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**ELECTRICAL EQUIPMENT**

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### SERVICE INFORMATION

#### GENERAL INSTRUCTIONS

- It is not necessary to check the battery electrolyte or fill with distilled water.
- Remove the battery from the motorcycle for charging. Do not remove the electrolyte cap..
- Do not quick charge the battery. Quick charging should only be done in an emergency..
- Charge the battery according to the charging current and time specified on the battery.
- When charging, check the voltage (open voltage) with an electric tester.
- When replacing the battery, do not use a traditional battery.

#### SPECIFICATIONS

		B&W50	
Battery	Capacity	12V4AH	
	Voltage	13.0_ 13.2V	
	Charging current	Standard	0.4A/5H
		Quick	5A/0.5H
Spark plug	(NGK)	BR8HSA	
Spark plug gap		0.6_ 0.7mm	
Ignition coil resistance	Primary coil	0.153_ 0.187Ω	
	Secondary coil (with plug cap)	6.99_ 10.21KΩ	
	Secondary coil (without plug cap)	3.24_ 3.96KΩ	
Pulser coil resistance (20ϕJ)		80_ 160Ω	
Ignition timing		13.5°±2°BTDC/2000rpm	

### TROUBLESHOOTING

#### CHARGING SYSTEM

##### 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
- 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

### IGNITION SYSTEM

#### No spark at plug

- Faulty spark plug
- Poorly connected, broken or shorted wire
  - Between A.C. generator and CDI unit
  - Between CDI unit and ignition coil
  - Between CDI unit and ignition switch
  - Between ignition coil and spark plug
- Faulty ignition switch
- Faulty ignition coil
- Faulty CDI unit
- Faulty A.C. generator

#### Engine starts but turns poorly

- Ignition primary circuit
  - Faulty ignition coil
  - Poorly connected wire or connector
- Ignition secondary circuit
  - Faulty ignition coil
  - Faulty spark plug
  - Poorly insulated plug cap
- Improper ignition timing
  - Battery voltage too low (6V max.)
  - Faulty CDI unit

### STARTING SYSTEM

#### Starter motor won't turn

- Fuse burned out
- Weak battery
- Faulty ignition switch
- Faulty starter switch
- Faulty front or rear stop switch
- Faulty starter relay
- Poorly connected, broken or shorted wire
- Faulty starter motor

#### Lack of power

- Weak battery
- Loose wire or connection
- Foreign matter stuck in starter motor or pinion

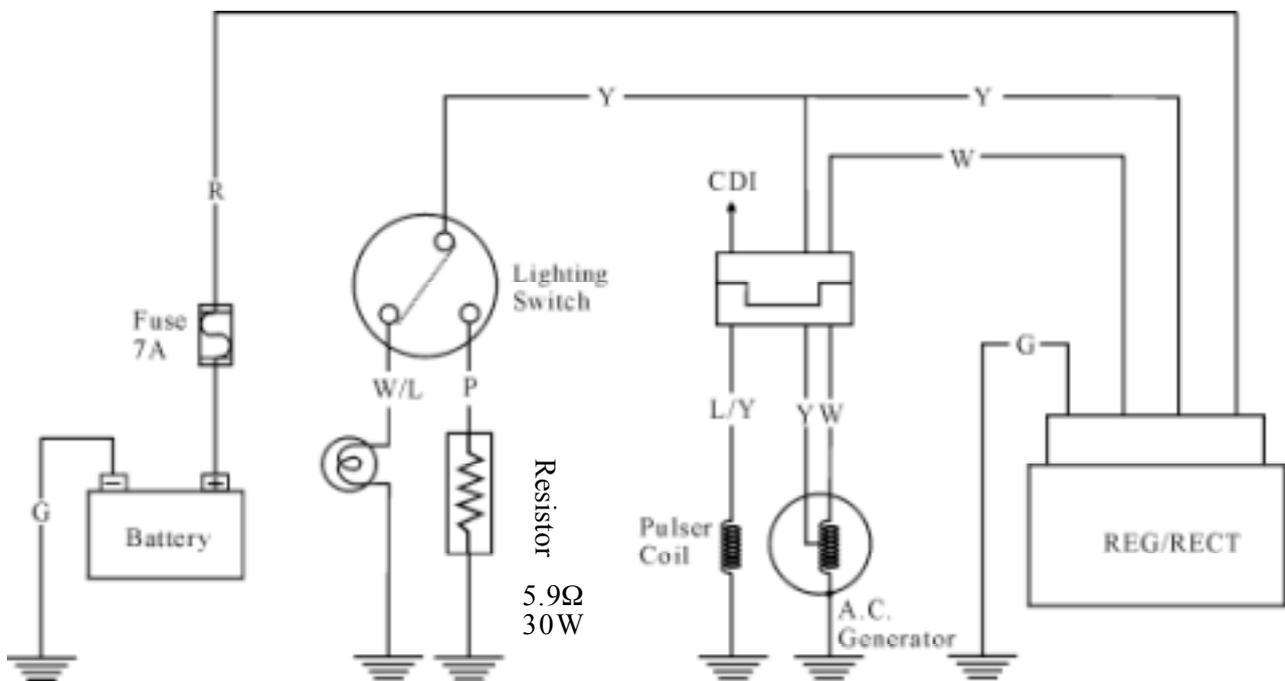
#### Starter motor rotates but engine does not start

