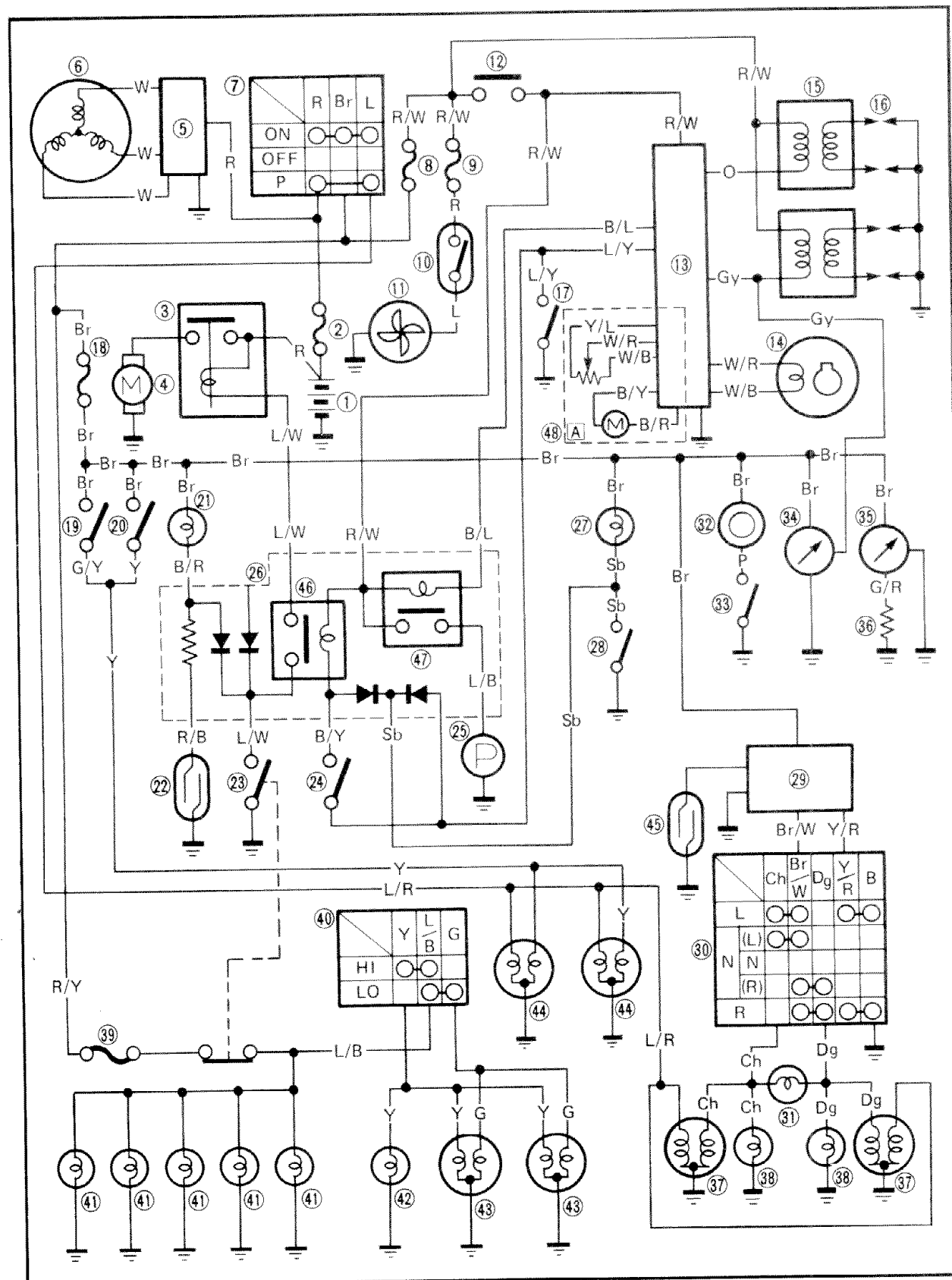




## ELECTRICAL

## FZR600W/WC CIRCUIT DIAGRAM





OUT OF SPECIFICATION

- Turn the main switch to "ON".
- Check for voltage (12V) on the "Brown" lead at bulb socket connector.

MEETS  
SPECIFICATION (12V)

This circuit is good.

Wiring circuit from main switch to bulb socket connector is faulty, repair.

5. "OIL LEVEL" indicator light does not come on when engine oil level is low.

## 1. Bulb and bulb socket

Check the bulb and bulb socket for continuity. Refer to the "CHECKING OF BULBS" section.



CONTINUITY

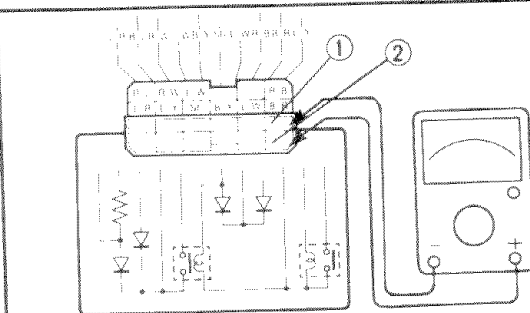
NO CONTINUITY

Bulb and/or bulb socket are faulty, replace.

## 2. Resistor

- Remove the relay assembly from the wire-harness.
- Connect the pocket tester ( $\Omega \times 1$ ) to the relay assembly terminal.

Tester (+) lead → Black/Red terminal ①  
 Tester (-) lead → Red/Black terminal ②



- Check the resistor for continuity.

NO CONTINUITY

Resistor is faulty, replace relay assembly.



CONTINUITY

## 3. Oil level switch

- Drain the engine oil and remove the oil level switch from the oil pan.
- Connect the pocket tester ( $\Omega \times 1$ ) to the oil level gauge.

Tester (+) lead → Red/Black ① lead  
 Tester (-) lead → Oil level switch body

# FZR600W/WC CIRCUIT DIAGRAM

**ELEC**



- |                               |   |
|-------------------------------|---|
| ① Battery                     | ②⑦ Neutral indicator light                  |
| ② Fuse (main)                 | ②⑧ Neutral switch                           |
| ③ Starter relay               | ②⑨ Flasher relay                            |
| ④ Starter motor               | ③⑩ "TURN" switch                            |
| ⑤ Rectifier/Regulator         | ③⑪ "TURN" indicator light                   |
| ⑥ A.C. generator              | ③⑫ Horn                                     |
| ⑦ Main switch                 | ③⑬ "HORN" switch                            |
| ⑧ Fuse (ignition)             | ③⑭ Tachometer                               |
| ⑨ Fuse (fan)                  | ③⑮ Engine temperature gauge                 |
| ⑩ Thermo switch               | ③⑯ Thermo unit                              |
| ⑪ Fan motor                   | ③⑰ Front position light/Front flasher light |
| ⑫ "ENGINE STOP" switch        | ③⑱ Rear flasher light                       |
| ⑬ Ignitor unit                | ③⑲ Fuse (head)                              |
| ⑭ Pickup coil                 | ④⑩ "LIGHTS" (dimmer) switch                 |
| ⑮ Ignition coil               | ④⑪ Meter light                              |
| ⑯ Spark plug                  | ④⑫ "HIGH BEAM" indicator light              |
| ⑰ Side stand switch           | ④⑬ Headlight                                |
| ⑱ Fuse (signal)               | ④⑭ Tail/brake light                         |
| ⑲ Front brake switch          | ④⑮ Read switch                              |
| ⑳ Rear brake switch           | ④⑯ Starting circuit cut-off relay           |
| ㉑ "OIL LEVEL" indicator light | ④⑰ Fuel pump relay                          |
| ㉒ Oil level switch            | ④⑱ "EXUP" servo motor                       |
| ㉓ "START" switch              |   |
| ㉔ Clutch switch               | Ⓐ For California only                       |
| ㉕ Fuel pump                   |   |
| ㉖ Relay assembly              |   |

## COLOR CODE

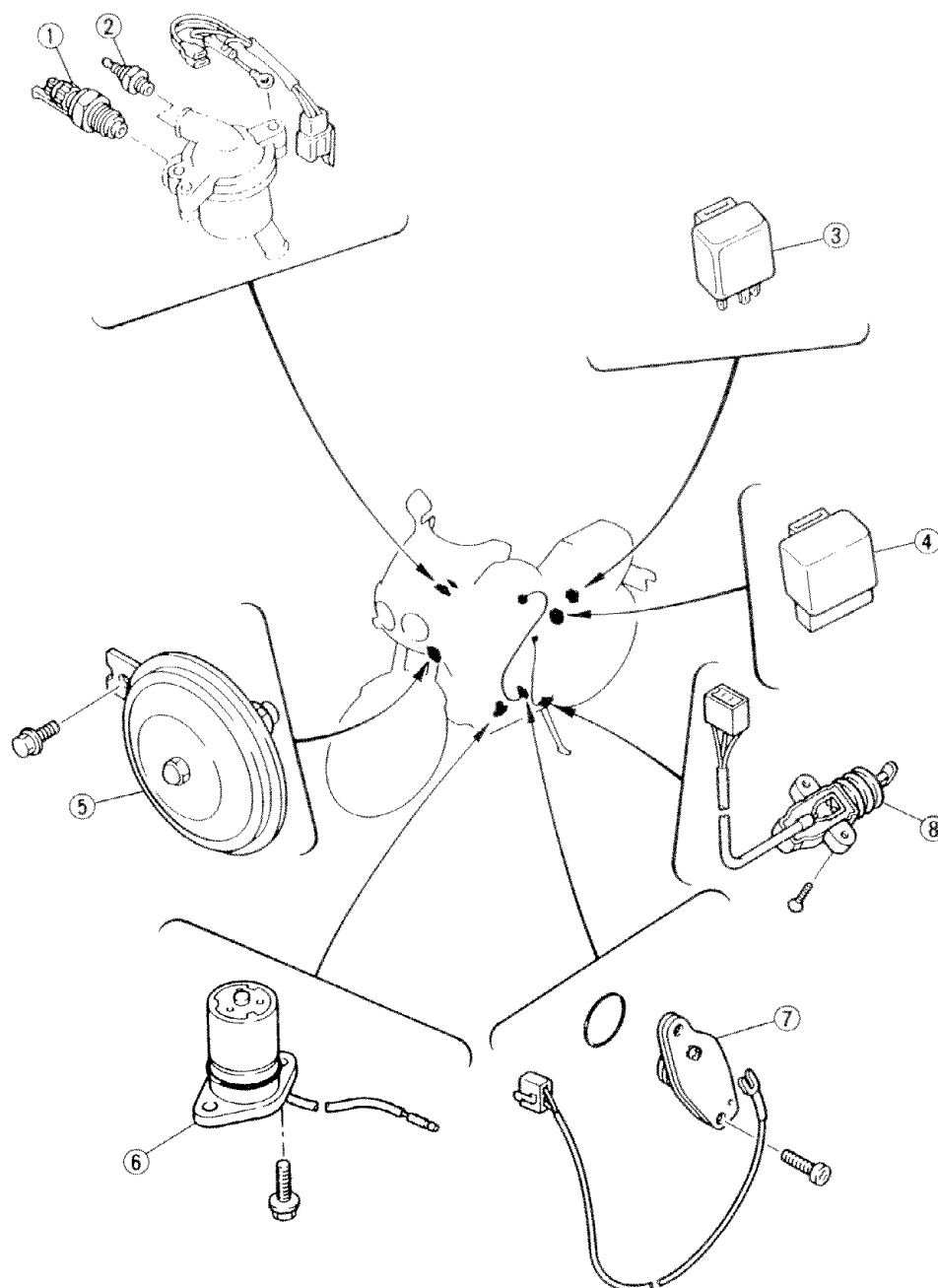
B	Black	Sb	Skyblue	L/R	Blue/Red
R	Red	Dg	Dark green	L/Y	Blue/Yellow
L	Blue	W	White	L/W	Blue/White
G	Green	B/R	Black/Red	G/R	Green/Red
O	Orange	B/L	Black/Blue	G/Y	Green/Yellow
Y	Yellow	B/Y	Black/Yellow	Y/R	Yellow/Red
P	Pink	R/Y	Red/Yellow	Br/W	Brown/White
Br	Brown	R/B	Red/Black	W/G	White/Green
Ch	Chocolate	R/W	Red/White	W/R	White/Red
Gy	Gray	L/B	Blue/Black	W/B	White/Black



