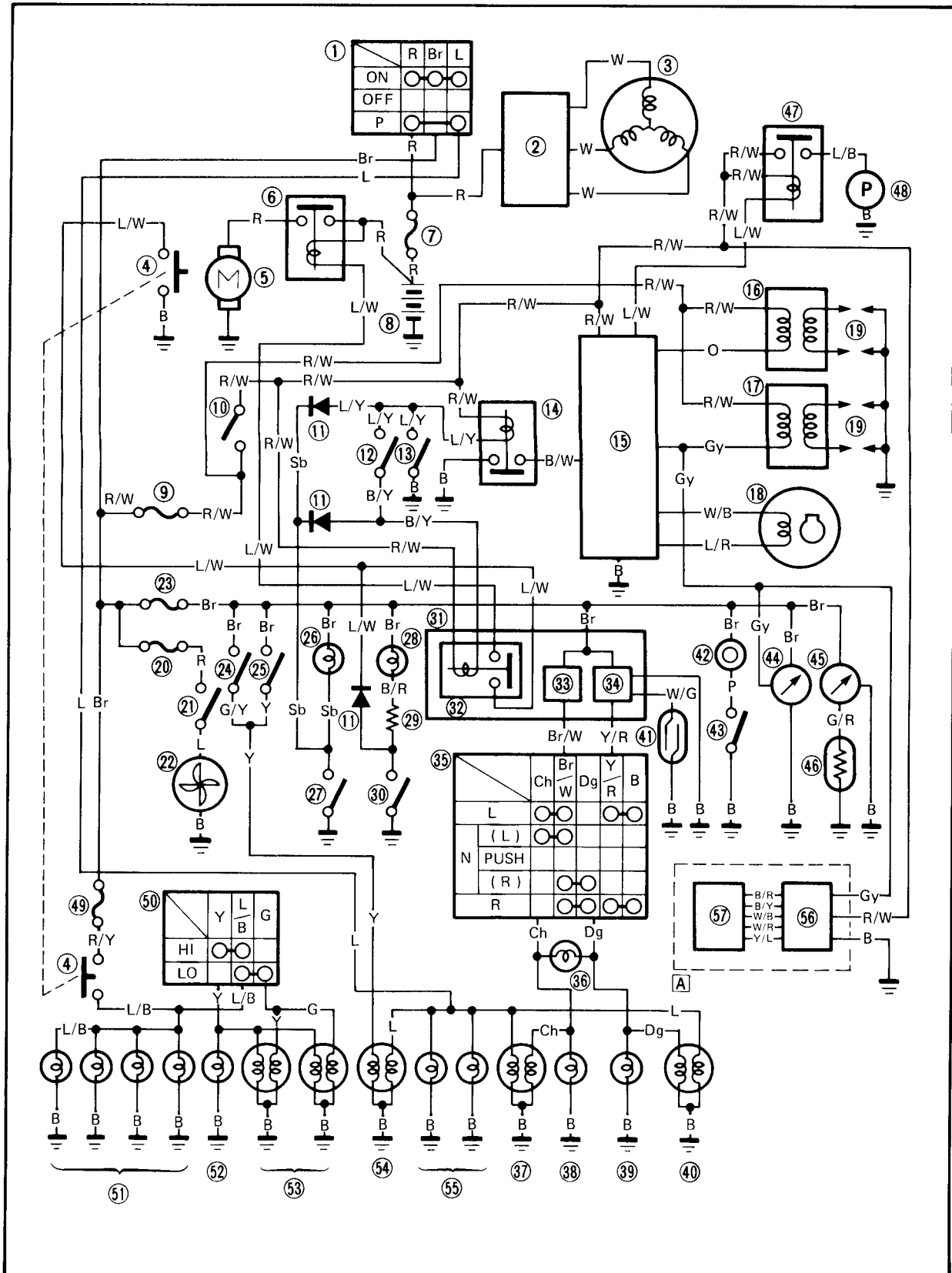




ELECTRICAL

FZR400U/SUC CIRCUIT DIAGRAM





- ① Main switch
- ② Rectifier/Regulator
- ③ A.C. generator
- ④ "START" switch
- ⑤ Starter motor
- ⑥ Starter relay
- ⑦ Fuse "MAIN"
- ⑧ Battery
- ⑨ Fuse "IGNITION"
- ⑩ "ENGINE STOP" switch
- ⑪ Diode block
- ⑫ Clutch switch
- ⑬ Sidestand switch
- ⑭ Ignition circuit cut-off relay
- ⑮ Digital ignitor unit
- ⑯ Ignition coil (#1 and #4 cylinder)
- ⑰ Ignition coil (#2 and #3 cylinder)
- ⑱ Pickup coil
- ⑲ Spark plug
- ⑳ Fuse "FAN"
- ㉑ Thermo switch
- ㉒ Fan motor
- ㉓ Fuse "SIGNAL"
- ㉔ Front brake switch
- ㉕ Rear brake switch
- ㉖ "NEUTRAL" indicator light
- ㉗ Neutral switch
- ㉘ "OIL" indicator light
- ㉙ Resistor
- ㉚ Oil level switch
- ㉛ Relay assembly
- ㉜ Starting circuit cut-off relay
- ㉝ Flasher relay
- ㉞ Cancelling unit
- ㉟ "TURN" switch
- ㊱ "TURN" indicator light
- ㊲ Front position light/Flasher light (Left)
- ㊳ Rear flasher light (Left)
- ㊴ Rear flasher light (Right)
- ㊵ Front position light/Flasher light (Right)
- ㊶ Reed switch
- ㊷ Horn
- ㊸ "HORN" switch
- ㊹ Tachometer
- ㊺ Temp meter
- ㊻ Thermo unit
- ㊼ Fuel pump relay
- ㊽ Fuel pump
- ㊾ Fuse "HEAD"
- ㊿ "LIGHTS" (Dimmer) switch
- 1 Meter light
- 2 "HIGH BEAM" indicator light
- 3 Headlight
- 4 Tail/Brake light
- 5 License light
- 6 EXUP control unit
- 7 EXUP servomotor

[A] For California only

COLOR CODE

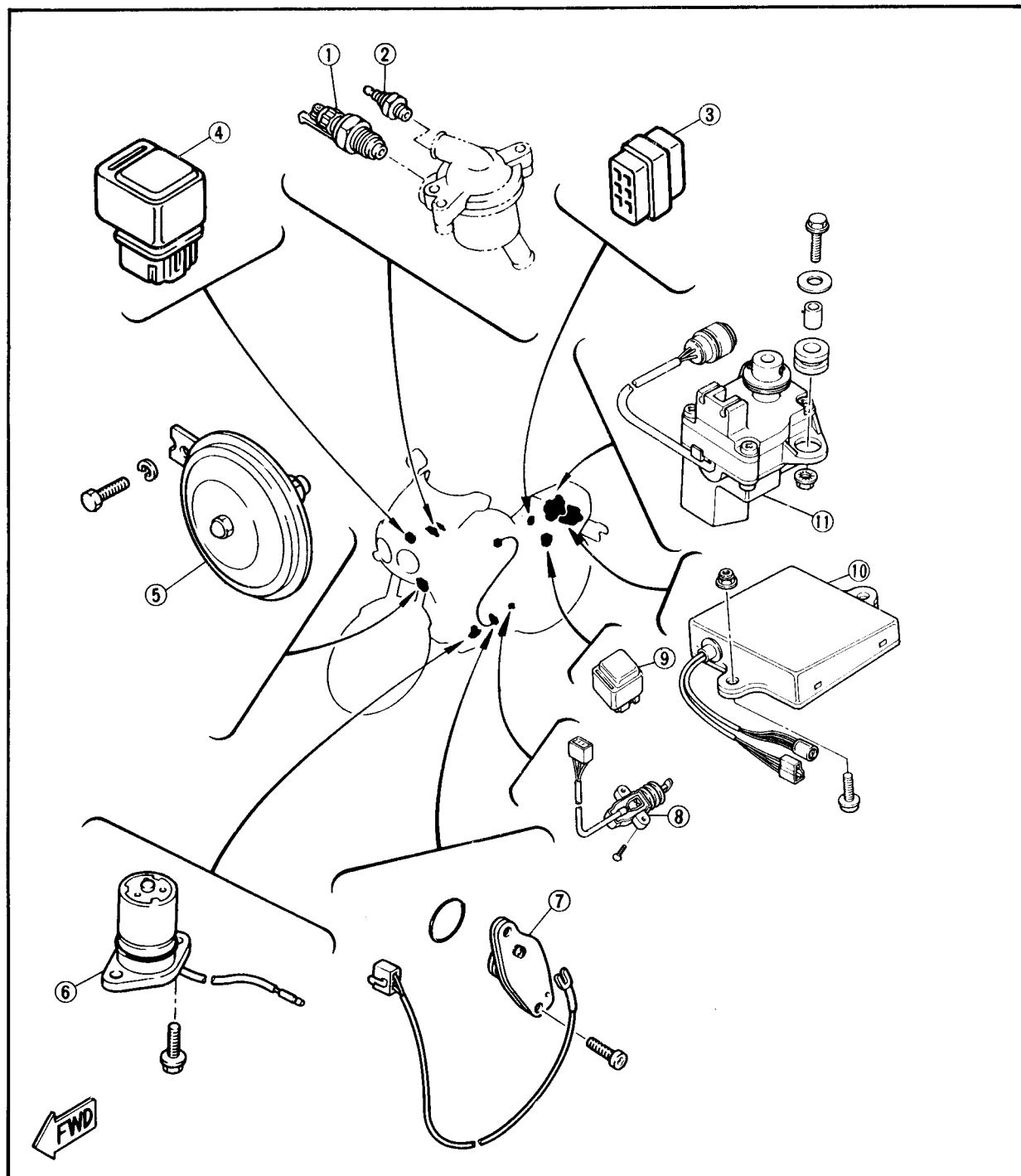
O	Orange	Y/R	Yellow/Red
R	Red	Br/W	Brown/White
L	Blue	R/W	Red/White
Br	Brown	R/Y	Red/Yellow
B	Black	B/R	Black/Red
Y	Yellow	B/W	Black/White
W	White	B/Y	Black/Yellow
G	Green	L/W	Blue/White
P	Pink	L/B	Blue/Black
Dg	Dark green	L/Y	Blue/Yellow
Ch	Chocolate	G/Y	Green/Yellow
Gy	Gray	W/R	White/Red
Sb	Sky blue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



ELECTRICAL COMPONENTS (1)

- ① Thermo switch
- ② Thermo unit
- ③ Relay assembly
- ④ Fuel pump relay
- ⑤ Horn
- ⑥ Oil level switch
- ⑦ Neutral switch
- ⑧ Sidestand switch
- ⑨ Sidestand relay
- ⑩ EXUP control unit
(For California only)
- ⑪ EXUP servomotor
(For California only)

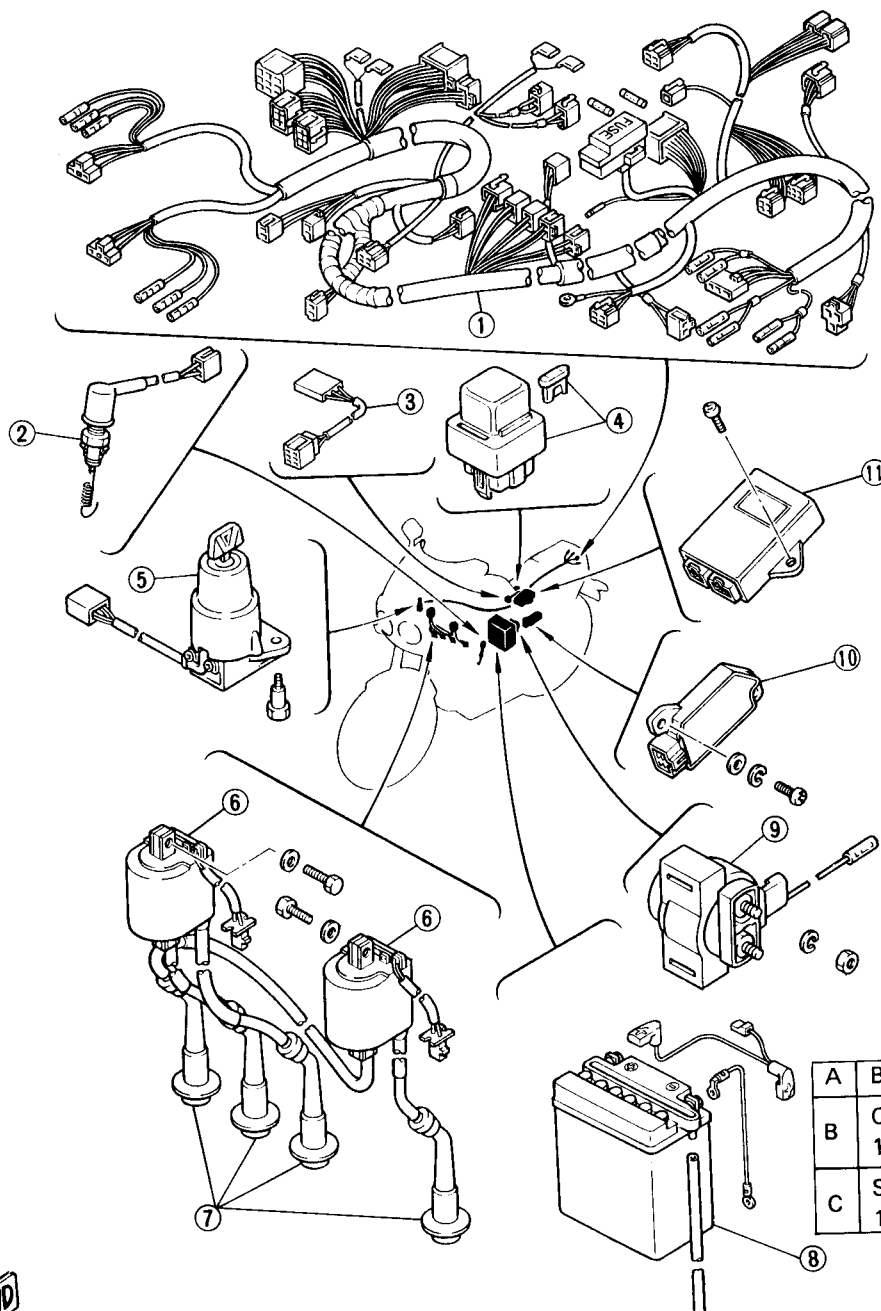
SPECIFICATIONS	RESISTANCE
IGNITION COIL: PRIMARY	1.8 ~ 2.2Ω at 20°C (65°F)
SECONDARY	9.6 ~ 14.4 kΩ at 20°C (68°F)
PICKUP COIL:	85 ~ 115Ω at 20°C (68°F)





ELECTRICAL COMPONENTS (2)

- ① Wireharness
- ② Rear brake switch
- ③ Diode block
- ④ Fuse "MAIN"
- ⑤ Main switch
- ⑥ Ignition coil
- ⑦ Plug cap
- ⑧ Battery
- ⑨ Starter relay
- ⑩ Rectifier/Regulator
- ⑪ Digital ignitor unit



FWD

A	BATTERY:
B	CAPACITY: 12V, RAH
C	SPECIFIC GRAVITY: 1.280 at 20° (68°F)



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.

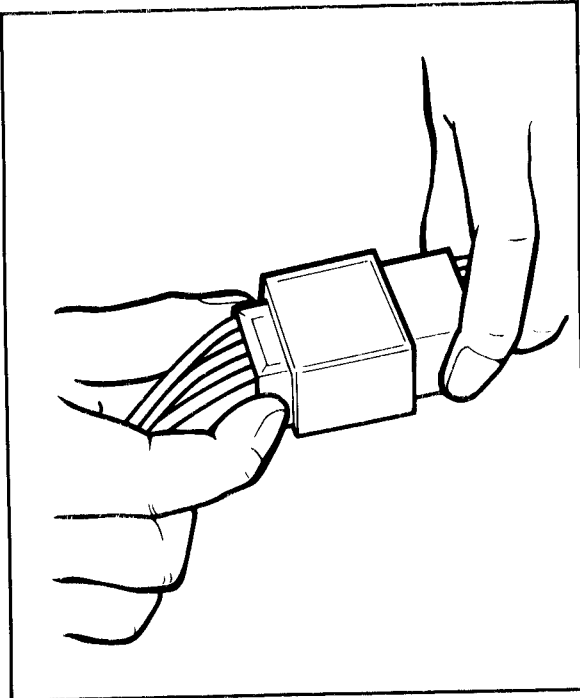
"B and B/W" is continuous with the "LOCK" switch position.

"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.

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

"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.

