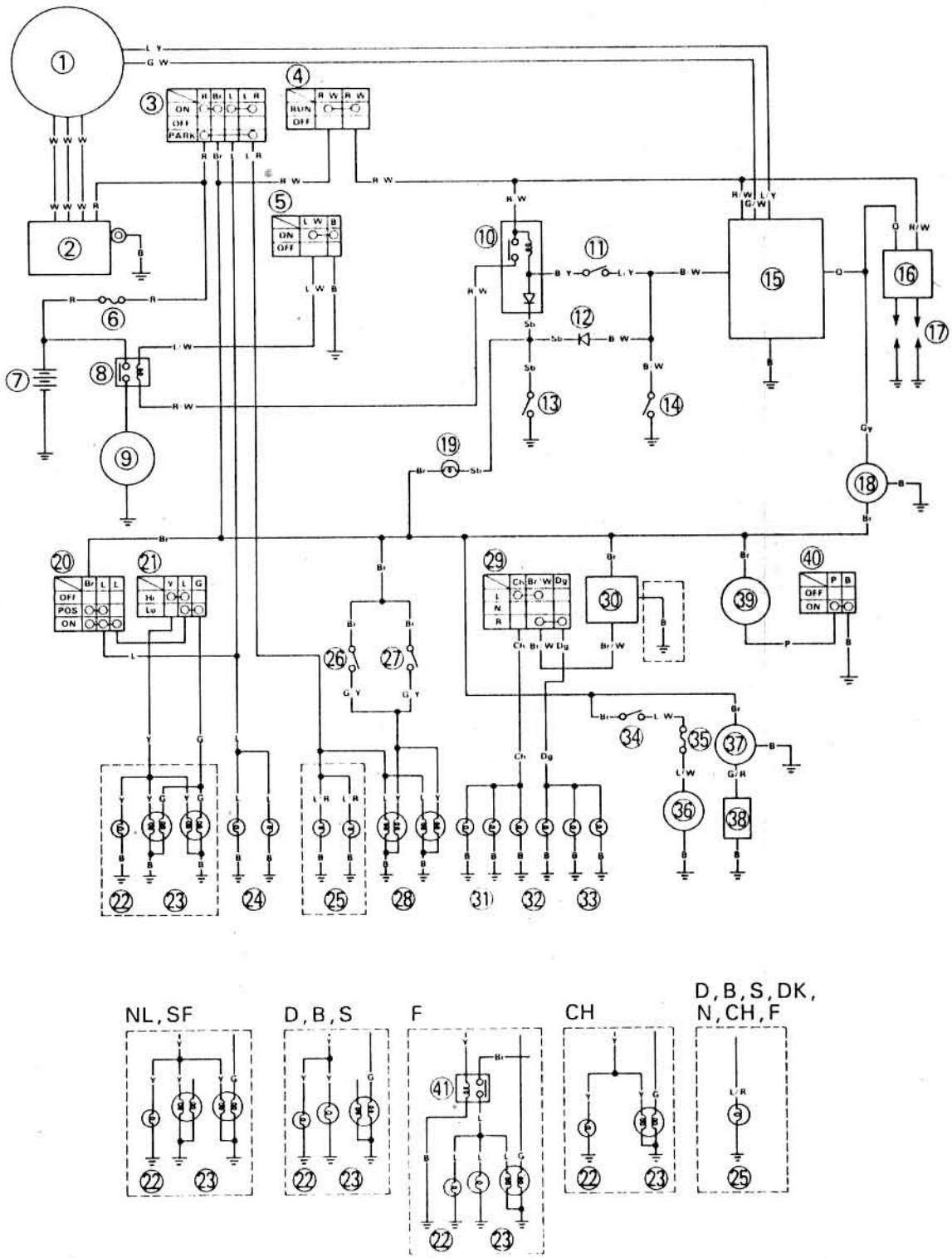
INDEX

CHAPTER 8.
ELECTRICAL

ELECTRICAL

XTZ750 CIRCUIT DIAGRAM



① A.C. magneto
② Rectifier/Regulator
③ Main switch
④ "ENGINE STOP" switch
⑤ "START" switch
⑥ Fuse (main)
⑦ Battery
⑧ Starter relay
⑨ Starter motor
⑩ Starting circuit cut-off relay
⑪ Clutch switch
⑫ Diode
⑬ Neutral switch
⑭ Sidestand switch
⑮ Ignitor unit
⑯ Ignition coil
⑰ Spark plug
⑱ Tachometer
⑲ "NEUTRAL" indicator light
⑳ "LIGHTS" switch
㉑ "LIGHTS" (dimmer) switch
㉒ "HIGH BEAM" indicator light
㉓ Headlight
㉔ Meter light
㉕ Auxiliary light
㉖ Front brake switch
㉗ Rear brake switch
㉘ Tail/brake light
㉙ "TURN" switch
㉚ Flasher relay
㉛ Flasher light (left)
㉜ "TURN" indicator light
㉝ Flasher light (right)
㉞ Thermo switch
㉟ Fuse (fan motor)
㊱ Fan motor
㊲ Temperature gauge
㊳ Thermo unit
㊴ Horn
㊵ "HORN" switch
㊶ Headlight relay

NOTE:

- "START" switch is closed while the button (switch) is pushed.
- "HORN" switch is closed while the button (switch) is pushed.
- Clutch switch is closed while the clutch lever is pulled.
- Sidestand switch is closed while the sidestand is upped.
- Neutral switch is closed while the transmission is in neutral.
- Brake switch is closed while the brake is applied.

COLOR CODE

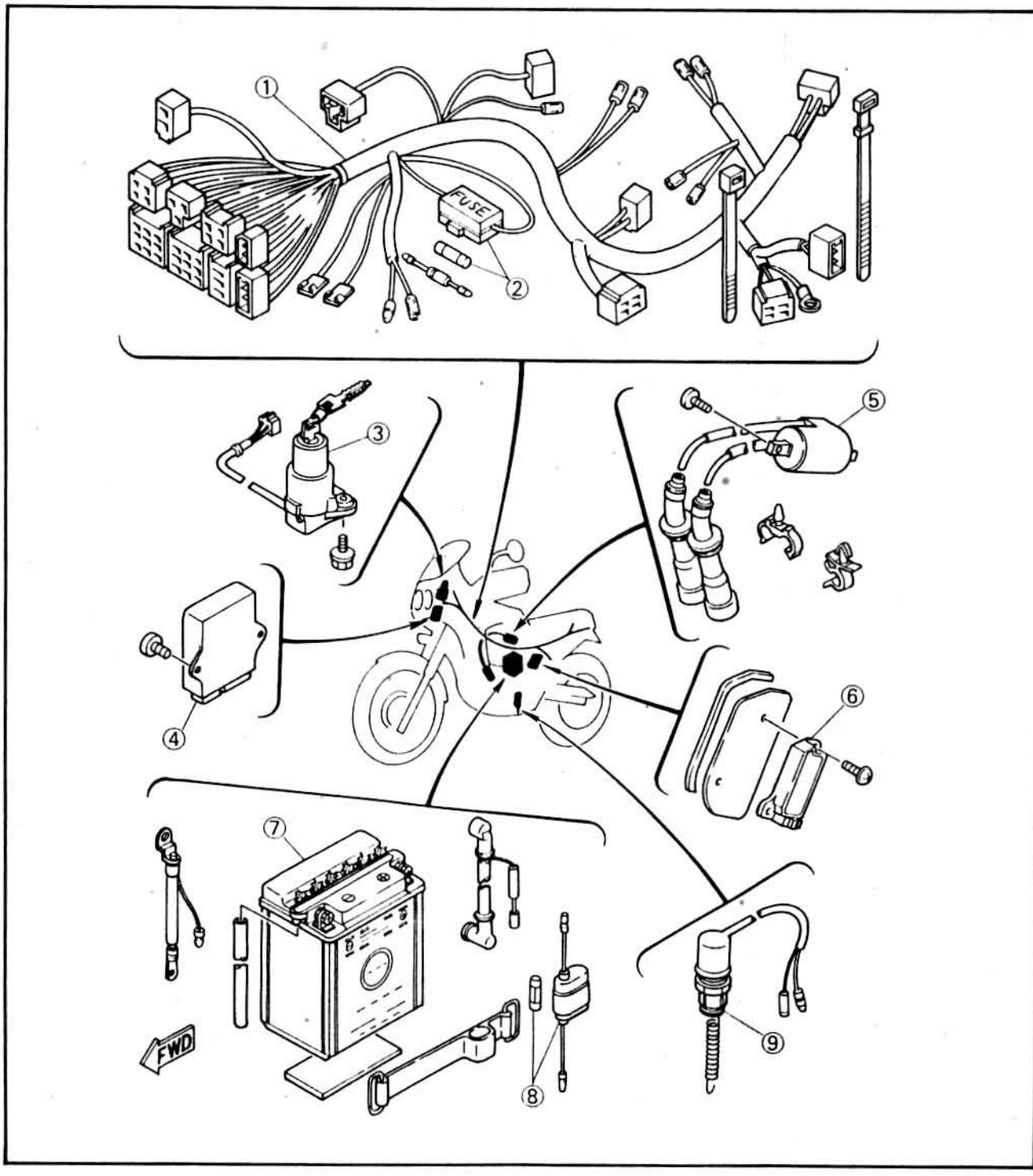
B	Black	Ch	Chocolate	G/Y	Green/Yellow
L	Blue	Gy	Gray	G/R	Green/Red
G	Green	Sb	Sky blue	L/Y	Blue/Yellow
Y	Yellow	Dg	Dark green	L/R	Blue/Red
R	Red	W	White	L/W	Blue/White
P	Pink	B/Y	Black/Yellow	R/W	Red/White
O	Orange	B/W	Black/White	Br/W	Brown/White
Br	Brown	G/W	Green/White		

ELECTRICAL COMPONENTS

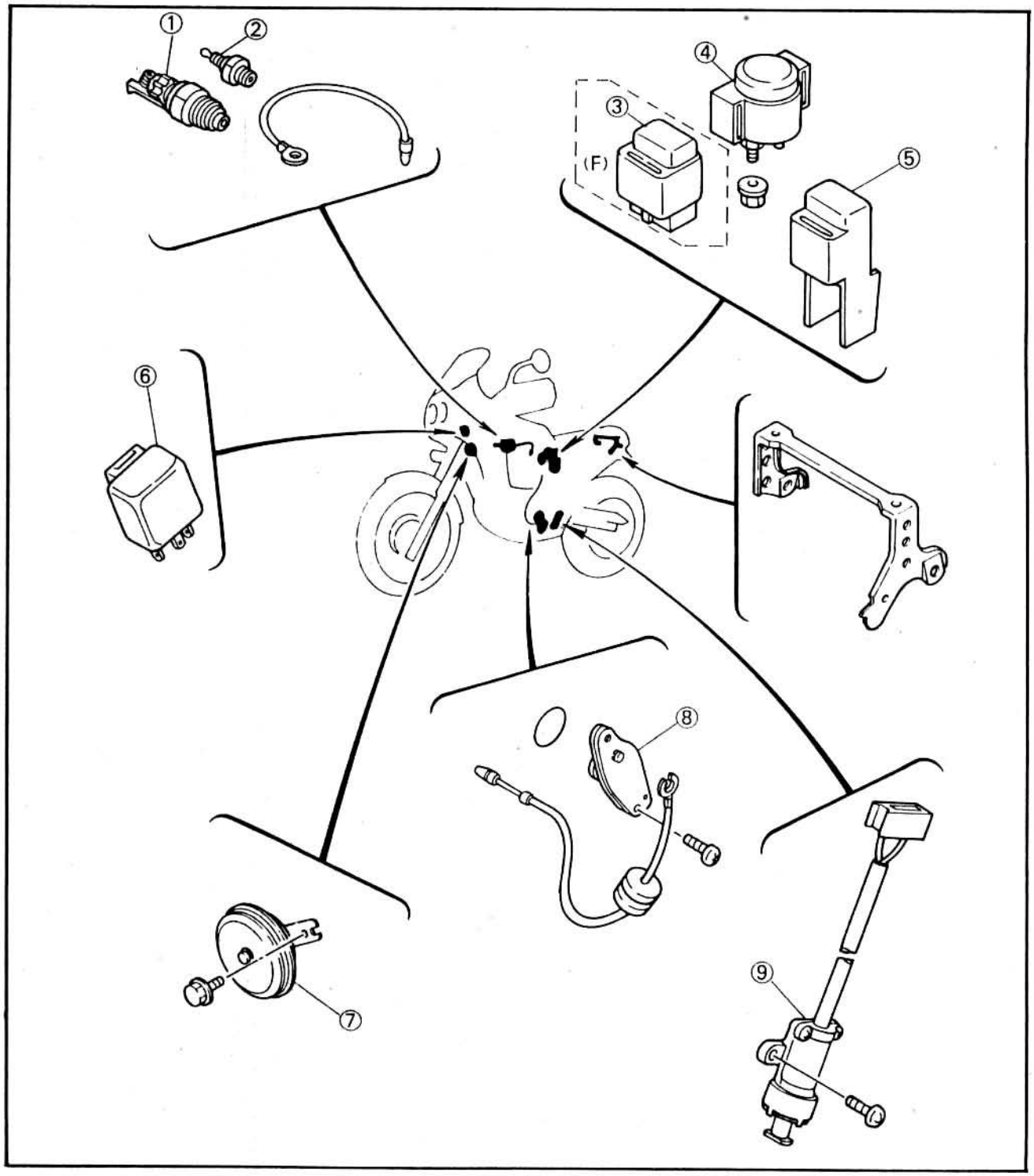
① Wireharness
② Fuse (cooling fan)
③ Main switch
④ Ignitor unit
⑤ Ignition coil
⑥ Rectifier/regulator
⑦ Battery
⑧ Fuse (main)
⑨ Brake switch

BATTERY:
CAPACITY: 12V 14AH
SPECIFIC GRAVITY: 1.280

IGNITION COIL:
PRIMARY COIL RESISTANCE:
2.38 ~ 3.22Ω at 20°C (68°F)
SECONDARY COIL RESISTANCE:
12 ~ 18kΩ at 20°C (68°F)



① Thermo switch
② Thermo unit
③ Headlight relay
④ Starter relay
⑤ Starting circuit cut-off relay
⑥ Flasher relay
⑦ Horn
⑧ Neutral switch
⑨ Sidestand switch



CHECKING OF SWITCHES

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

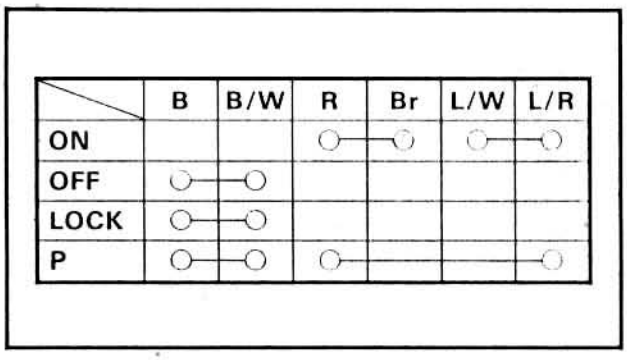
Read the following for switch inspection.

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.

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



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

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.

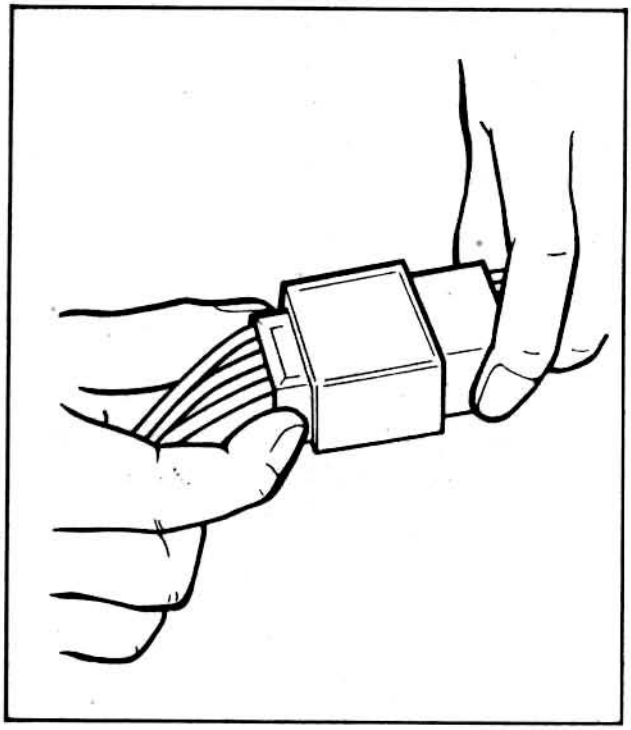
"B and B/W" is continuous with the "LOCK" switch position.

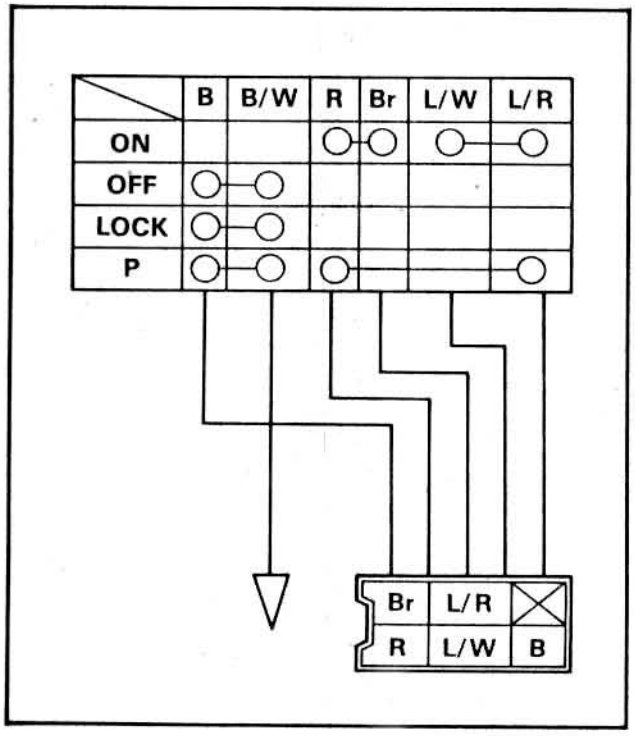
"B and B/W" and "R and L/R" are continuous with the "P" switch position.