## ELECTRICAL COMPONENTS

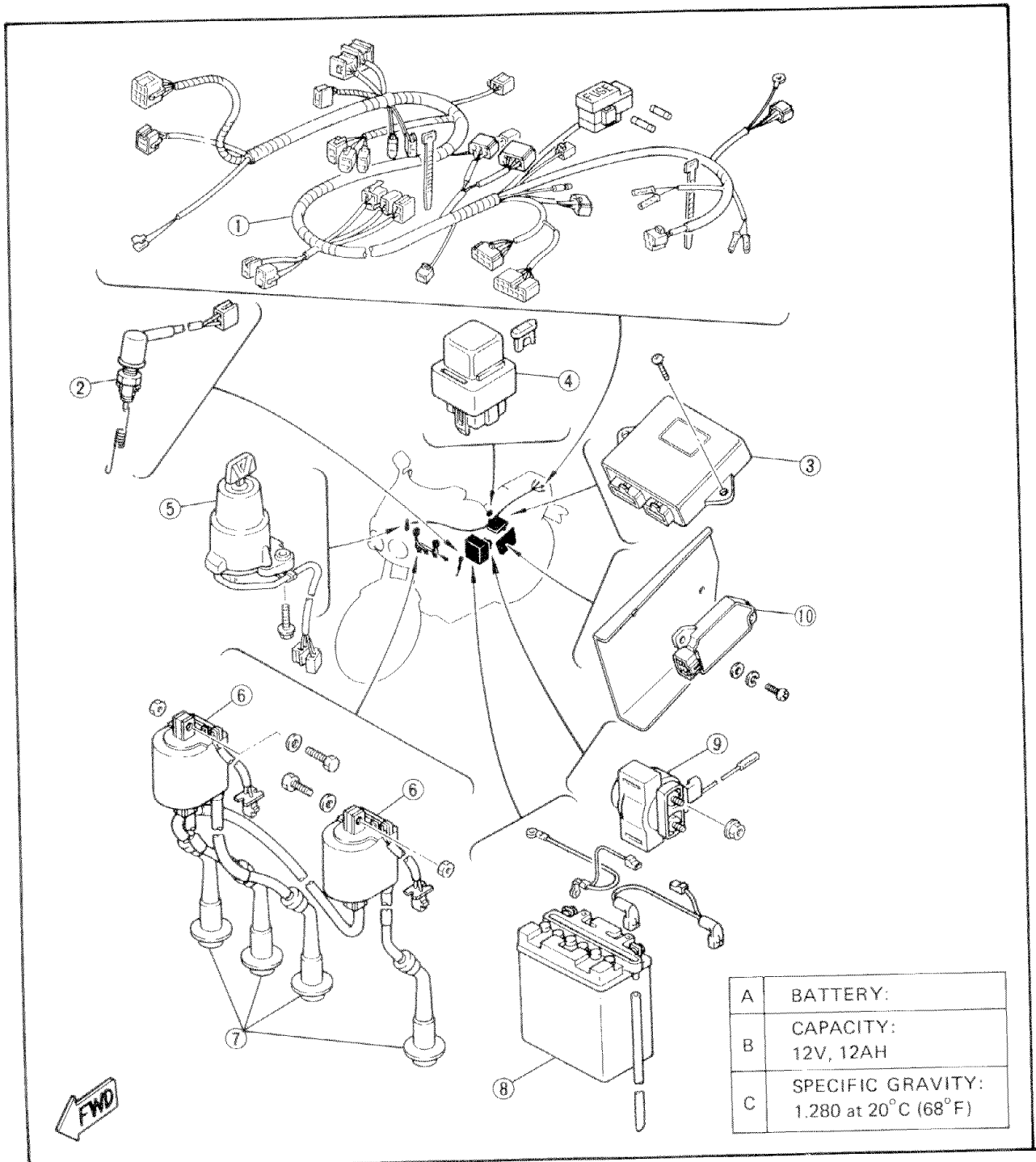
- ① Thermo switch
- ② Thermo unit
- ③ Flasher relay
- ④ Relay assembly
- ⑤ Horn
- ⑥ Oil level switch
- ⑦ Neutral switch
- ⑧ Sidestand switch

SPECIFICATIONS	RESISTANCE
IGNITION COIL:	
PRIMARY	1.8 ~ 2.2Ω at 20°C (65°F)
SECONDARY	9.6 ~ 14.4 kΩ at 20°C (68°F)
PICKUP COIL:	80 ~ 120Ω at 20°C (68°F)
STATOR COIL:	0.31 ~ 0.37Ω at 20°C (68°F)





- ① Wireharness
- ② Rear brake switch
- ③ Ignitor unit
- ④ Fuse (main)
- ⑤ Main switch
- ⑥ Ignition coil
- ⑦ Plug cap
- ⑧ Battery
- ⑨ Starter relay
- ⑩ Rectifier/Regulator





## CHECKING OF SWITCHES

Check the switches for the continuity between the terminals to determine correct connection.

Read the following for switch inspection.

### SWITCH CONNECTION AS SHOWN IN MANUAL

The manual contains a connection chart as shown left showing the terminal connections of the switches (e.g., main switch, handlebar switch, brake switch, lighting switch, etc.)

The extreme left column indicates the switch positions and the top line indicates the colors of leads connected with the terminals in the switch component.

	B	B/W	R	Br	L/W	L/R
ON			○—○		○—○	
OFF	○—○					
LOCK	○—○					
P	○—○	○—○	○—○			○—○

"○—○" indicates the terminals between which there is a continuity of electricity; i.e., a closed circuit at the respective switch positions.

In this chart:

"R and Br" and "L/W and L/R" are continuous with the "ON" switch position.

"B and B/W" is continuous with the "OFF" switch position.

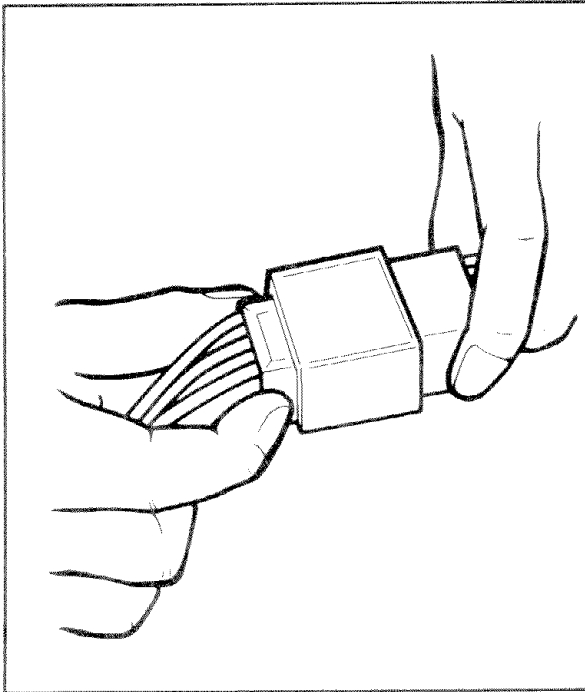
"B and B/W" is continuous with the "LOCK" switch position.

"B and B/W" and "R and L/R" are continuous with the "P" switch position.

### CHECKING SWITCH FOR TERMINAL CONNECTION

Before checking the switch, refer to the connection chart as shown above and check for the correct terminal connection (closed circuit) by the color combination.

To explain how to check the switch, the main switch is taken for example in the following.



1. Disconnect the main switch coupler from the wireharness.

**⚠ CAUTION:**

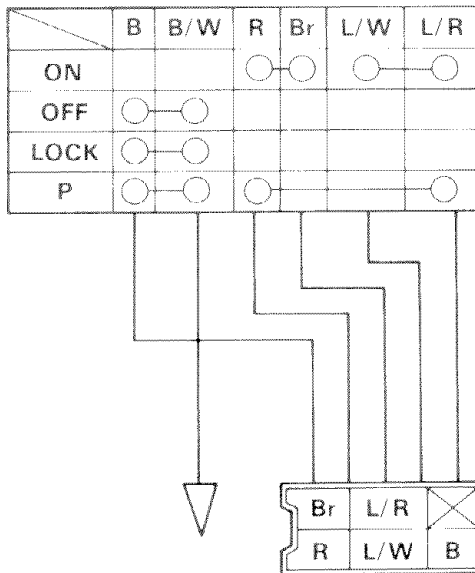
Never disconnect the main switch coupler by pulling the leads. Otherwise, leads may be pulled off the terminals inside the coupler.

2. Inspect whether any lead is off the terminal inside the coupler. If it is, repair it.

**NOTE:**

If the coupler is clogged with mud or dust, blow it off by compressed air.

3. Use the connection chart to check the color combination for continuity (a closed circuit). In this example, the continuity is as follows.



"R and Br" and "L/W and L/R" are continuous with the "ON" switch position.

"B and B/W" is continuous with the "OFF" switch position.

"B and B/W" is continuous with the "LOCK" switch position.

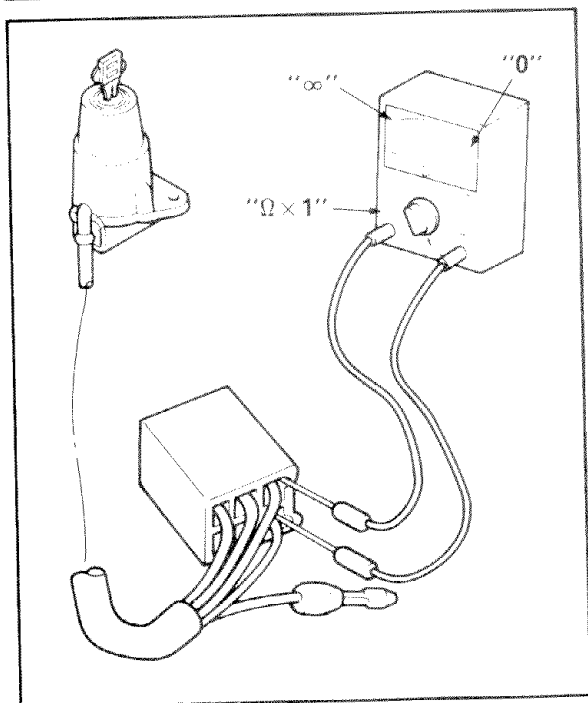
"B and B/W" and "R and L/R" are continuous with the "P" switch position.

Please note that there is no continuity (an open circuit) at all for the color combinations other than the above.

4. Check the switch component for the continuity between "R and Br".

**Checking steps:**

- Turn the switch key to the "ON", "OFF", "LOCK", and "P" several times.
- Set the pocket tester selector to the " $\Omega \times 1$ ".
- Connect the tester (+) lead to the "R" lead terminal in the coupler and the (-) lead to the "Br" lead terminal.

