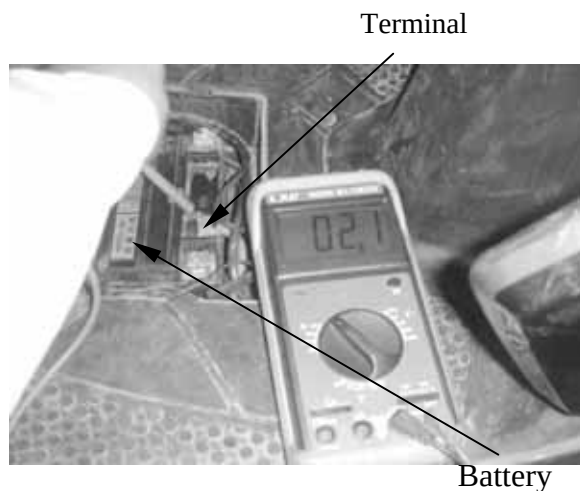
Connect the electric tester across the battery terminals. Disconnect the fuse and connect an ammeter between the fuse terminals.

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. (⇒14-5)



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

## REGULATOR/RECTIFIER

### MAIN HARNESS CIRCUIT INSPECTION

Remove the front covers. (⇒2-2)

Remove the regulator/rectifier 4P coupler and check for continuity between the wire harness terminals according to the following :

| Item (Wire Color)                                                                                                                     | Judgment                                |
|---------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
| Between battery (red) and engine ground                                                                                               | Battery has voltage                     |
| Between ground (green) and engine ground                                                                                              | Continuity exists                       |
| Between c.d.i wire (black/blue) and engine ground (Remove the auto bystarter coupler and turn the lighting switch OFF for inspection) | A.C. generator stator nought resistance |
| Between charging coil (yellow or peach) and engine ground                                                                             | A.C. generator stator nought resistance |

Regulator/Rectifier

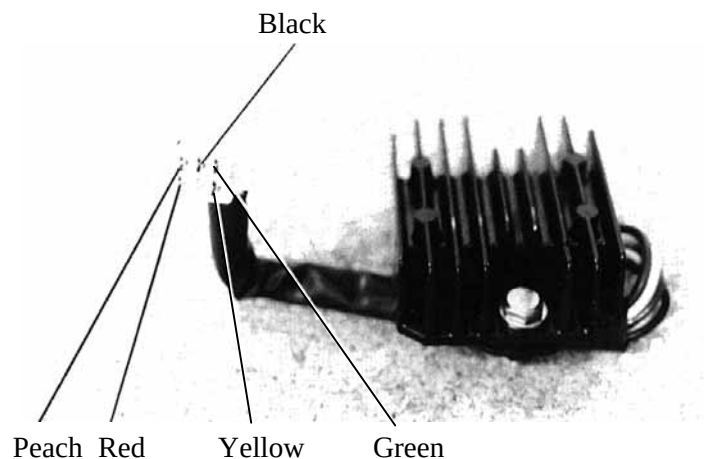


## REGULATOR/RECTIFIER

### REMOVAL

Remove the regulator/rectifier lock nut and disconnect the regulator/rectifier wire coupler.

Measure the resistances between the regulator/rectifier wire terminals. Replace the regulator/rectifier if the readings are not within the specifications in the table below.



- \* • Due to the semiconductor in circuit, it is necessary to use a specified tester for accurate testing. Use of an improper tester or measurements in an improper range may give false readings.
- Use a Sanwa Electric Tester or Kowa Electric Tester for testing.

### Testing Range

Range for the Sanwa Tester: xKΩ

Range for the Kowa Tester: x100Ω

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

## 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 2P connector. Measure the resistance between the A.C. generator white wire and engine ground with an electric tester.

**Standard:**  $0.1 \sim 1.0\Omega$  (at  $20^{\circ}\text{C}$ )

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

Charging Coil Wire

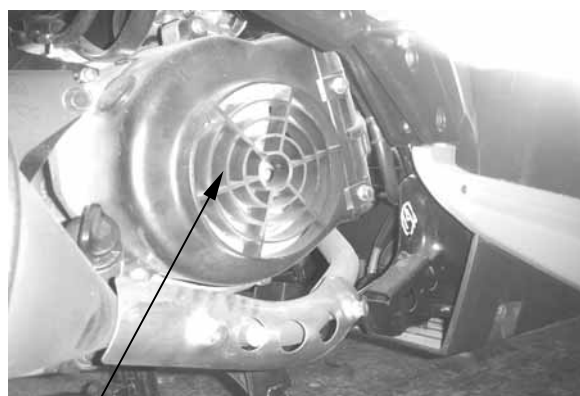


### A.C. GENERATOR

#### REMOVAL

Remove the right side cover. ( $\Rightarrow$  2-4)

Remove the four bolts attaching the cooling fan cover to remove the fan cover.