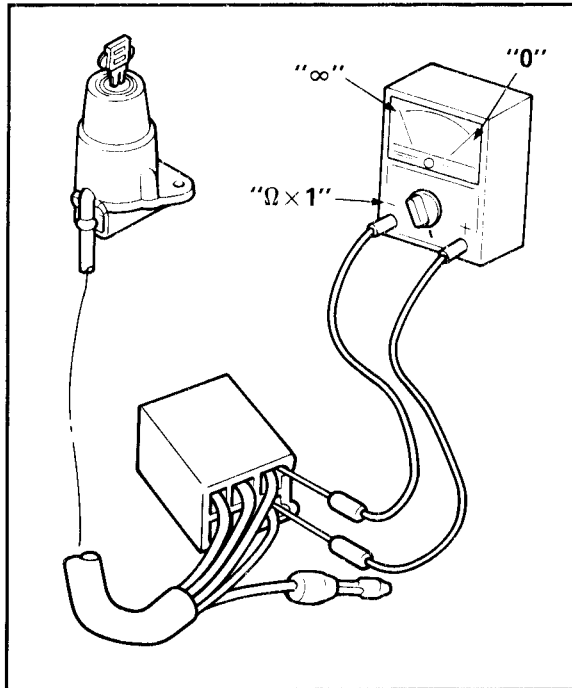
"B and B/W" and "R and L/R" are continuous with the "P" switch position.

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.

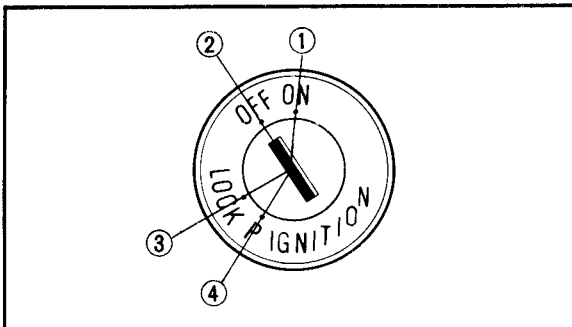
**NOTE:**

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 "∞") 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.

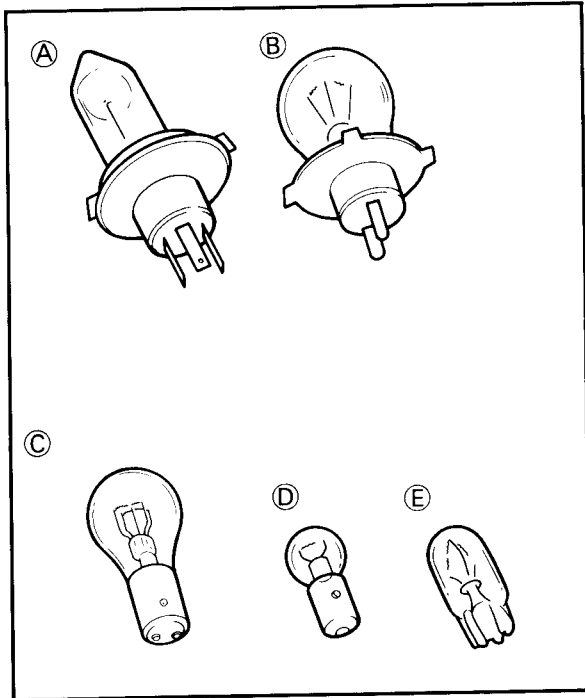


CHECKING OF BULBS (FOR HEADLIGHT, TAIL/BRAKE LIGHT, FLASHER LIGHT, METER LIGHT, ETC.)

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 use 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 (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:

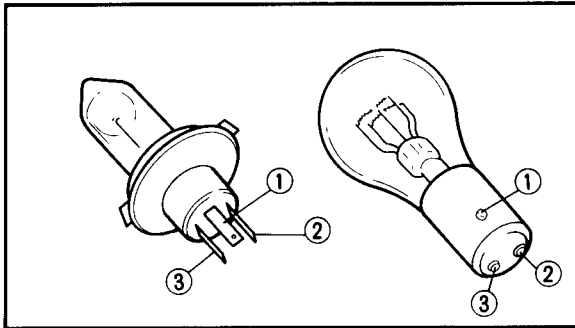
Keep flammable products or your hands away from the headlight bulb while it is on. It will be hot. Do not touch the bulb until it cools down.



2. Check the bulb terminals for continuity.

Checking steps:

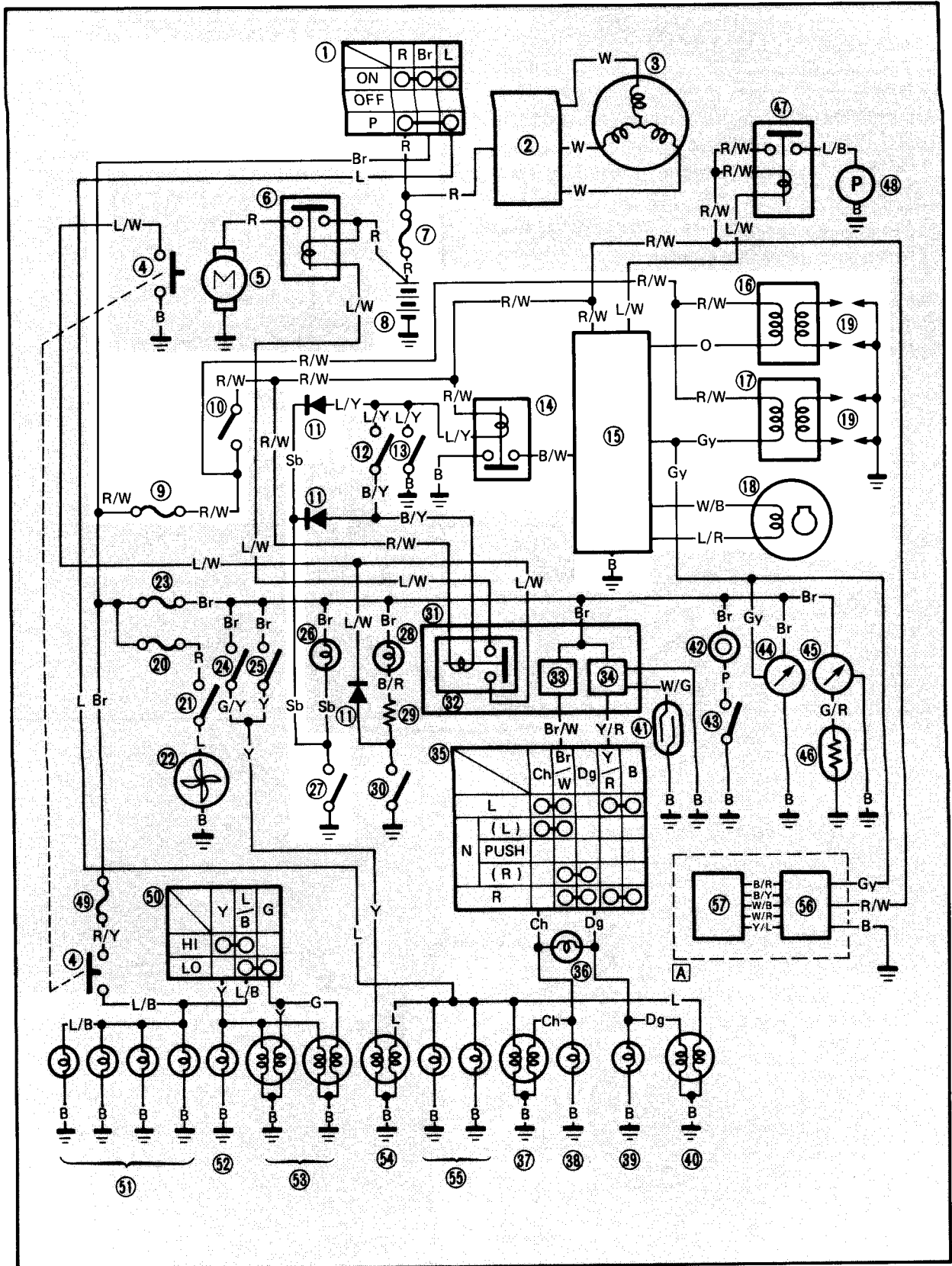
- Set the pocket tester selector to the " $\Omega \times 1$ ".
- Connect the tester leads to the respective bulb terminals. Take for example a 3-terminal bulb as shown left. First check the continuity between the ① and ② terminals by connecting the tester (+) lead to the ① terminal and the tester (–) 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 " ∞ " 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



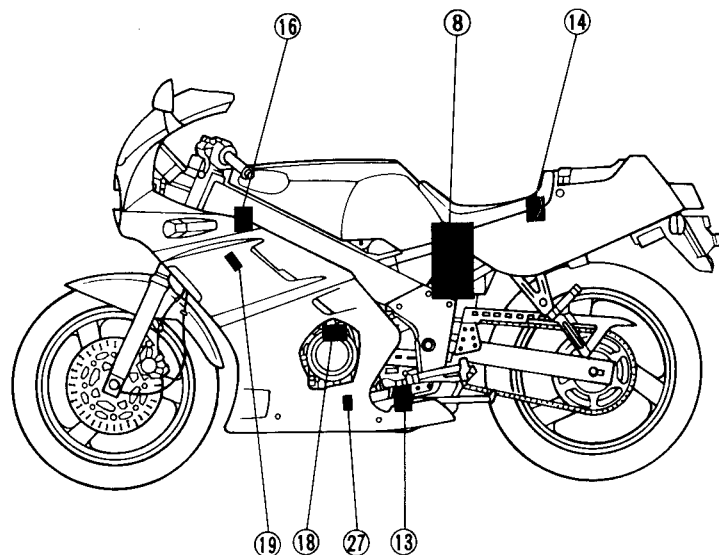
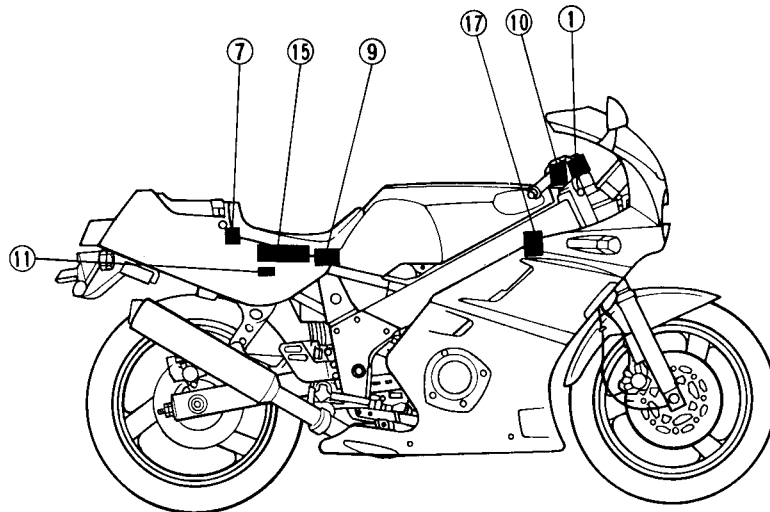


Aforementioned circuit diagram shows the ignition circuit in the wiring diagram.

NOTE:

For the color codes, see page 8-2.

- ① Main switch
- ⑦ Fuse "MAIN"
- ⑧ Battery
- ⑨ Fuse "IGNITION"
- ⑩ "ENGINE STOP" switch
- ⑪ Diode block
- ⑬ Sidestand switch
- ⑭ Sidestand relay
- ⑮ Digital ignitor unit
- ⑯ Ignition coil (#1 and #4 cylinder)
- ⑰ Ignition coil (#2 and #3 cylinder)
- ⑱ Pickup coil
- ⑲ Spark plug
- ⑳ Neutral switch





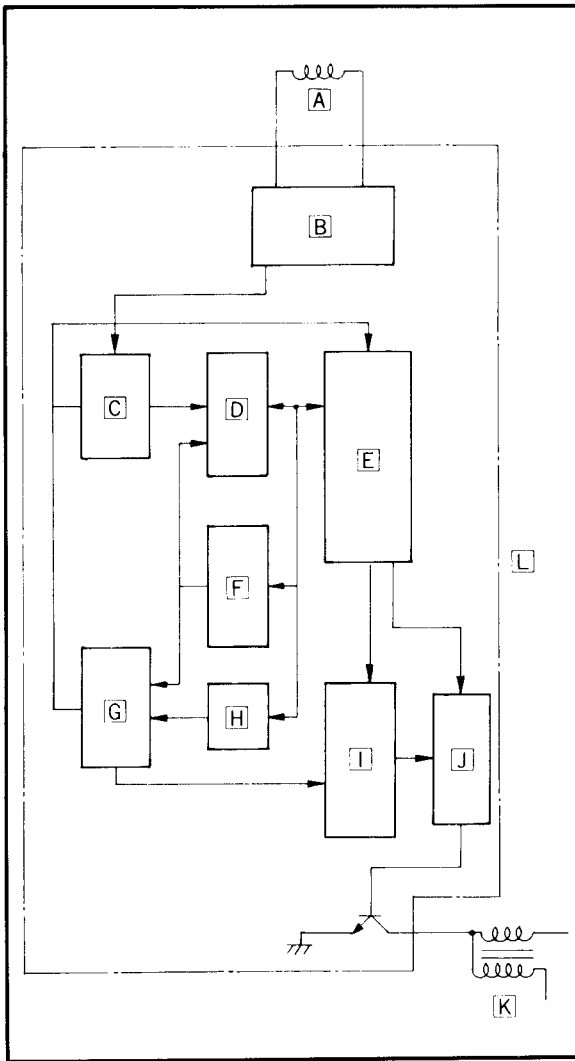
DIGITAL IGNITION CONTROL SYSTEM

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.

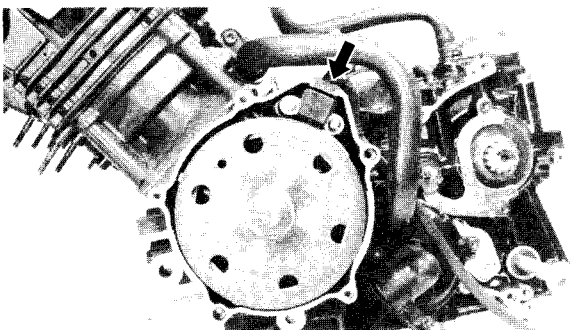
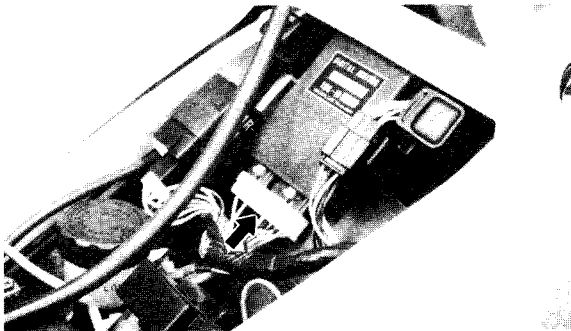


- A** Pickup coil
- B** Wave-shape shaping circuit
- C** Edge detection circuit
- D** Latch circuit
- E** Microprocessor
- F** Free-running counter
- G** Comparison circuit
- H** Register
- I** Flip-flop circuit
- J** Driving circuit
- K** Ignition coil
- L** Digital ignitor unit

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. Sidestand relay |
| 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.

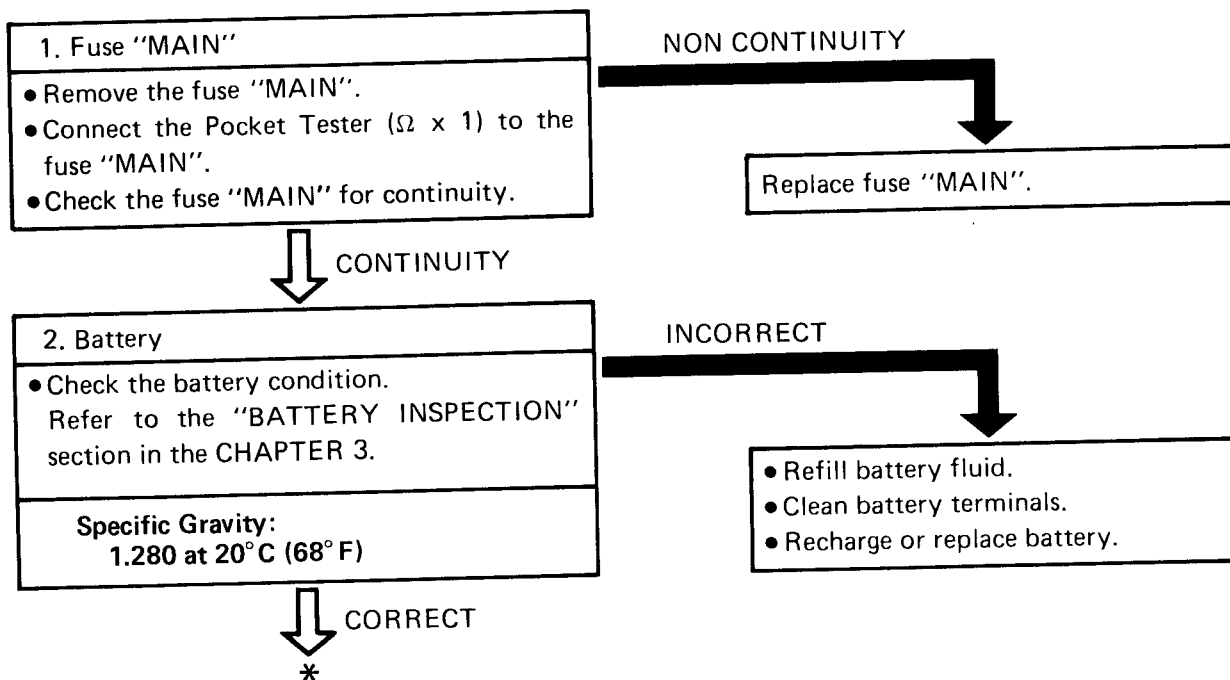
1) Seat	4) Top cover
2) Lower cowling	5) Air filter case
3) Center cowling	6) Crankcase cover (Left)
- Use the following special tools in this troubleshooting.