- Faulty starter pinion
- Starter motor rotates reversely
- Faulty starter clutch
- Weak battery

# 15. ELECTRICAL EQUIPMENT

BET & WIN 50

## CHARGING SYSTEM





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## PERFORMANCE TEST

Warm up the engine.  
Remove the floor mat and battery cover.

☞ Use a fully charged battery to check the charging system output.

Stop the engine and open the fuse box. Disconnect the wire lead from the fuse terminal. Connect an ammeter between the wire lead and fuse terminal as shown. Connect the battery positive (+) terminal to the voltmeter positive (+) probe and battery negative (-) terminal to the voltmeter negative (-) probe. Start the engine, gradually increase engine speed to test the output:

Position \ RPM	Day	Night
2500	1.3A min.	1.0A min.
6000	2.0A min.	2.0A min.

**Charging Limit Voltage:**  $14.5 \pm 0.5V/8000rpm$   
If the limit voltage is not within the specified range, check the regulator/ rectifier.

## A.C. GENERATOR (CHARGING COIL) INSPECTION

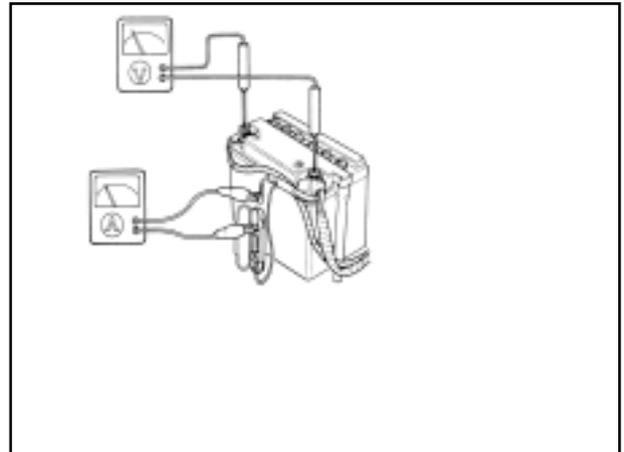
☞ Inspect with the engine installed.

Remove the met-in box, rear carrier and frame body cover. (⇒2-2)  
Disconnect the A.C. generator connector.  
Measure the resistances between the charging coil terminals (white-green) and lighting coil terminals (yellow-green).

**Resistances:**

Charging coil	white-green	0.2 _ 1.2Ω
Lighting coil	yellow-green	0.3 _ 1.0Ω

Refer to 8-3 for A.C. generator removal.



A.C. Generator Connector



# 15. ELECTRICAL EQUIPMENT

## RESISTOR INSPECTION

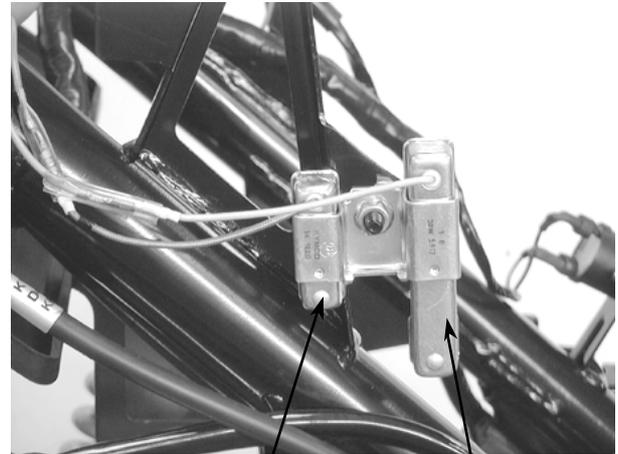
Remove the front upper/lower cover. (⇒2-3)  
 Measure the resistance between the resistor B pink wire and ground.  
 Measure the resistance between the resistor A green/black wire and ground.