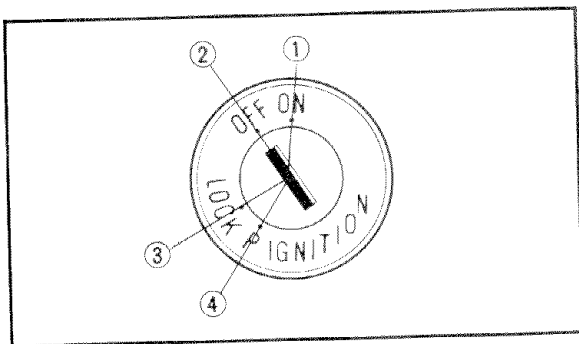
**NOTE:**

Use thin probes for checking the continuity. Otherwise, the probes may contact other terminals inside the coupler.

- Check the continuity between "R" and "Br" at the respective switch positions of "ON" ①, "OFF" ②, "LOCK" ③, and "P" ④. There must be continuity (the tester indicating "0") at the "ON" switch position, and there must be no continuity (the tester indicating " $\infty$ ") at "OFF", "LOCK", or "P". There is something wrong between "R" and "Br" if there is no continuity at the "ON" position or if there is some continuity either at the "OFF" or "LOCK" or "P".

**NOTE:**

Check the switch for continuity several times.



5. Next go on to checking of the continuity between "B and B/W", "L/W and L/R", and "R and L/R" at the respective switch positions, as in the same manner mentioned above.

6. If there is something wrong with any one of the combinations, replace the switch component.



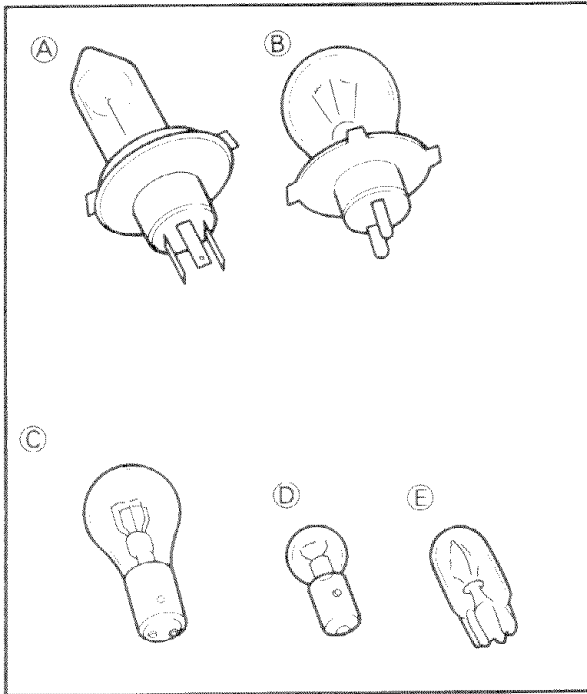


## CHECKING OF BULBS (FOR HEADLIGHT, TAIL/BRAKE LIGHT, FLASHER LIGHT, METER LIGHT, ETC.)

Check the bulb terminal continuity for the condition of the bulb.

### KINDS OF BULBS

The bulbs used in the motorcycle are classified as shown left by the shape of the bulb socket.



(A) and (B) are mainly used for the headlight.

(C) is mainly used for the flasher light and tail/brake light.

(D) and (E) are mainly used for the meter light and other indicator lights.

### CHECKING BULB CONDITION

1. Remove the bulb.

#### NOTE:

- Bulbs of the (A) and (B) type uses a bulb holder. Remove the bulb holder before removing the bulb itself. Most of the bulb holders for this type can be removed by turning them counter-clockwise.
- Most of the bulbs of (C) and (D) type can be removed from the bulb sockets by pushing and turning them counterclockwise.
- Bulbs of the (E) type can be removed from the bulb sockets by simply pulling them out.

#### ⚠ CAUTION:

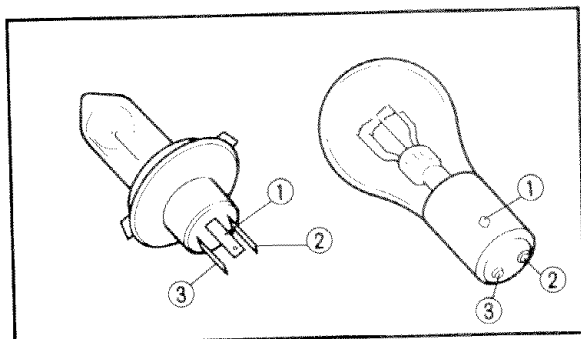
Be sure to hold the socket firmly when removing the bulb. Never pull the lead. Otherwise, the lead may be pulled off the terminal in the coupler.

#### ⚠ WARNING:

Keep flammable products or your hands away from the headlight bulb while it is on. It will be hot. Do not touch the bulb until it cools down.



2. Check the bulb terminals for continuity.



**Checking steps:**

- Set the pocket tester selector to the " $\Omega \times 1$ ".
- Connect the tester leads to the respective bulb terminals. Take for example a 3-terminal bulb as shown left. First check the continuity between the ① and ② terminals by connecting the tester (+) lead to the ① terminal and the tester (-) lead to the ② terminal. Then check the continuity between the ① and ③ terminals by connecting the tester (+) lead still to the ① terminal and the tester (-) lead to the ③ terminal. If the tester shows " $\infty$ " in either case, replace the bulb.

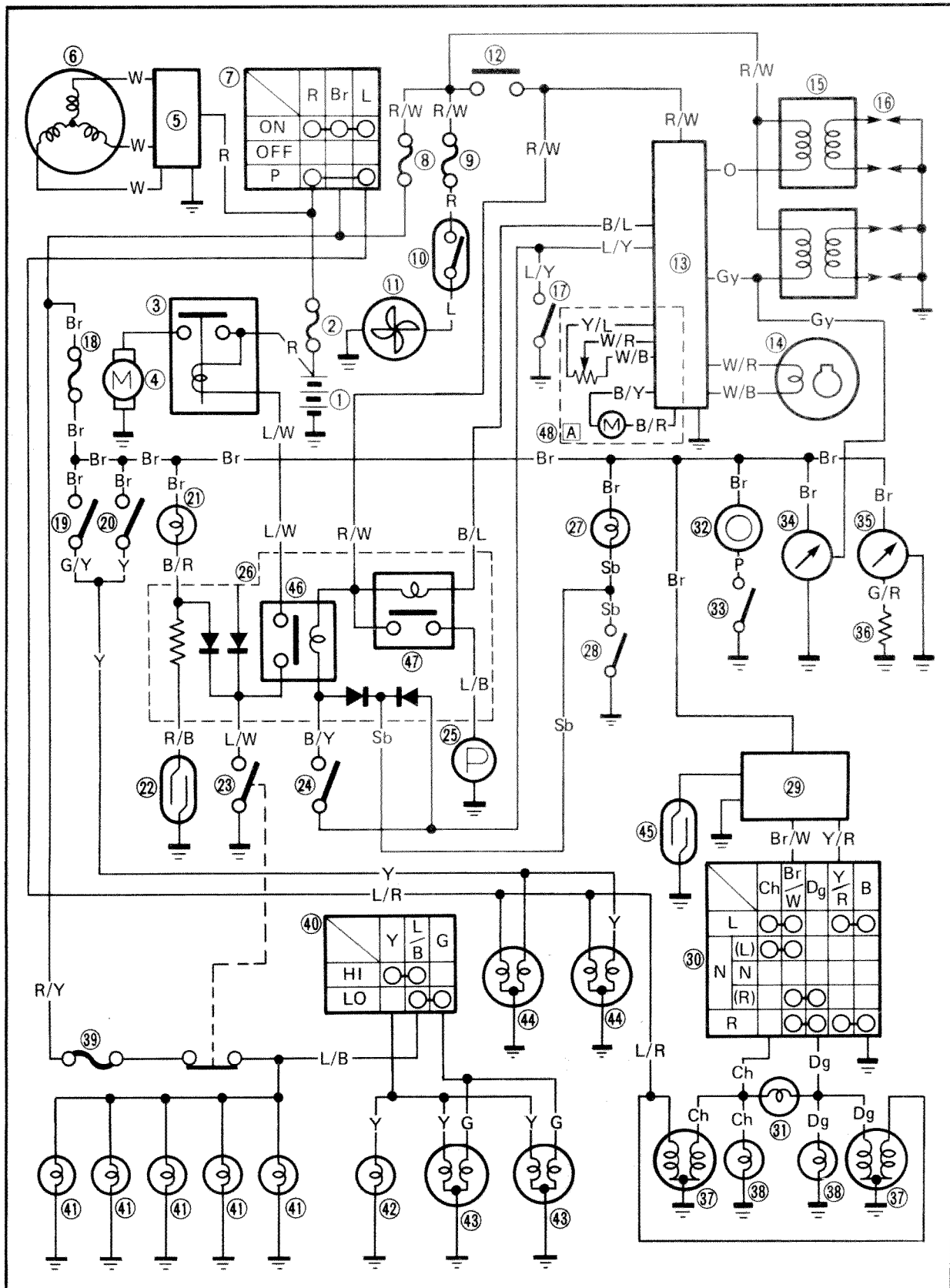
3. Check the bulb socket by installing a proven bulb to it. As in the checking of bulbs, connect the pocket tester leads to the respective leads of the socket and check for continuity in the same manner as mentioned above.





# IGNITION SYSTEM

## CIRCUIT DIAGRAM



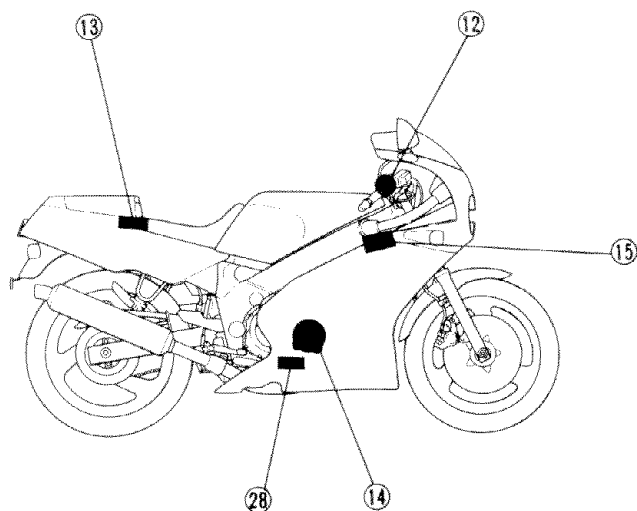
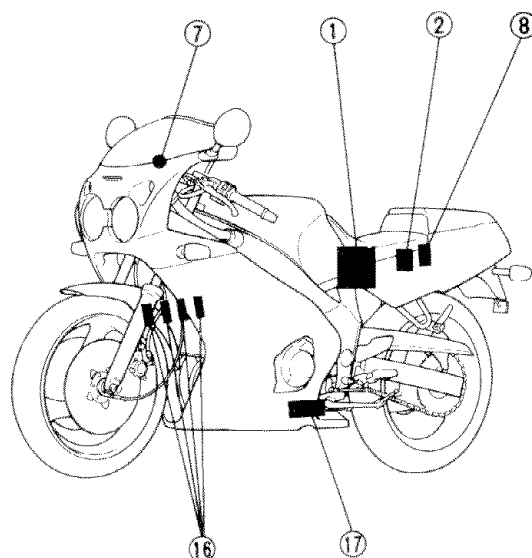


Aformentioned circuit diagram shows ignition circuit in circuit diagram.

### NOTE:

For the color codes, see page 8-2.