Dynamic Spark Tester:
P/N. YM-34487



Pocket Tester:
P/N. YU-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:
CR8E (NGK), U24ESR-N (N.D.)



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

INCORRECT

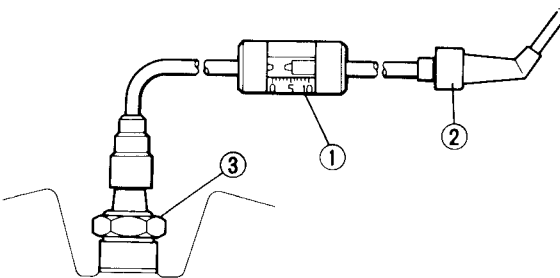
Repair or replace spark plug.



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.

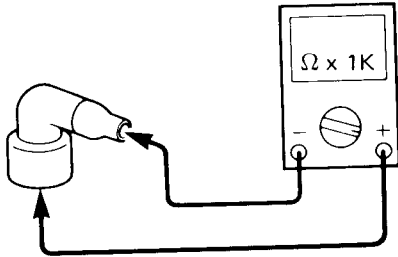


OUT OF SPECIFICATION
OR NO SPARK



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 Ω at 20°C (68°F)

OUT OF SPECIFICATION

Replace spark plug cap.

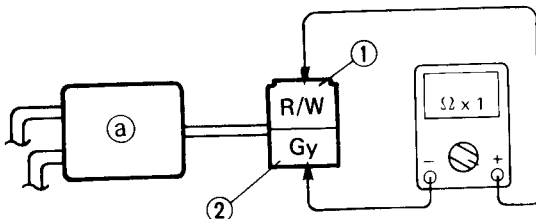
MEETS SPECIFICATION

6. Ignition coil resistance

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

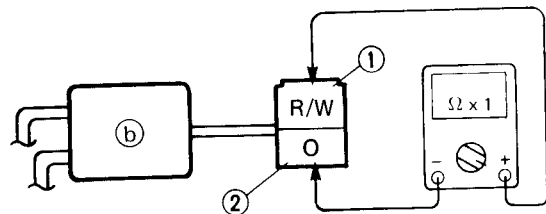
Ignition coil (Right) (a) :

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.

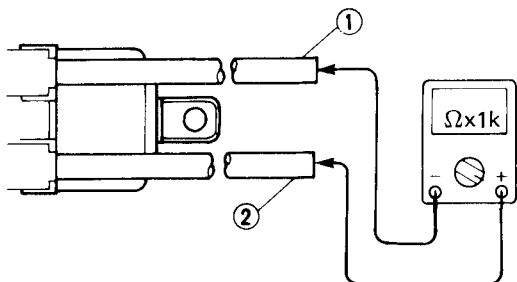


Primary Coil Resistance:
1.8 ~ 2.2 Ω at 20°C (68°F)



- 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 Ω at 20°C (68°F)
(Spark Plug Lead — Spark plug)

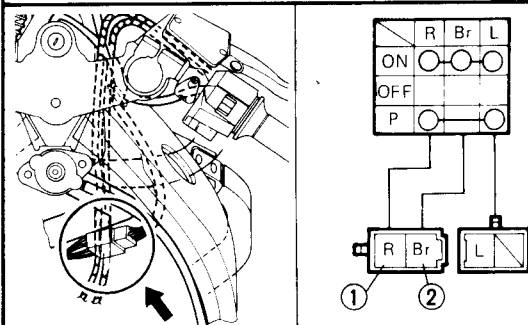
OUT OF SPECIFICATION

Replace ignition coil.

BOTH MEET
SPECIFICATIONS

7. Main switch

- Disconnect the main switch coupler 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

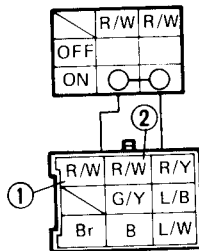
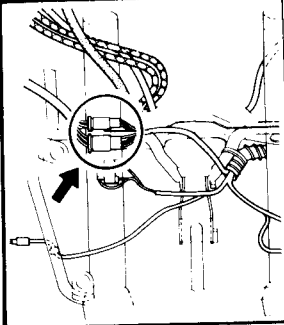
Replace main switch.

CORRECT
*



8. "ENGINE STOP" switch

- Disconnect the "ENGINE STOP" switch 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

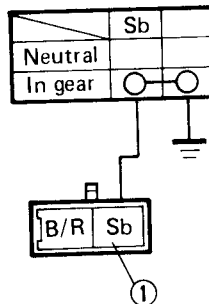
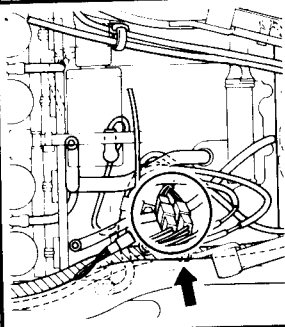
Replace handlebar switch (Right).



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.

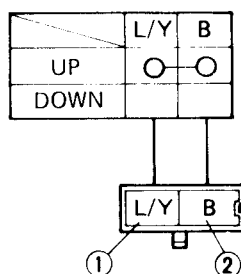
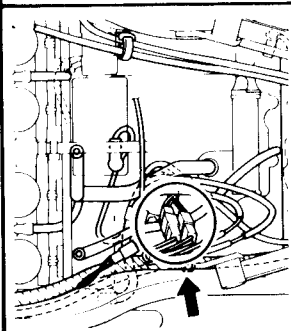


CORRECT



10. Sidestand switch

- Disconnect the sidestand switch coupler from the 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.

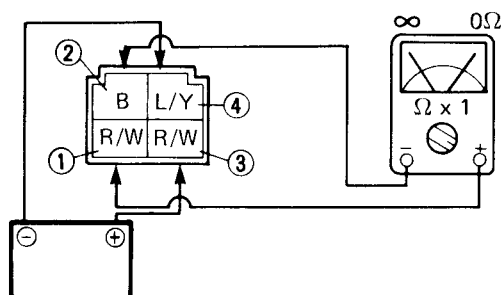


CORRECT

11. Sidestand relay

- Disconnect the sidestand relay coupler from the wire harness.
- Connect the Pocket Tester ($\Omega \times 1$) and battery (12V) voltage to the sidestand relay coupler terminals.

Tester (+) Lead → Red/White ① Terminal
 Tester (−) Lead → Black ② Terminal
 Battery (+) Lead → Red/White ③ Terminal
 Battery (−) Lead → Blue/Yellow ④ Terminal



NOCONTINUITY

Replace sidestand relay.



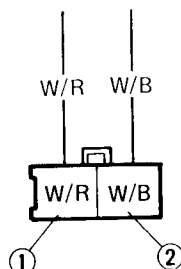
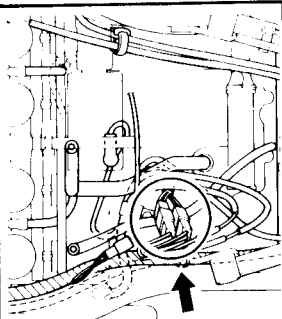
CONTINUITY



12. Pickup coil resistance

- Disconnect the A.C. magneto coupler from the wire harness.
- Connect the Pocket Tester ($\Omega \times 100$) to the pickup coil terminal.

Tester (+) Lead → White/Red ① Terminal
Tester (–) Lead → White/Black ② Terminal



- Check the pickup coil for specified resistance.



Pickup Coil Resistance:
85 ~ 115 Ω at 20°C (68°F)
(White/Red – White/Black)

OUT OF SPECIFICATION

Replace pickup coil.



MEET SPECIFICATION

3. Wiring connection

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

POOR CONNECTION

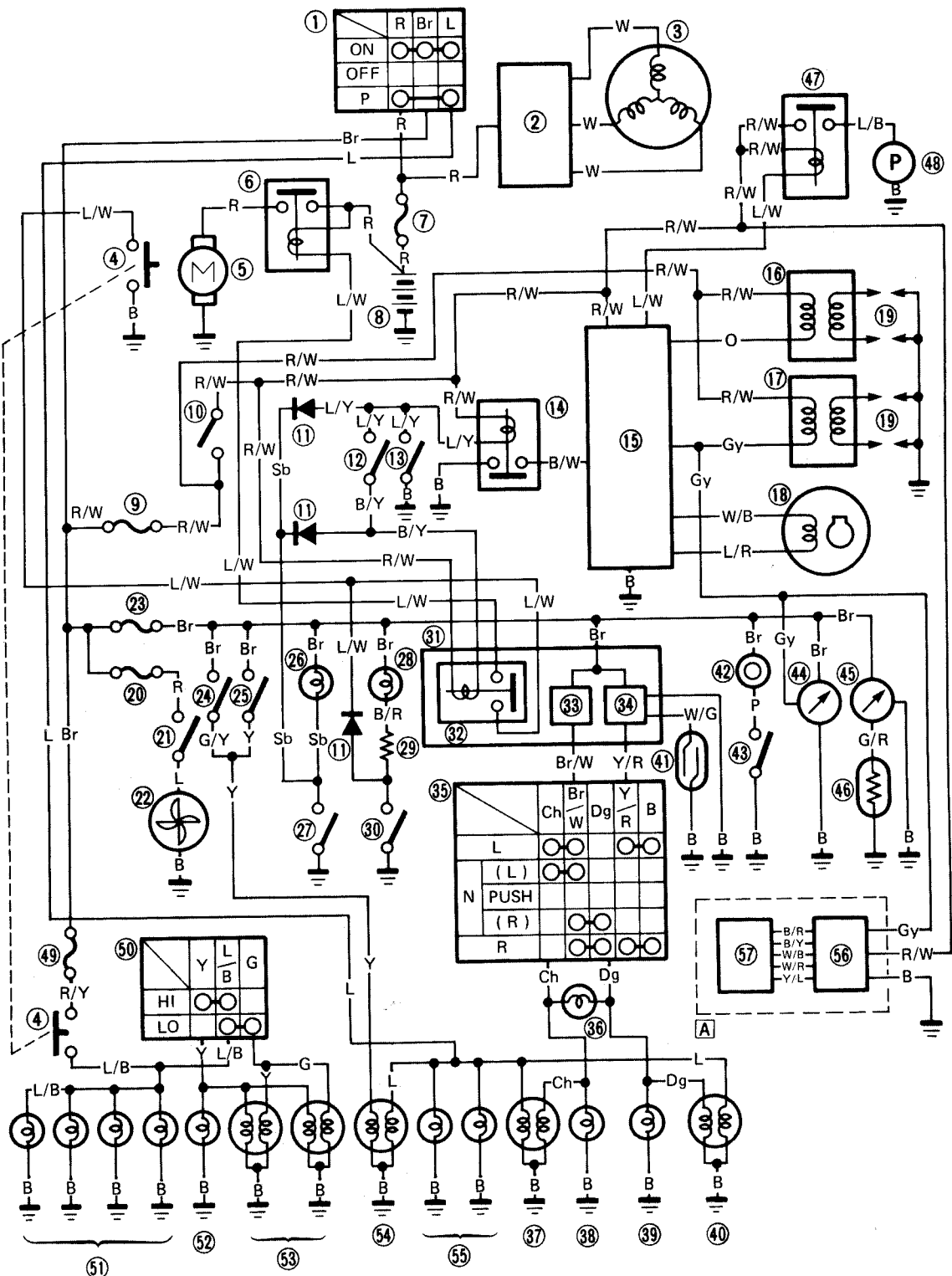
Correct.



CORRECT

Digital ignitor unit is faulty.
Replace the digital ignitor unit.

CIRCUIT DIAGRAM



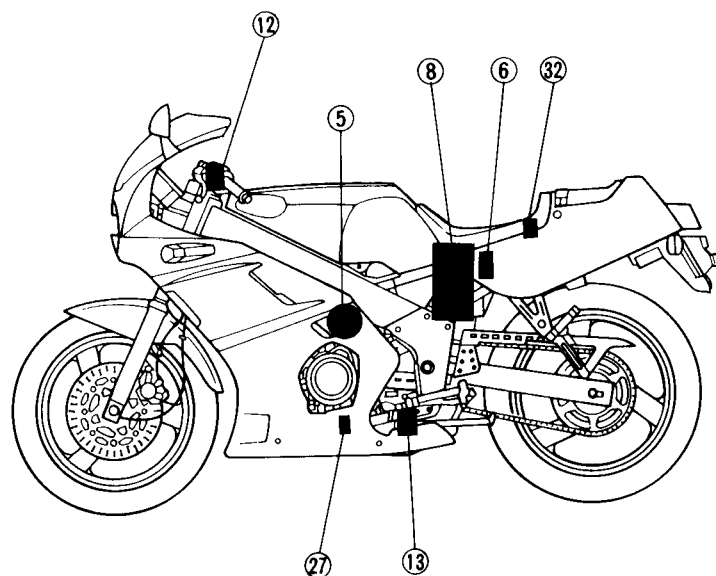
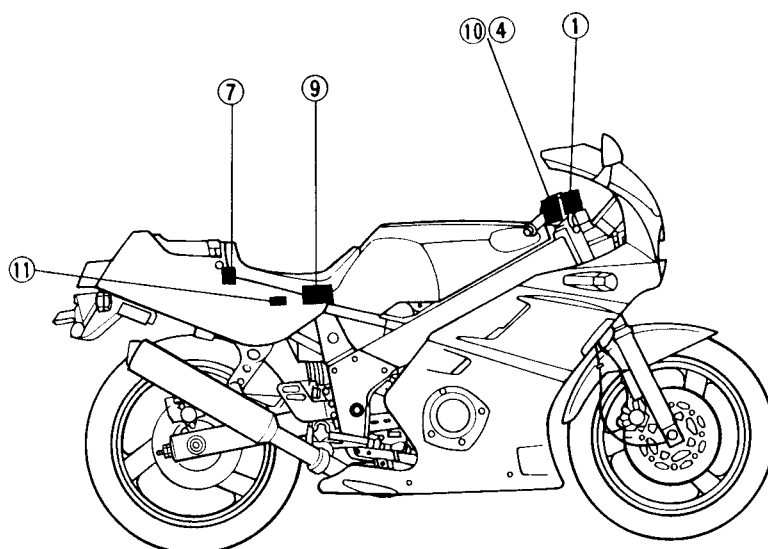


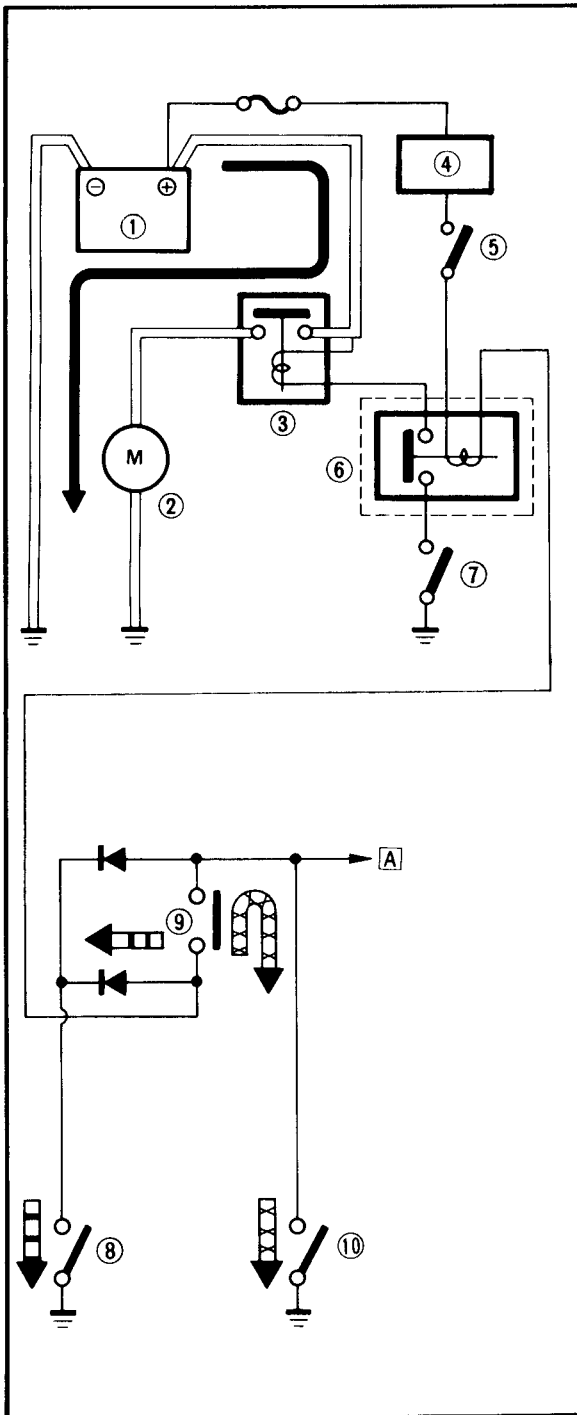
A forementioned circuit diagram shows the electric starting circuit in the wiring diagram.