**Resistances:**

Resistor A: 9.9\_ 10.5Ω

Resistor B: 5.6\_ 6.2Ω

⊘ Faulty resistor is the cause of faulty operation of the auto bystarter.



Resistor A      Resistor B

## REGULATOR/RECTIFIER INSPECTION

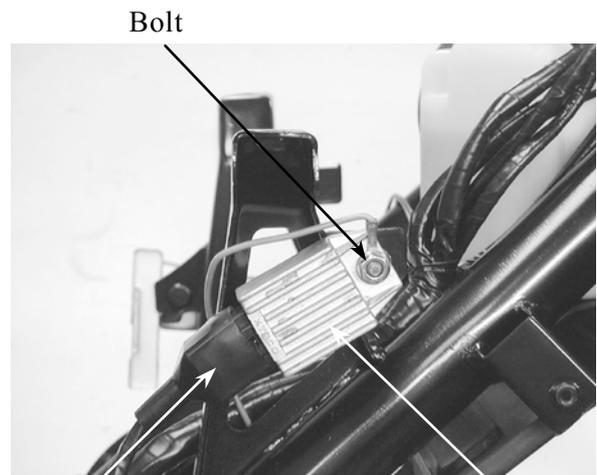
Remove the front upper/lower cover. (⇒2-3)  
 Disconnect the regulator/rectifier wire coupler and remove the bolt to remove the regulator/rectifier.

Measure the resistances between the terminals.

Replace the regulator/rectifier if the readings are not within the specifications in the table below.

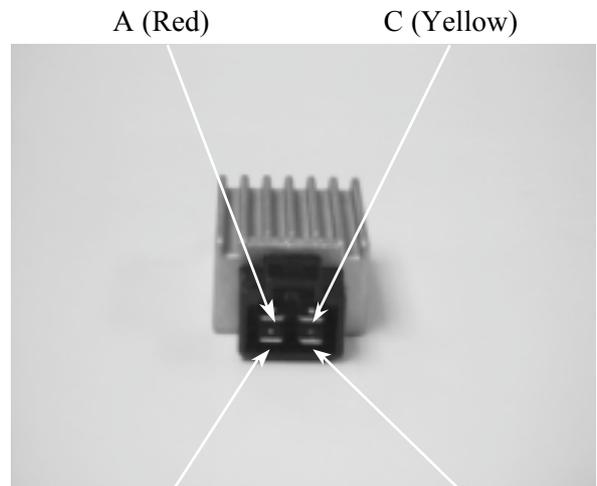
⊘

- Due to the semiconductor in circuit, it is necessary to use a specified tester for accurate testing. Use of an improper tester in an improper range may give false readings.
- Use a Sanwa Electric Tester (07208-0020000) or Kowa Electric Tester (TH-5H). The proper range for testing is listed below.