- ① Battery
- ② Fuse
- ⑦ Main switch
- ⑧ Fuse (ignition)
- ⑫ "ENGINE STOP" switch
- ⑬ Ignitor unit
- ⑭ Pickup coil
- ⑮ Ignition coil
- ⑯ Spark plug
- ⑰ Sidestand switch
- ⑳ Neutral switch





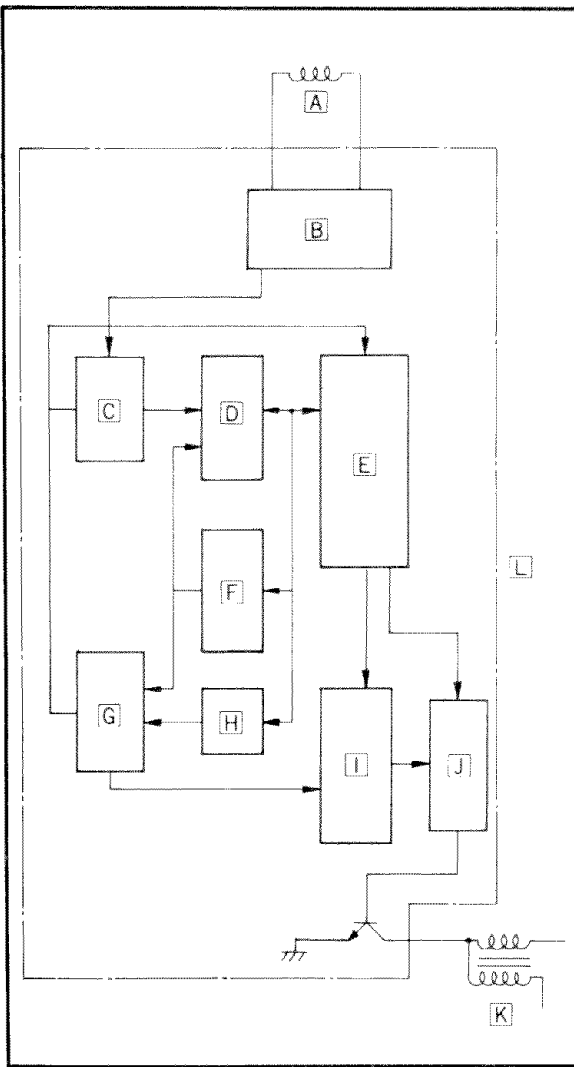
## DIGITAL IGNITION CONTRL SYSTEM

**Description**

The electronic ignition that sparks the engine is computer controlled and operated by the digital microprocessor. It has a pre-programed ignition advance curve.

This programed advance curve closely matches the spark timing to the engine's ignition requirements. Only one pickup coil is needed to meet the requirements of the digital ignitor unit.

The digital ignitor also includes the control unit for the electric fuel pump.



- [A] Pickup coil
- [B] Wave-shape shaping circuit
- [C] Edge detection circuit
- [D] Latch circuit
- [E] Microprocessor
- [F] Free-running counter
- [G] Comparison circuit
- [H] Register
- [I] Flip-flop circuit
- [J] Driving circuit
- [K] Ignition coil
- [L] Digital ignitor unit

**Operation**

The following operations are digitally-performed by signal from the pickup coil signal:

1. Determining proper ignition timing.
2. Sensing the engine revolution speed.
3. Determining timing for switching on ignition coil (duty control).
4. Increasing ignition coil primary current for starting the engine.
5. Sensing engine stall.
6. Preventing over-revolution of the engine.



TROUBLESHOOTING

IF IGNITION SYSTEM SHOULD BECOME INOPERATIVE  
(NO SPARK OR INTERMITTENT SPARK)

Procedure

Check;

- |                              |                            |
|------------------------------|----------------------------|
| 1. Fuse (main)               | 8. "ENGINE STOP" switch    |
| 2. Battery                   | 9. Neutral switch          |
| 3. Spark plug                | 10. Sidestand switch       |
| 4. Ignition spark gap        | 11. Diode (relay assembly) |
| 5. Spark plug cap resistance | 12. Pickup coil resistance |
| 6. Ignition coil resistance  | 13. Wiring connection      |
| 7. Main switch               | (Entire ignition system)   |

NOTE:

- Remove the following before troubleshooting.
 

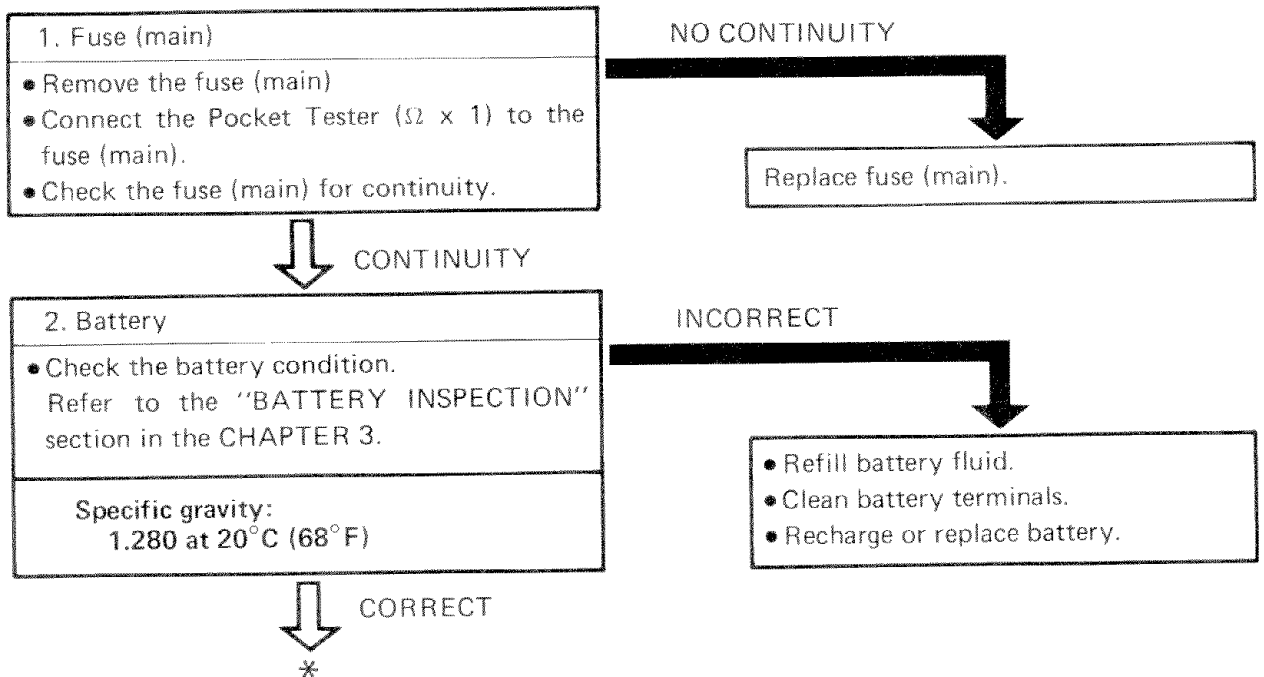
1) Seat (Front and rear)	4) Top cover
2) Side cowlings	5) Air filter case
3) Side cover (left)	
- Use the following special tools in this troubleshooting.



Dynamic spark tester:  
YM-34487  
90890-03144



Pocket tester:  
YU-03112  
90890-03112






**3. Spark plug**

- Check the spark plug condition.
- Check the spark type.
- Check the spark plug gap.

Refer to the "SPARK PLUG INSPECTION" section in the CHAPTER 3.

**Standard spark plug:**  
CR9E (NGK), U27ESR-N (N.D.)

 **Spark Plug Gap:**  
0.7 ~ 0.8 mm (0.028 ~ 0.032 in)

INCORRECT

Repair or replace spark plug.



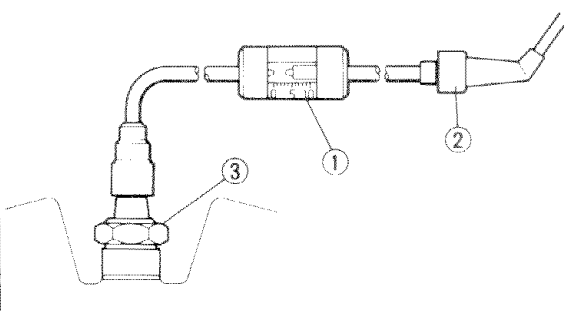
CORRECT

**4. Ignition spark gap**


- Disconnect the spark plug cap from spark plug.
- Connect the dynamic spark tester ① as shown.

② Spark plug cap  
③ Spark plug

- Turn the main switch to "ON".



- Check the ignition spark gap.
- Start engine, and increase spark gap until misfire occurs.

 **Minimum spark gap:**  
6.0 mm (0.24 in)

MEETS SPECIFICATION

Ignition system is good.



OUT OF SPECIFICATION  
OR NO SPARK



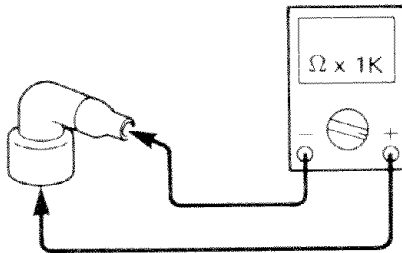


\*



### 5. Spark plug cap resistance

- Remove the spark plug cap.
- Connect the pocket tester ( $\Omega \times 1k$ ) to the spark plug cap.



- Check the spark plug cap for specified resistance.



**Spark plug cap resistance:**  
9 ~ 11 k $\Omega$  at 20°C (68°F)

OUT OF SPECIFICATION



Replace spark plug cap.

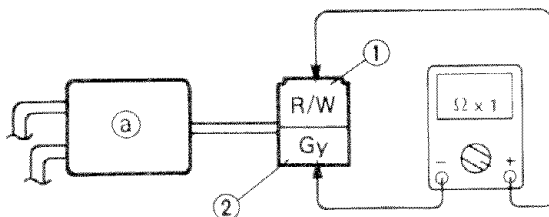
MEETS SPECIFICATION



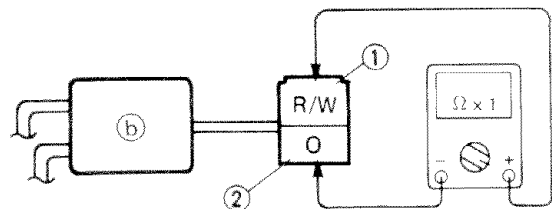
### 6. Ignition coil resistance

- Disconnect the ignition coil coupler from the wireharness.
- Connect the Pocket Tester ( $\Omega \times 1$ ) to the ignition coil.

**Ignition coil (right) (a) :**  
Tester (+) lead → Red/White ① terminal  
Tester (-) lead → Gray ② terminal



**Ignition coil (left) (b) :**  
Tester (+) lead → Red/White ① terminal  
Tester (-) lead → Orange ② terminal



- Check the primary coil for specified resistance.

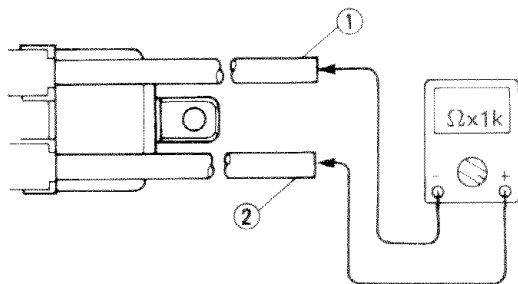


**Primary coil resistance:**  
1.8 ~ 2.2 $\Omega$  at 20°C (68°F)



- Connect the pocket tester ( $\Omega \times 1k$ ) to the ignition coil.

Tester (+) lead → Spark plug lead ①  
 Tester (-) lead → Spark plug lead ②



- Check the secondary coil for specified resistance.



Secondary coil resistance:  
 9.6 ~ 14.4 k $\Omega$  at 20°C (68°F)  
 (Spark plug lead – Spark plug lead)

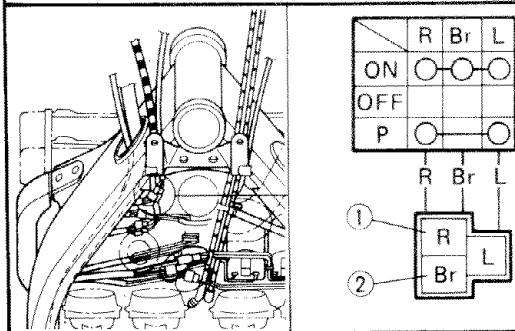
OUT OF SPECIFICATION

Replace ignition coil.