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.

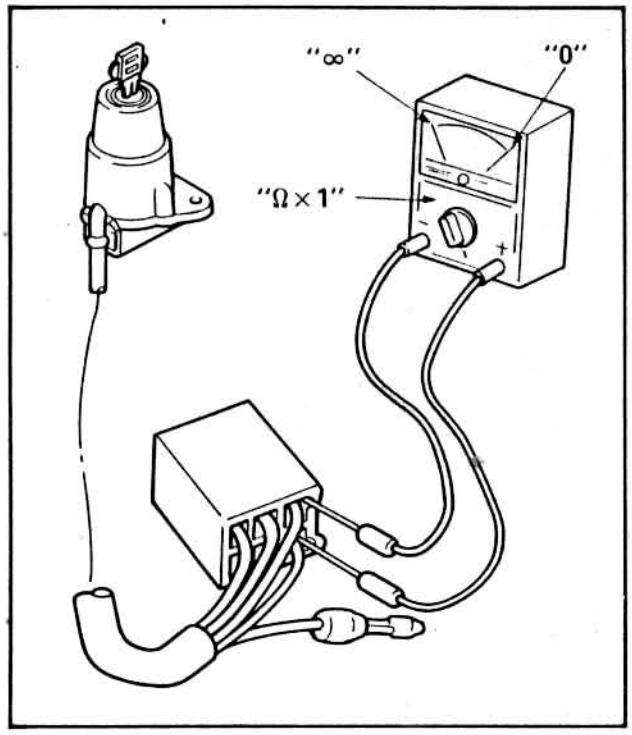
   "B and B/W" is continuous with the "LOCK" switch position.

   "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 "Ω × 1".
- Connect the tester (+) lead to the "R" lead terminal in the coupler and the (−) lead to the "Br" lead terminal.



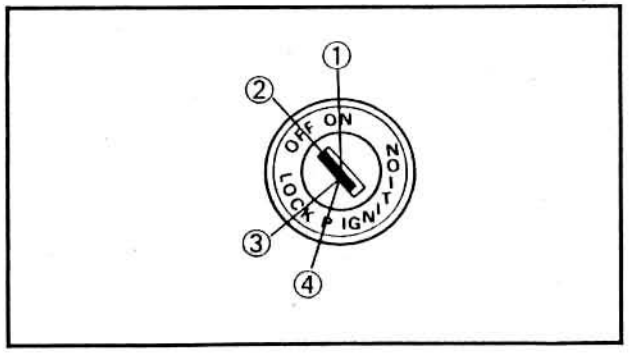
NOTE:

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 "∞") 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".

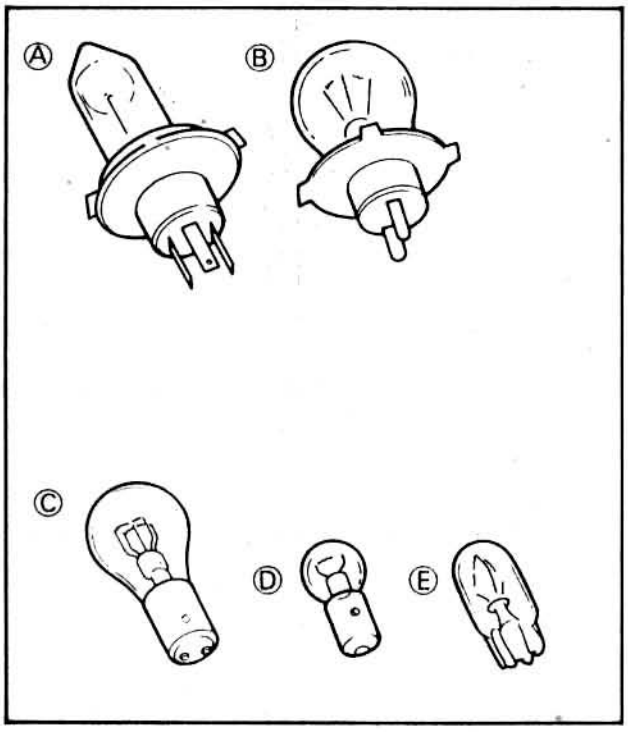
NOTE:

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.

Ⓐ and Ⓑ are mainly used for the headlight.

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

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

CHECKING BULB CONDITION

1. Remove the bulb.

NOTE:

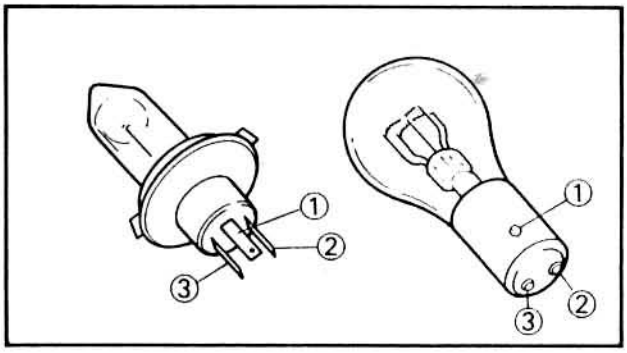
- Bulbs of the Ⓐ and Ⓑ type uses a bulb holder. Remove the bulb holder before removing the bulb itself. Most of the bulb holders for this type can be removed by turning them counterclockwise.
- Most of the bulbs of Ⓒ and Ⓓ type can be removed from the bulb sockets by pushing and turning them counterclockwise.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

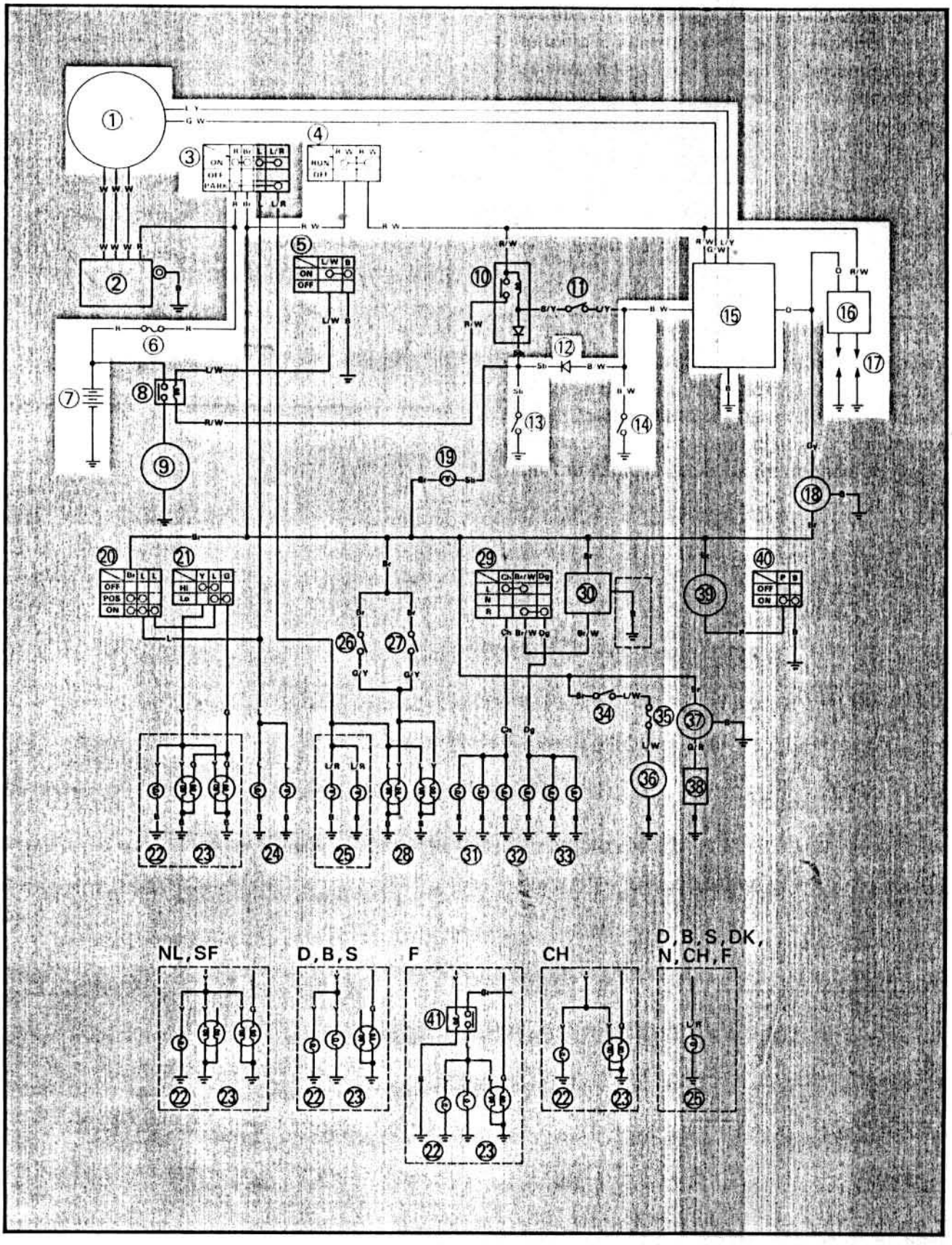
Checking steps:
- Set the pocket tester selector to the "Ω × 1".
- Connect the tester leads to the respective bulb terminals. Take for example a 3-terminal bulb as shown left. First check the continuity between the ① and ② terminals by connecting the tester (+) lead to the ① terminal and the tester (−) 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 "∞" 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

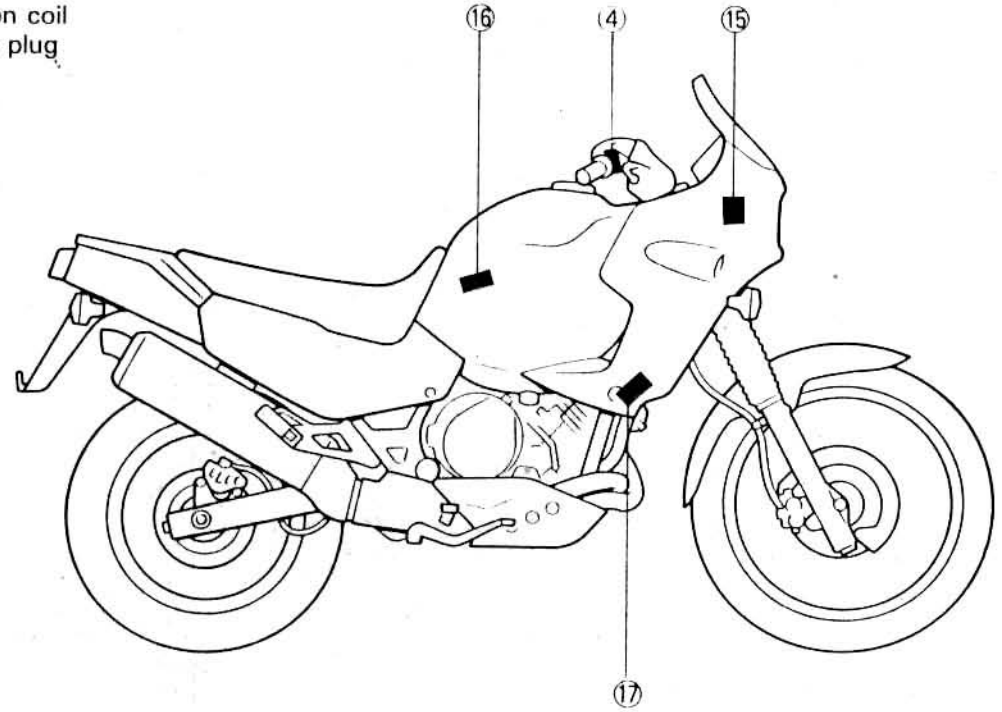
Below circuit diagram shows ignition system.

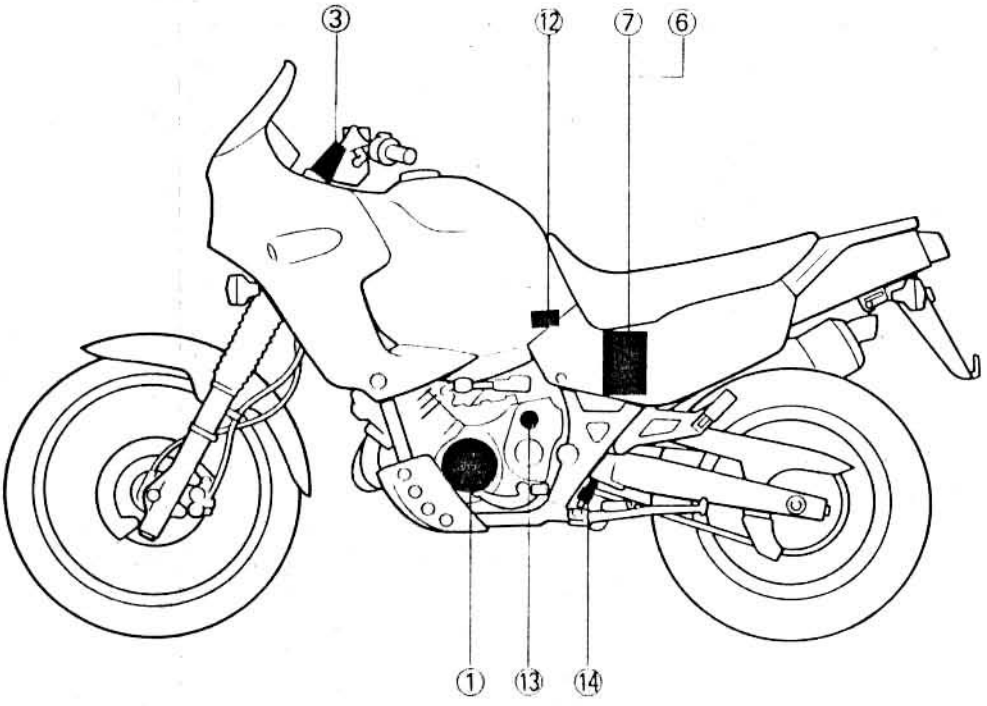


NOTE:

For the color codes, see page 8-2.

① A.C. magneto
③ Main switch
④ "ENGINE STOP" switch
⑥ Fuse (main)
⑦ Battery
⑫ Diode
⑬ Neutral switch
⑭ Sidestand switch
⑮ Ignitor unit
⑯ Ignition coil
⑰ Spark plug





TROUBLESHOOTING

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

Procedure

Check;

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

NOTE:

- Remove the following parts before troubleshooting.
  1) Seat
  2) Side cowlings
  3) Side cover (left)
  4) Fuel tank
  5) Air filter case
- Use the following special tools in this troubleshooting.

Dynamic spark tester:
90890-03144

Pocket tester:
90890-03112

1. Fuse (main)

- Remove the fuse.
- Connect the pocket tester (Ω × 1) to the fuse.
- Check the fuse for continuity.

NOCONTINUITY → Fuse is faulty, replace it.

CONTINUITY ↓

2. Battery

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

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

INCORRECT →

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

CORRECT ↓

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3. Spark plug

- Check the spark plug condition.
- Check the spark plug type.
- Check the spark plug gap.
  Refer to the "SPARK PLUG INSPECTION" section in the CHAPTER 3.

Standard spark plug:
DPR8EA-9 (NGK), X24EPRU-9 (N.D.)

Spark plug gap:
0.8 ~ 0.9 mm (0.031 ~ 0.035 in)

INCORRECT

Spark plug is faulty, replace it or repair plug gap.

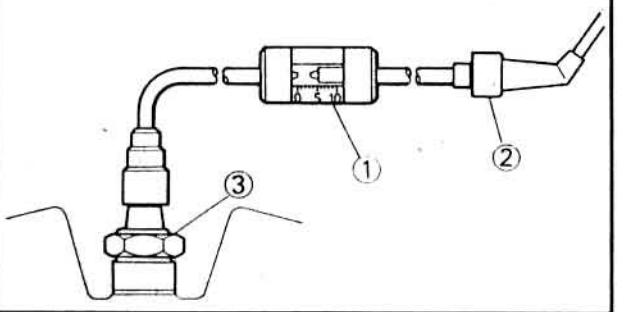
CORRECT

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

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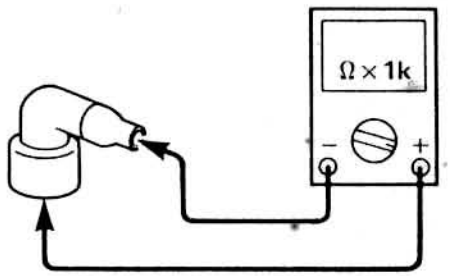
5. Spark plug cap resistance

- Remove the spark plug cap.
- Connect the pocket tester (Ω × 1k) to the spark plug cap.



- Check the spark plug cap for specificated resistance.

Spark plug cap resistance:
9 ~ 11kΩ at 20°C (68°F)

OUT OF SPECIFICATION

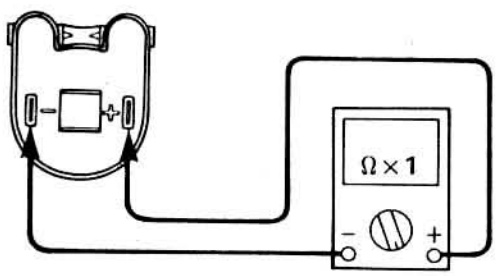
Replace spark plug cap.

MEETS SPECIFICATION

6. Ignition coil resistance

- Disconnect the ignition coil leads from the ignition coil.
- Connect the pocket tester (Ω × 1) to the ignition coil.

Ignition coil:
Tester (+) lead → Terminal
Tester (–) lead → Terminal

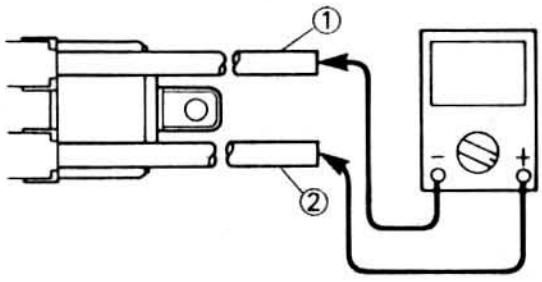


- Check the primary coil for specificated resistance.