NOTE:

For the color codes, see page 8-2.

- ① Main switch
- ④ "START" switch
- ⑤ Starter motor
- ⑥ Starter relay
- ⑦ Fuse "MAIN"
- ⑧ Battery
- ⑨ Fuse "IGNITION"
- ⑩ "ENGINE STOP" switch
- ⑪ Diode block
- ⑫ Clutch switch
- ⑬ Sidestand switch
- ⑰ Neutral switch
- ⑳ Starting circuit cut-off relay (Relay assembly ⑳)





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:

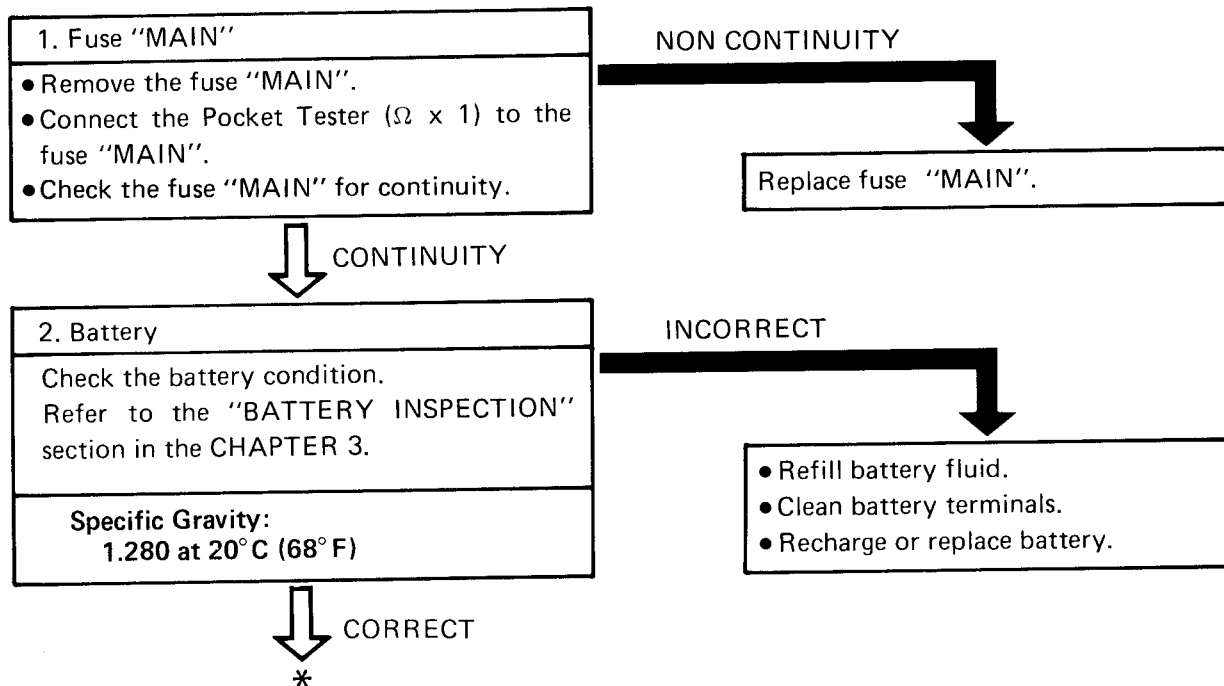
Remove the following before troubleshooting.

- | | |
|-----------------|------------------|
| 1) Seat | 3) Lower cowling |
| 2) Seat cowling | 4) Fuel tank |

• Use the following special tool in this troubleshooting.



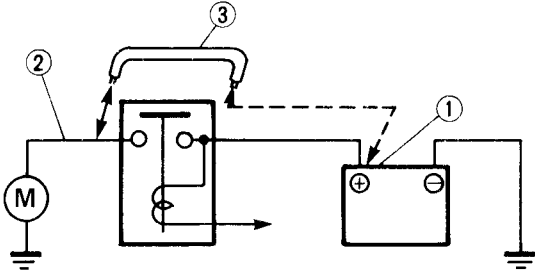
Pocket Tester:
P/N. YU-03112





3. Starter motor

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



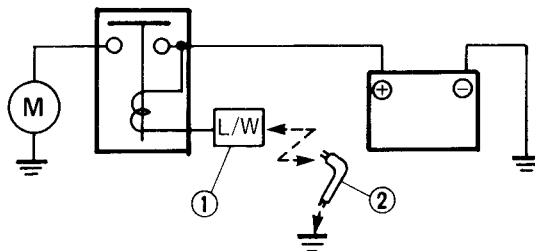
- Check the starter motor operation.



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

- Disconnect the relay assembly coupler from the wire harness.
- 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.

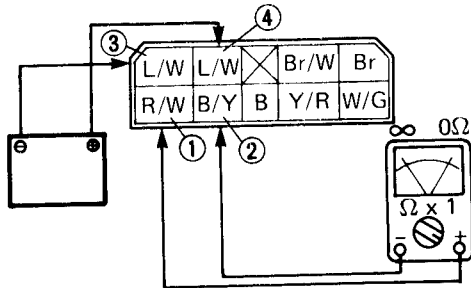
NO OPERATIVE



Replace starter relay.



Tester (+) Lead → Red/White ① Terminal
 Tester (–) Lead → Black/Yellow ② Terminal
 Tester (+) Lead → Blue/White ③ Terminal
 Tester (–) Lead → Blue/White ④ Terminal



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

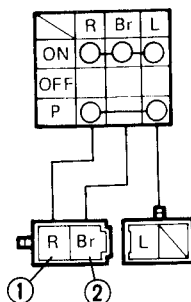
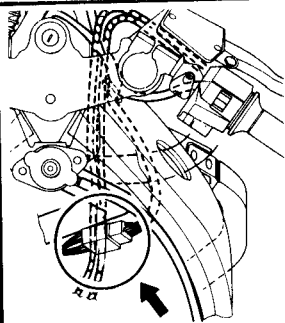
NO CONTINUITY

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.



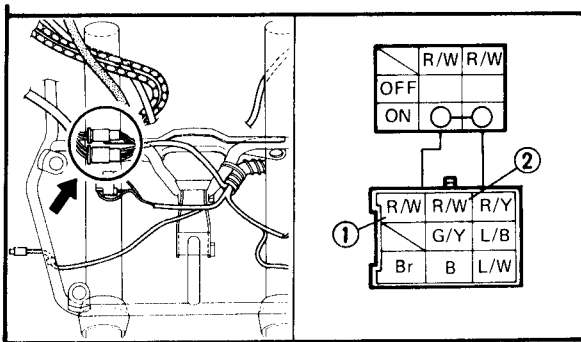
INCORRECT

Replace main switch.

CORRECT

7. "ENGINE STOP" switch

- Disconnect the "ENGINE STOP" switch 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.



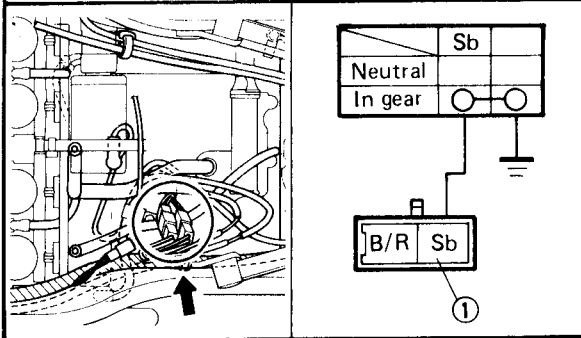
↓ CORRECT

INCORRECT

Replace handlebar switch (Right).

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.



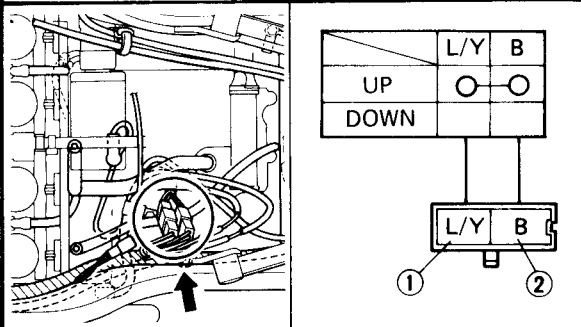
↓ CORRECT

INCORRECT

Replace neutral switch.

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.



↓ CORRECT

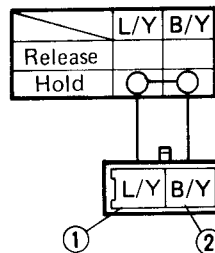
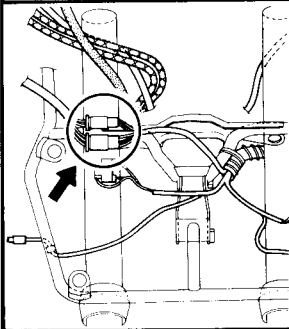
INCORRECT

Replace sidestand switch.



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

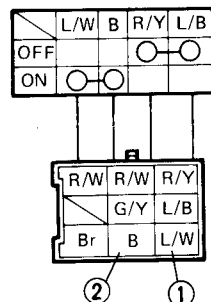
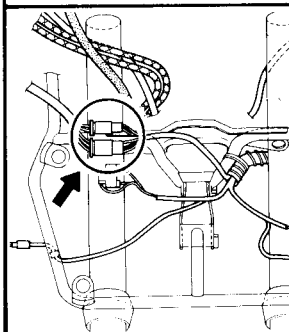
Replace clutch switch.



CORRECT

11. "START" switch

- Disconnect the "START" switch 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.



OK

*



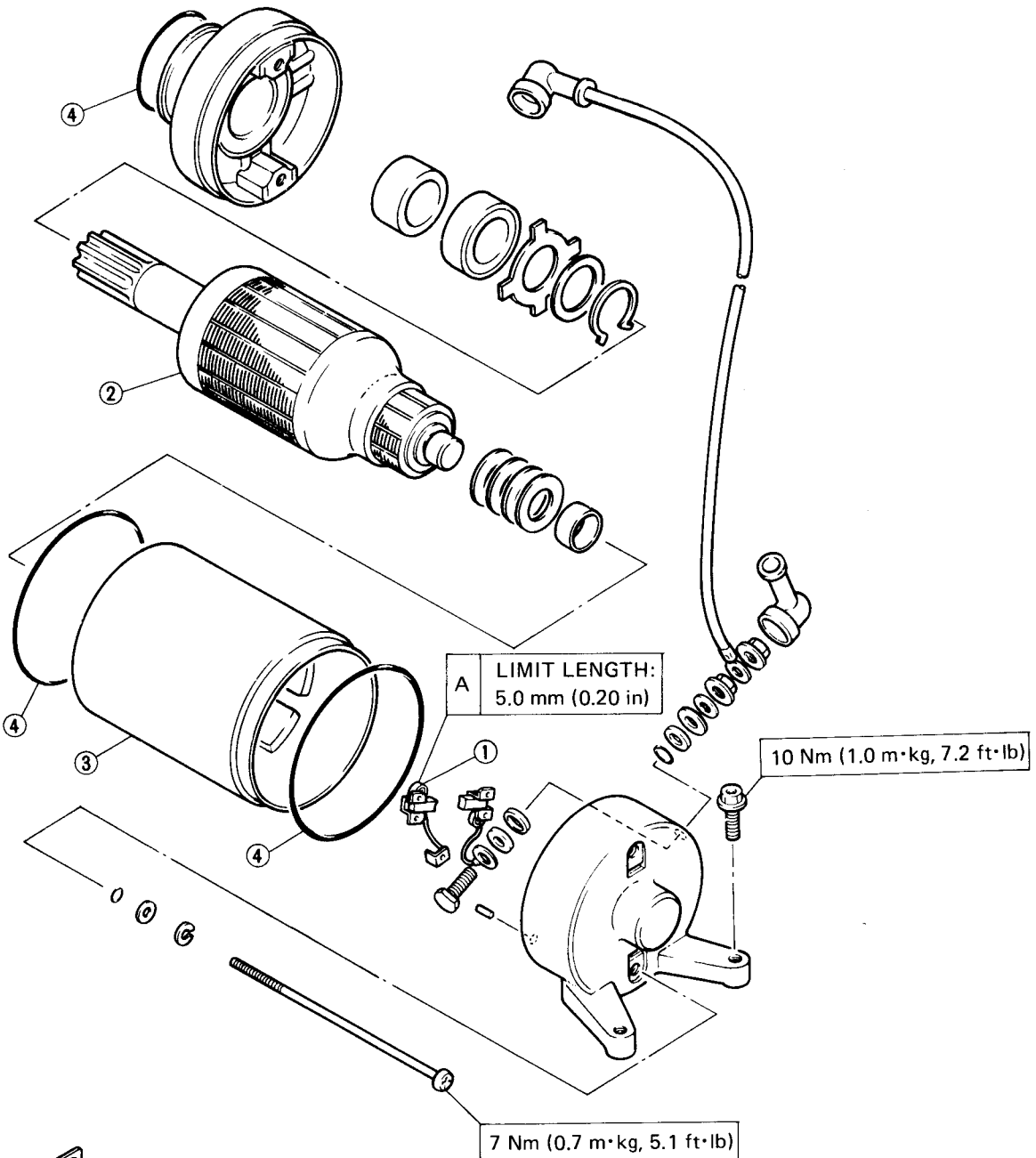
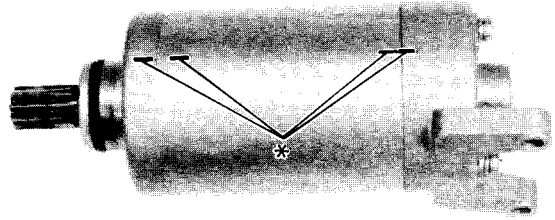
Diode block is faulty.
Replace the diode block.



STARTER MOTOR

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

* MATCH MARKS

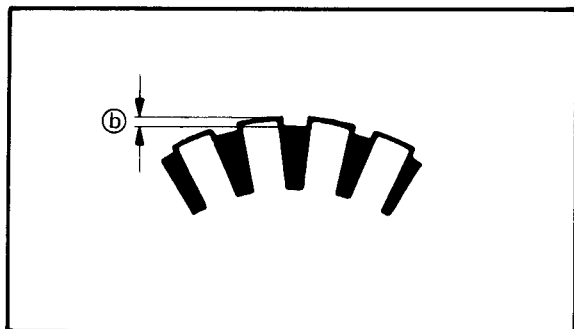
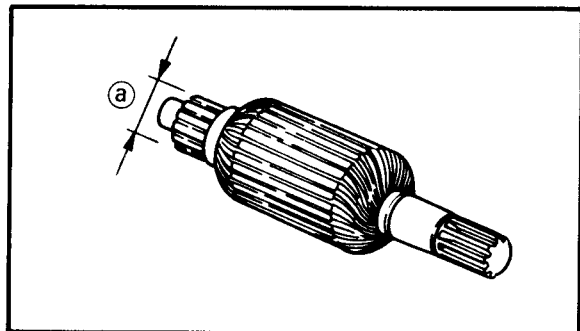


**Removal**

1. Remove:

- Starter motor

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

**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) :
22 mm (0.87 in)

3. Measure:

- Mica undercut (b)

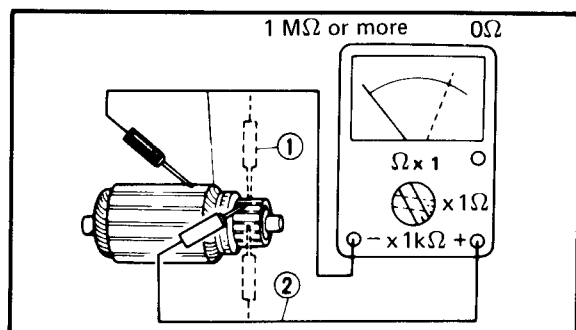
Out of specification → Scrape the mica to proper value use a hacksaw blade can be ground to fit.