BOTH MEET  
 SPECIFICATIONS

### 7. Main switch

- Disconnect the main switch coupler from the wireharness.
- Check the switch component for the continuity between "Red ①" and Brown ②". Refer to the "CHECKING OF SWITCHES" section.



INCORRECT

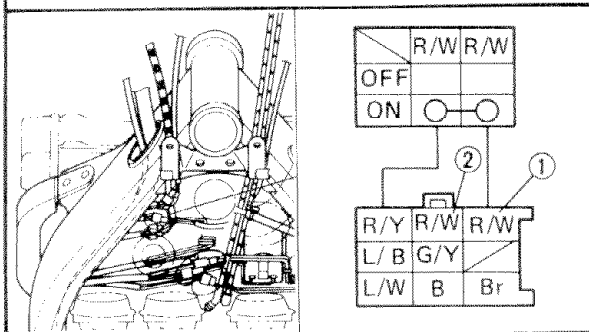
Replace main switch.

CORRECT  
 \*



### 8. "ENGINE STOP" switch

- Disconnect the handlebar switch (right) lead coupler from the wire harness.
- Check the switch component for the continuity between "Red/White ① and Red/White ②". Refer to the "CHECKING OF SWITCHES" section.



INCORRECT

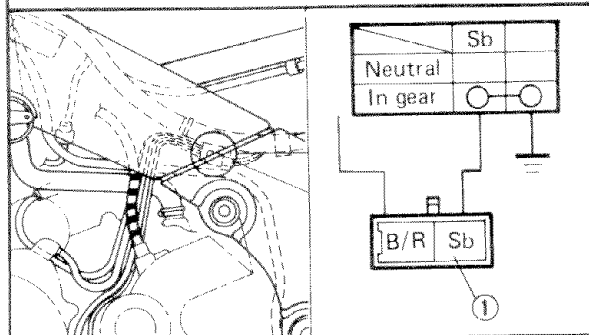
Replace handlebar switch (right).



CORRECT

### 9. Neutral switch

- Disconnect the neutral switch coupler from the wire harness.
- Check the switch component for the continuity between "Sky blue ① and ground". Refer to the "CHECKING OF SWITCHES" section.



INCORRECT

Replace neutral switch.

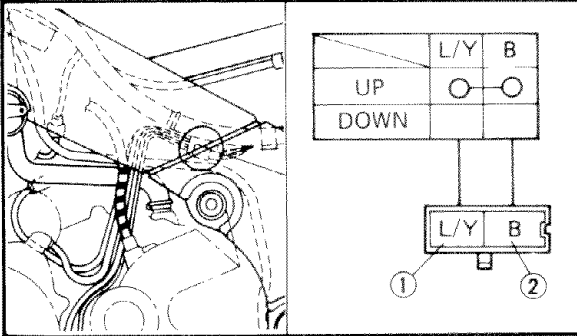


CORRECT



### 10. Sidestand switch

- Disconnect the sidestand switch coupler from the wireharness.
- Check the switch component for the continuity between "Blue/Yellow ① and Black ② ". Refer to the "CHECKING OF SWITCHES" section.



INCORRECT

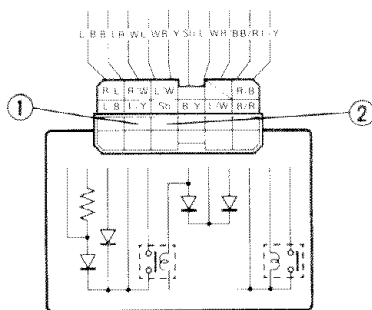
Replace sidestand switch.



### 11. Diode (relay assembly)

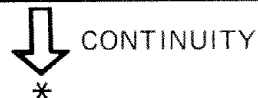
- Disconnect the relay assembly coupler.
- Connect the pocket tester ( $\Omega \times 1$ ) to the relay assembly terminal.

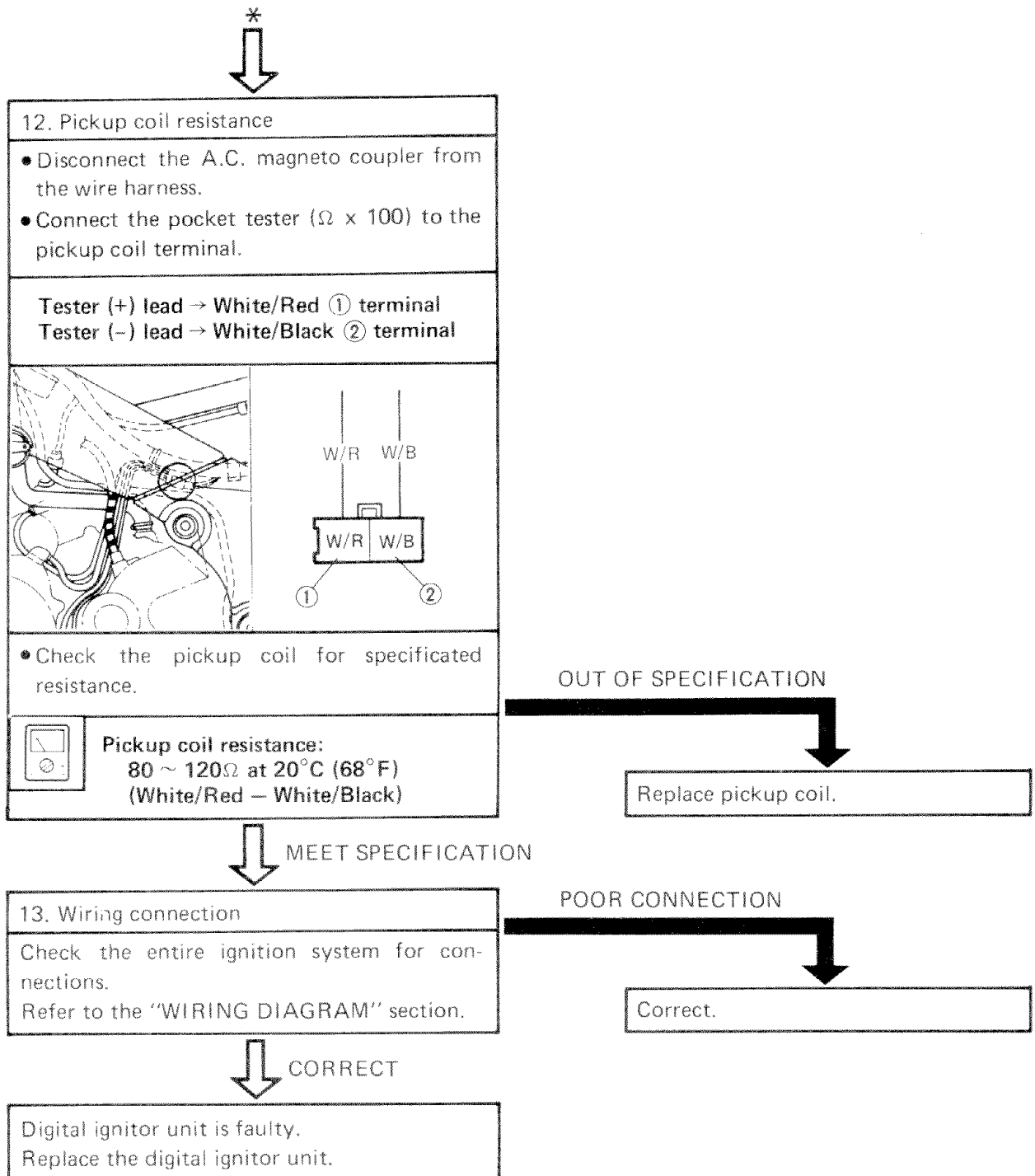
Tester (+) lead → Blue/Yellow terminal ①  
Tester (-) lead → Skyblue terminal ②



NO CONTINUITY

Replace relay assembly.