Primary coil resistance:
2.38 ~ 3.22Ω at 20°C (68°F)

• Connect the pocket tester (Ω × 1k) to the ignition coil.

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



• Check the secondary coil for specificated resistance.

Secondary coil resistance:
12 ~ 18kΩ at 20°C (68°F)
(Spark plug lead — Spark plug lead)

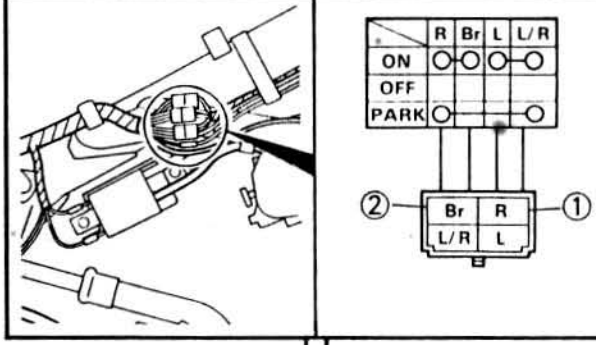
OUT OF SPECIFICATION

Ignition coil is faulty, replace it.

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

Main switch is faulty, replace it.

CORRECT

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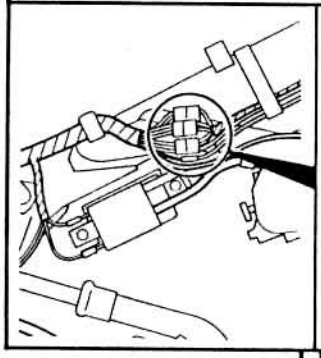
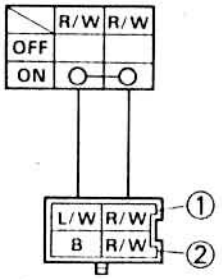
8. "ENGINE STOP" switch

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





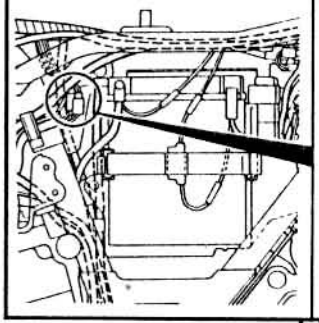
INCORRECT

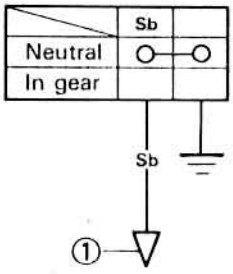
"ENGINE STOP" switch is faulty, replace handlebar switch (right).

CORRECT

9. Neutral switch

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





INCORRECT

Neutral switch is faulty, replace it.

CORRECT

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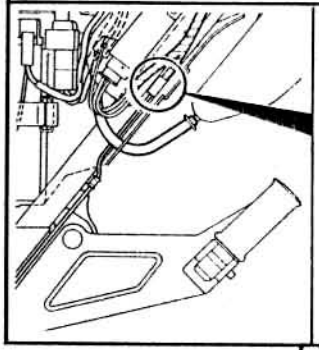
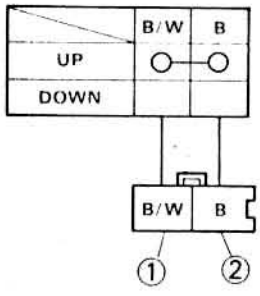
10. Sidestand switch

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





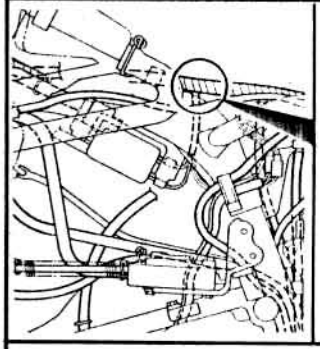
INCORRECT

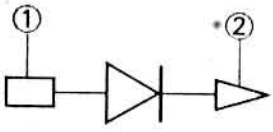
Sidestand switch is faulty, replace it.

CORRECT

11. Diode

- Disconnect the diode leads from the wireharness.
- Connect the pocket tester (Ω × 1) to the diode.





BAD CONDITION

Diode is faulty, replace it.

- Check the diode for continuity.

Pocket tester connecting point		Good	Bad		
(+) lead	(−) lead				
②	①	○		×	×
①	②	×		×	

○: Continuity ×: Nocontinuity

GOOD CONDITION

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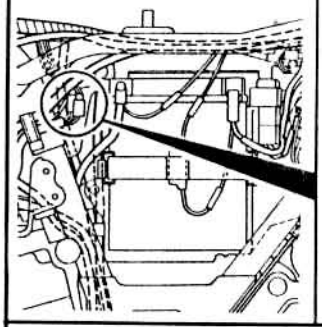
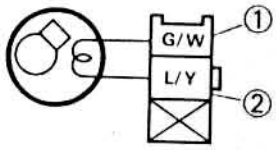
12. Pickup coil resistance

- Disconnect the pickup coil coupler from the wireharness.
- Connect the pocket tester (Ω × 100) to the pickup coil terminal.

Tester (+) lead → Green/White lead (1)
Tester (−) lead → Blue/Yellow lead (2)





- Check the pickup coil for specificated resistance.

Pickup coil resistance:
184 ~ 276Ω at 20°C (68°F)
(Green/White — Blue/Yellow)

OUT OF SPECIFICATION → Pickup coil is faulty, replace it.

MEET SPECIFICATION

13. Wiring connection

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

POOR CONNECTION → Correct.

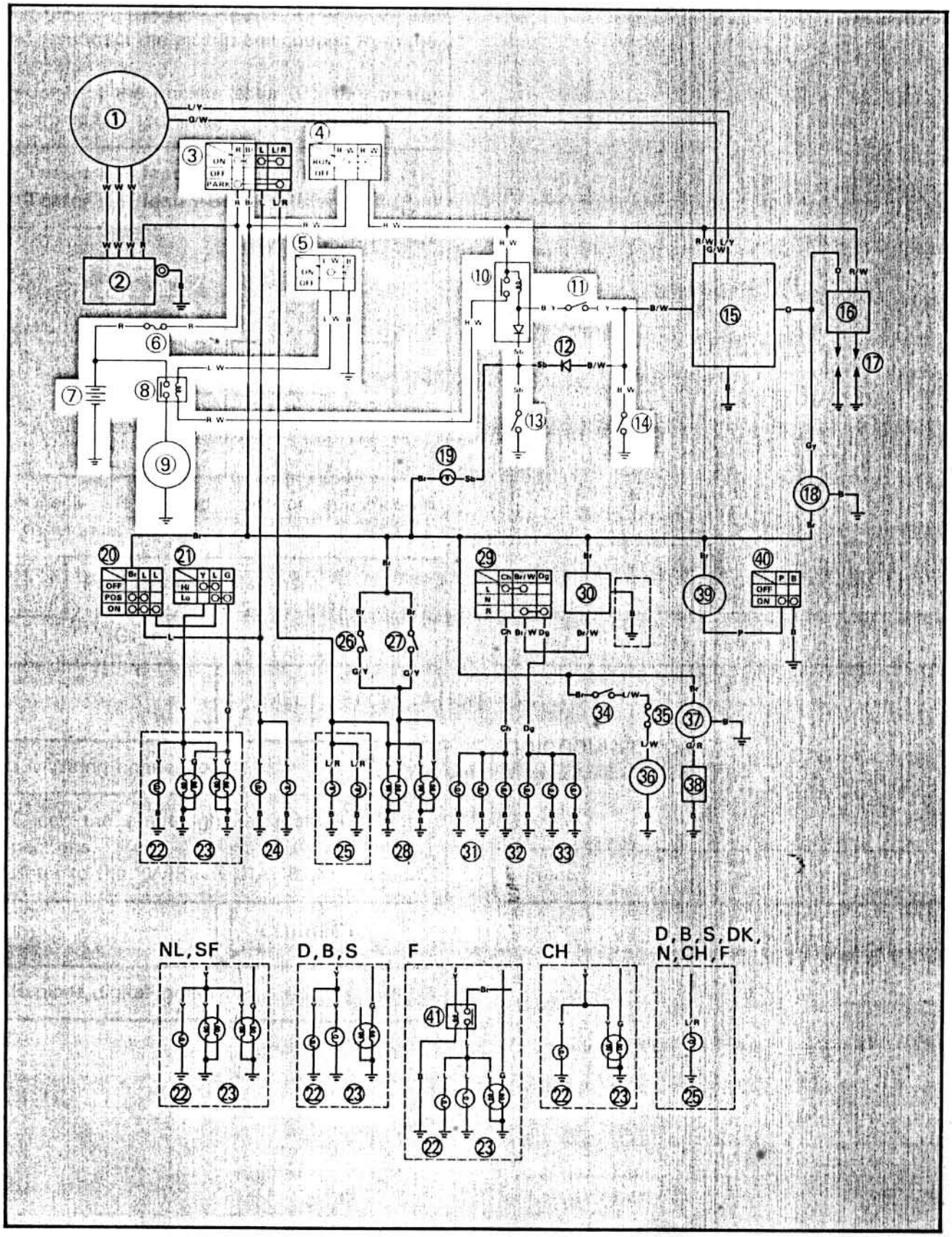
CORRECT

Replace digital ignitor unit.

ELECTRICAL STARTING SYSTEM

CIRCUIT DIAGRAM

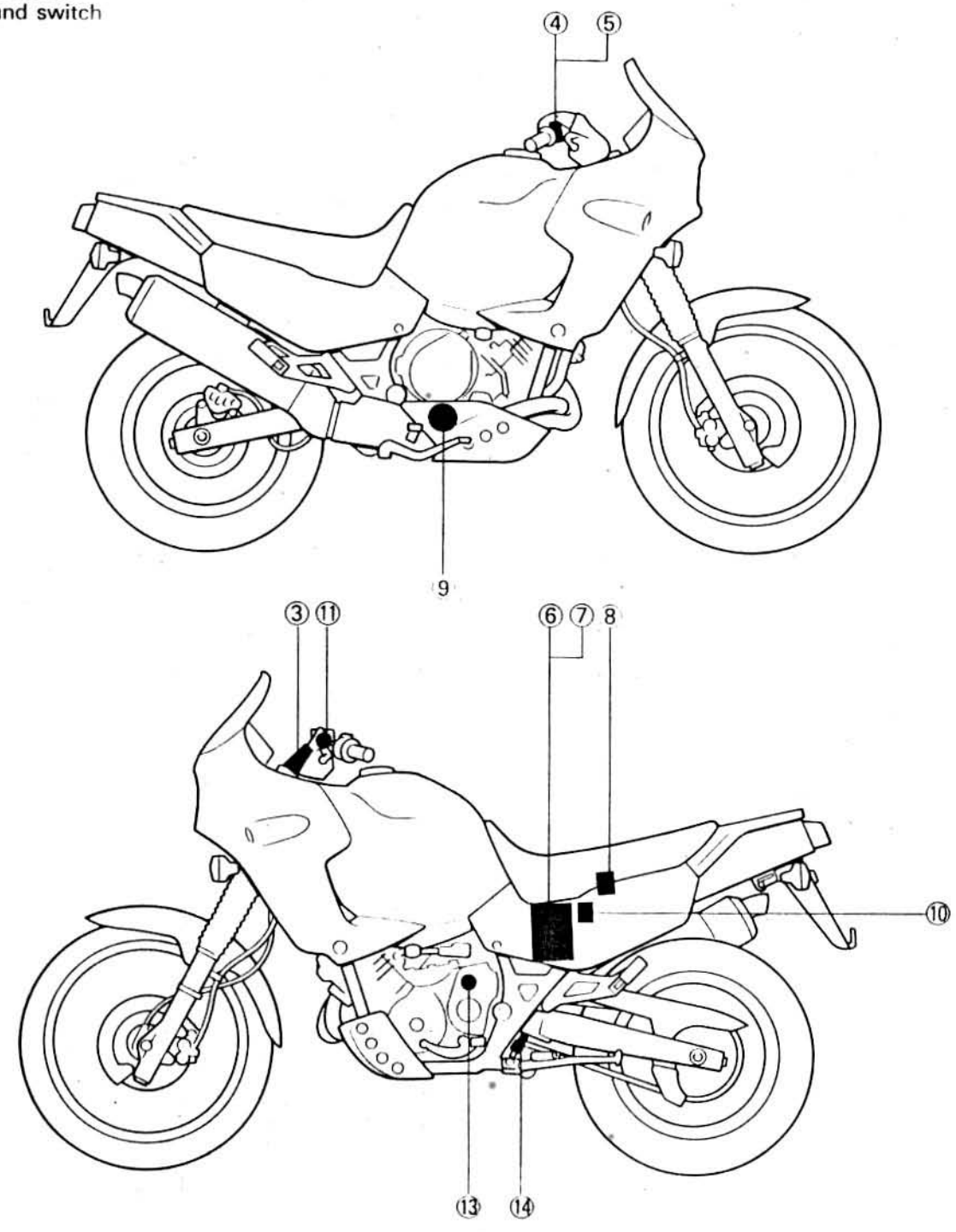
Below circuit diagram shows electrical starting system.

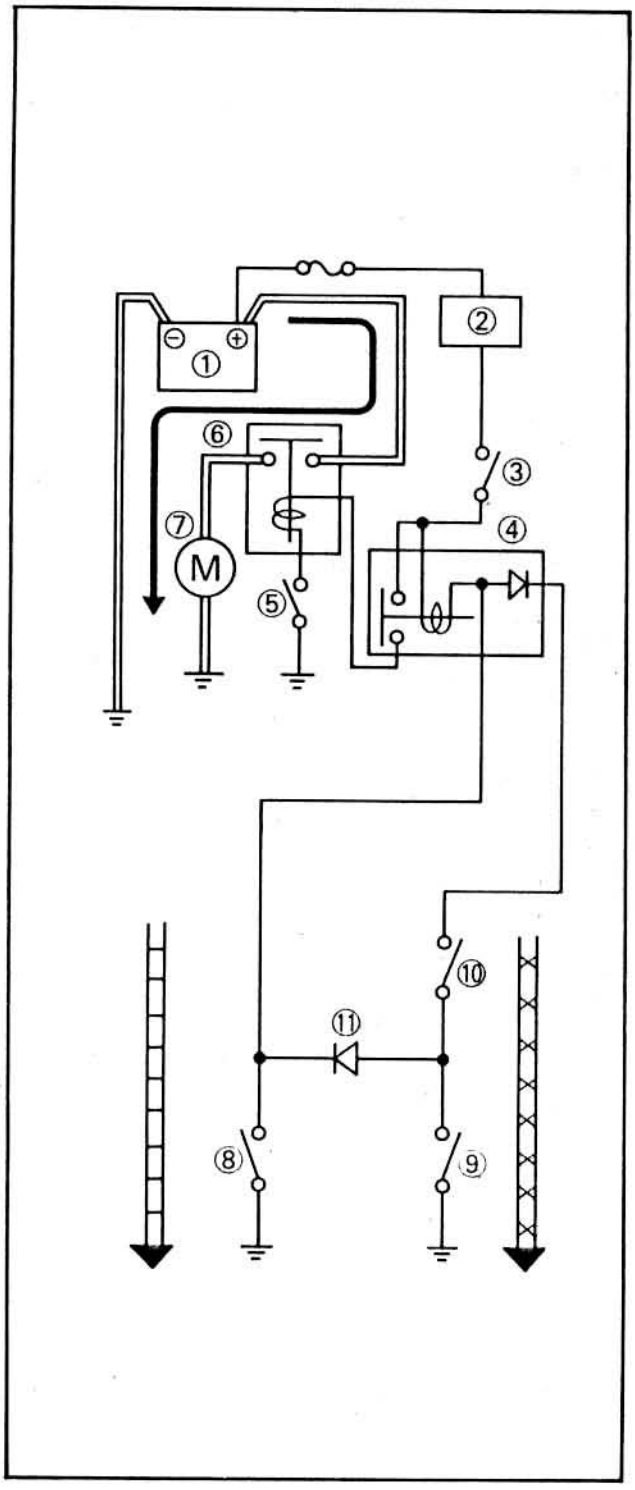


NOTE:

For the color codes, see page 8-2.

③ Main switch
④ "ENGINE STOP" switch
⑤ "START" switch
⑥ Fuse (main)
⑦ Battery
⑧ Starter relay
⑨ Starter motor
⑩ Starting circuit cut-off relay
⑪ Clutch switch
⑬ Neutral switch
⑭ Sidestand switch





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 Main switch
③ "ENGINE STOP" switch
④ Starting circuit cut-off relay
⑤ "START" switch
⑥ Starter relay
⑦ Starter motor
⑧ Neutral switch
⑨ Sidestand switch
⑩ Clutch switch
⑪ Diode

TROUBLESHOOTING

STARTER MOTOR DOES NOT OPERATE.