Mica Undercut (b) :
1.8 mm (0.07 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:

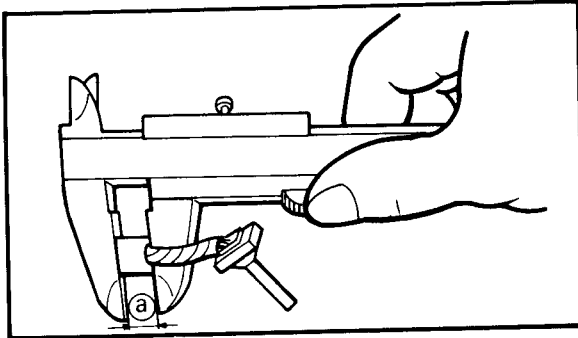
- Connect the Pocket Tester for continuity check ① and insulation check ②.
- Measure the armature resistances.

**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:

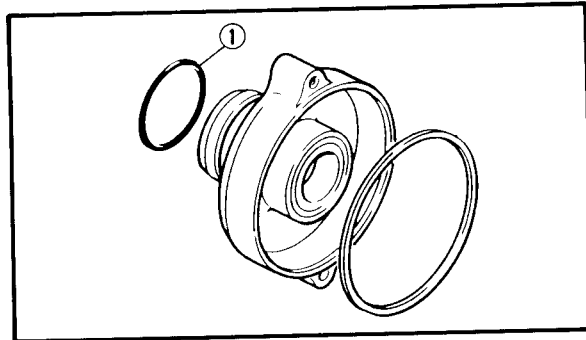
- Brush length ③
Out of specification → Replace.

**Brush Length Limit:****5.0 mm (0.20 in)****6. Measure:**

- Brush spring pressure
Fatigue/Out of specification → Replace as a set.

**Brush Spring Pressure:****540 ~ 660 g (19.05 ~ 23.28 oz)****7. Inspect:**

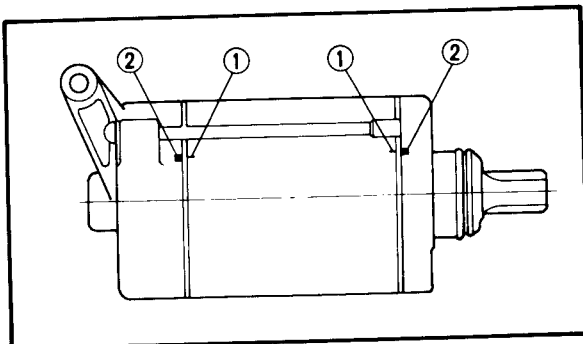
- Bearing
- Oil seal
- O-rings ①
Wear/Damage → Replace.

**Installation****1. Install:**

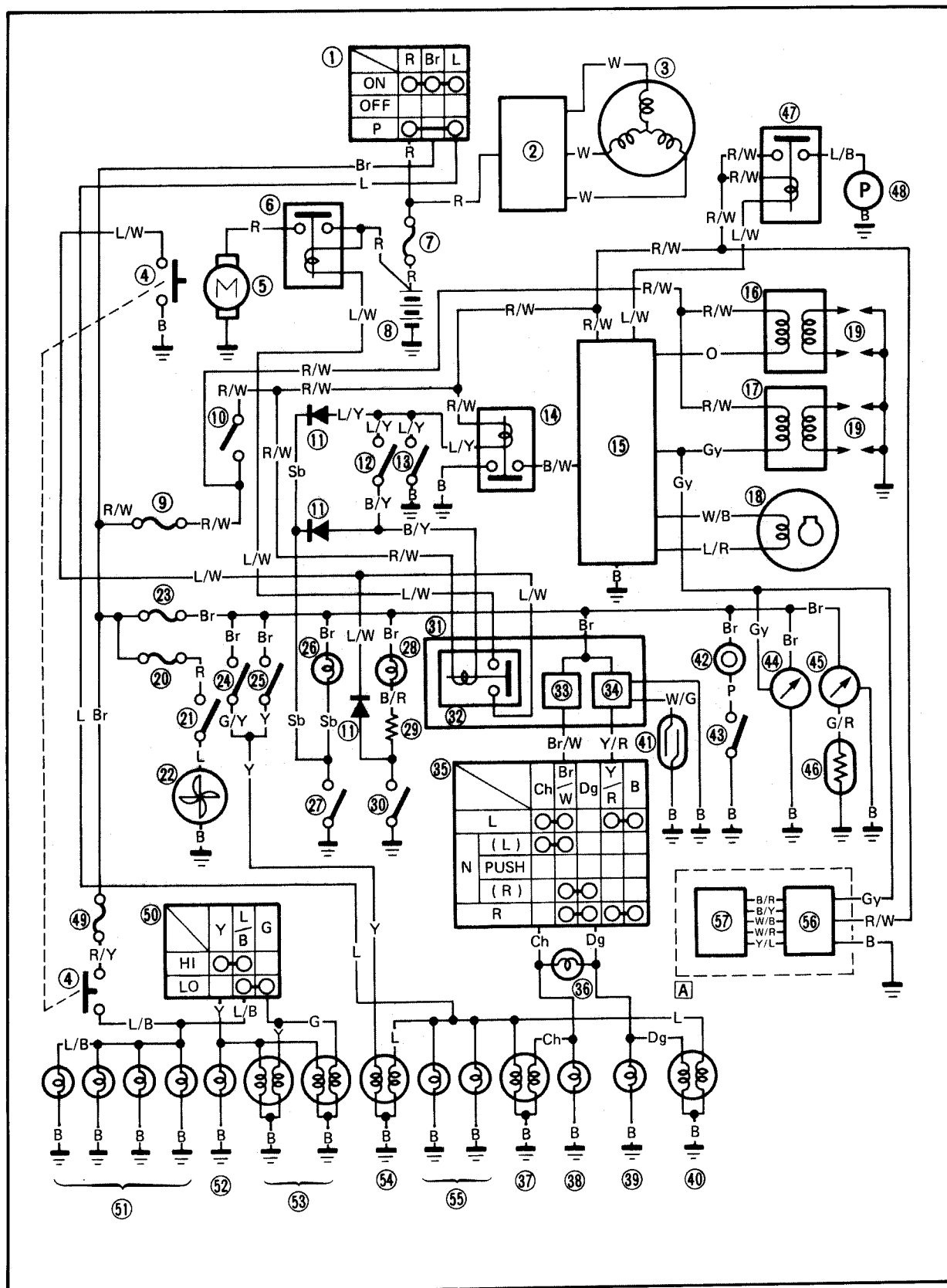
- Starter motor

NOTE:

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



CIRCUIT DIAGRAM



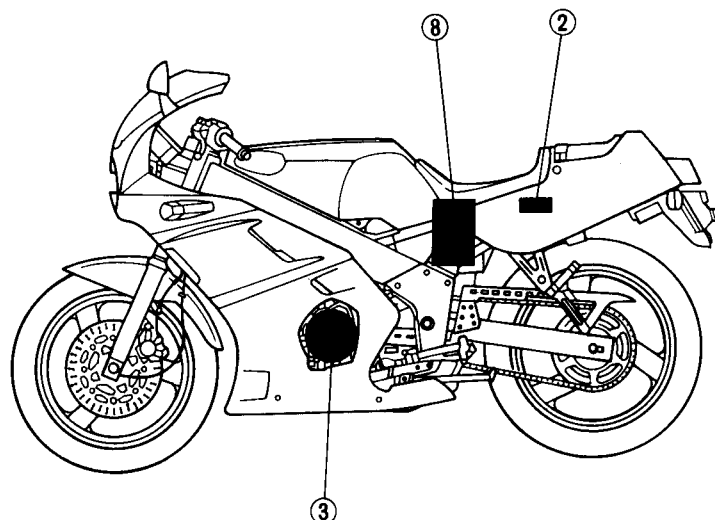
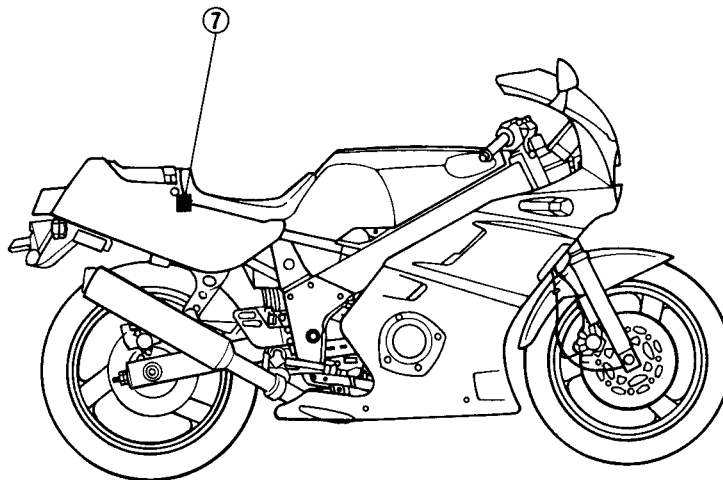


Aforementioned circuit diagram show the charging circuit in the wiring diagram.

NOTE:

For the color codes, see page 8-2.

- ② Rectifier/Regulator
- ③ A.C. generator
- ⑦ Fuse "MAIN"
- ⑧ Battery





TROUBLESHOOTING

THE BATTERY IS NOT CHARGED.

Procedure

Check;

1. Fuse "MAIN"
2. Battery
3. Charge voltage
4. Stator coil resistance
5. Wiring connection
(Entire charging system)

NOTE:

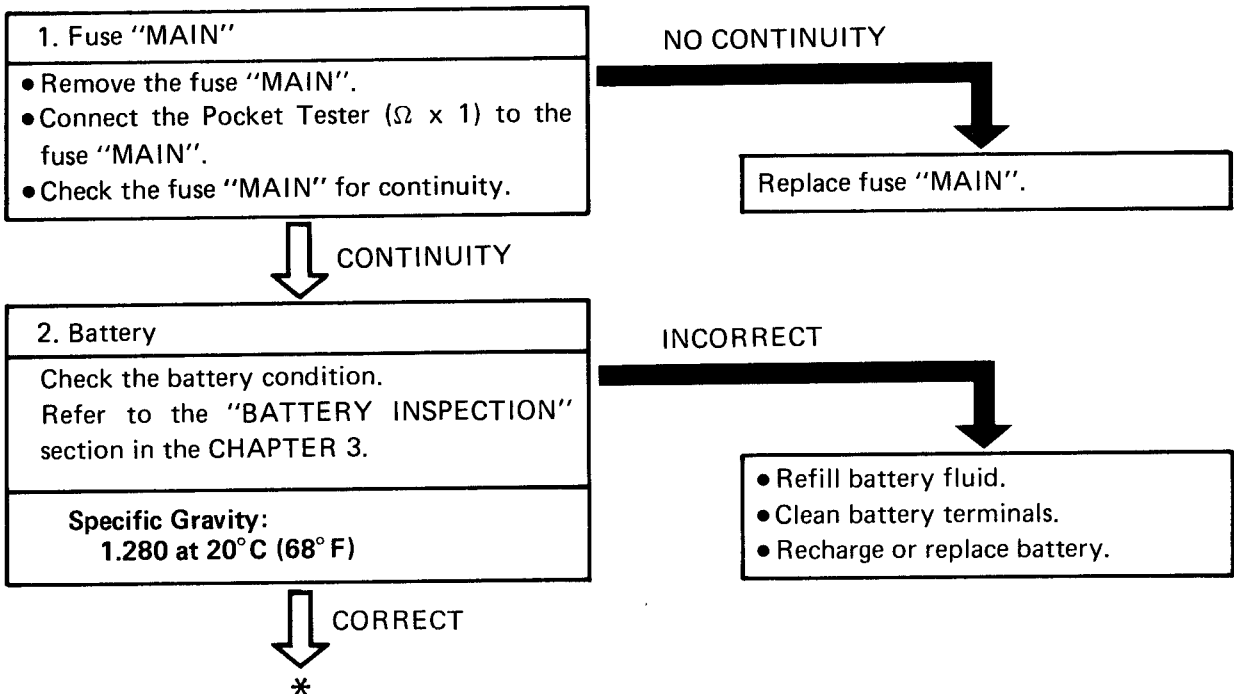
- Remove the following parts before troubleshooting.
 - 1) Seat
 - 2) Seat cowl
 - 3) Top cover
 - 4) Fuel tank
 - 5) Lower cowl
- Use the following special tools in this troubleshooting.



Inductive Tachometer:
P/N. YU-08036



Pocket Tester:
P/N. YU-03112

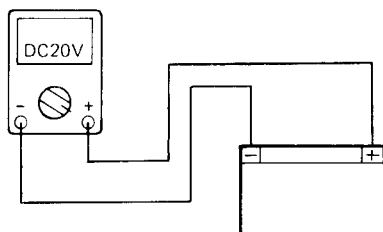




3. Charge voltage

- 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

MEETS SPECIFICATION

Replace battery.

OUT OF SPECIFICATION

4. Stator coil resistance

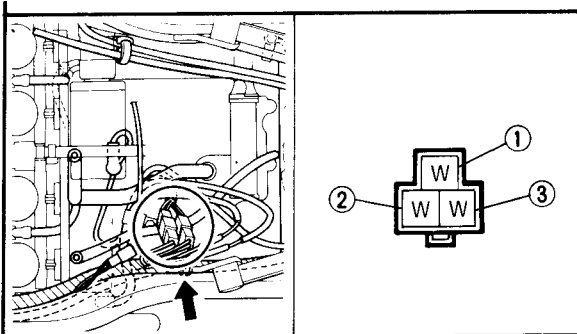
- Disconnect the A.C. magneto coupler from the wire harness.
- Connect the Pocket Tester ($\Omega \times 1$) to the stator coil leads.

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

 $0.44 \sim 0.66 \Omega$ at 20°C (68°F)

White ① – White ③

 $0.44 \sim 0.66 \Omega$ at 20°C (68°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.

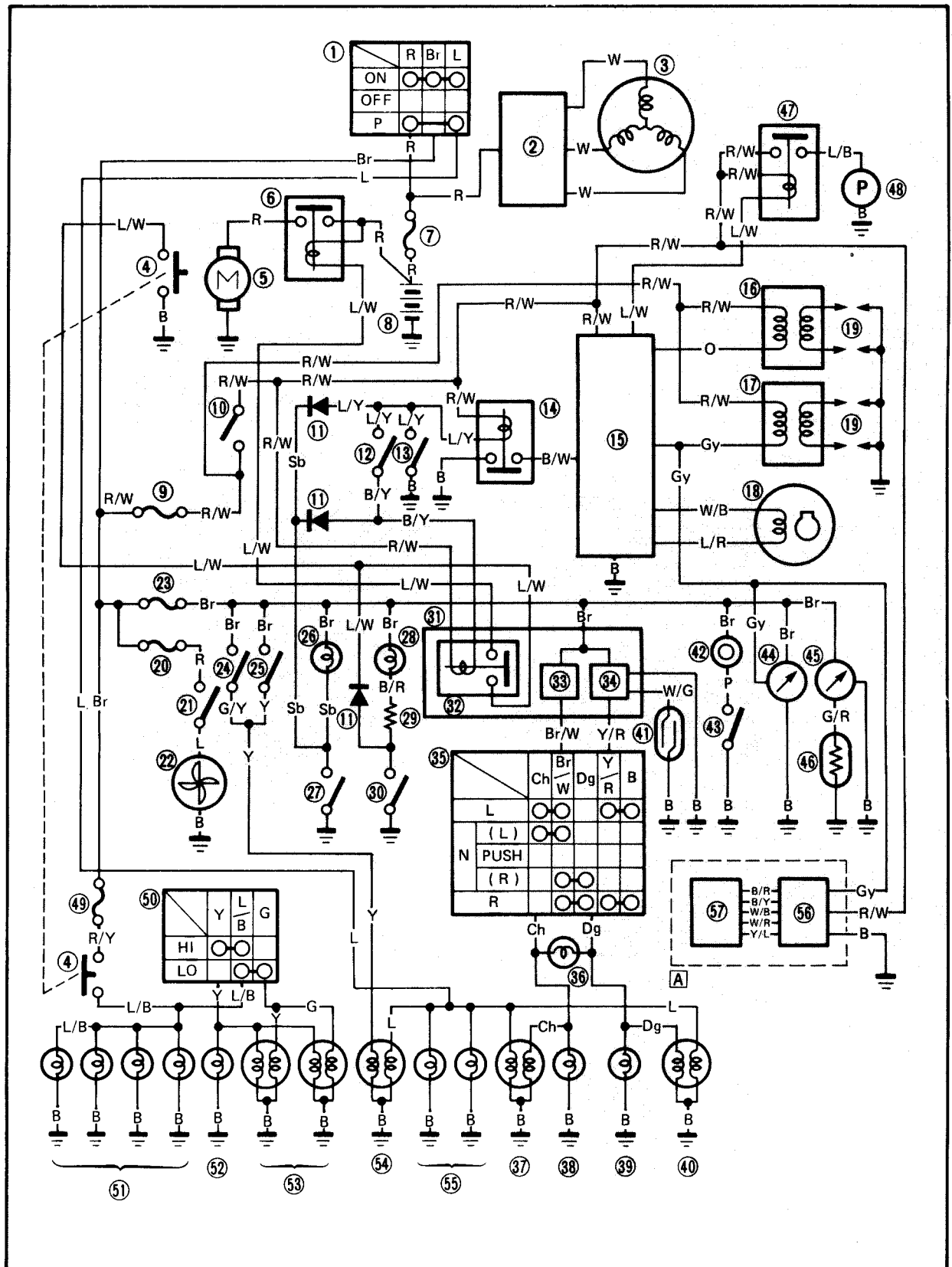
CORRECT

Replace rectifier/regulator.