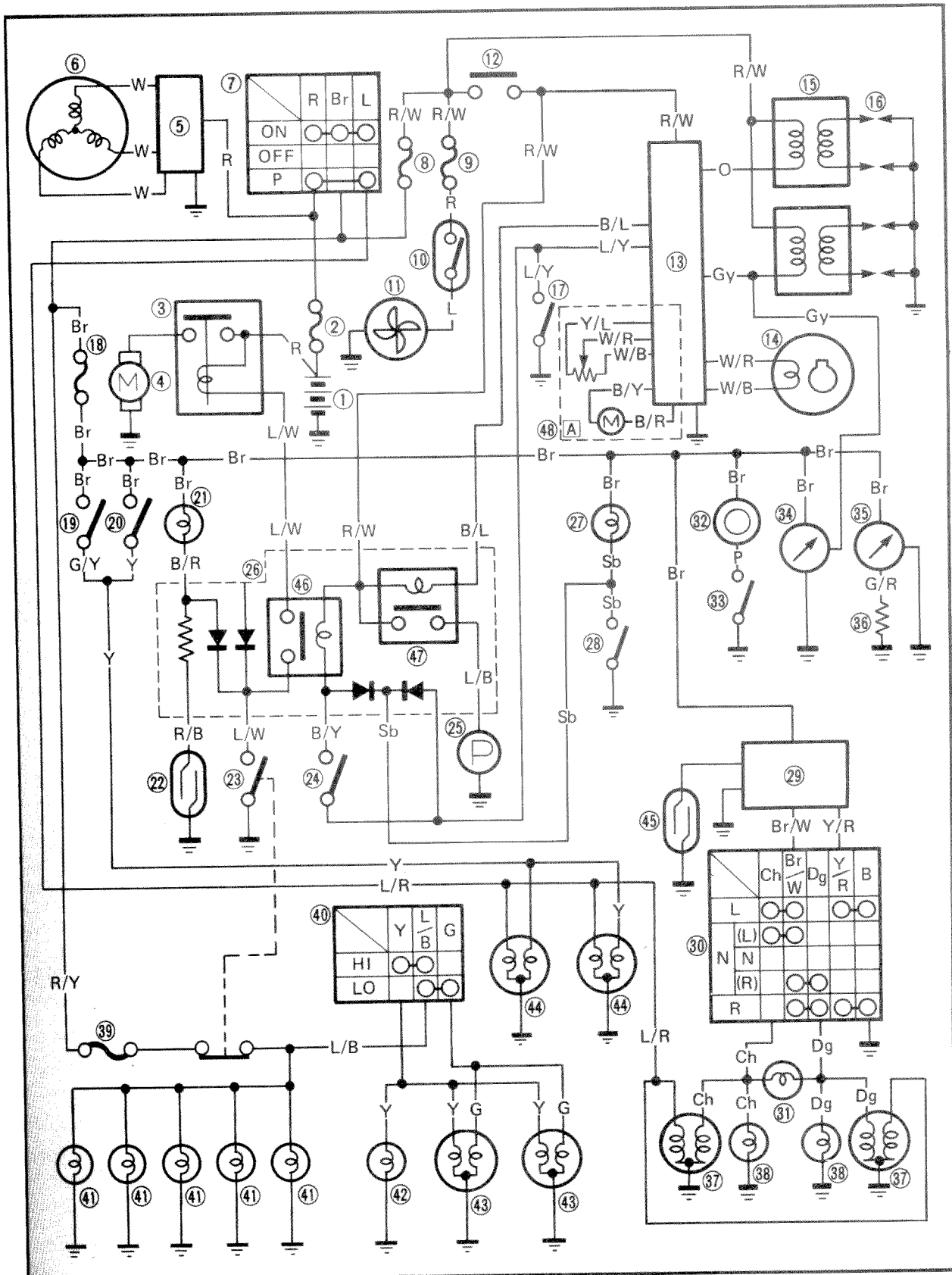






## ELECTRICAL STARTING SYSTEM

## CIRCUIT DIAGRAM



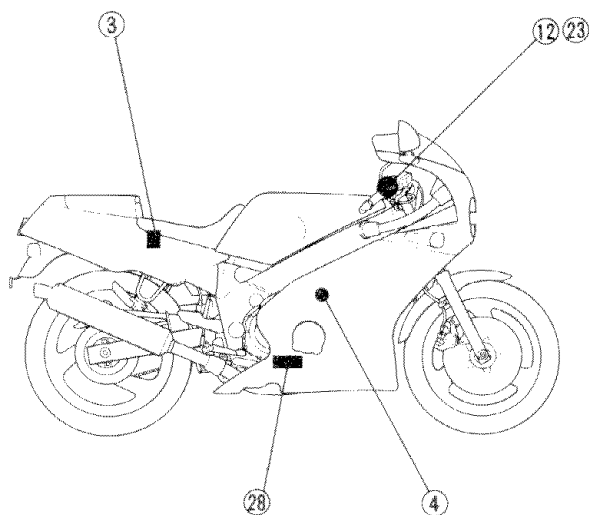
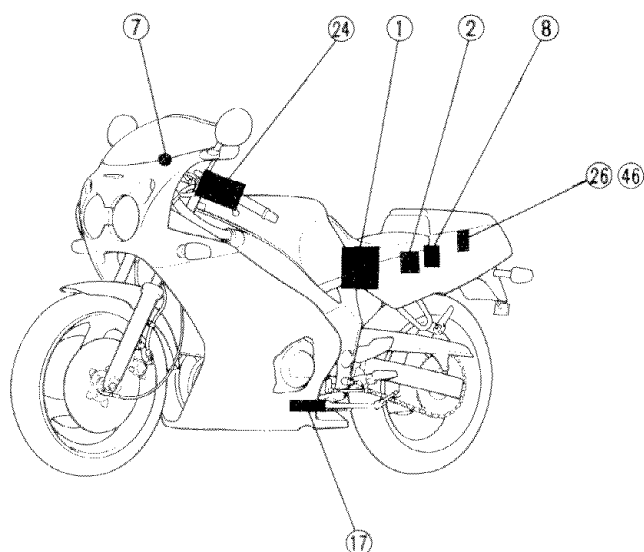


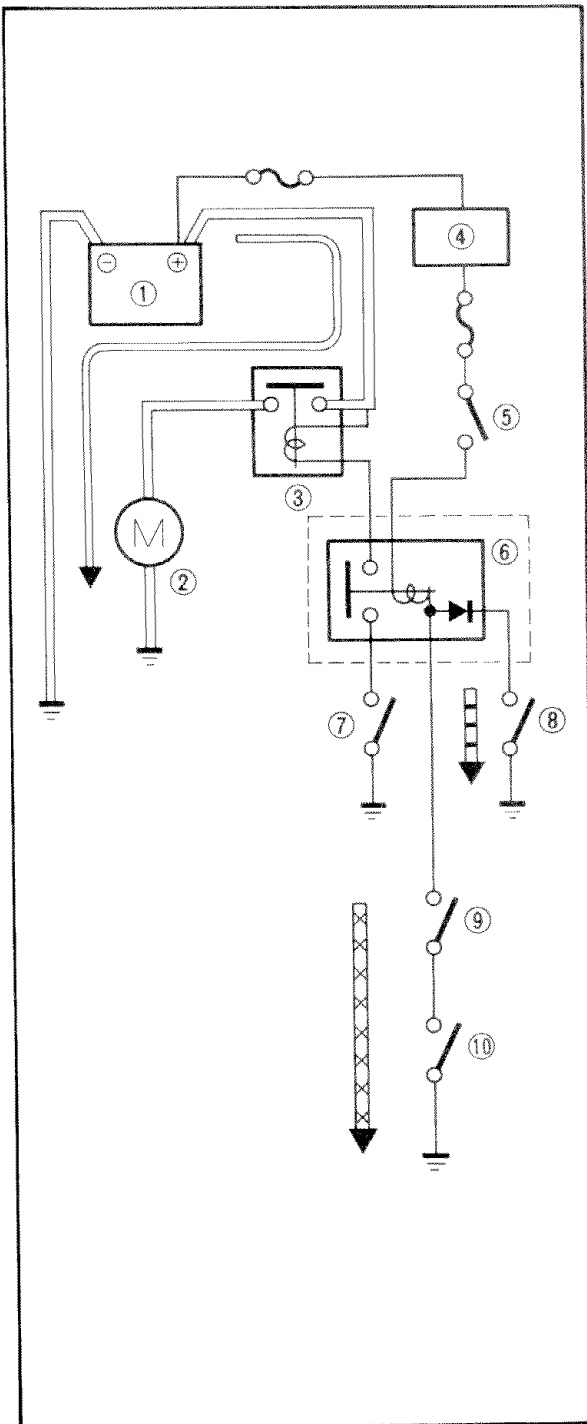
Aformentioned circuit diagram shows electrical starting circuit in circuit diagram.

**NOTE:**

For the color codes, see page 8-2.

- ① Battery
- ② Fuse (main)
- ③ Starter relay
- ④ Starter motor
- ⑦ Main switch
- ⑧ Fuse (ignition)
- ⑫ "ENGINE STOP" switch
- ⑰ Sidestand switch
- ⑳ "START" switch
- ㉔ Clutch switch
- ㉖ Relay assembly
- ㉘ Neutral switch
- ㉚ Ignition circuit cut-off relay





### STARTING CIRCUIT OPERATION

The starting circuit on this model consist of the starter motor, starter relay, and the relay unit (starting circuit cut-off relay). If the engine stop switch and the main switch are both closed, the starter motor can operate only if:

The transmission is in neutral (the neutral switch is closed).

or if

The clutch lever is pulled to the handlebar (the clutch switch is closed) and the sidestand is up (the sidestand switch is closed.)

The starting circuit cut-off relay prevents the starter from operating when neither of these conditions has been met. In this instance, the starting circuit cut-off relay is open so current cannot reach the starter motor.

When one of both of the above conditions have been met, however, the starting circuit cut-off relay is closed, and the engine can be started by pressing the starter switch.

← WHEN THE TRANSMISSION IS IN NEUTRAL

← WHEN THE SIDESTAND IS UP AND THE CLUTCH LEVER IS PULLED IN

- ① Battery
- ② Starter motor
- ③ Starter relay
- ④ Main switch
- ⑤ "ENGINE STOP" switch
- ⑥ Starting circuit cut-off relay
- ⑦ "START" switch
- ⑧ Neutral switch
- ⑨ Clutch switch
- ⑩ Sidestand switch
- [A] To ignition circuit cut-off relay





## TROUBLESHOOTING

## STARTER MOTOR DOES NOT OPERATE.

## Procedure

Check;

- |                                   |                                   |
|-----------------------------------|-----------------------------------|
| 1. Fuse (main)                    | 8. Neutral switch                 |
| 2. Battery                        | 9. Sidestand switch               |
| 3. Starter motor                  | 10. Clutch switch                 |
| 4. Starter relay                  | 11. "START" switch                |
| 5. Starting circuit cut-off relay | 12. Wiring connection             |
| 6. Main switch                    | (Entire electric starting system) |
| 7. "ENGINE STOP" switch           |                                   |

## NOTE:

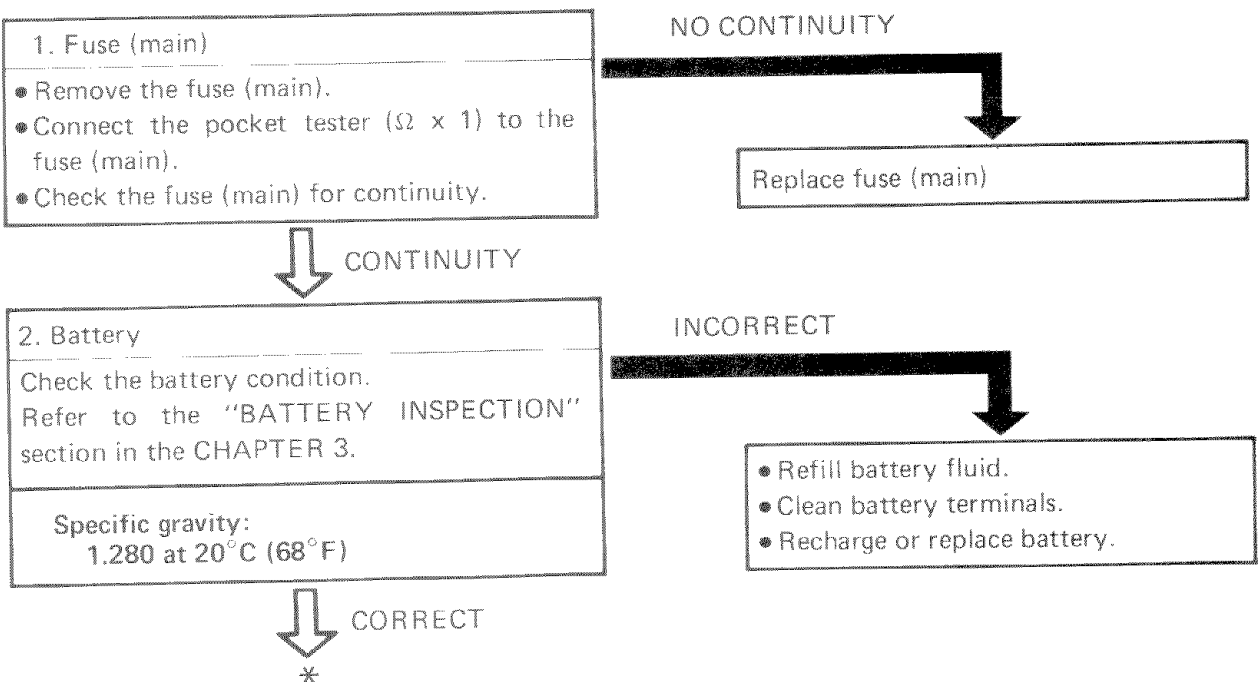
Remove the following before troubleshooting.

- |                          |                    |
|--------------------------|--------------------|
| 1) Seat (front and rear) | 4) Top cover       |
| 2) Side cover            | 5) Air filter case |
| 3) Side cowlings         |                    |

- Use the following special tool in this troubleshooting.



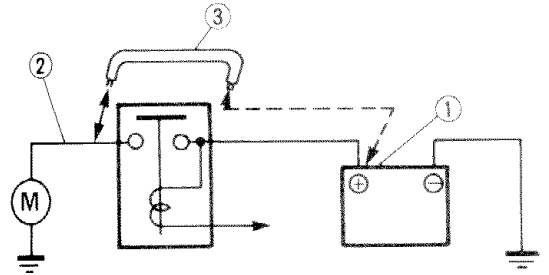
Pocket tester:  
P/N. YU-03113  
90890-03112





### 3. Starter motor

- Connect the battery positive terminal ① and starter motor cable ② using a jumper lead ③ \* as shown.



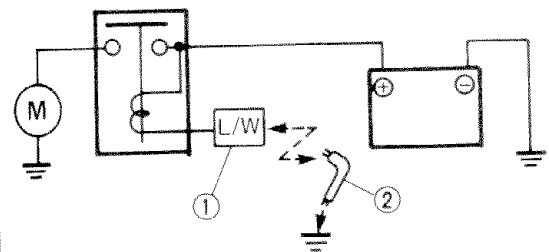
- Check the starter motor operation.