Bolt      Coupler      Regulator/Rectifier

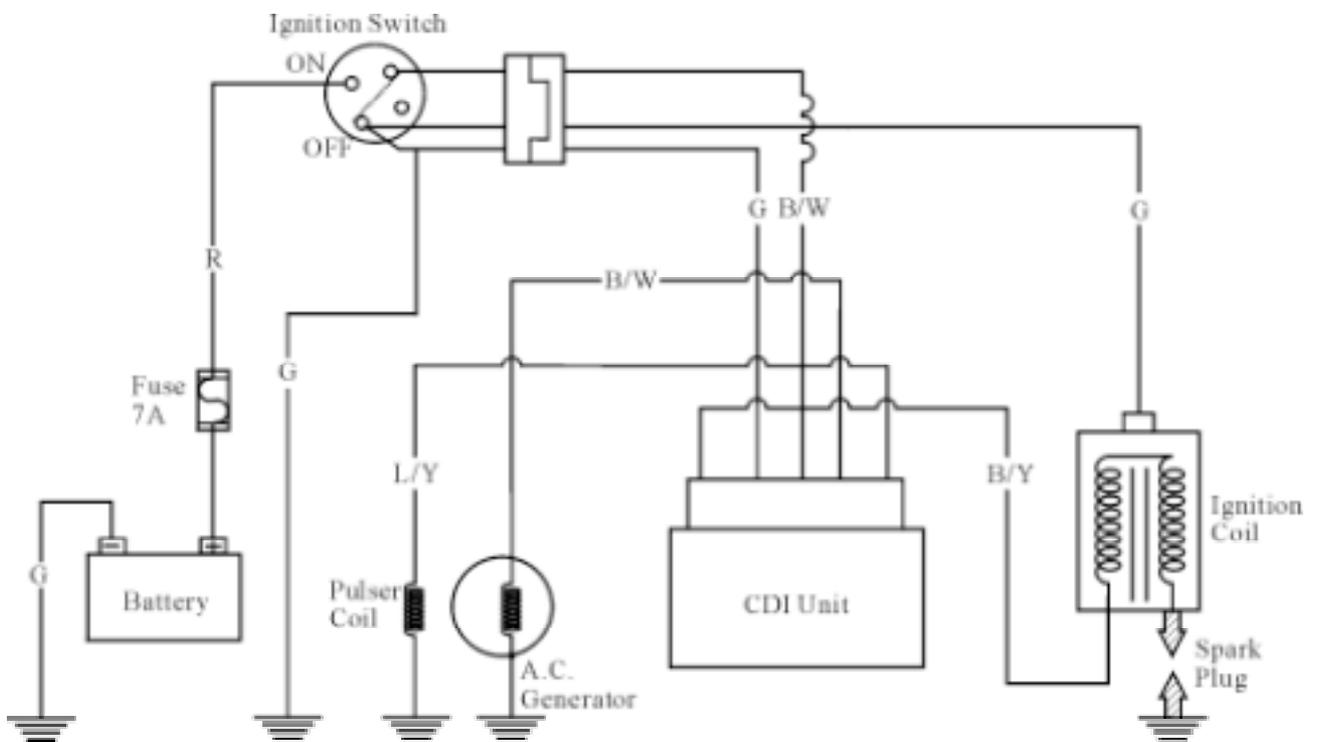
Model	Brand	Range
SP-10D	Sanwa	KΩ
TH-5H	Kowa	100Ω



A (Red)      B (White)      C (Yellow)      D (Green)

Probe⊕ Probe(-)	A (R)	B (W)	C (Y)	D (G)
A (R)		∞	∞	∞
B (W)	3-10KΩ		∞	∞
C (Y)	∞	∞		33-35KΩ
D (G)	∞	∞	33-35KΩ	

IGNITION SYSTEM



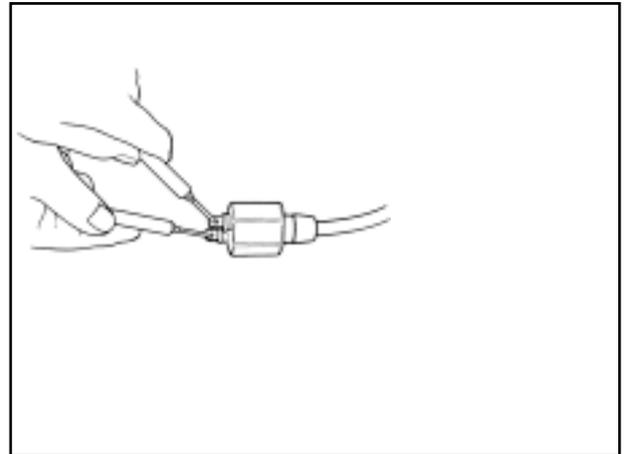
**IGNITION COIL INSPECTION**

**Continuity Test**

°C This test is to inspect the continuity of ignition coil.