LIGHTING SYSTEM

CIRCUIT DIAGRAM



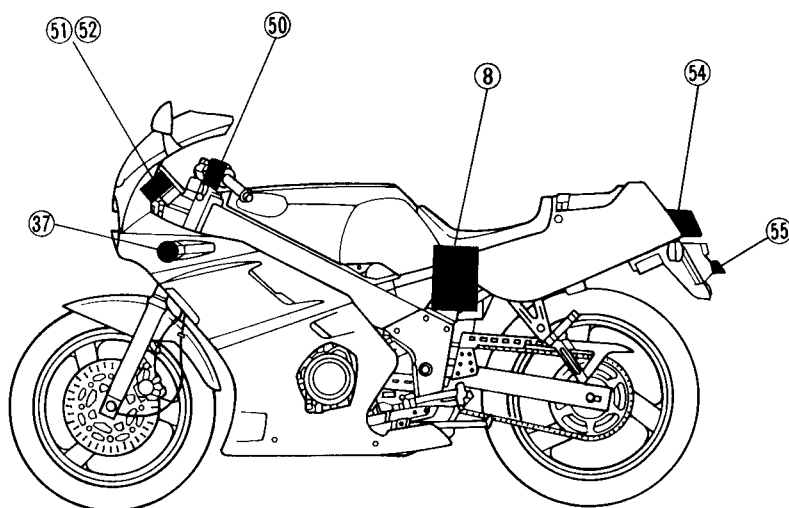
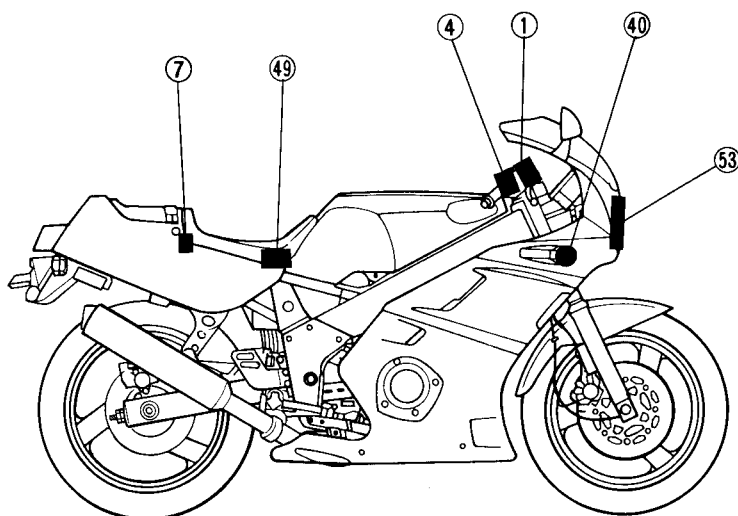


Aforementioned circuit diagram shows the lighting circuit in the wiring diagram.

NOTE:

For the color codes, see page 8-2.

- ① Main switch
- ④ "START" switch
- ⑦ Fuse "MAIN"
- ⑧ Battery
- ③⑦ Front position light (Left)
- ④⑩ Front position light (Right)
- ④⑨ Fuse "HEAD"
- ⑤⑩ "LIGHTS" (Dimmer) switch
- ⑤① Meter light
- ⑤② "HIGH BEAM" indicator light
- ⑤③ Headlight
- ⑤④ Tail light
- ⑤⑤ License light





TROUBLESHOOTING

HEADLIGHT, "HIGH BEAM" INDICATOR LIGHT, TAILLIGHT, LICENSE LIGHT
METER LIGHT, AND POSITION LIGHT DO NOT COME ON.

Procedure

Check;

- | | |
|----------------|-----------------------------|
| 1. Fuse "MAIN" | 4. "LIGHTS" (Dimmer) switch |
| 2. Battery | 5. Wiring connection |
| 3. Main switch | (Entire lighting system) |

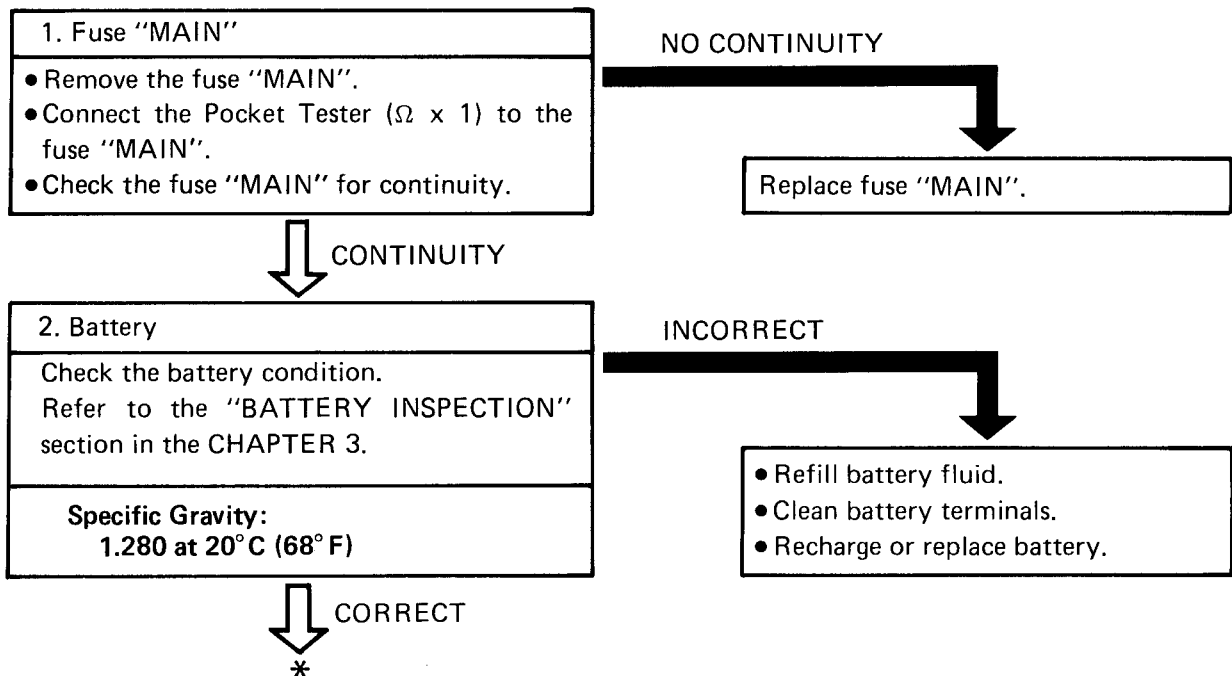
NOTE:

- Remove the following parts before troubleshooting.

1) Seat	3) Seat cowling
2) Upper cowling	
- Use the following special tool in this troubleshooting.



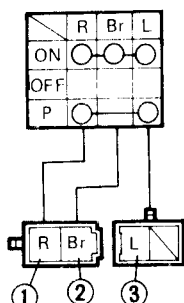
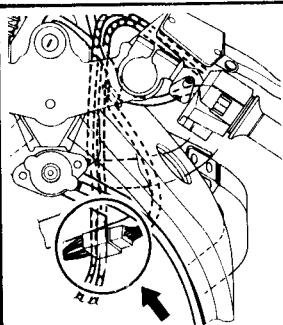
Pocket Tester:
P/N. YU-03112





3. Main switch

- Disconnect the main switch couplers from the wire harness.
- Check the switch component for the continuity between "Red ① and Brown ②", and "Red ① and Blue ③". Refer to the "CHECKING OF SWITCHES" section.



INCORRECT

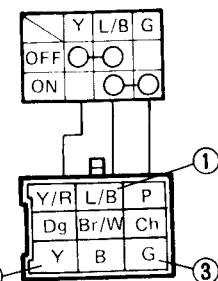
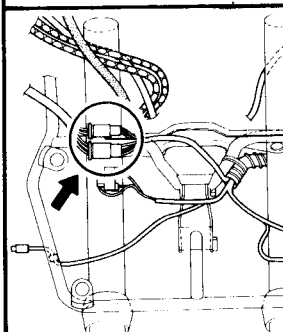
Replace main switch.



CORRECT

4. "LIGHTS" (Dimmer) switch

- Disconnect the handlebar switch (Left) coupler from the wire harness.
- Check the switch component for the continuity between "Blue/Black ① and Yellow ②" and Blue/Black ① and Green ③". Refer to the "CHECKING OF SWITCHES" section.



INCORRECT

Replace handlebar switch (Left).

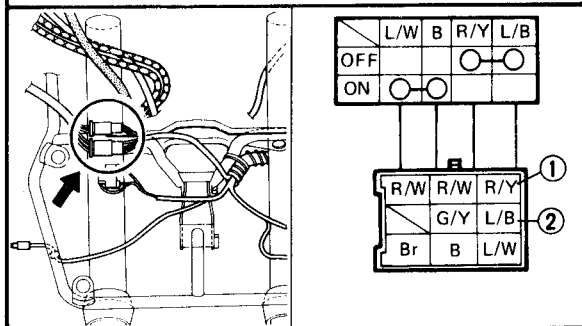


CORRECT



5. "START" switch

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



INCORRECT

Replace handlebar switch (Right).



CORRECT

6. Wiring connection

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

POOR CONNECTION

Correct.



CORRECT

Check condition of each circuit for lighting system.
Refer to the "LIGHTING SYSTEM CHECK" section.



LIGHTING SYSTEM CHECK

1. Headlight and "HIGH BEAM" indicator light do not come on.

1. Fuse "HEAD"

- Remove the fuse "HEAD".
- Connect the Pocket Tester ($\Omega \times 1$) to the fuse "HEAD".
- Check the fuse "HEAD" for continuity.

NO CONTINUITY

Replace fuse "HEAD".

CONTINUITY

2. Bulb and bulb socket

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

NO CONTINUITY

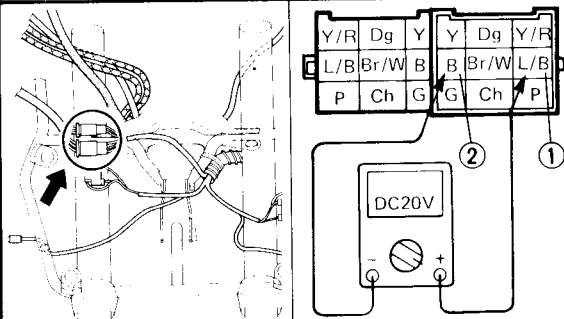
Replace bulb and/or bulb socket.

CONTINUITY

3. Voltage

- Connect the Pocket Tester (DC20V) to the "LIGHTS" (Dimmer) switch connector.

Tester (+) Lead → Blue/Black ① Terminal
 Tester (–) Lead → Black ② Terminal



MEETS SPECIFICATION

This circuit is good.

OUT OF SPECIFICATION



4. Wiring connection

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

2. Meter light does not come on.

1. Fuse "HEAD"

- Remove the fuse "HEAD".
- Connect the Pocket Tester ($\Omega \times 1$) to the fuse "HEAD".
- Check the fuse "HEAD" for continuity.

NO CONTINUITY

Replace fuse "HEAD".



CONTINUITY

2. Bulb and bulb socket

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

NO CONTINUITY

Replace bulb and/or bulb socket.

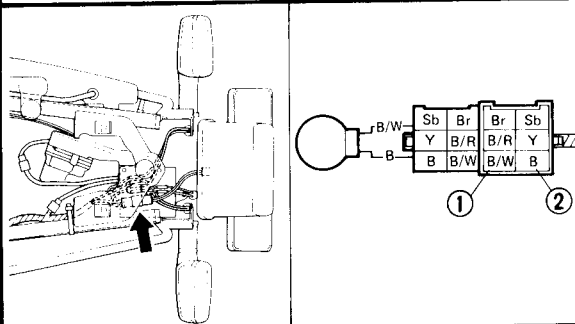


CONTINUITY

3. Voltage

- Connect the Pocket Tester (DC20V) to the bulb socket connector.

Tester (+) Lead → Black/White ① Terminal
Tester (−) Lead → Black ② Terminal





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

MEETS
SPECIFICATION (12V)

This circuit is good.

3. License light does not come on.

OUT OF SPECIFICATION

4. Wiring connection

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

1. Bulb and bulb socket

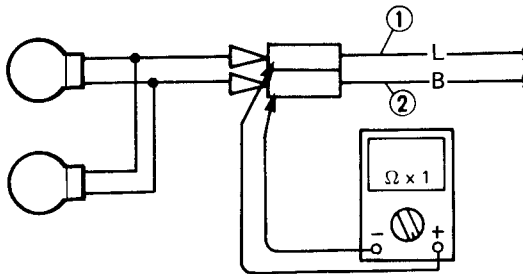
- Check the bulb and bulb socket for continuity. Refer to the "CHECKING OF BULBS" section.

CONTINUITY

2. Voltage

- Connect the Pocket Tester (DC20V) to the bulb socket connector.

Tester (+) Lead → Blue ① Lead
Tester (-) Lead → Black ② Lead



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

MEETS
SPECIFICATION (12V)

This circuit is good.

NO CONTINUITY

Replace bulb and/or bulb socket.

OUT OF SPECIFICATION

3. Wiring connection

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



4. Taillight does not come on.

1. Bulb and bulb socket

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

NO CONTINUITY

Replace bulb and/or bulb socket.

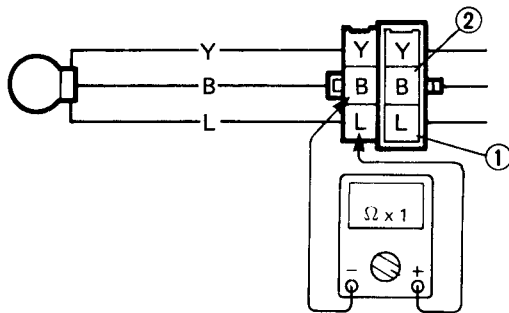
CONTINUITY

2. Voltage

- Connect the Pocket Tester (DC20V) to the bulb socket connector.

Tester (+) Lead → Blue ① Terminal

Tester (–) Lead → Black ② Terminal



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

OUT OF SPECIFICATION

3. Wiring connection

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

MEETS
SPECIFICATION (12V)

This circuit is good.



4. Taillight does not come on.

1. Bulb and bulb socket

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

NO CONTINUITY

Replace bulb and/or bulb socket.



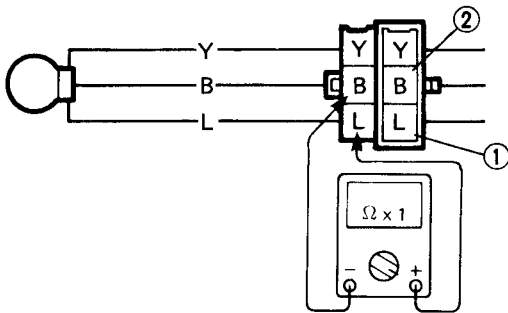
CONTINUITY

2. Voltage

- Connect the Pocket Tester (DC20V) to the bulb socket connector.

Tester (+) Lead → Blue ① Terminal

Tester (–) Lead → Black ② Terminal



OUT OF SPECIFICATION

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

3. Wiring connection

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



MEETS
SPECIFICATION (12V)

This circuit is good.