Fan Cover

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



SUPER8 50

Remove the cooling fan by removing the four cooling fan attaching bolts.



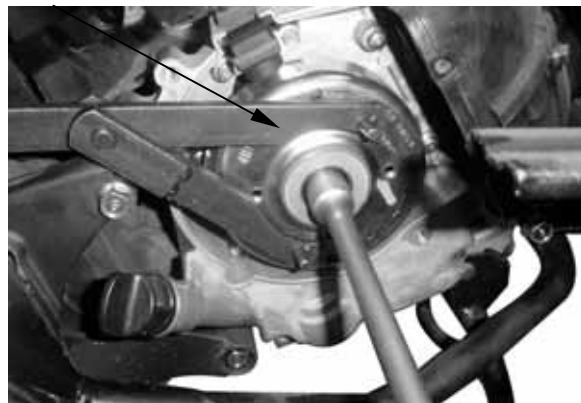
Cooling Fan

Hold the flywheel with an universal holder.  
Remove the flywheel nut.

**Special**

Universal Holder

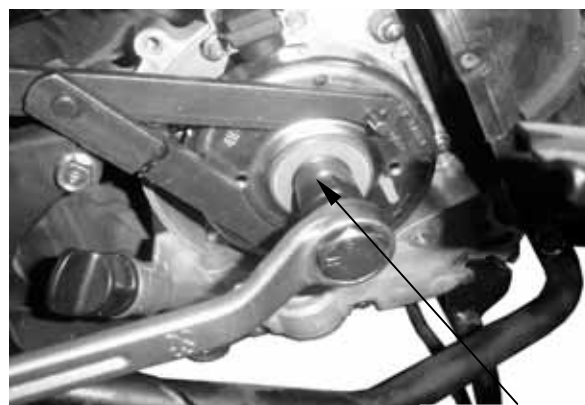
Universal Holder



Remove the A.C. generator flywheel using  
the flywheel puller.  
Remove the woodruff key.

**Special**

Flywheel Puller



Flywheel Puller

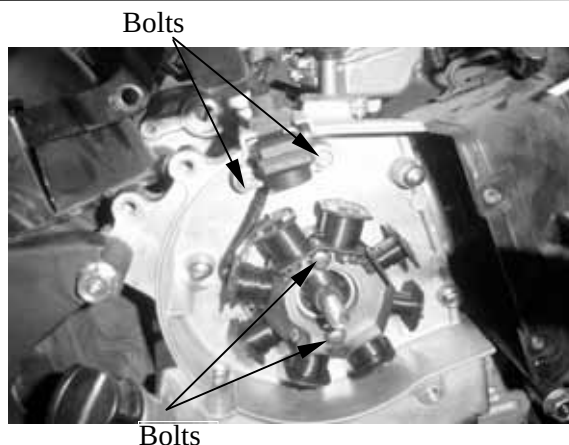
A.C. Generator Wire Connector

Remove the A.C. generator wire connector.