Procedure

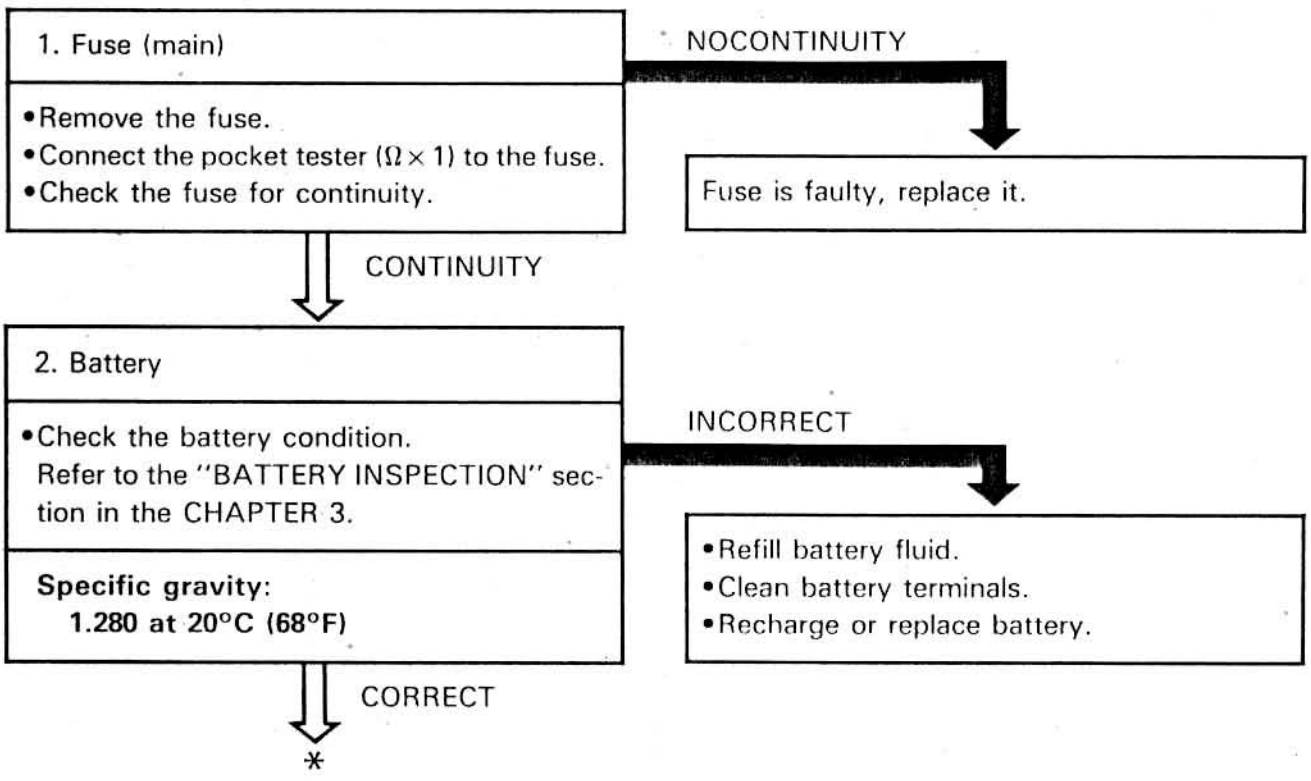
Check;

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

NOTE:

- Remove the following parts before troubleshooting.
  1) Seat
  2) Side cowlings
  3) Side cover (left)
  4) Fuel tank
  5) Air filter case
- Use the following special tool in this troubleshooting.

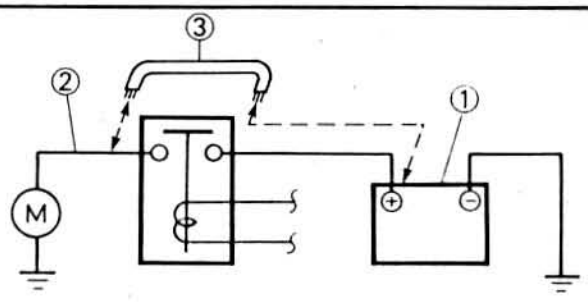
Pocket tester:
90890-03112



*

3. Starter motor

- Connect the battery positive terminal (1) and starter motor cable (2) using a jumper lead (3) *.



- Check the starter motor for operation.

*

⚠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.**

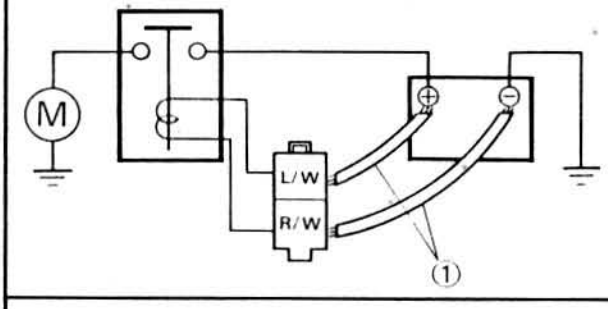
DOES NOT MOVE

Starter motor is faulty, repair or replace it.

MOVES

4. Starter relay

- Disconnect the starter relay coupler from the wireharness.
- Connect the battery to the starter relay leads as shown using the jumper leads (1).



- Check the starter motor for operation.

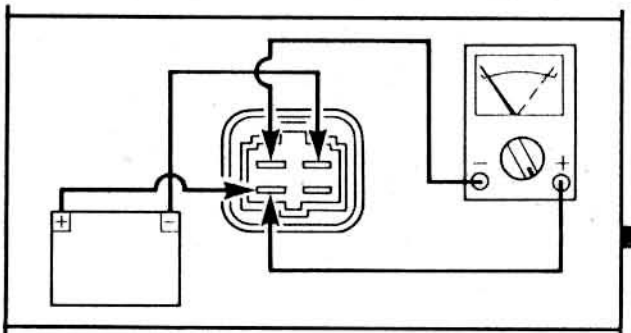
DOES NOT MOVE

Starter relay is faulty, replace it.

MOVES

5. Starting circuit cut-off relay

- Disconnect the starting circuit cut-off relay from the wireharness.
- Connect the pocket tester (Ω × 1) and battery (12V) to the starting circuit cut-off relay.



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

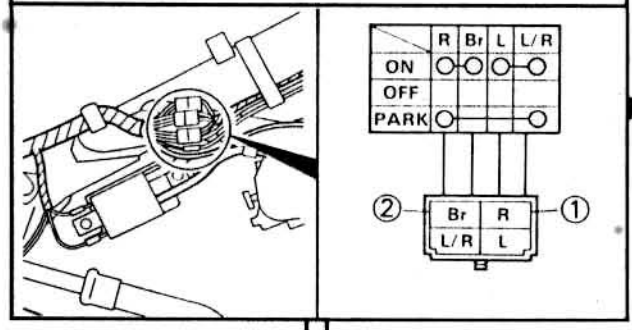
NOCONTINUITY

Starting circuit cut-off relay is faulty, replace it.

CONTINUITY

6. 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.



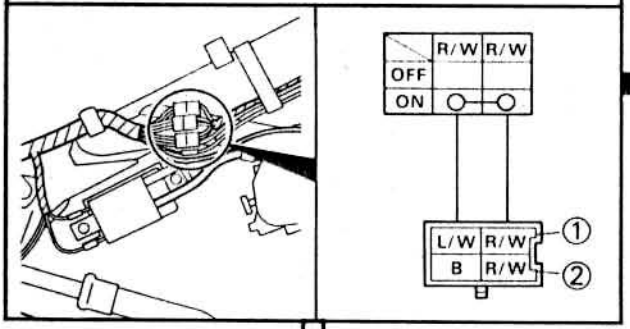
INCORRECT

Main switch is faulty, replace it.

CORRECT

7. "ENGINE STOP" switch

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



INCORRECT

"ENGINE STOP" switch is faulty, replace handlebar switch (right).

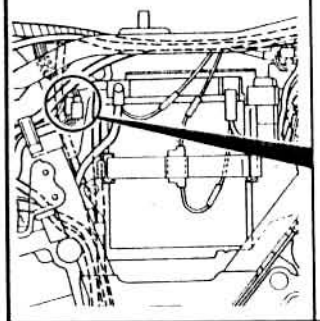
CORRECT

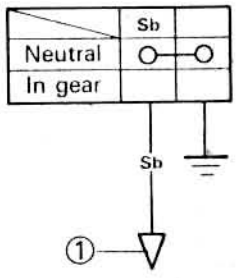
*

*

8. Neutral switch

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





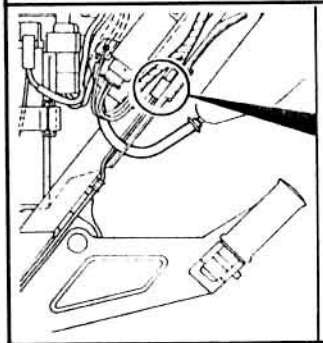
INCORRECT

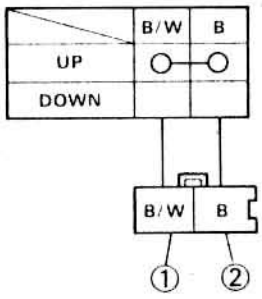
Neutral switch is faulty, replace it.

CORRECT

9. Sidestand switch

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





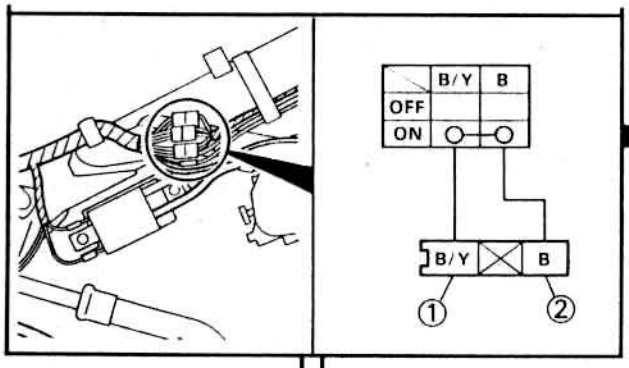
INCORRECT

Sidestand switch is faulty, replace it.

CORRECT

10. Clutch switch

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



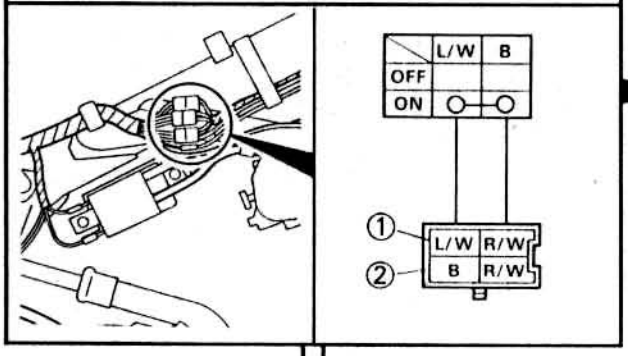
INCORRECT

Clutch switch is faulty, replace it.

CORRECT

11. "START" switch

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



INCORRECT

"START" switch is faulty, replace handlebar switch (right).

CORRECT

12. Wiring connection

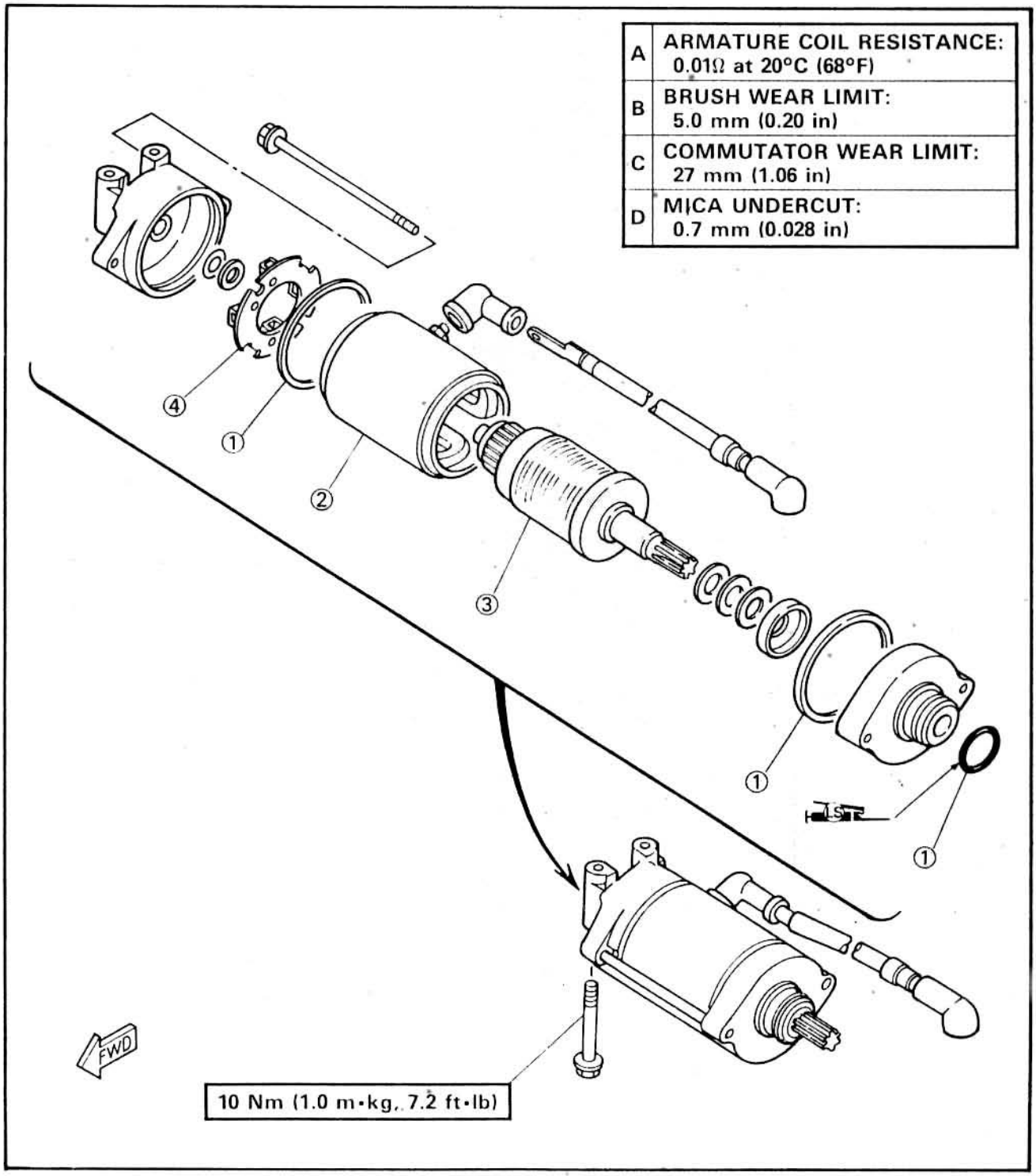
Check the entire ignition system for connections.
Refer to the "WIRING DIAGRAM" section.

POOR CONNECTION

Correct.

STARTER MOTOR

① O-ring
② Yoke
③ Armature
④ Brush



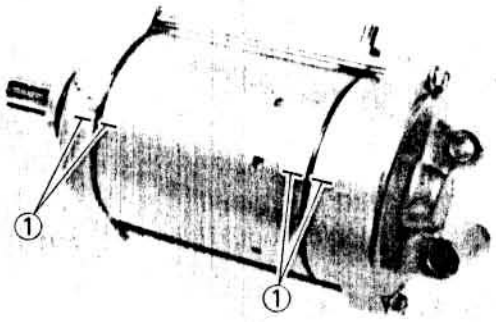
Removal

1. Remove:
   - Starter motor

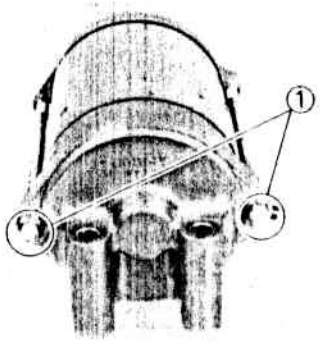
   Refer to the "ENGINE OVERHAUL — ENGINE DISASSEMBLY" section in the CHAPTER 4.

Disassembly

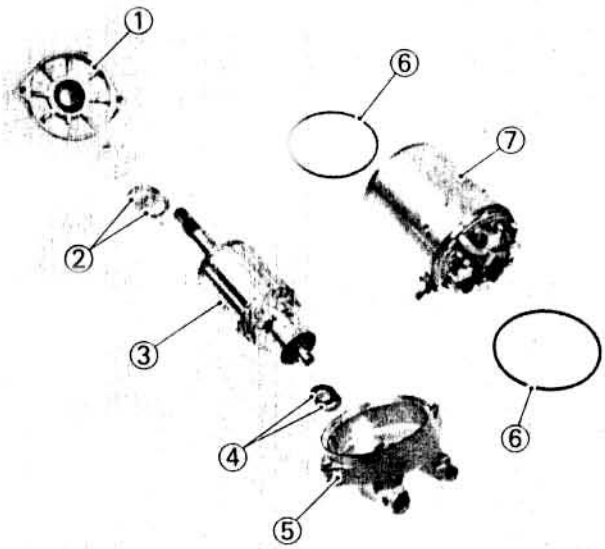
1. Put identifying marks (1) on the brackets for reassembly as shown.

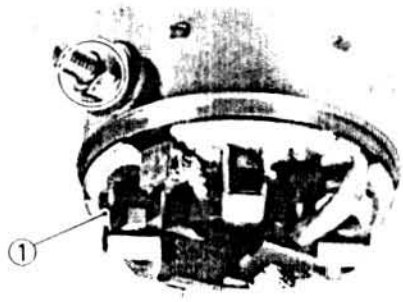


2. Remove:
   - Bolts (1)

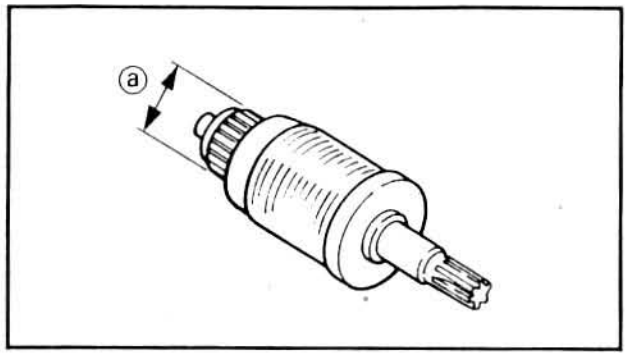


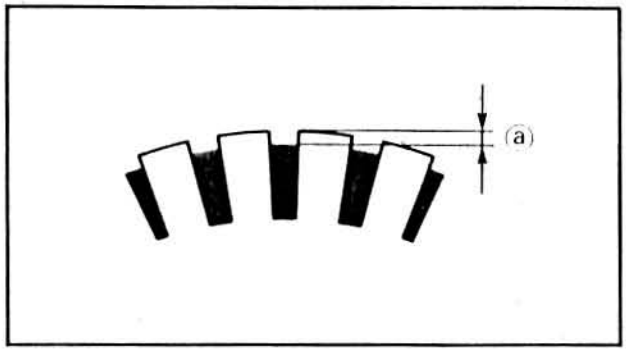
3. Remove:
   - Bracket (1)
   - Washers (2)
   - Armature (3)
   - Shims (4)
   - Bracket (5)
   - O-rings (6)
   - Yoke (7)





4. Remove:
   • Brush ①





Inspection and Repair

1. Inspect:
   • Commutator
   Dirty → Clean it with #600 grit sandpaper.
2. Measure:
   • Commutator diameter ⓐ
   Out of specification → Replace starter motor.