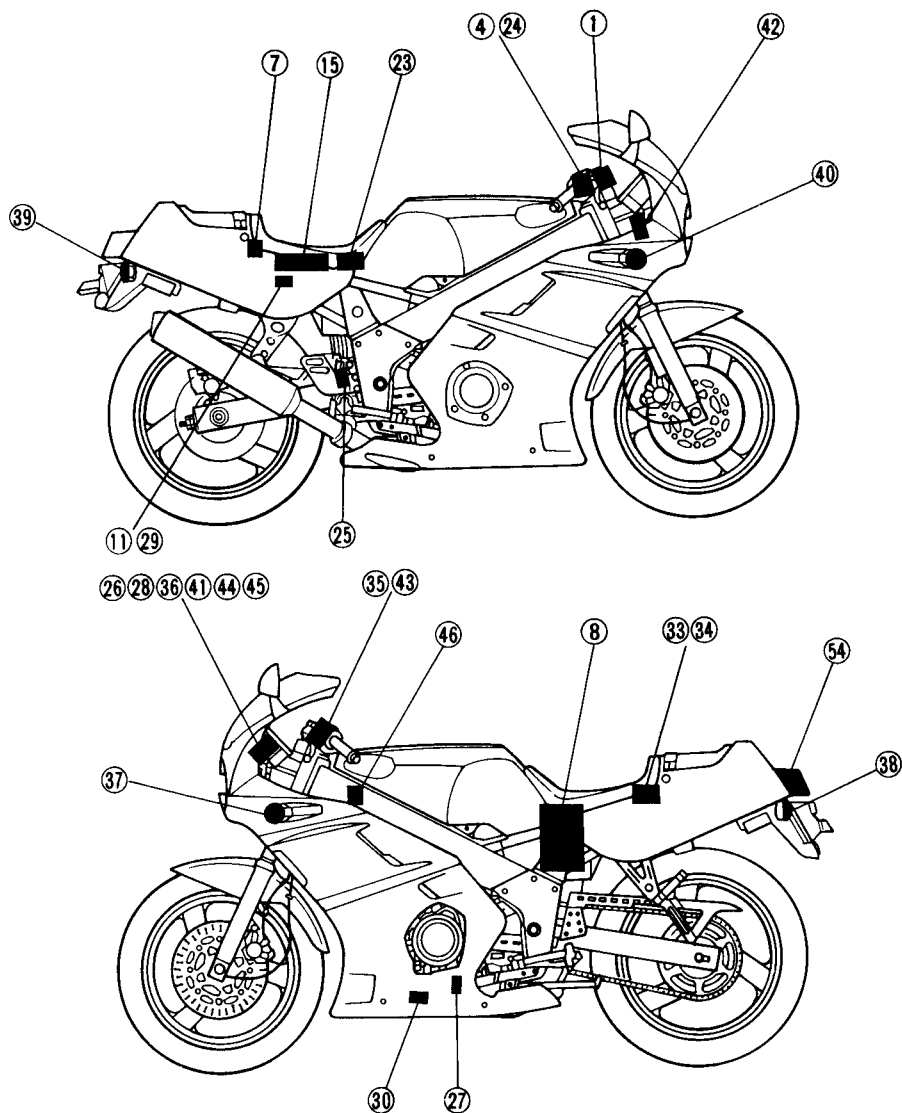


Aforementioned circuit diagram shows the signal circuit in the wiring diagram.

NOTE:

For the color codes, see page 8-2.

- | | |
|--------------------------------------|---|
| ① Main switch | ③④ Cancelling unit (Relay assembly ③①) |
| ④ "START" switch | ③⑤ "TURN" switch |
| ⑦ Fuse "MAIN" | ③⑥ "TURN" indicator light |
| ⑧ Battery | ③⑦ Front flasher light (Left) |
| ⑪ Diode block | ③⑧ Rear flasher light (Left) |
| ⑮ Digital ignitor unit | ③⑨ Rear flasher light (Right) |
| ⑲ Fuse "SIGNAL" | ④① Front flasher light (Right) |
| ⑲ Front brake switch | ④② Reed switch |
| ⑲ Rear brake switch | ④③ Horn |
| ⑲ "NEUTRAL" indicator light | ④④ "HORN" switch |
| ⑲ Neutral switch | ④⑤ Tachometer |
| ⑲ "OIL" indicator light | ④⑥ Temp meter |
| ⑲ Resistor | ④⑦ Thermo unit |
| ⑳ Oil level switch | ④⑧ Brake light |
| ⑳ Flasher relay (Relay assembly ③①) | |





TROUBLESHOOTING

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

Procedure

Check;

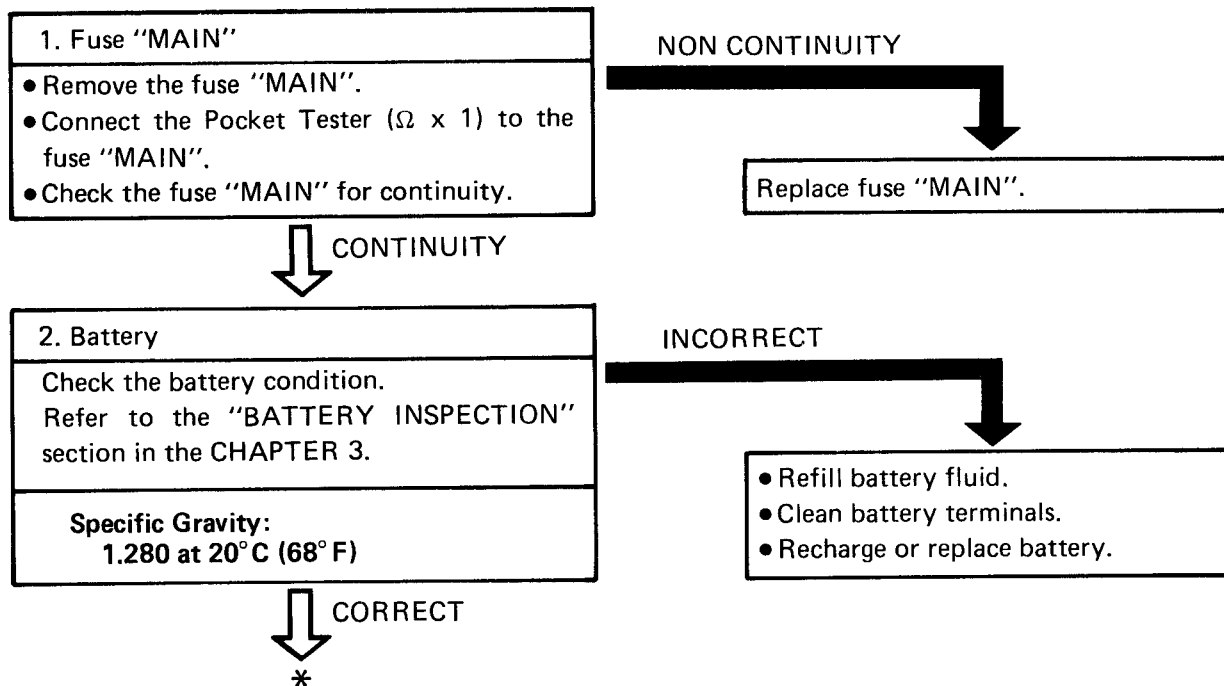
1. Fuse "MAIN"
2. Battery
3. Main switch
4. Wiring connection
(Entire signal system)

NOTE:

- Remove the following parts before troubleshooting.
 - 1) Seat
 - 2) Lower cowling
 - 3) Seat cowling
 - 4) Air filter case
- Use the following special tool in this troubleshooting.



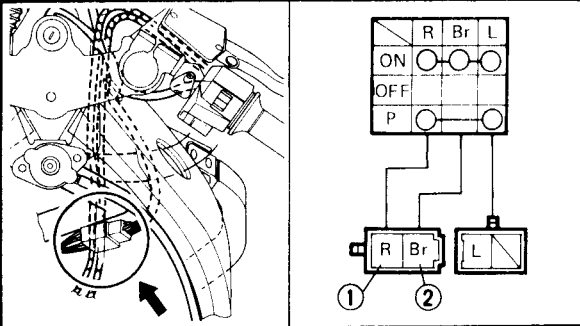
Pocket Tester:
P/N. YU-03112





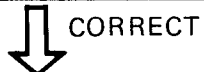
3. Main switch

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



4. Wiring connection

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



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

INCORRECT

Replace main switch.

POOR CONNECTION

Correct.

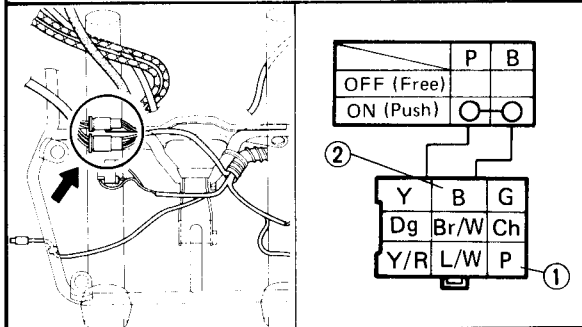


SIGNAL SYSTEM CHECK

1. Horn does not sound.

1. "HORN" switch

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



INCORRECT

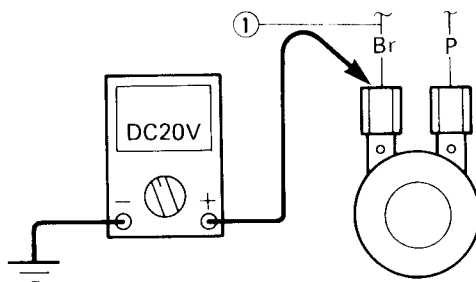
Replace handlebar switch (Left).

CORRECT

2. Voltage

- Connect the Pocket Tester (DC20V) to the horn connector.

Tester (+) Lead → Brown ① Lead
 Tester (-) Lead → Frame Ground



OUT OF SPECIFICATION

Check the entire lighting system for connections.

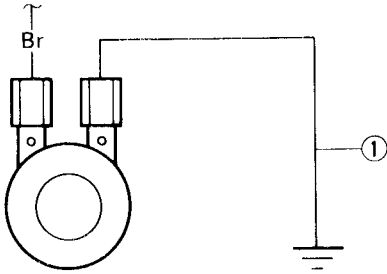
MEETS
 SPECIFICATION (12V)

*



3. Horn

- Disconnect the "Pink" lead at the horn terminal.
- Connect a jumper lead ① to the horn terminal and ground the jumper lead.
- Turn the mainswitch to "ON".



HORN IS SOUNDED

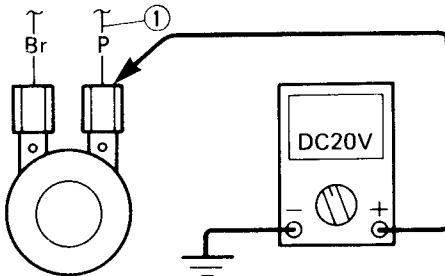
Horn is good.

HORN IS NOT
SOUNDED

4. Voltage

- Connect the Pocket Tester (DC20V) to the horn at the Pink terminal.

Tester (+) Lead → Pink ① Lead
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

Replace horn.

MEETS SPECIFICATION
(12V)

Adjust or replace 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.

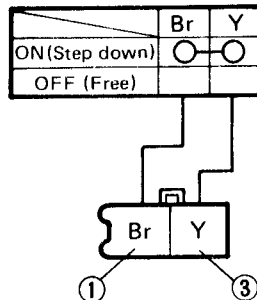
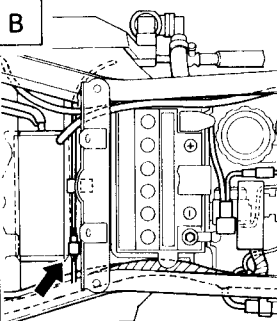
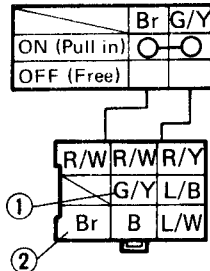
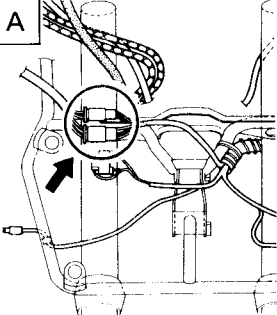
NON CONTINUITY

Replace bulb and/or bulb socket.

CONTINUITY

2. Brake switch

- Disconnect the brake switch coupler from the wire harness.
- Check the switch component for the continuity between "Brown ① and Green/-Yellow ②" or "Brown ① and Yellow ③". Refer to the "CHECKING OF SWITCHES" section.



- A Front brake switch
- B Rear brake switch

INCORRECT

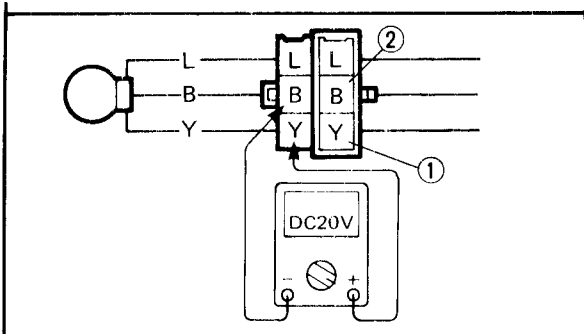
Replace brake switch.

CORRECT

3. Voltage

- Connect the Pocket Tester (DC20V) to the bulb socket connector.

Tester (+) Lead → Blue ① Lead
Tester (−) Lead → Black ② Lead



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

MEETS
SPECIFICATION (12V)

This circuit is good.

OUT OF SPECIFICATION

4. Wiring connection

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

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

1. Bulb and bulb socket

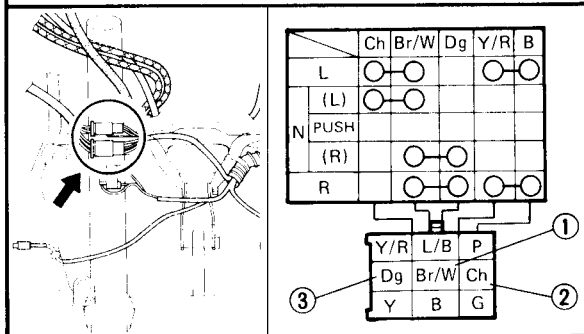
- Check the bulb and bulb socket for continuity. Refer to the "CHECKING OF BULBS" section.

NO CONTINUITY

CONTINUITY

2. "TURN" switch

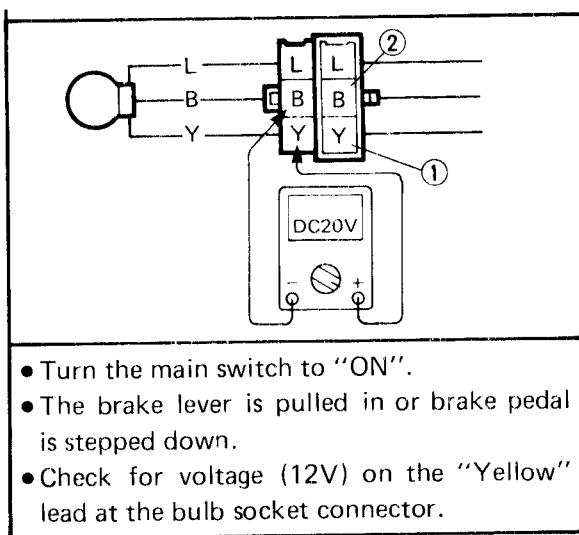
- Disconnect the handlebar switch coupler from the wire harness.
- Check the switch component for the continuity between "Brown/White ① and Chocolate ②" and "Brown/White ① and Dark green ③". Refer to the "CHECKING OF SWITCHES" section.



INCORRECT

Replace handlebar switch (Left).

CORRECT
*



MEETS
SPECIFICATION (12V)

This circuit is good.

OUT OF SPECIFICATION

4. Wiring connection

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

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

1. Bulb and bulb socket

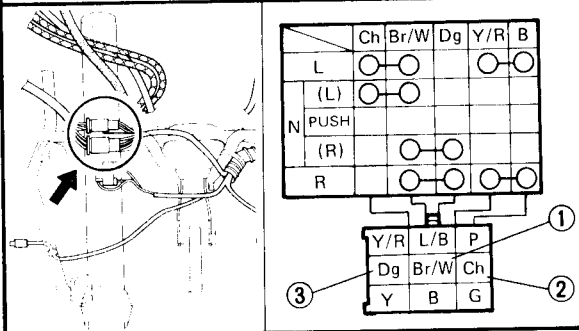
- Check the bulb and bulb socket for continuity. Refer to the "CHECKING OF BULBS" section.

NO CONTINUITY

CONTINUITY

2. "TURN" switch

- Disconnect the handlebar switch coupler from the wire harness.
- 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

Replace handlebar switch (Left).

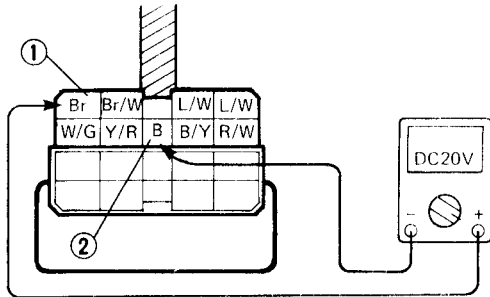
CORRECT
*



3. Voltage

- Connect the pocket tester (DC20V) to the relay assembly connector.

Tester (+) Lead → Brown ① Terminal
Tester (–) Lead → Black ② Terminal



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

OUT OF SPECIFICATION

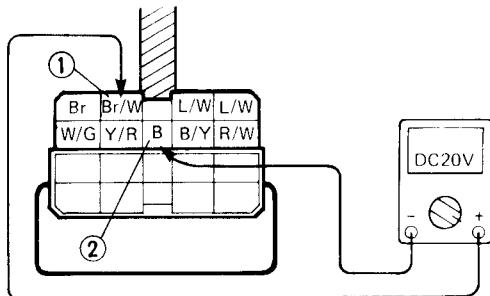
Check the entire signal system for connections.

MEETS
SPECIFICATION (12V)

4. Voltage

- Connect the pocket tester (DC20V) to the relay assembly connector.