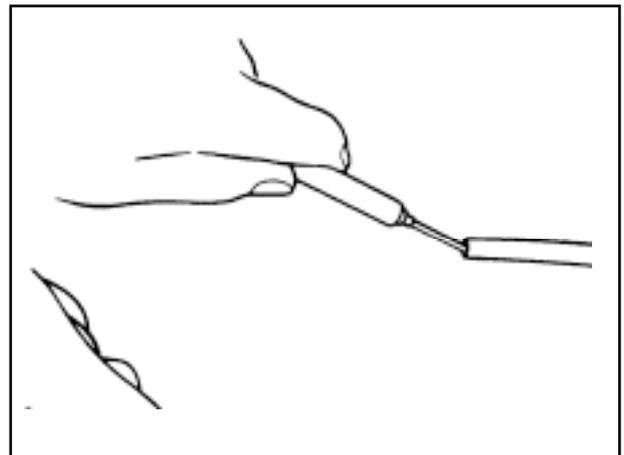
Remove the met-in box. (⇒12-4)  
 Measure the resistance between the ignition coil primary coil terminals.

**Resistance (20±J):** 0.153\_ 0.187Ω



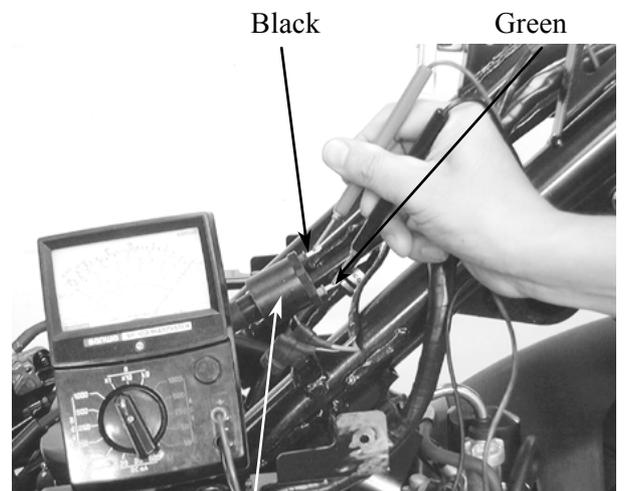
Measure the secondary coil resistance between the spark plug cap and the primary coil terminal as Figure A shown.

**Resistance (20±J) (with plug cap):** 6.99\_ 10.21KΩ



Measure the secondary coil resistance between the ignition coil terminal and the primary coil terminal as Figure B shown.

**Resistance (20±J) (without plug cap):** 3.24\_ 3.96KΩ



# 15. ELECTRICAL EQUIPMENT

## Ignition Coil

### Performance Test

Remove the ignition coil.



Ignition Coil

Inspect the ignition coil with an ignition coil tester.

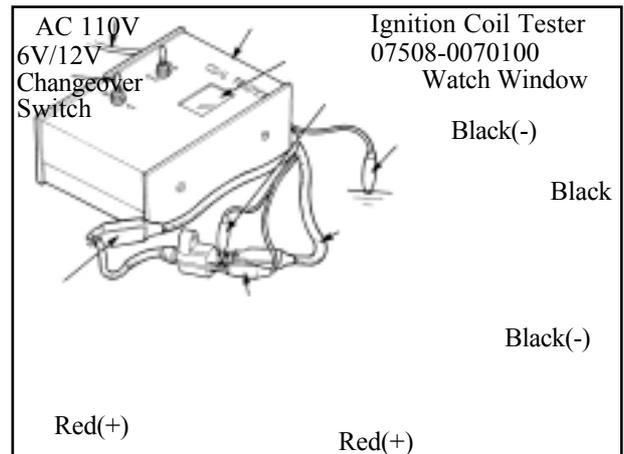
°C Follow the ignition coil tester manufacturer's instructions.

1. Turn the changeover switch to 12V and connect the ignition coil to the tester.
2. Turn the power switch ON and check the spark from the watch window.

\_Good : Normal and continuous spark

\_Faulty : Weak or intermittent spark

°C The test is performed at both conditions that the ignition coil is cold and hot.



## A.C. GENERATOR

### Exciter Coil/Pulser Coil Inspection

°C This test is performed with the stator installed in the engine.

Remove the met-in box. (⇒ 12-4)

Disconnect the A.C. generator wire connector.

Measure the pulser coil resistance between the blue/yellow wire and ground.