OPERATIVE

### 4. Starter relay

- Disconnect the starter relay lead.
- Ground the starter relay lead ① to the frame using the jumper lead ② as shown.



- Check the starter motor operation.



OPERATIVE

### 5. Starting circuit cut-off relay (relay assembly)

- Disconnect the relay assembly coupler from the wireharness.
- Connect the pocket tester ( $\Omega \times 1$ ) and battery (12V) voltage to the relay assembly coupler terminals.

\*

#### ⚠ WARNING:

A wire for the jumper lead must have the equivalent capacity as that of the battery lead or more, otherwise it may cause the jumper lead to be burned. This check is likely to produce sparks, so be sure that no flammable gas or fluid is in the vicinity.

NO OPERATIVE



Repair or replace starter motor.

NO OPERATIVE



Replace starter relay.

**Step 1.**

Battery (+) terminal → Red/White ① terminal.

Battery (-) terminal → Black/Yellow ② terminal.

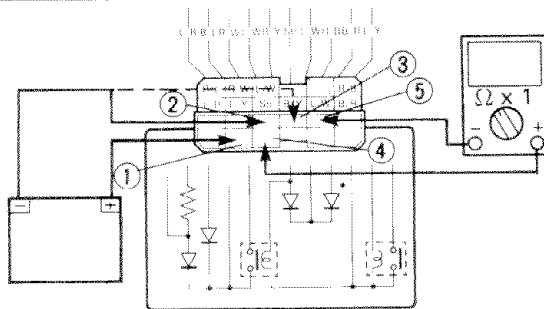
**Step 2.**

Battery (+) terminal → Red/White ① terminal.

Battery (-) terminal → Skyblue ③ terminal.

Tester (+) lead → Blue/White ④ terminal

Tester (-) lead → Blue/White ⑤ terminal



- Check the starting circuit cut-off relay for continuity.

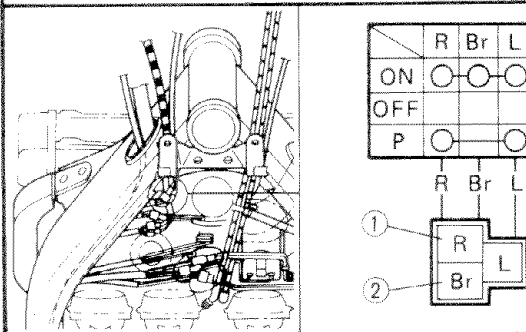
NO CONTINUITY

Replace relay assembly.

CONTINUITY

**6. Main switch**

- Disconnect the main switch coupler and lead from the wire harness.
- Check the switch component for the continuity between "Red ① and Brown ②". Refer to the "CHECKING OF SWITCHES" section.



INCORRECT

Replace main switch.

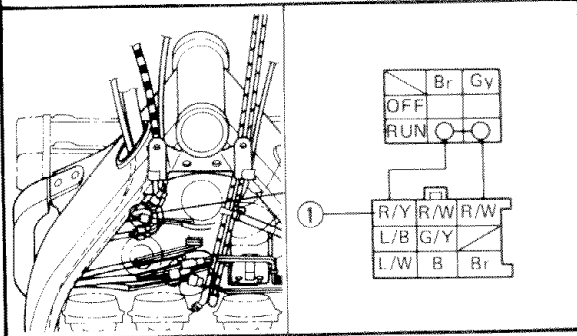
CORRECT

\*



## 7. "ENGINE STOP" switch

- Disconnect the handlebar switch (right) coupler from the wire harness.
- Check the switch component for the continuity between "Red/White ① and Red/White ② ". Refer to the "CHECKING OF SWITCHES" section.



INCORRECT

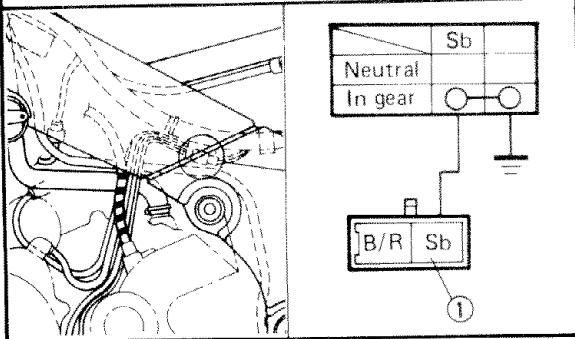
Replace handlebar switch (right).



CORRECT

## 8. Neutral switch

- Disconnect the neutral switch coupler from the wire harness.
- Check the switch component for the continuity between "Sky blue ① and Ground". Refer to the "CHECKING OF SWITCHES" section.



INCORRECT

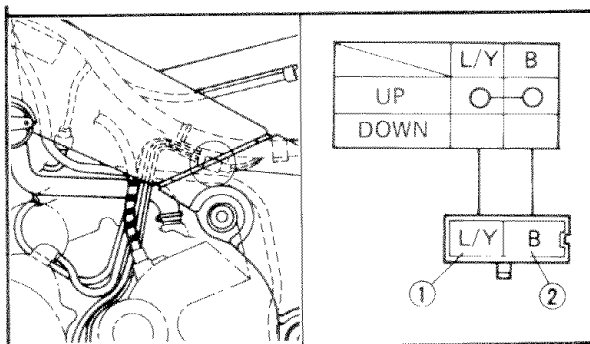
Replace neutral switch.



CORRECT

## 9. Sidestand switch

- Disconnect the sidestand switch coupler from the wire harness.
- Check the switch component for the continuity between "Blue/Yellow ① and Black ② ". Refer to the "CHECKING OF SWITCHES" section.



INCORRECT

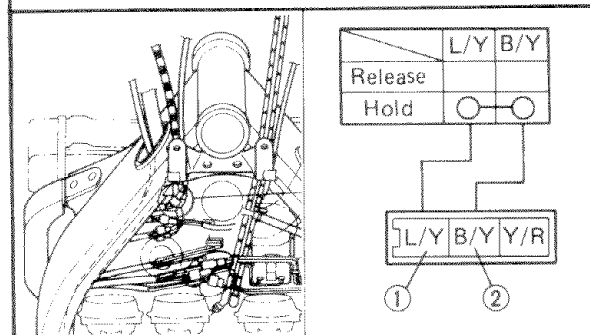
Replace sidestand switch.



CORRECT

## 10. Clutch switch

- Disconnect the clutch switch coupler from wire harness.
- Check the switch component for the continuity between "Blue/Yellow ① and Black/Yellow ② ". Refer to the "CHECKING OF SWITCHES" section.



INCORRECT

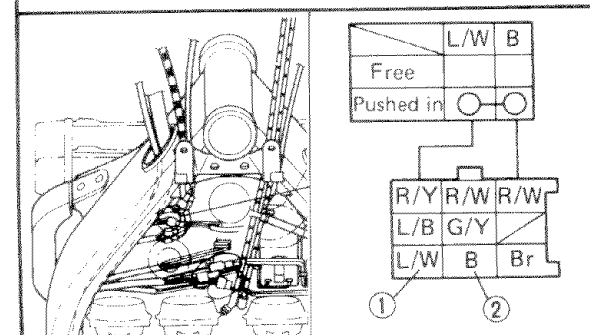
Replace clutch switch.



CORRECT

## 11. "START" switch

- Disconnect handlebar switch (right) coupler from wire harness.
- Check the "START" switch component for the continuity between "Blue/White ① and Black ② ". Refer to the "CHECKING OF SWITCHES" section.



INCORRECT

Replace handlebar switch (right).



CORRECT

\*



## 12. Wiring connection

Check the entire ignition system for connections.  
Refer to the "WIRING DIAGRAM" section.

POOR CONNECTION



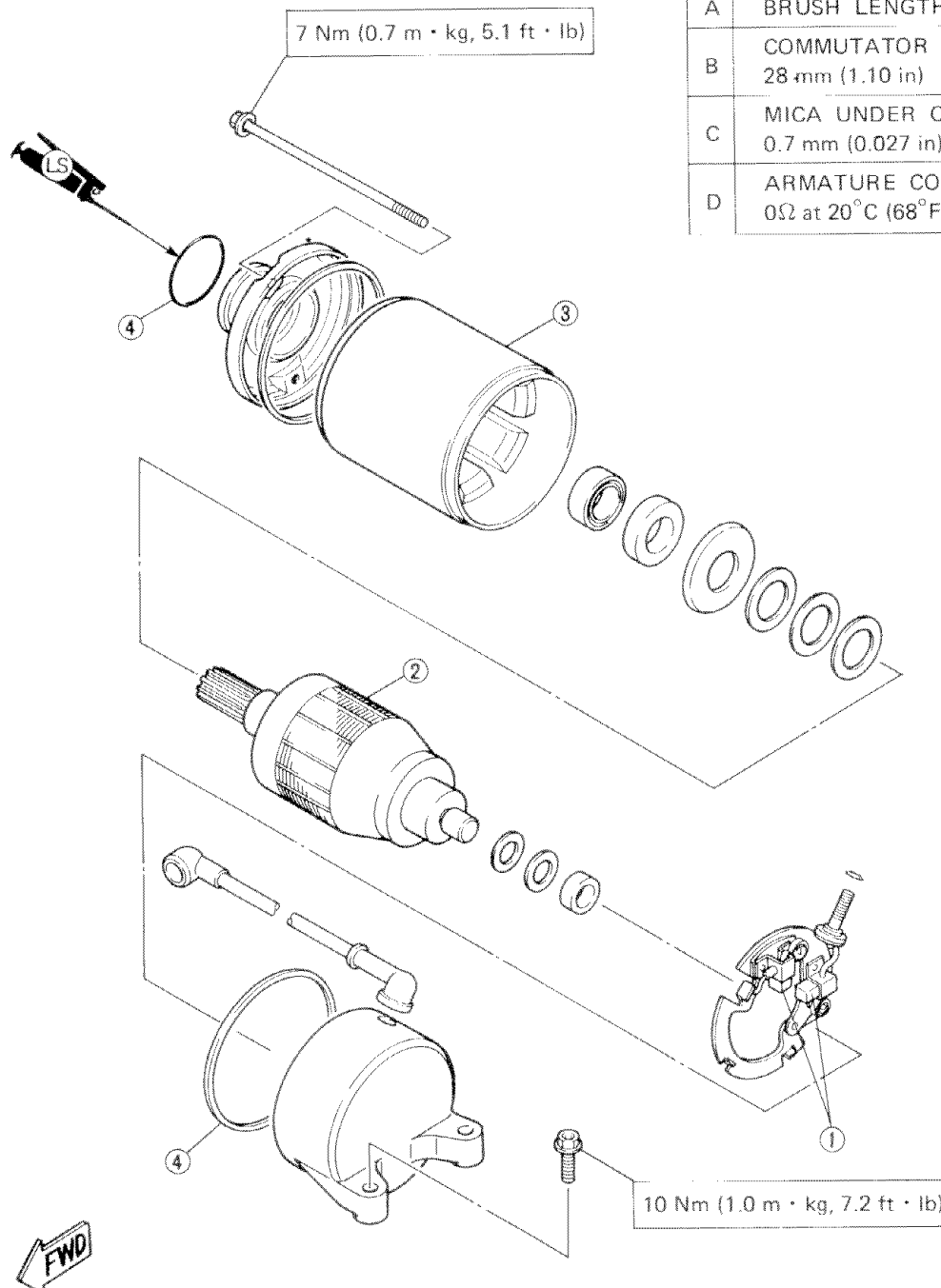
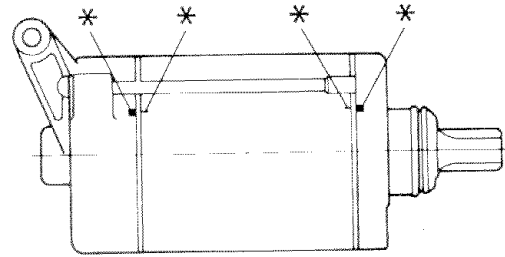
Correct.