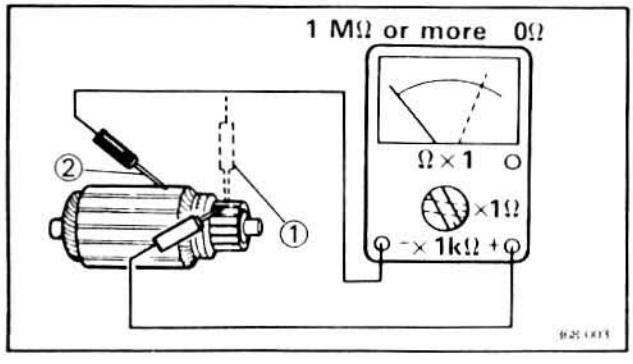
Commutator wear limit:
27 mm (1.06 in)

3. Measure:
   • Mica undercut ⓐ
   Out of specification → Scrape the mica to proper value use a hacksaw blade can be ground to fit.

Mica undercut:
0.7 mm (0.028 in)

NOTE:

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

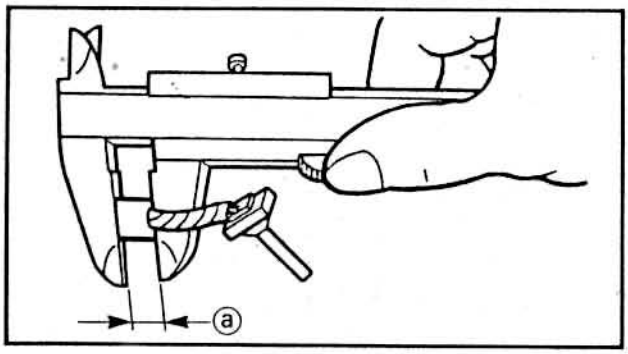


4. Inspect:
   • Armature coil (insulation/continuity)
   Defects(s) → Replace starter motor.

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:
0Ω at 20°C (68°F)
Insulation check ②:
More than 1MΩ at 20°C (68°F)

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

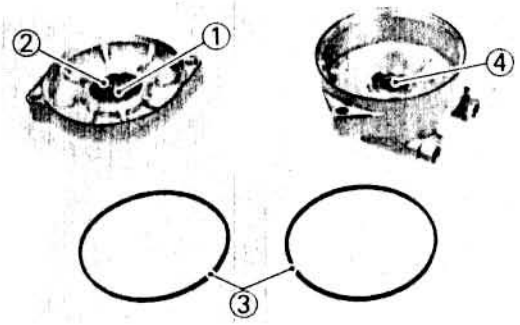


5. Measure:
   - Brush length ⓐ
     Out of specification → Replace.

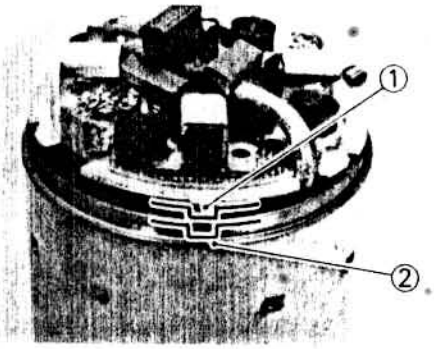
Brush length limit:
5.0 mm (0.20 in)

6. Measure:
   - Brush spring force
     Fatigue/Out of specification → Replace as a set.

Brush spring force:
680 ~ 920 g (24.0 ~ 32.4 oz)



7. Inspect:
   - Bearing ①
   - Oil seal ②
   - O-rings ③
   - Bush ④



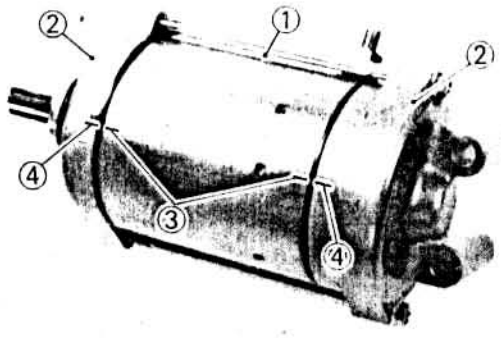
Assembly

Reverse the "Removal" procedure.
Note the following points.

1. Install:
   - Brush seat

NOTE:

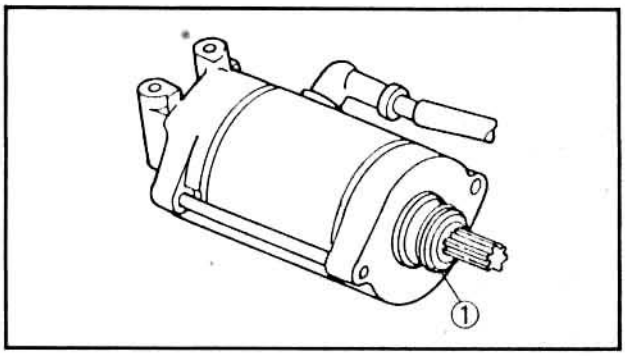
Align the projection ① on the brush seat with the slot ② on the housing.



2. Install:
   - Yoke ①
   - Brackets ②

NOTE:

Align the match marks ③ on the yoke with the match marks on the brackets ④.



Installation

1. Install:
   - Starter motor

NOTE:

Apply a lightly grease to the O-ring ①.

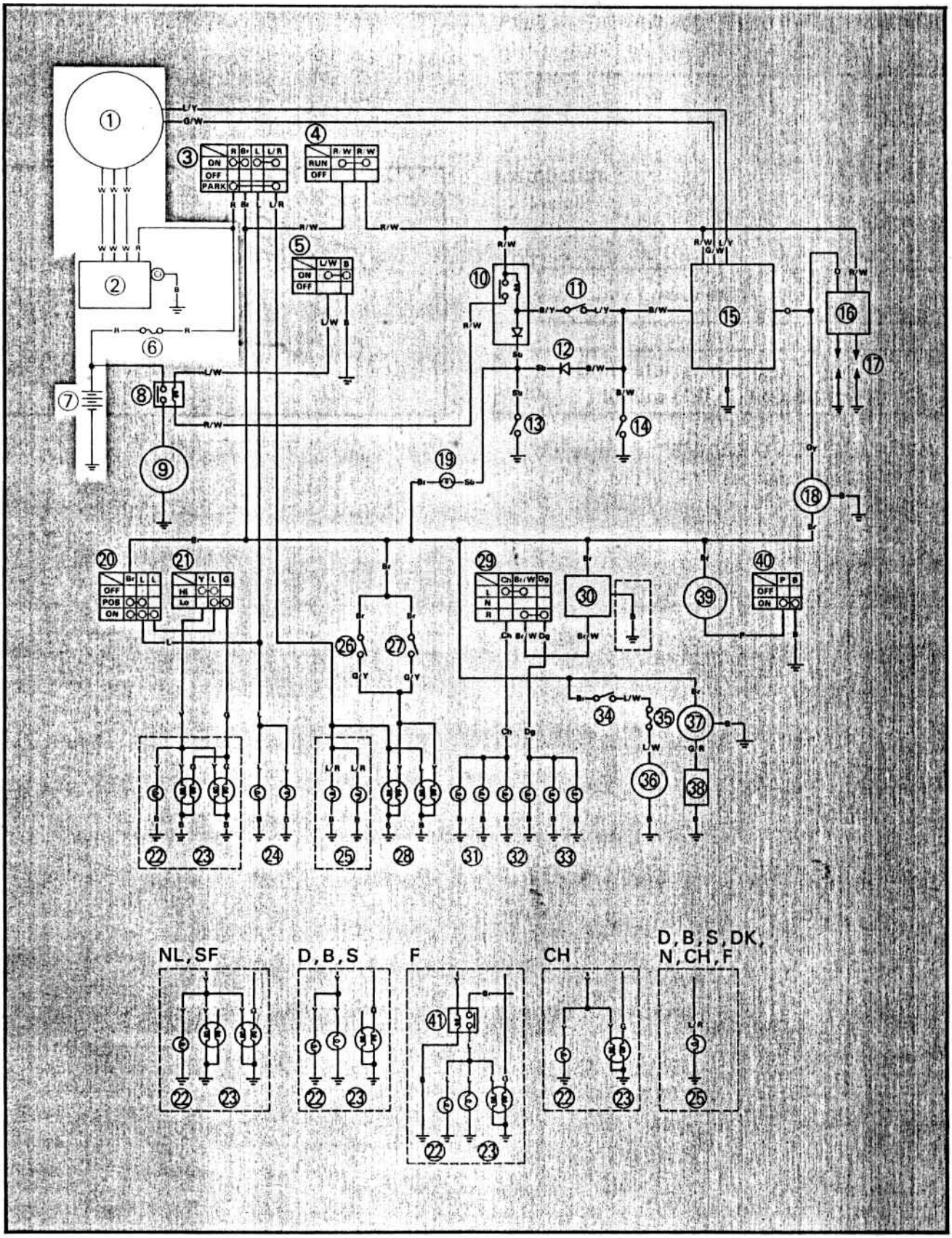
	Bolt (starter motor): 10 Nm (1.0 m•kg, 7.2 ft•lb)

Refer to the "ENGINE OVERHAUL — ENGINE ASSEMBLY" section in the CHAPTER 4.

CHARGING SYSTEM

CIRCUIT DIAGRAM

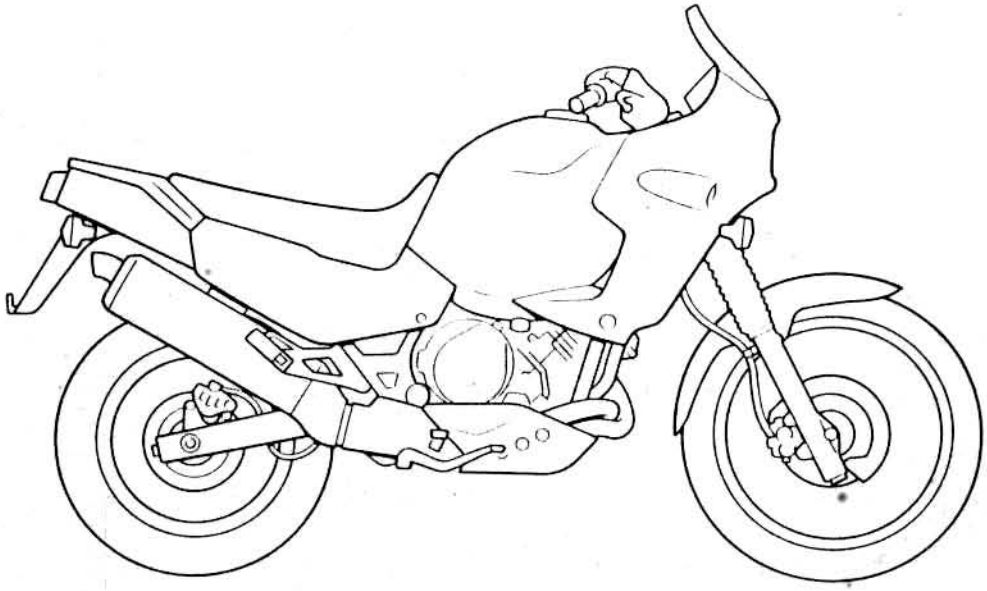
Below circuit diagram shows charging system.

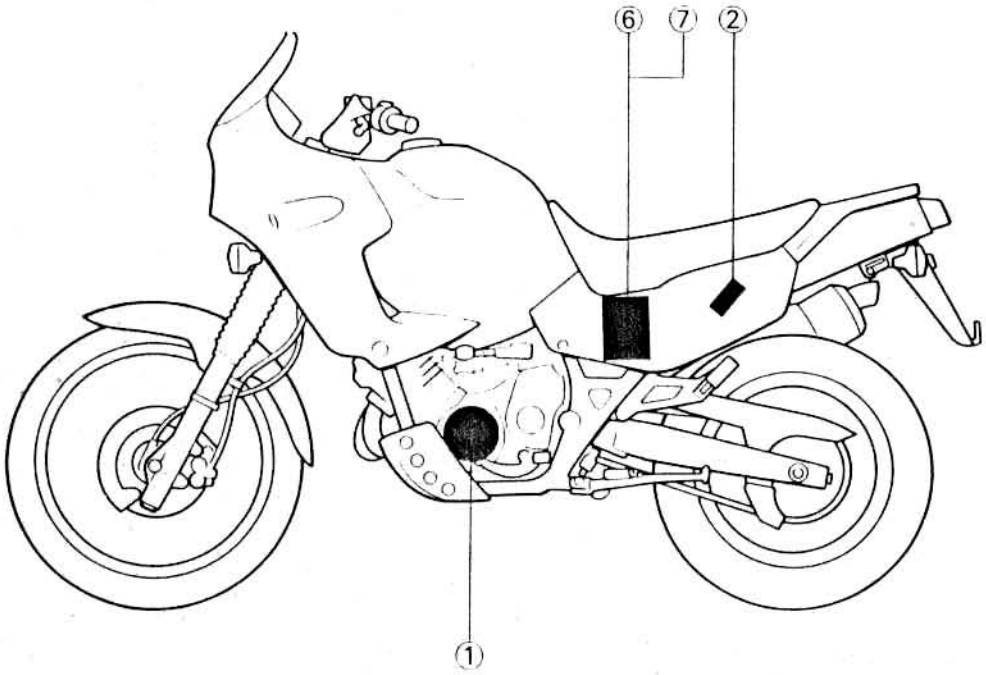


NOTE:

For the color codes, see page 8-2.

① A.C. magneto
② Rectifier/Regulator
⑥ Fuse (main)
⑦ Battery





TROUBLESHOOTING

THE BATTERY IS NOT CHARGED.

Procedure

Check;

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

NOTE:

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

Inductive tachometer:
90890-03113

Pocket tester:
90890-03112

1. Fuse (main)

- Remove the fuse.
- Connect the pocket tester (Ω × 1) to the fuse.
- Check the fuse for continuity.

NOCONTINUITY → Fuse is faulty, replace it.

CONTINUITY ↓

2. Battery

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

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

INCORRECT →

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

CORRECT ↓

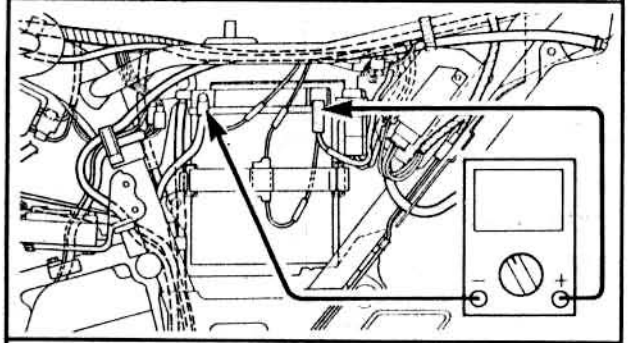
*

*

3. Charging voltage

- Connect the inductive tachometer to the #1 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, 5,000 r/min.
- Check charging voltage.

Charging voltage:
14.3 ~ 15.3V at 5,000 r/min

NOTE:
Use a full charged battery.

MEETS SPECIFICATION → Charging circuit is good.

OUT OF SPECIFICATION

4. Stator coil resistance

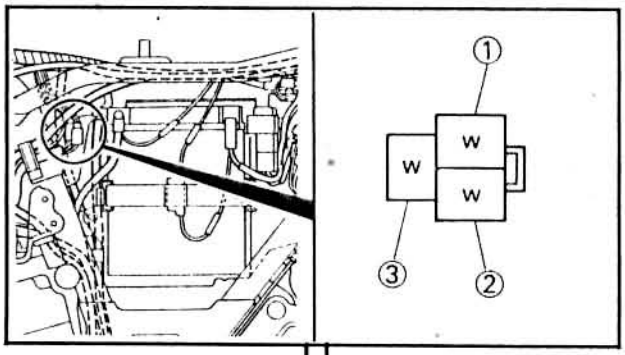
- Disconnect the stator coil coupler from the wireharness.
- Connect the pocket tester "Ω × 1" to the stator coils.
- Measure the stator coil resistances.

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

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

OUT OF SPECIFICATION → Stator coil is faulty, replace it.

Stator coil resistance:
0.2 ~ 0.3Ω at 20°C (68°F)



BOTH MEET SPECIFICATIONS

5. Wiring connection

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

POOR CONNECTION

Correct.