**Resistance (20°C):** 80\_ 160Ω



# 15. ELECTRICAL EQUIPMENT

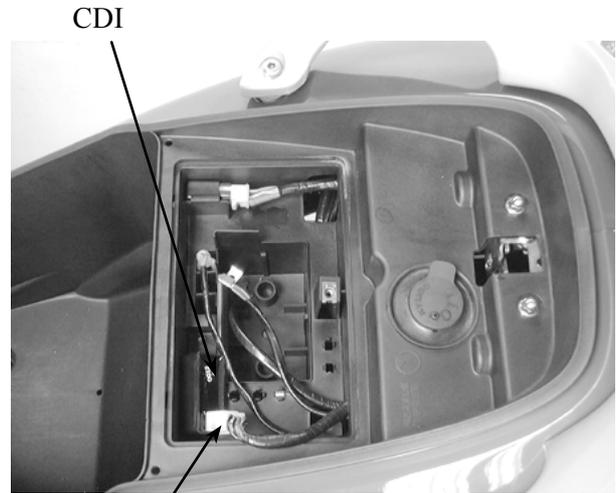
## BET & WIN 50

Blue/Yellow

Black/White	€	€	€		
Green	€	€	18	60	

### CDI UNIT INSPECTION

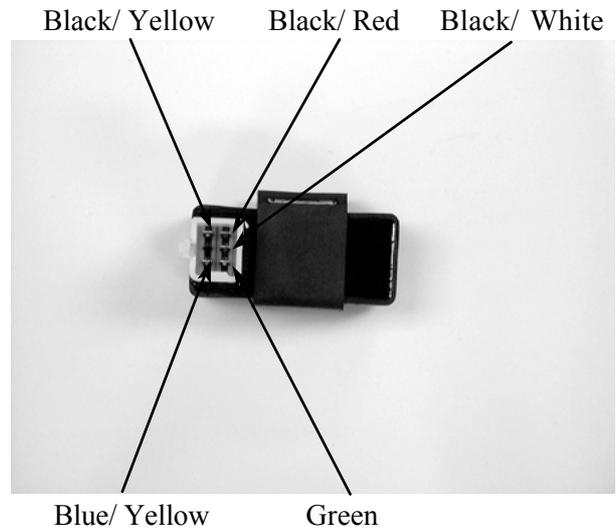
Open the front tool box and remove the bolt.  
 Remove the front tool box. (⇒2-4)  
 Disconnect the CDI coupler and remove the CDI unit.



### CDI CIRCUIT INSPECTION

Measure the resistance between the terminals.  
 Replace the CDI unit 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 in an improper range may give false readings.
- Use a Sanwa Electric Tester or Kowa Electric Tester (TH-5H).
- In this table, “Needle swings then returns” indicates that there is a charging current applied to a condenser. The needle will then remain at “∞” unless the condenser is discharged.

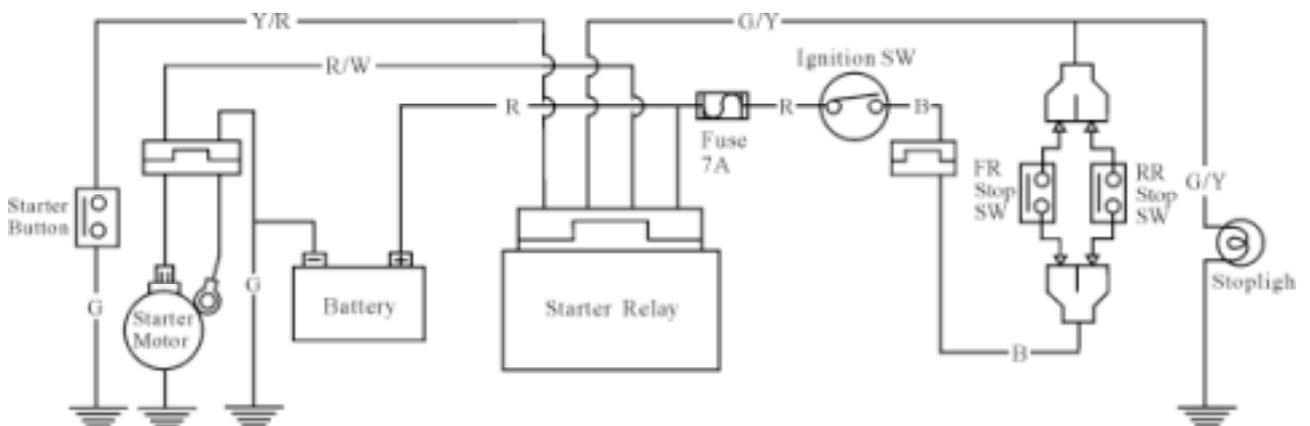


Use the x KΩ range for the Sanwa Tester.  
 Use the x 100Ω range for the Kowa Tester.