## STARTER MOTOR

- ① Brush
- ② Armature
- ③ Stator
- ④ O-ring

\* MATCH MARKS



A	BRUSH LENGTH LIMIT
B	COMMUTATOR WEAR LIMIT: 28 mm (1.10 in)
C	MICA UNDER CUT: 0.7 mm (0.027 in)
D	ARMATURE COIL RESISTANCE 0Ω at 20°C (68°F)

FWD

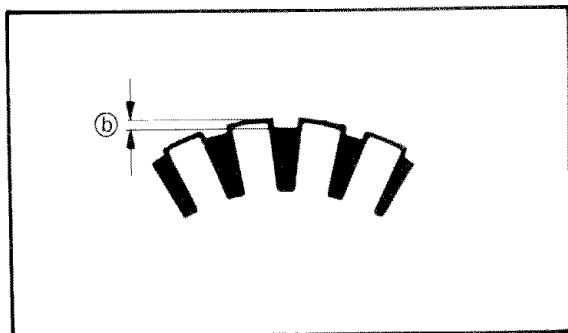
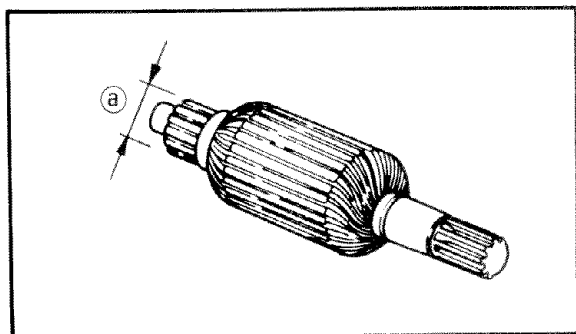


## Removal

## 1. Remove:

- Starter motor

Refer to "CHAPTER 4. ENGINE OVERHAUL – ENGINE REMOVAL" section.



## Inspection and Repair

## 1. Inspect:

- Commutator

Dirty → Clean it with #600 grit sandpaper.

## 2. Measure:

- Commutator diameter (a)

Out of specification → Replace starter motor.



Commutator wear limit (a):  
28 mm (1.10 in)

## 3. Measure:

- Mica undercut (b)

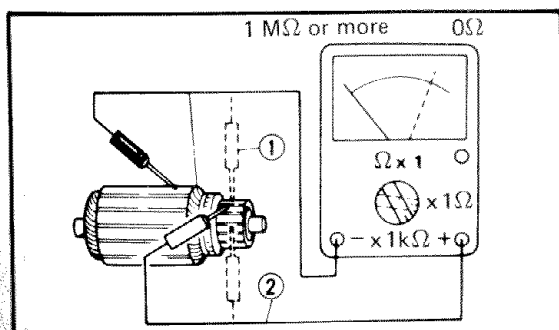
Out of specification → Scrape the mica to proper value use a hacksaw blade can be ground to fit.



Mica undercut (b):  
0.7 mm (0.027 in)

## NOTE:

The mica insulation of the commutator must be undercut to ensure proper operation of commutator.



## 4. Inspect:

- Armature coil (insulation/continuity)

Defects(s) → Replace starter motor.

## Armature coil inspecting steps:

- Connect the Pocket Tester for continuity check ① and insulation check ②.
- Measure the armature resistances.





Armature coil resistance:

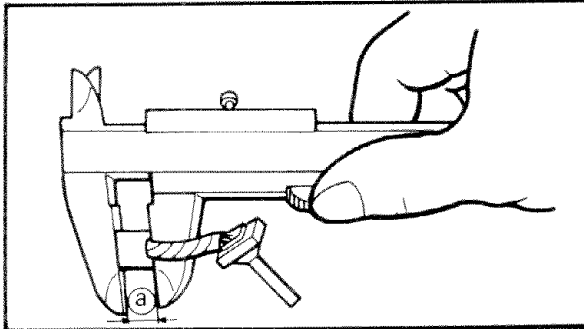
Continuity check ① :

$0\Omega$  at  $20^{\circ}\text{C}$  ( $68^{\circ}\text{F}$ )

Insulation check ② :

More than  $1\text{M}\Omega$  at  $20^{\circ}\text{C}$  ( $68^{\circ}\text{F}$ )

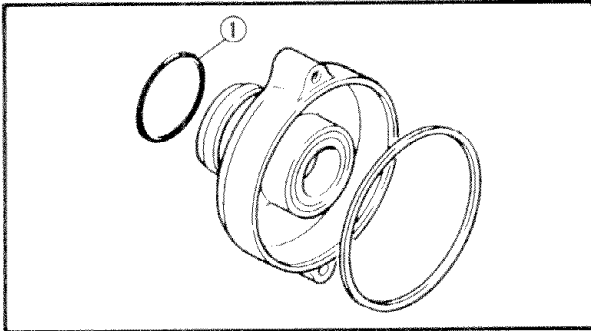
- If the resistance is incorrect, replace the starter motor.



Brush length limit:  
4.0 mm (0.16 in)

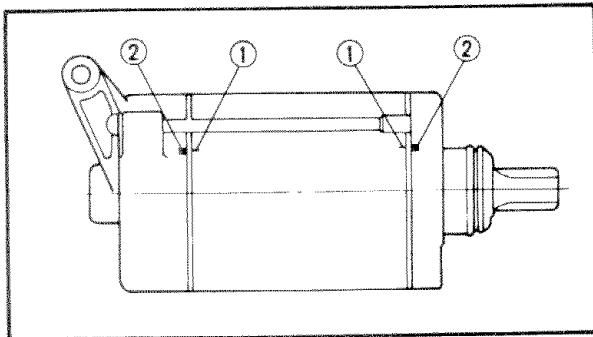
6. Measure:

- Brush spring pressure  
Fatigue → Replace as a set.



7. Inspect:

- Bearing
- Oil seal
- O-rings ①  
Wear/Damage → Replace.



#### Installation

1. Install:

- Starter motor

#### NOTE:

Align the match marks ① on the bracket with the match marks ② on the housing.



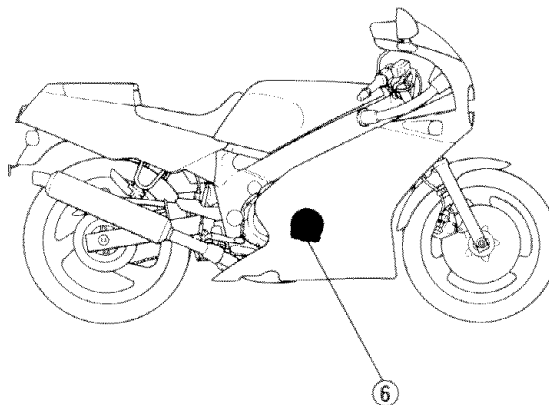
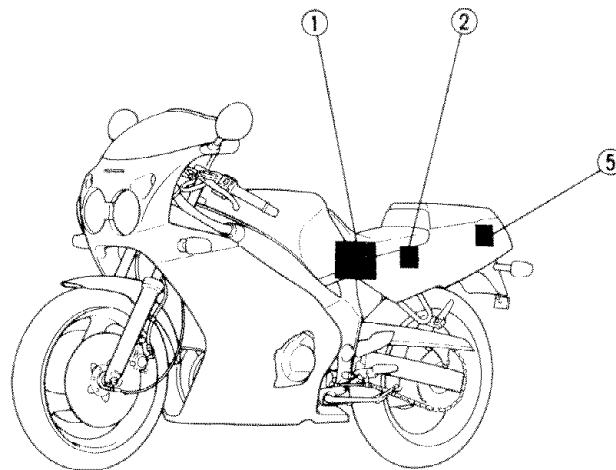


A forementioned circuit diagram show the charging circuit in the circuit diagram.

**NOTE:**

For the color codes, see page 8-2.

- ① Battery
- ② Fuse (main)
- ⑤ Rectifier/Regulator
- ⑥ A.C. generator





## TROUBLESHOOTING

## THE BATTERY IS NOT CHARGED.

## Procedure

## Check;

1. Fuse (main)
2. Battery
3. Charging output
4. Stator coil resistance
5. Wiring connection  
(Entire charging system)

## NOTE:

- Remove the following parts before troubleshooting.
  - 1) Seat (front and rear)
  - 2) Side cover (left)
  - 3) Top cover
  - 4) Fuel tank
- Use the following special tool(s) in this troubleshooting.



Inductive tachometer:  
YU-03113  
90890-03113



Pocket tester:  
YU-03112  
90890-03112

## 1. Fuse (main)

- Remove the fuse (main).
- Connect the pocket tester ( $\Omega \times 1$ ) to the fuse.
- Check the fuse for continuity. Refer to "FUSE INSPECTION" in the CHAPTER 3.

NO CONTINUITY

Fuse is faulty, replace it.

CONTINUITY

## 2. Battery

Check the battery condition. Refer to the "BATTERY INSPECTION" section in the CHAPTER 3.

INCORRECT

- Refill battery fluid.
- Clean battery terminals.
- Recharge or replace battery.

Specific gravity:  
1.280 at 20°C (68°F)

CORRECT

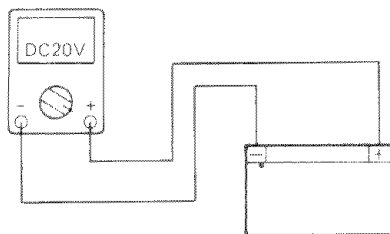
\*



### 3. Charging voltage

- Connect the inductive tachometer to spark plug lead.
- Connect the pocket tester (DC20V) to the battery.

Tester (+) lead → Battery (+) terminal  
Tester (-) lead → Battery (-) terminal



- Start the engine and accelerate to about, 3,000 r/min.
- Check charging voltage.



Charging voltage:  
14.3 ~ 15.3V at 3,000 r/min

NOTE: \_\_\_\_\_  
Use a full charged battery.

MEETS SPECIFICATION

Charging circuit is good.



OUT OF SPECIFICATION

### 4. Stator coil resistance

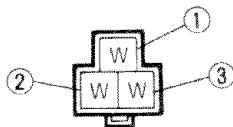
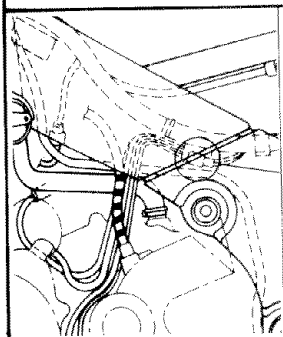
- Disconnect the A.C. magneto coupler from the wire harness.
- Connect the pocket tester ( $\Omega \times 1$ ) to the stator coil leads.

#### Stator coil (1)

Tester (+) lead → White lead ①  
Tester (-) lead → White lead ②

#### Stator coil (2)

Tester (+) lead → White lead ①  
Tester (-) lead → White lead ③



- Check the stator coil for specified resistance.



Stator coil resistance:

White ① – White ②  
 $0.31 \sim 0.37 \Omega$  at  $20^{\circ}\text{C}$  ( $68^{\circ}\text{F}$ )

White ① – White ③  
 $0.31 \sim 0.37 \Omega$  at  $20^{\circ}\text{C}$  ( $68^{\circ}\text{F}$ )

OUT OF SPECIFICATION

Replace stator coil.

BOTH RESISTANCES  
MEET SPECIFICATIONS

#### 5. Wiring connection

Check the entire charging system for connections.

Refer to the "WIRING DIAGRAM" section.

POOR CONNECTION

Correct.

CORRECT

Replace rectifier/regulator.



## — MEMO —