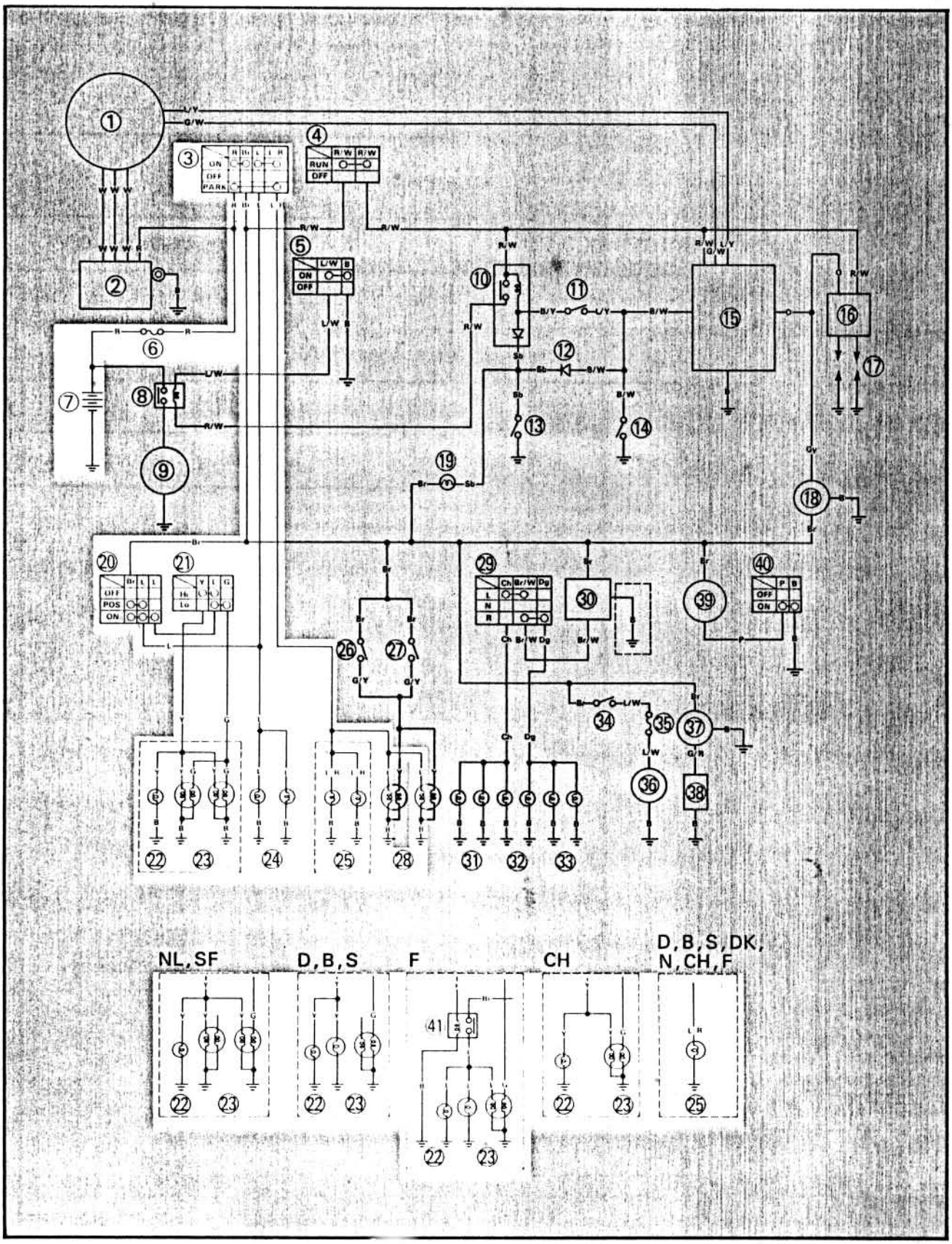
OK

Replace rectifier/regulator.

LIGHTING SYSTEM

CIRCUIT DIAGRAM

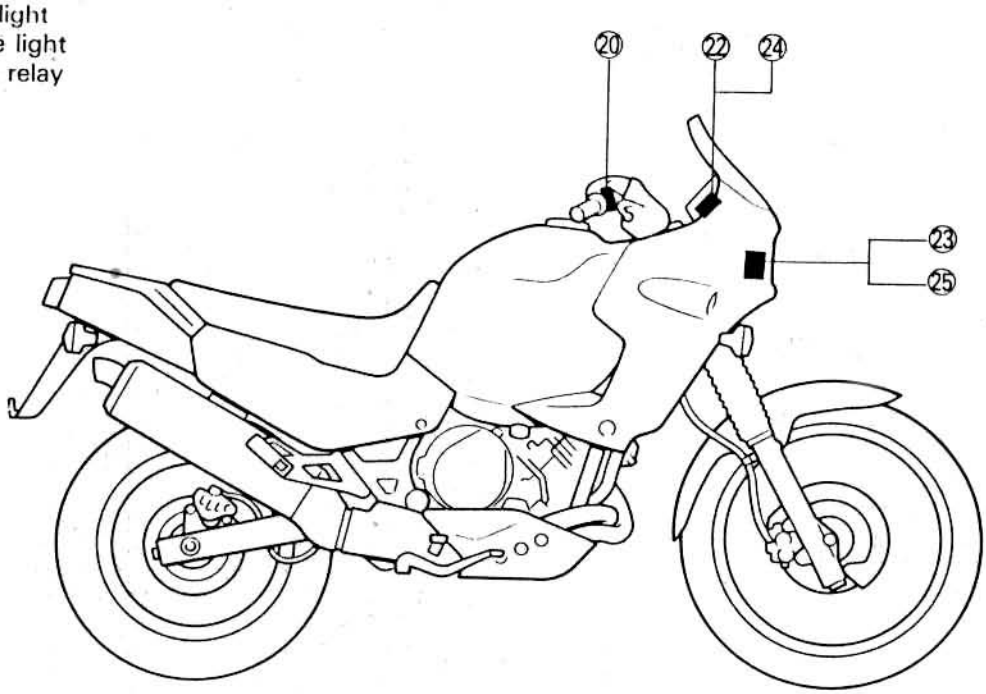
Below circuit diagram shows lighting system.

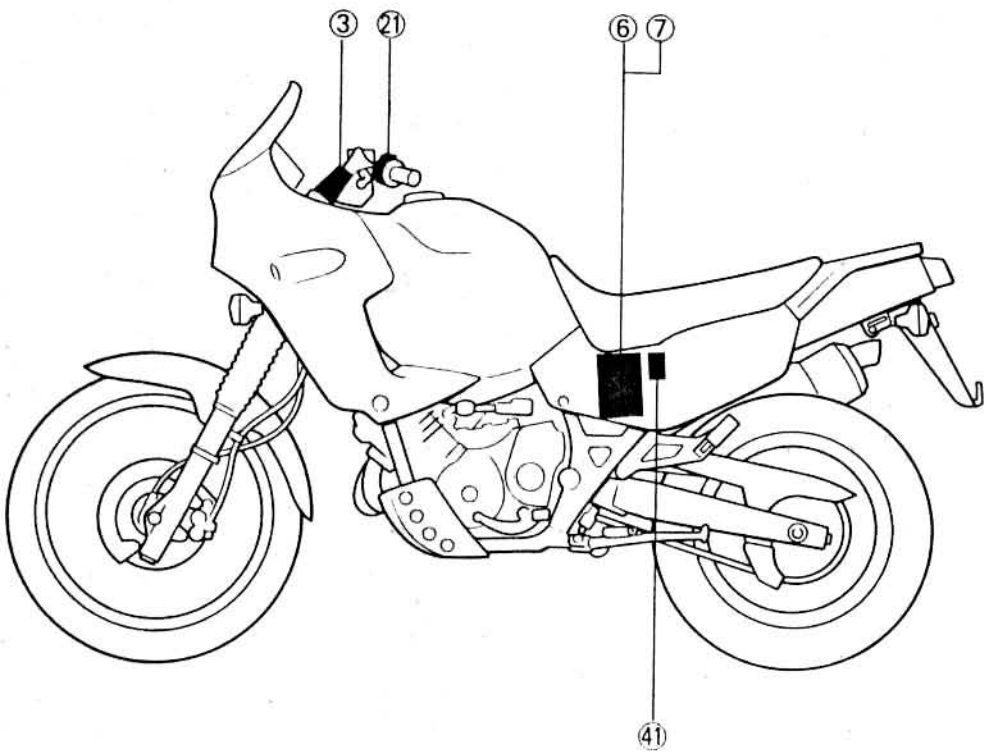


NOTE:

For color codes, see page 8-2.

③ Main switch
⑥ Fuse (main)
⑦ Battery
⑳ "LIGHTS" switch
㉑ "LIGHTS" (dimmer) switch
㉒ "HIGH BEAM" indicator light
㉓ Headlight
㉔ Meter light
㉕ Auxiliary light
㉘ Tail/brake light
㊶ Headlight relay





TROUBLESHOOTING

HEADLIGHT "HIGH BEAM" INDICATOR LIGHT, TAILLIGHT, AUXILIARY LIGHT AND/ OR METER LIGHT DO NOT COME ON.

Procedure

Check;

1. Bulb
2. Fuse (main)
3. Battery
4. Main switch
5. "LIGHTS" switch
6. "LIGHTS" (Dimmer) switch
7. Headlight relay (For F)
8. Wiring connection (Entire lighting system)

NOTE:

- Remove the following parts before troubleshooting.
  1) Side cowlings
  2) Side cover (left)
  3) Seat
  4) Fuel tank
  5) Air filter case
- Use the following special tool(s) in this troubleshooting.

Pocket tester:
90890-03112

1. Bulb and bulb socket

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

NOCONTINUITY → Bulb and/or bulb socket are faulty, replace.

CONTINUITY ↓

2. Fuse (main)

- Remove the fuse.
- Connect the pocket tester (Ω × 1) to the fuse.
- Check the fuse for continuity. Refer to the "FUSE INSPECTION" in the CHAPTER 3.

NOCONTINUITY → Fuse is faulty, replace it.

CONTINUITY ↓

*

*

3. Battery

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

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

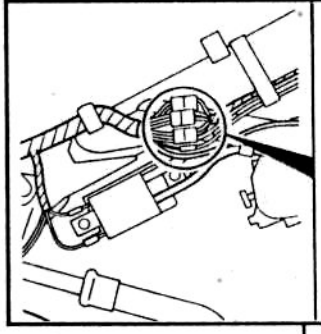
INCORRECT

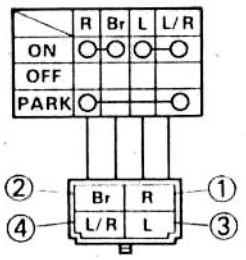
- Refill battery fluid.
- Clean battery terminals.
- Recharge or replace battery.

CORRECT

4. Main switch

- Disconnect the main switch coupler from the wireharness.
- Check the switch component for the continuity between "Red ① and Brown ②", "Blue ③ and Blue/Red ④" and "Red ①" and Blue/Red ④". Refer to the "CHECKING OF SWITCHES" section.





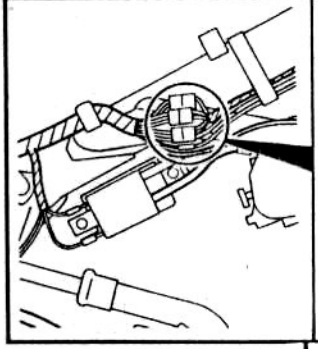
INCORRECT

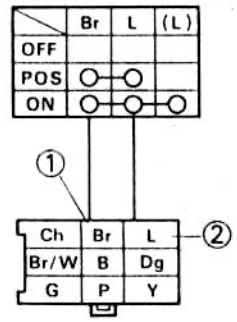
Main switch is faulty, replace it.

CORRECT

5. "LIGHTS" switch

- Disconnect the handlebar switch (left) coupler from the wireharness.
- Check the switch component for the continuity between "Brown ① and Blue ②". Refer to the "CHECKING OF SWITCHES" section.





INCORRECT

"LIGHTS" switch is faulty, replace handlebar switch (left).

CORRECT

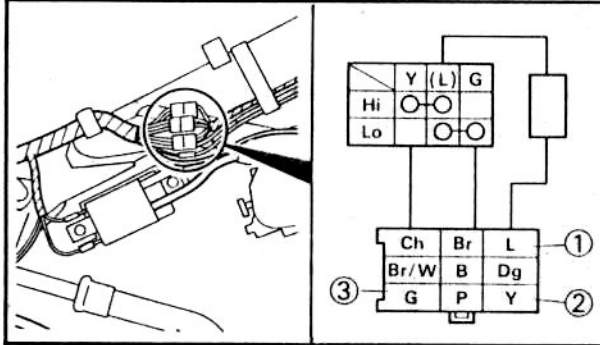
*

*

6. "LIGHTS" (dimmer) switch

- Disconnect the handlebar switch (left) coupler from the wireharness.
- Turn the "LIGHTS" switch to "ON" position.
- Check the switch component for the continuity between "Blue ① and Yellow ②" and "Blue ① and Green ③". Refer to the "CHECKING OF SWITCHES" section.

④ "LIGHTS" switch

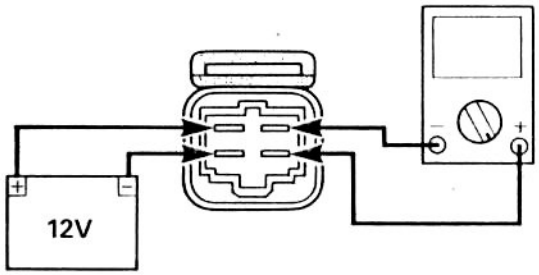


INCORRECT → "LIGHTS" (dimmer) switch is faulty, replace handlebar switch (left).

CORRECT

7. Headlight relay (For F)

- Remove the headlight relay.
- Connect the pocket tester (Ω × 1) and battery (12V) to the headlight relay.
- Check the headlight relay for continuity.



NOCONTINUITY → Headlight relay is faulty, replace it.

CONTINUITY

8. Wiring connection

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

POOR CONNECTION → Correct.

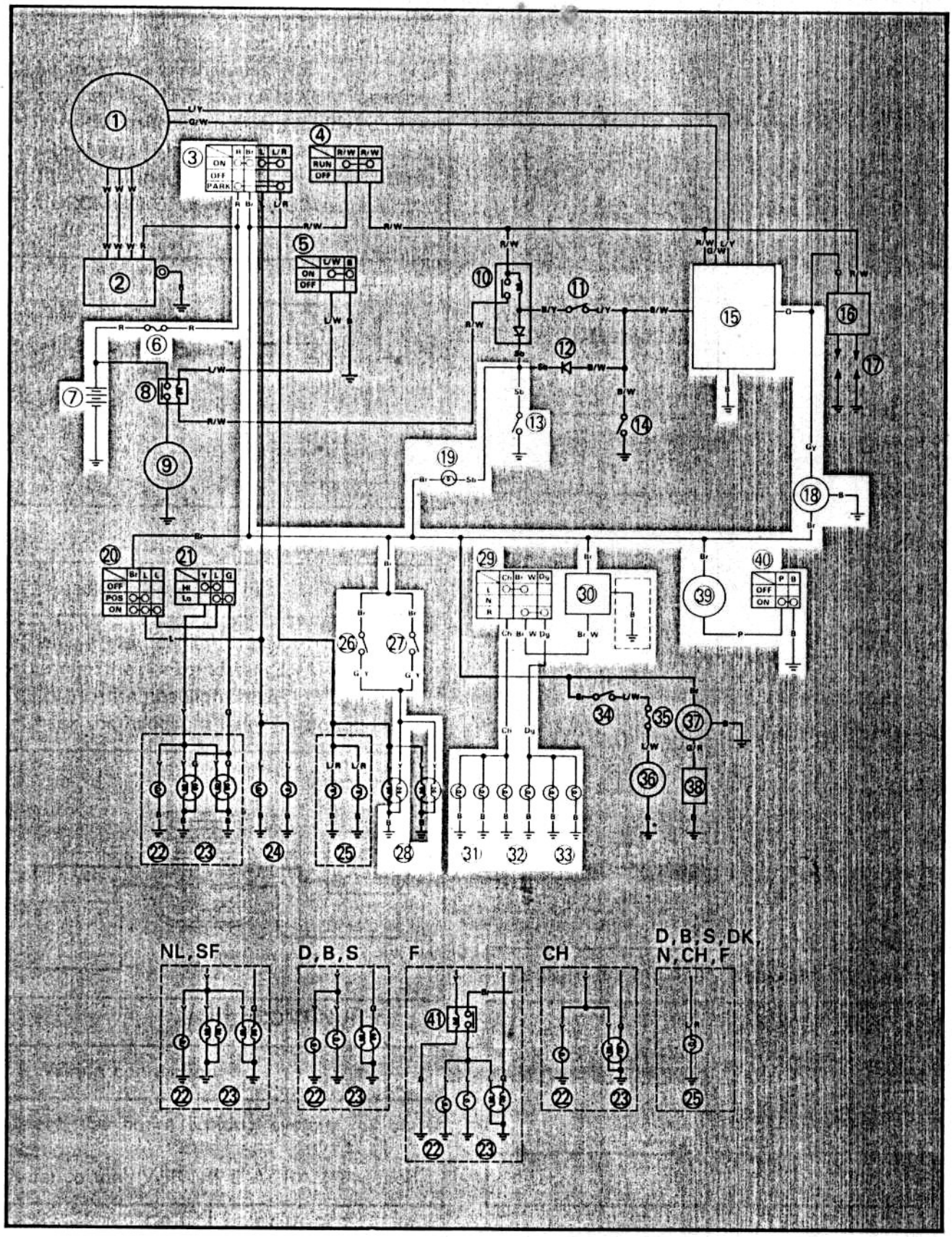
CORRECT

This circuit is good.