Unit: KΩ

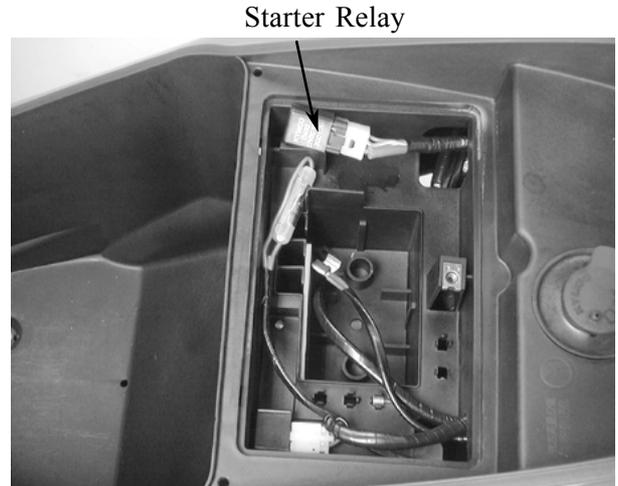
Probe⊕ (-)Probe	Black/ Yellow	Blue/ Yellow	Black/ Red	Black/ White	Green
Black/ Yellow		∞	∞	∞	∞
Blue/ Yellow	∞		45	110	24
Black/ Red	∞	∞		5.3	∞

STARTING SYSTEM

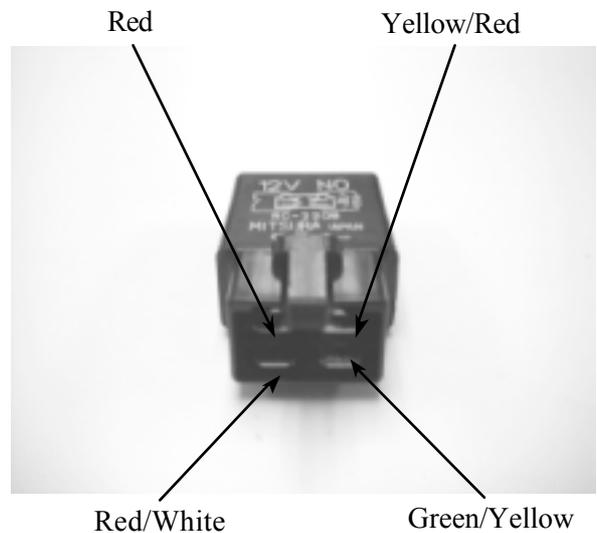


**STARTER RELAY INSPECTION**

Open the front tool box and remove the bolt.  
 Remove the front tool box. (⇒2-4)  
 Disconnect the starter relay coupler and then  
 remove the starter relay.

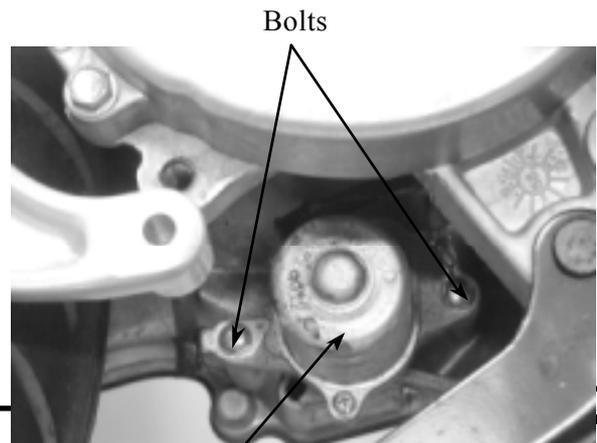


Connect the starter relay green/yellow terminal to the 12V battery positive (+) terminal and the relay yellow/red terminal to the battery negative (-) terminal. Check for continuity between the starter relay red and red/white terminals. The relay is normal if there is continuity.



**STARTER MOTOR REMOVAL**

Disconnect the starter motor cable.  
 Remove the two bolts attaching the starter motor and remove the starter motor.  
 The installation sequence is the reverse of removal.



Starter Motor

**STARTER MOTOR INSPECTION**

Connect a battery across the starter motor and check for its operation.

- ° 1. Do not turn the starter motor for a long time.
- 2. This inspection should be done with a fully charged battery.