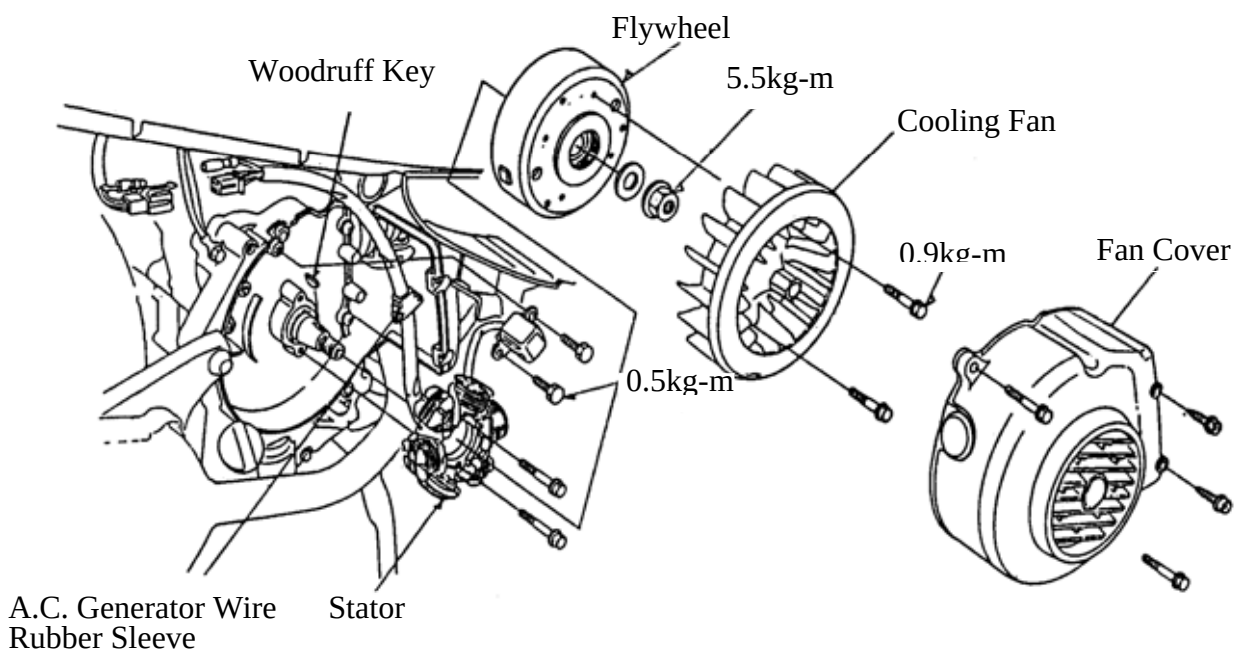


## 14. BATTERY/CHARGING SYSTEM/ A.C. GENERATOR

Remove the A.C. generator wire set plate.  
Remove the pulser coil bolts.  
Remove the A.C. generator wire rubber sleeve and pulser coil from the right crankcase.  
Remove the two bolts and A.C. generator stator.

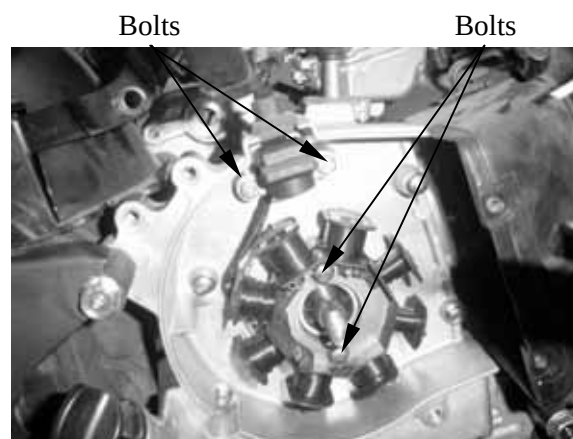


### A.C. GENERATOR INSTALLATION



Install the A.C. generator stator and pulser coil onto the right crankcase.  
Tighten the stator and pulser coil bolts.  
**Torques: Pulser Coil** : 0.45~0.6kgf-m  
**Stator** : 0.8~1.2kgf-m

Install the A.C. generator wire rubber sleeve and A.C. generator wire set plate.



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



SUPER8 50

Connect the A.C. generator wire connector.

A.C. Generator Wire Connector



Clean the taper hole in the flywheel off any burrs and dirt.  
Install the woodruff key in the crankshaft keyway.

Woodruff Key



Install the flywheel onto the crankshaft with the flywheel hole aligned with the crankshaft woodruff key.



The inside of the flywheel is magnetic.  
Make sure that there is no bolt or nut  
before installation.

Hold the flywheel with the universal holder  
and tighten the flywheel nut.

**Torque:** 3.5~4.5kgf-m

Universal Holder



Special

Universal Holder

Install the cooling fan.

**Torque:** 0.8~1.2kgf-m

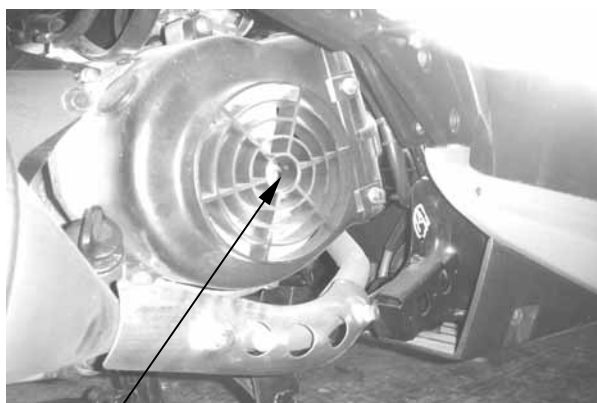


Cooling Fan

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

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Install the fan cover.  
Install the right side cover. (⇒2-4)



Fan Cover