SIGNAL SYSTEM

CIRCUIT DIAGRAM

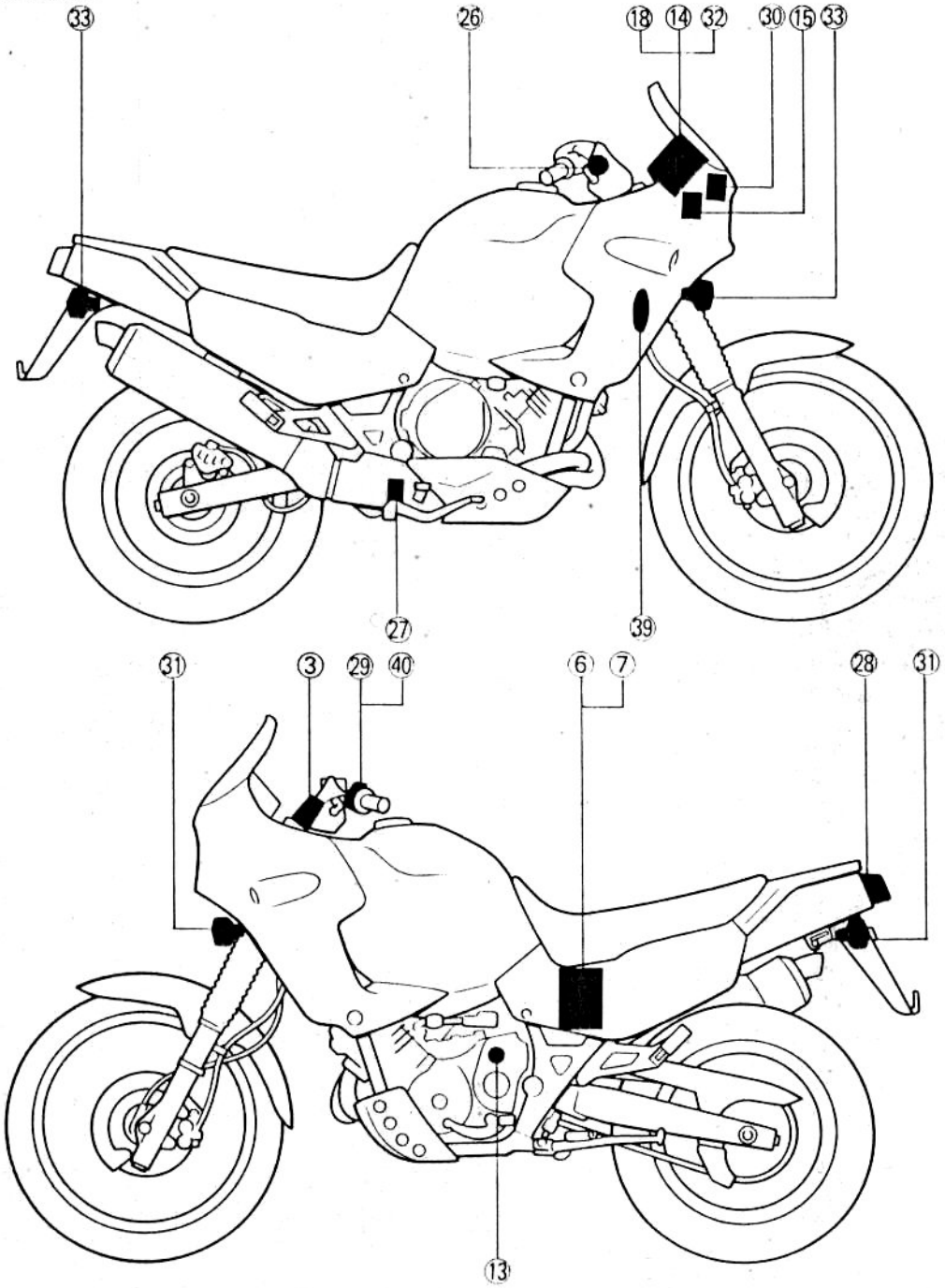
Below circuit diagram shows signal system.



NOTE:

For the color codes, see page 8-2.

③ Main switch
⑥ Fuse
⑦ Battery
⑬ Neutral switch
⑮ Ignitor unit
⑱ Tachometer
⑲ "NEUTRAL" indicator light
㉖ Front brake switch
㉗ Rear brake switch
㉘ Tail/brake light
㉙ "TURN" switch
㉚ Flasher relay
㉛ Flasher light (left)
㉜ "TURN" indicator light
㉝ Flasher light (right)
㊴ Horn
㊵ "HORN" switch



TROUBLESHOOTING

•FLASHER LIGHT, BRAKE LIGHT AND/OR INDICATOR LIGHT DO NOT COME ON.
•HORN DOES NOT SOUND.
•TACHOMETER DOES NOT OPERATE.

Procedure

Check;

1. Fuse (main)
2. Battery
3. Main switch
4. Wiring connection
   (Entire signal system)

NOTE:

- Remove the following parts before troubleshooting.
  1) Side cowlings
  2) Side cover (left)
  3) Seat
  4) Fuel tank
  5) Air filter case
- Use the following special tool in this troubleshooting.

Pocket tester:
90890-03112

1. Fuse (main)

- Remove the fuses.
- Connect the pocket tester (Ω × 1) to the fuses.
- Check the fuses for continuity.
  Refer to the "FUSE INSPECTION" in the CHAPTER 3.

NOCONTINUITY → Fuse is faulty, replace it.

CONTINUITY ↓

2. Battery

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

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

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

CORRECT ↓

*

TROUBLESHOOTING

•FLASHER LIGHT, BRAKE LIGHT AND/OR INDICATOR LIGHT DO NOT COME ON.
•HORN DOES NOT SOUND.
•TACHOMETER DOES NOT OPERATE.

Procedure

Check;

1. Fuse (main)
2. Battery
3. Main switch
4. Wiring connection
   (Entire signal system)

NOTE:

- Remove the following parts before troubleshooting.
  1) Side cowlings
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Pocket tester:
90890-03112

1. Fuse (main)

- Remove the fuses.
- Connect the pocket tester (Ω × 1) to the fuses.
- Check the fuses for continuity.
  Refer to the "FUSE INSPECTION" in the CHAPTER 3.

NOCONTINUITY → Fuse is faulty, replace it.

CONTINUITY ↓

2. Battery

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

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

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

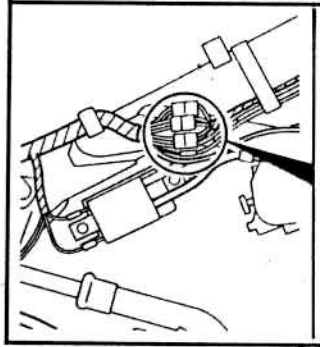
CORRECT ↓

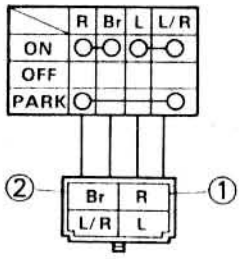
*

*

3. 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

Main switch is faulty, replace it.

CORRECT

4. Wiring connection

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

POOR CONNECTION

Correct.

CORRECT

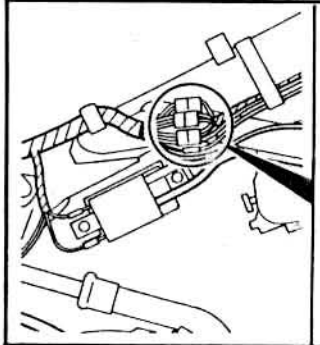
Check condition of each circuit for signal system. Refer to "SIGNAL SYSTEM CHECK" section.

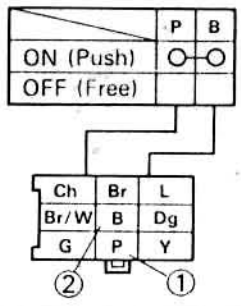
SIGNAL SYSTEM CHECK

1. Horn does not sound.

1. "HORN" switch.

- Disconnect the handlebar switch (left) coupler from the wireharness.
- Check the switch component for the continuity between "Pink (1) and Black (2)". Refer to the "CHECKING OF SWITCHES" section.





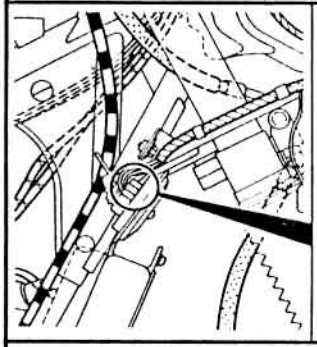
INCORRECT → "HORN" switch is faulty, replace handlebar switch (left).

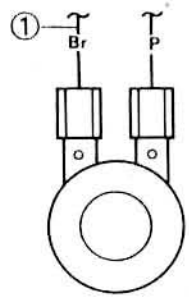
CORRECT

2. Voltage

- Connect the pocket tester (DC20V) to the horn lead.

Tester (+) lead → Brown lead (1)
Tester (−) lead → Frame ground





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

OUT OF SPECIFICATION → Wiring circuit from main switch to horn terminal is faulty, repair.

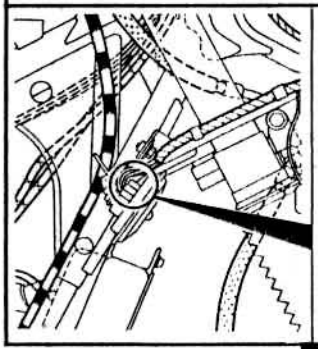
MEETS SPECIFICATION (12V)

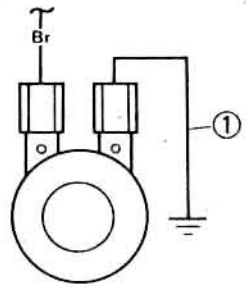
*

*

3. Horn

- Disconnect the "Pink" lead from the horn terminal.
- Connect a jumper lead ① to the horn terminal and ground the jumper lead.
- Turn the main switch to "ON".





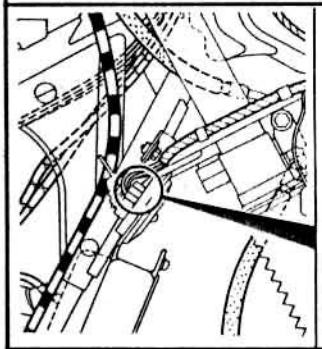
HORN IS SOUNDED → Horn is good.

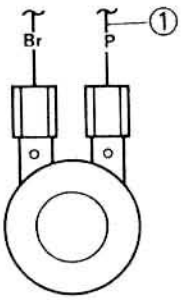
HORN IS NOT SOUNDED

4. Voltage

- Connect the pocket tester (DC20V) to the horn at the "Pink" terminal.

Tester (+) lead → Pink lead ①
Tester (−) lead → Frame ground





- Turn the main switch to "ON".
- Check for voltage (12V) on the "Pink" lead at the horn terminal.

OUT OF SPECIFICATION → Horn is faulty, replace it.

MEETS SPECIFICATION (12V) → Adjust horn.

2. Brake light does not come on.

1. Bulb and bulb socket

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

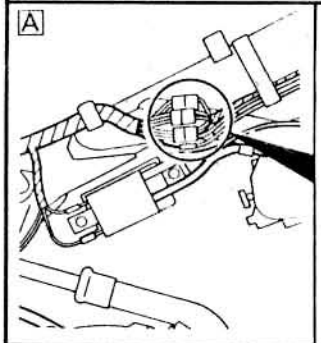
NOCONTINUITY → Replace bulb and/or bulb socket.

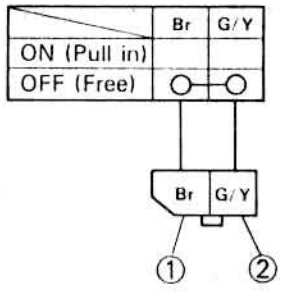
CONTINUITY ↓

2. Brake switch

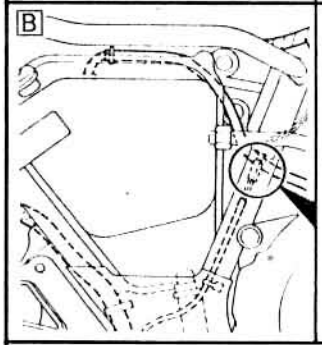
- Disconnect the brake switch leads from the wireharness.
- Check the switch component for the continuity between "Brown ① and Green/Yellow ②". Refer to the "CHECKING OF SWITCHES" section.

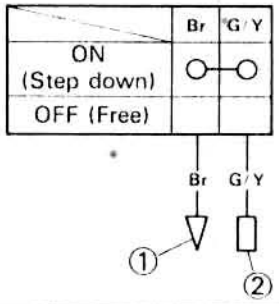
A





B





A Front brake switch
B Rear brake switch

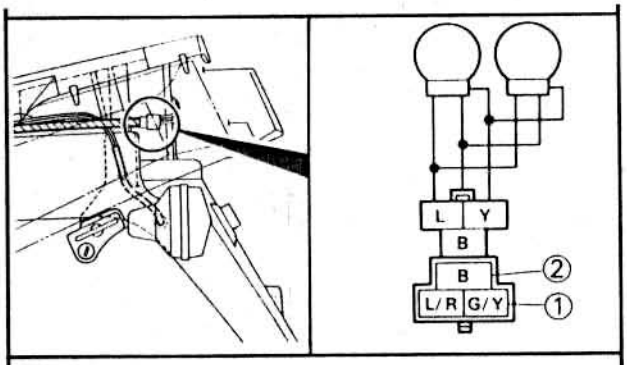
INCORRECT → Brake switch is faulty, replace it.

CORRECT ↓

3. Voltage

- Connect the pocket tester (DC20V) to the bulb socket connector.

Tester (+) lead→Green/Yellow ① lead
Tester (−) lead→Black ② lead



- Turn the main switch to "ON".
- The brake level is pulled in or brake pedal is stepped down.
- Check for voltage (12V) on the "Green/Yellow" lead at the bulb socket connector.

OUT OF SPECIFICATION

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

MEETS SPECIFICATION (12V)

This circuit is good.

3. Flasher light and/or "TURN" indicator light do not blink.

1. Bulb and bulb socket

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

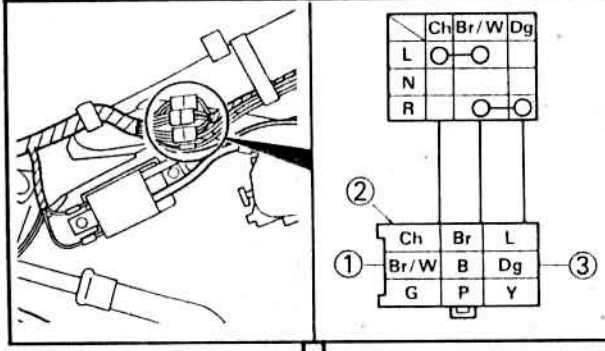
NOCONTINUITY

Replace bulb and/or bulb socket.

CONTINUITY

2. "TURN" switch

- Disconnect the handlebar switch (left) coupler from the wireharness.
- Check the switch component for the continuity between "Brown/White ① and Chocolate ②" and "Brown/White ① and Dark green ③". Refer to the "CHECKING OF SWITCHES" section.



INCORRECT

"TURN" switch is faulty, replace handlebar switch (left).

CORRECT

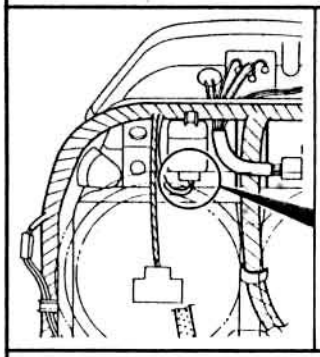
*

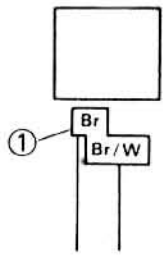
*

3. Voltage

- Connect the pocket tester (DC20V) to the flasher relay.

Tester (+) lead → Brown lead (1)
Tester (−) lead → Frame ground





- Turn the main switch to "ON".
- Check for voltage (12V) on the "Brown" lead at the flasher relay terminal.

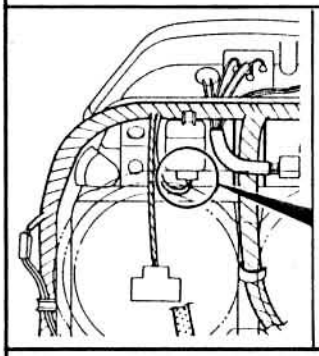
OUT OF SPECIFICATION → Wiring circuit from main switch to flasher relay connector is faulty, repair.

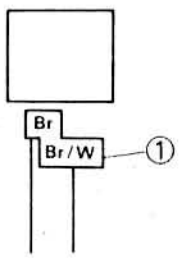
MEETS SPECIFICATION (12V)

4. Voltage

- Connect the pocket tester (DC20V) to the flasher relay.

Tester (+) lead → Brown/White lead (1)
Tester (−) lead → Frame ground





- Turn the main switch to "ON".
- Check for voltage (12V) on the "Brown/White" lead at the flasher relay terminal.

OUT OF SPECIFICATION → Flasher relay is faulty, replace it.

MEETS SPECIFICATION (12V)

*

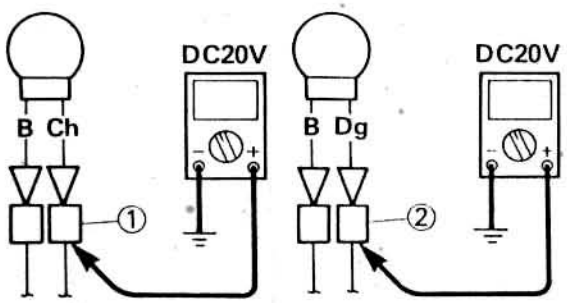
*

5. Voltage

- Connect the pocket tester (DC20V) to the bulb socket connector.

At flasher light (left):
Tester (+) lead → Chocolate lead (1)
Tester (−) lead → Frame ground

At flasher light (right):
Tester (+) lead → Dark green lead (1)
Tester (−) lead → Frame ground



- Turn the main switch to "ON".
- Turn the "TURN" switch to "L" or "R".
- Check for voltage (12V) on the "Chocolate" lead or "Dark green" lead at the bulb socket connector.

OUT OF SPECIFICATION → Wiring circuit from "TURN" switch to bulb socket connector is faulty, repair.

MEETS SPECIFICATION (12V)

This circuit is good.

4. "NEUTRAL" indicator light does not come on.

1. Bulb and bulb socket

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

NOCONTINUITY → Replace bulb and/or bulb socket.

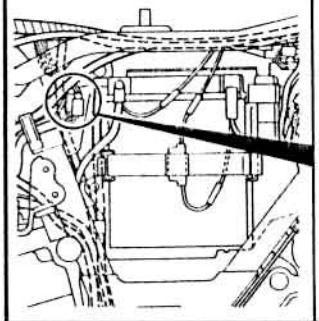
CONTINUITY

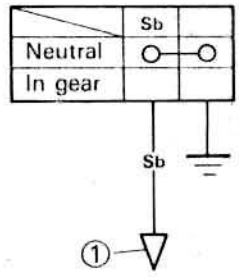
*

*

2. Neutral switch

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





INCORRECT

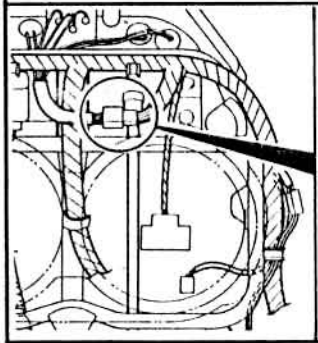
Neutral switch is faulty, replace it.

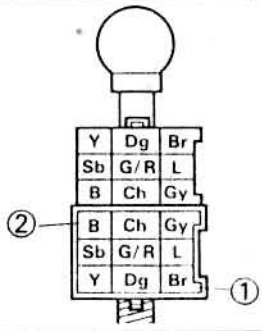
CORRECT

3. Voltage

- Connect the pocket tester (DC20V) to the bulb socket connector.

Tester (+) lead→Brown lead ①
Tester (−) lead→Black lead ②





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

OUT OF SPECIFICATION

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

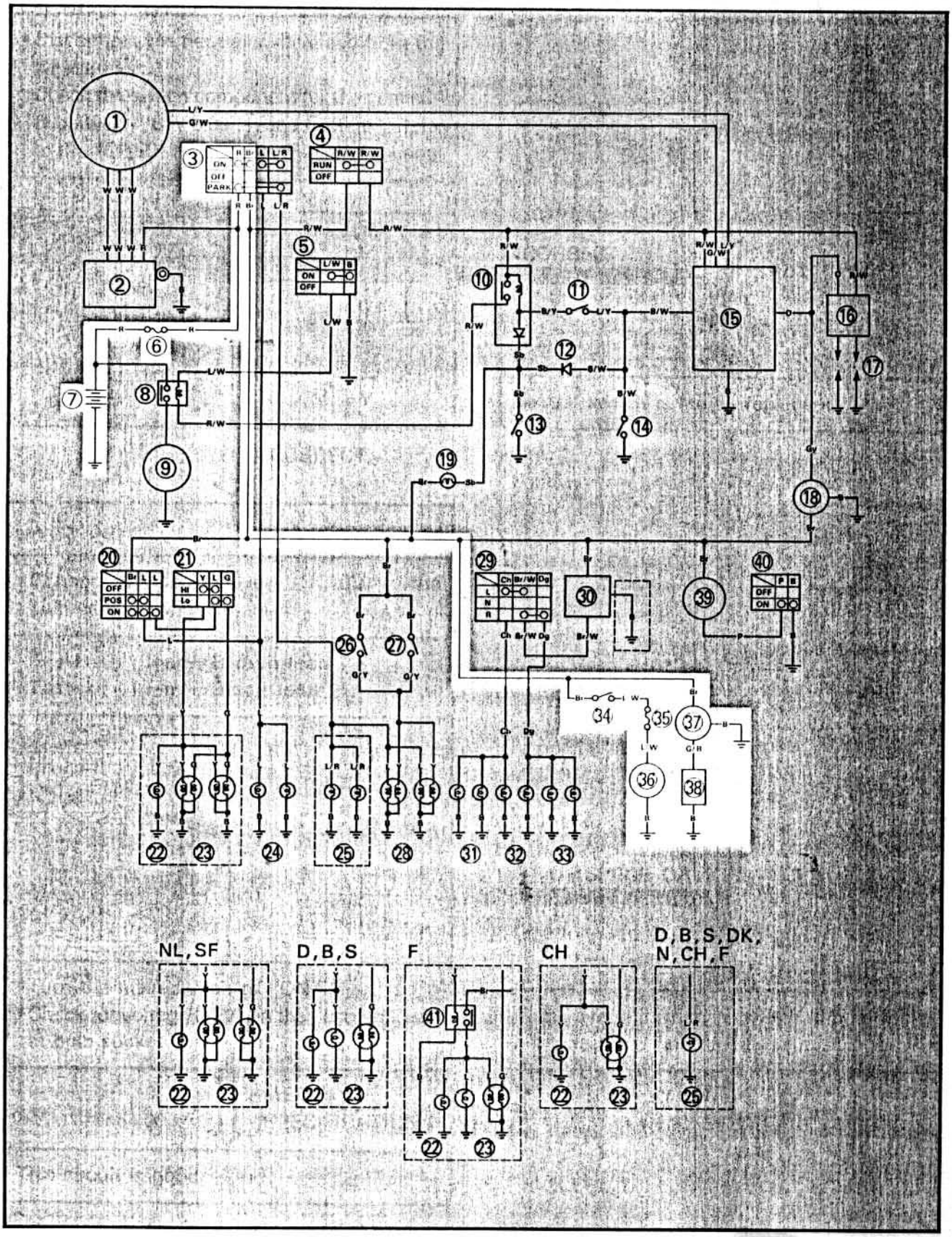
MEETS SPECIFICATION (12V)

This circuit is good.

COOLING SYSTEM

CIRCUIT DIAGRAM

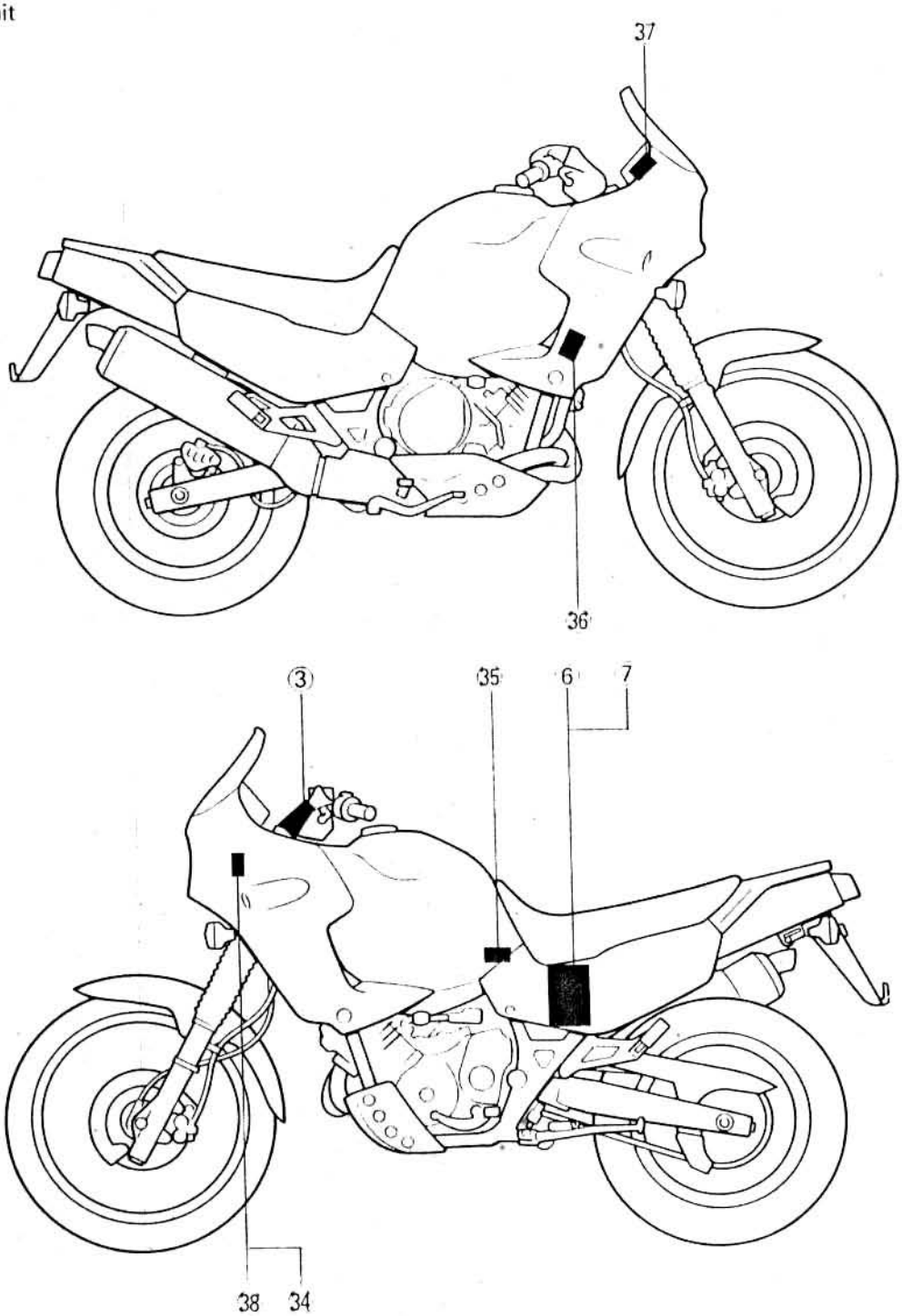
Below circuit diagram shows cooling system.



NOTE:

For the color codes, see page 8 2.

③ Main switch
⑥ Fuse (main)
⑦ Battery
㉞ Thermo switch
㉟ Fuse (fan motor)
㊱ Fan motor
㊲ Temperature gauge
㊳ Thermo unit



TROUBLESHOOTING

FAN MOTOR DOES NOT MOVE.

Procedure

Check;

1. Fuse (main and fan)
2. Battery
3. Main switch
4. Fan motor (Test 1)
5. Fan motor (Test 2)
6. Thermo switch
7. Wiring connection (Entire cooling system)

NOTE:

- Remove the following parts before troubleshooting.
  1) Side cowlings
  2) Side cover (left)
  3) Seat
  4) Fuel tank
  5) Air filter case
- Use the following special tool in this troubleshooting.

Pocket tester:
90890-03112

1. Fuse (main and fan)

- Remove the fuses.
- Connect the pocket tester (Ω × 1) to the fuses.
- Check the fuses for continuity.
  Refer to the "FUSE INSPECTION" in the CHAPTER 3.

NOCONTINUITY → Fuse is faulty, replace it.

CONTINUITY ↓

2. Battery

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

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

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

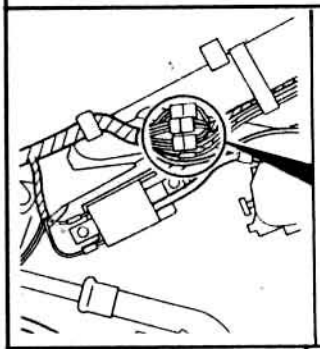
CORRECT ↓

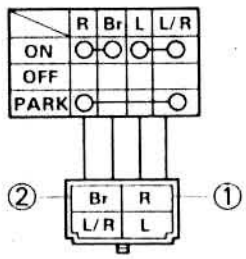
*

*

3. 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

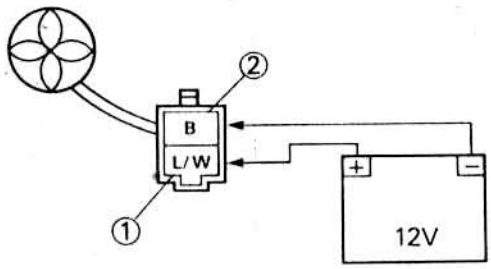
Main switch is faulty, replace it.

CORRECT

4. Fan motor (test 1)

- Disconnect the fan motor coupler.
- Connect the battery (12V) as shown.

Battery (+) lead→Blue/White lead ①
Battery (−) lead→Black lead ②



- Check the fan motor for operation.

DOES NOT MOVES

Fan motor is faulty, replace it.

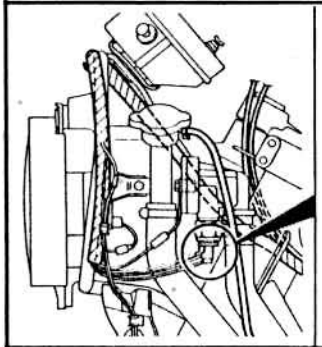
MOVES

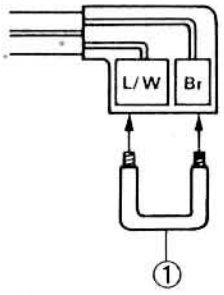
*

*

5. Fan motor (test 2)

- Disconnect the thermo switch leads ("Blue/White" and "Brown").
- Turn the main switch to "ON".
- Connect the leads with a jumper lead (1) as shown.





DOES NOT MOVE

Wiring circuit from main switch to fan motor leads is faulty, repair.

MOVES

6. Thermo switch

- Remove the thermo switch from the thermostat housing.
- Connect the pocket tester (Ω × 1) to the thermo switch (1).
- Immerse the thermo switch in the coolant (2).
- Check the thermo switch for continuity. Note temperatures while heating the coolant with the temperature gauge (3).

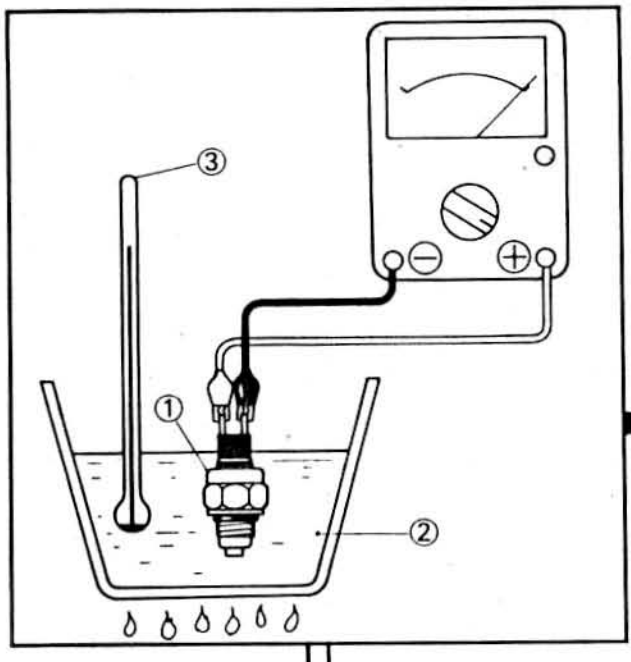
Test step	Coolant temperature	Good condition
1	Less than 105 ± 3°C (221.0 ± 5.4°F)	×
2	More than 105 ± 3°C (221.0 ± 5.4°F)	○
3*	105 to 98°C (221.0 to 208.4°F)	○
4*	Less than 98°C (208.4°F)	×

Test 1 & 2; Heat-up tests
Test 3* & 4*; Cool-down tests
○ : Continuity × : Nocontinuity

⚠WARNING:

Handle the thermo switch with special care. Never subject it to strong shock or allow it to be dropped. Should it be dropped, it must be replaced.

Thermo switch:
28 Nm (2.8 m•kg, 20 ft•lb)
Water resistant sealant



BAD CONDITION

Thermo switch is faulty, replace it.

GOOD CONDITION

7. Wiring connection

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

POUR CONNECTION

Correct.

CORRECT

This circuit is good.

WHEN ENGINE IS HOT, TEMPERATURE GAUGE DOES NOT MOVE.

Procedure

Check;

1. Fuse (main)
2. Battery
3. Main switch
4. Thermo unit
5. Voltage
6. Wiring connection
   (Entire cooling system)

NOTE:

- Remove the following parts before troubleshooting.
  1) Side cowlings
  2) Side cover (left)
  3) Seat
  4) Fuel tank
  5) Air clearner case
- Use the following special tool(s) in this troubleshooting.

Pocket tester:
90890-03112

1. Fuse (main)

- Remove the fuse.
- Connect the pocket tester (Ω × 1) to the fuse.
- Check the fuse for continuity. Refer to "FUSE INSPECTION" in the CHAPTER 3.

NOCONTINUITY → Fuse is faulty, replace it.

CONTINUITY ↓

2. Battery

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

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

INCORRECT →

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

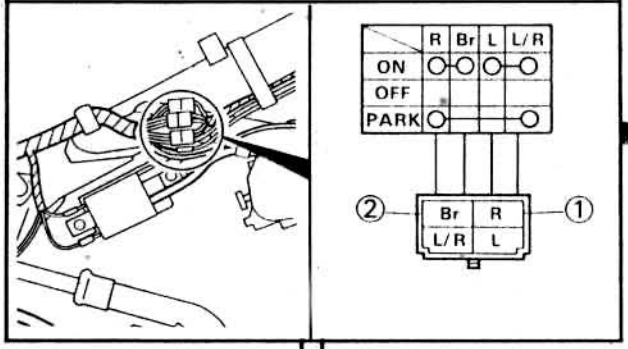
CORRECT ↓

*

*

3. 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

4. Thermo unit

- Remove the thermo unit.

⚠WARNING:

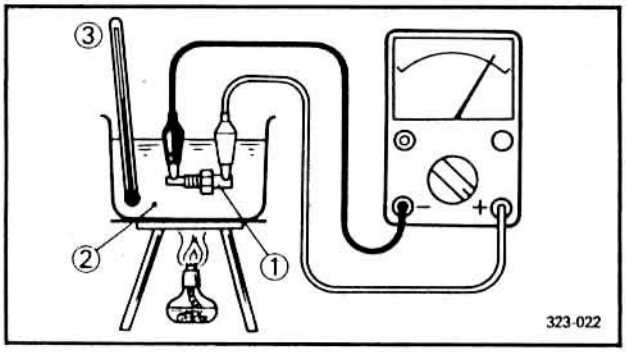
Handle the thermo unit with special care. Never subject it to strong or allow it to be dropped. Should it be dropped, it must be replaced.

- Immerse the thermo unit ① in coolant ②.
- Measure the resistance at each temperature as tabulated.

③ Thermometer

Coolant temperature	Resistance
50°C (122°F)	154Ω
80°C (176°F)	47 ~ 53Ω
100°C (212°F)	26 ~ 29Ω
120°C (248°F)	16Ω

- After measuring the thermo unit, install the unit.



Thermo unit:
13 Nm (1.3 m•kg, 9.4 ft•lb)
Water resistant sealant

⚠CAUTION:

Avoid overtightening.

OUT OF SPECIFICATION

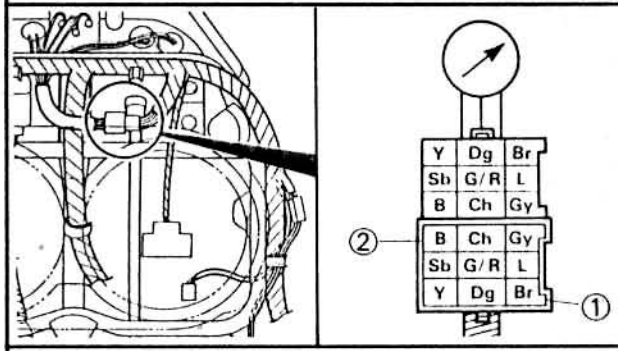
Thermo unit is faulty, replace it.

MEET SPECIFICATIONS

5. Voltage

- Connect the pocket tester (DC20V) to the temperature gauge leads.

Tester (+) lead→Brown lead (1)
Tester (−) lead→Black lead (2)



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

OUT OF SPECIFICATION

Wiring circuit from main switch to temperature gauge connector, repair.

MEETS SPECIFICATION (12V)

6. Wiring connection

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

POUR CONNECTION

Correct.

CORRECT

Replace tempmeter gauge.