Tester (+) Lead → Brown/White ① Terminal
Tester (–) Lead → Black ② Terminal



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

OUT OF SPECIFICATION

Replace relay assembly.

MEETS
SPECIFICATION (12V)

*



5. Voltage
<ul style="list-style-type: none"> • Connect the Pocket Tester (DC20V) to the bulb socket connector.
At Flasher Light (Left): Tester (+) Lead → Chocolate ① Lead Tester (–) Lead → Frame Ground
At Flasher Light (Right): Tester (+) Lead → Dark green ② Lead Tester (–) Lead → Frame Ground
<ul style="list-style-type: none"> • 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.



MEETS
SPECIFICATION (12V)

This circuit is good.

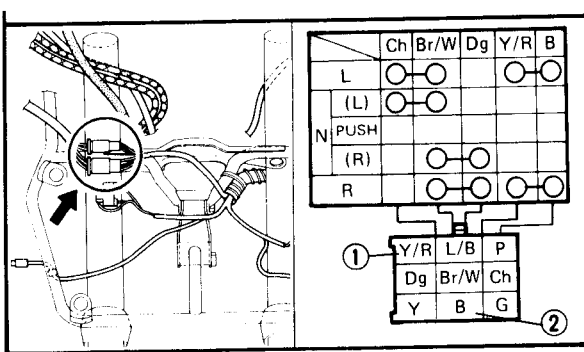
OUT OF SPECIFICATION

6. Wiring connection

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

4. Blinking (Flasher light) is not cancelled automatically.

1. "TURN" switch
<ul style="list-style-type: none"> • Disconnect the handlebar switch coupler from the wire harness. • Check the switch component for the continuity between "Yellow/Red ① and Black ②". Refer to the "CHECKING OF SWITCHES" section.



INCORRECT

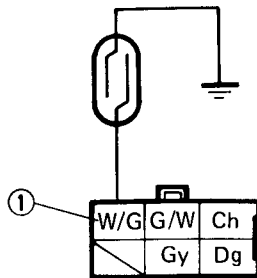
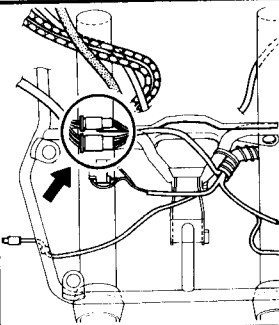
Replace handlebar switch (Left).

CORRECT

2. Reed switch

- Disconnect reed switch coupler from the wire harness.
- Connect the pocket tester ($\Omega \times 1$) to the reed switch terminal.

Tester (+) Lead → White/Green ① Terminal
 Tester (–) Lead → Ground



- Check the reed switch for specified resistance.



Reed Switch Resistance:
 About 7Ω
 (White/Green – Ground)
 Then return back 0Ω or $\infty\Omega$
 when wheel is stopped.

NOTE: _____

When measuring reed switch resistance, lift front wheel and rotate the wheel by hand.

OUT OF SPECIFICATION

Replace speedometer assembly.

MEETS SPECIFICATION

3. Wiring connection

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

POOR CONNECTION

Correct.

CORRECT

*



Replace relay assembly.

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.

NO CONTINUITY

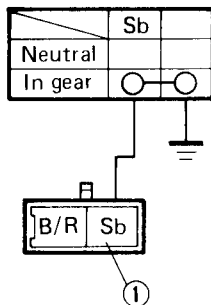
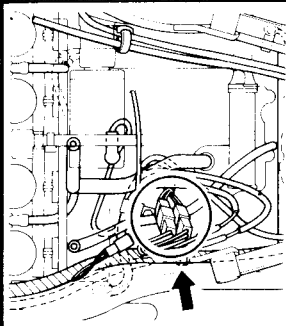
Replace bulb and/or bulb socket.



CONTINUITY

2. 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.

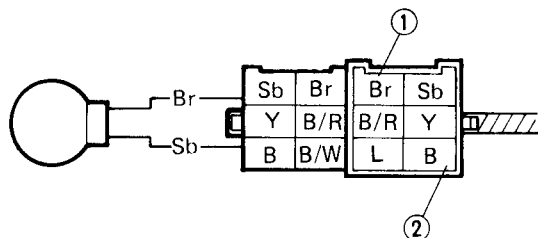


CORRECT

3. Voltage

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

Tester (+) Lead → Brown ① Terminal
Tester (−) Lead → Black ② Terminal



- 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.

OUT OF SPECIFICATION

6. Wiring connection

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

5. "OIL" indicator light does not come on when push "START" switch.

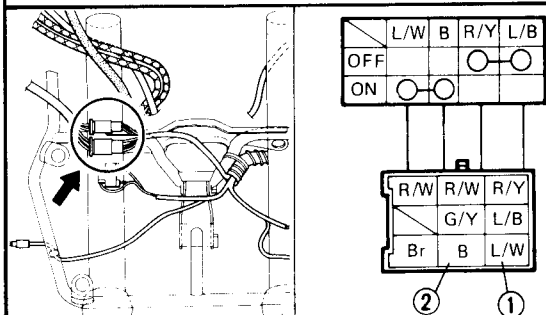
1. Bulb and bulb socket

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

CONTINUITY

2. "START" switch

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



CORRECT

NO CONTINUITY

Replace bulb and/or bulb socket.

INCORRECT

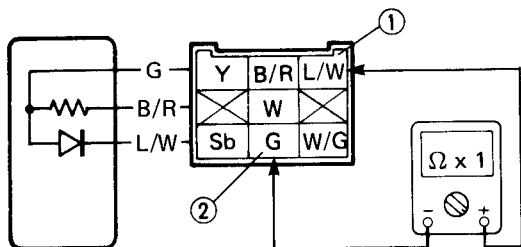
Replace handlebar switch (Right).



3. Diode

- Disconnect the diode unit coupler from the wire harness.
- Connect the pocket tester ($\Omega \times 1$) to the diode leads.

Tester (+) Lead → Blue/White ① Lead
Tester (–) Lead → Green ② Lead



- Check the diode for continuity.

NO CONTINUITY

Replace diode unit.

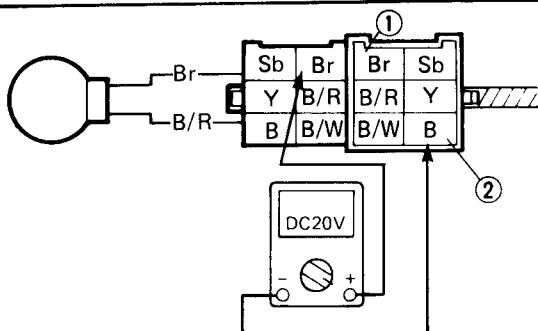


CONTINUITY

4. Voltage

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

Tester (+) Lead → Brown ① Terminal
Tester (–) Lead → Black ② Terminal





- 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.

OUT OF SPECIFICATION

5. Wiring connection

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

6. "OIL" indicator light does not come on, when oil tank is empty.

1. Bulb and bulb socket

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

CONTINUITY

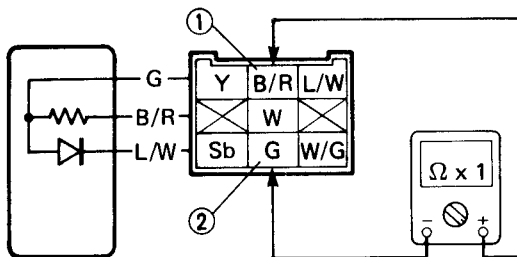
NO CONTINUITY

Replace bulb and/or bulb socket.

2. Resister

- Disconnect the diode unit coupler from the wire harness.
- Connect the pocket tester ($\Omega \times 1$) to the diode leads.

Tester (+) Lead \rightarrow Black/Red ① Lead
Tester (–) Lead \rightarrow Green ② Lead



- Check the resister for continuity.

CONTINUITY
*

NO CONTINUITY

Replace diode unit.

*
↓

3. Oil level switch

- Remove the oil level switch from the oil tank.
- Connect the pocket tester ($\Omega \times 1$) to the oil level gauge.

Tester (+) Lead → Black/Red ① Terminal
 Tester (−) Lead → Oil Level Switch Body

A

B

- Check the oil level switch for continuity.

Switch position		Good condition	Bad condition		
A	Upright position	X	○	X	○
	Upside down position	○	X	X	○

○ : Continuity X : No continuity

↓ GOOD CONDITION

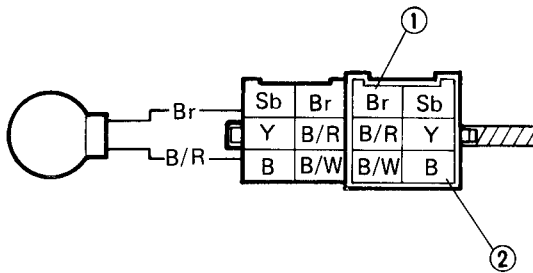
4. Voltage

- Connect the Pocket Tester (DC20V) to the bulb socket connector.

Tester (+) Lead → Brown ① Terminal
 Tester (−) Lead → Black ② Terminal

BAD CONDITION
↓

Replace oil level switch.



- 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.

OUT OF SPECIFICATION

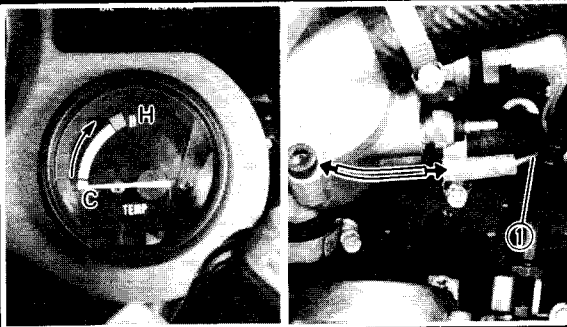
5. Wiring connection

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

7. When engine is hot, tempmeter does not move.

1. Tempmeter

- Disconnect the thermo unit lead (Green/-Red) ①.
- Check that the tempmeter stays put at "C".
- Ground the lead to the frame with the jumper lead.
- Turn the main switch to "ON".
- Check that the tempmeter hand moves up to "H".



↓ INCORRECT

⚠ CAUTION:

As soon as the meter hand get in the "Red zone, turn the main switch to "OFF" to avoid damage to the temp-meter.

CORRECT

Check wiring connection.

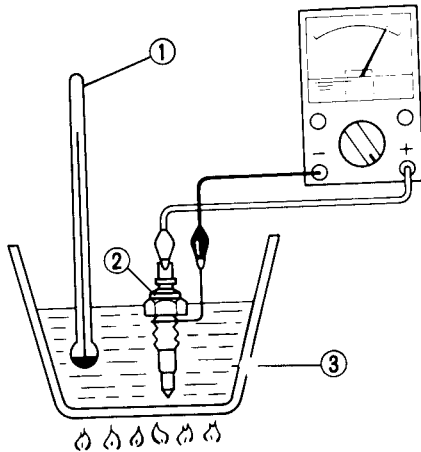
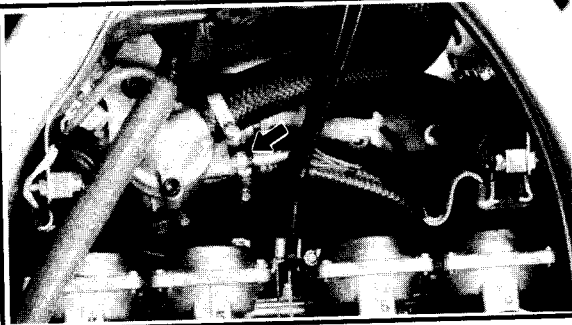


2. Thermo unit

- Remove the thermo unit.
- Immerse the thermo unit ② in coolant ③.
- Measure the resistance at each temperature as tabulated.

① Thermo meter

Coolant Temperature	Resistance
50°C (122°F)	154Ω
80°C (176°F)	47 ~ 57Ω
100°C (212°F)	26 ~ 29Ω
120°C (248°F)	16Ω



- After measuring the thermo unit, install the 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.

⚠ CAUTION:

Avoid overtightening.



Thermo Unit:
15 Nm (1.5 m · kg, 11 ft · lb)
Use Water Resistant Sealant.

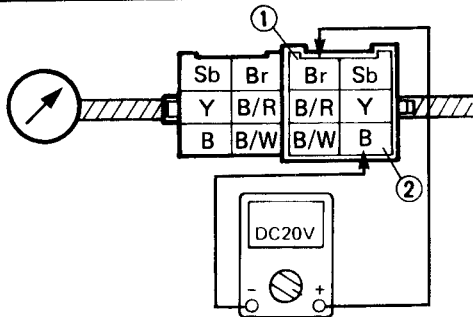
OUT OF SPECIFICATION

Replace thermo unit.

5. Voltage

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

Tester (+) Lead → Brown ① Terminal
Tester (–) Lead → Black ② Terminal



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

OUT OF SPECIFICATION

Check the entire signal system for connections.

MEETS SPECIFICATION (12V)

6. Wiring connection

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

POOR CONNECTION

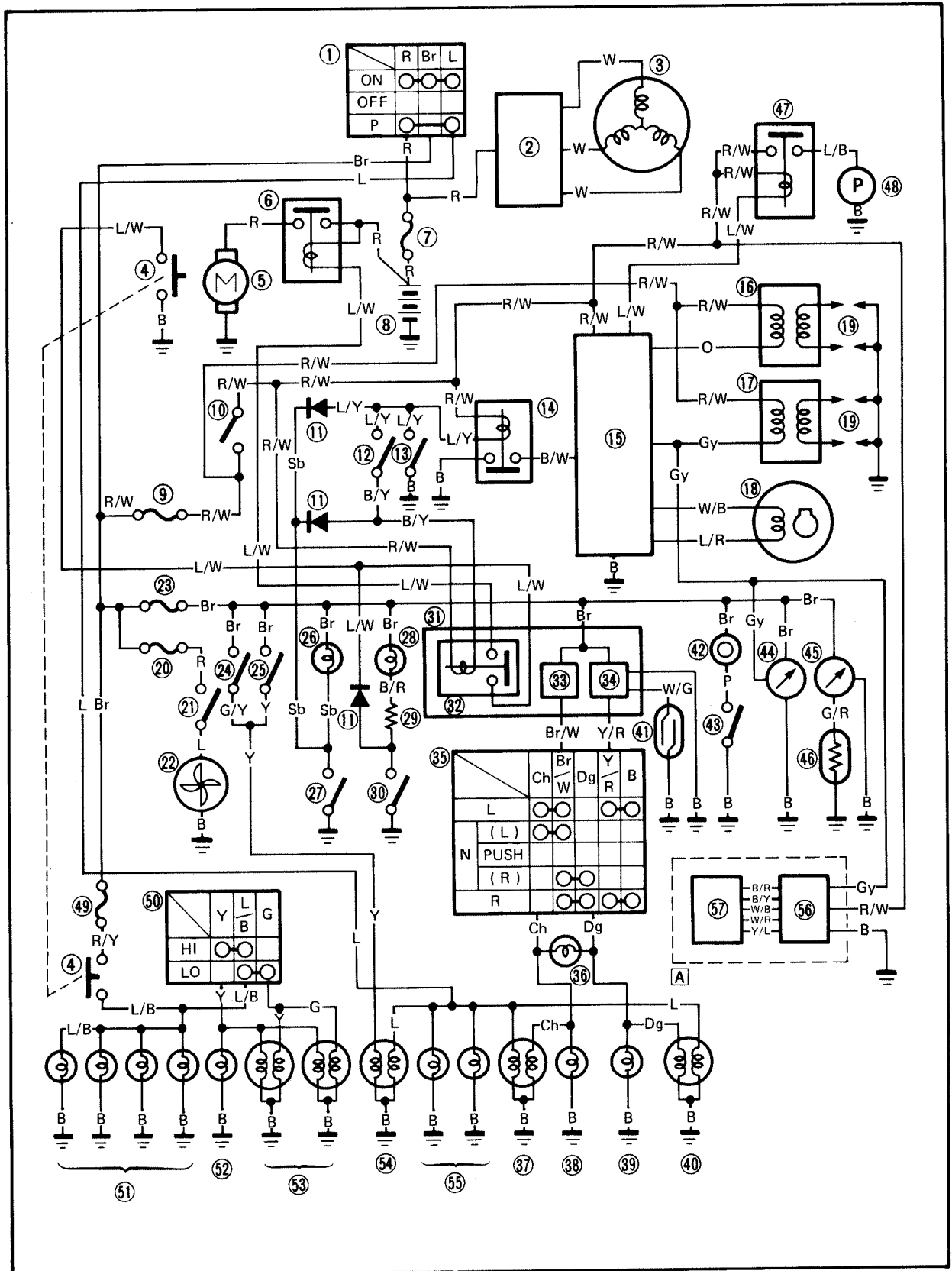
Correct.

CORRECT

Replace tempmeter.



COOLING SYSTEM
CIRCUIT DIAGRAM



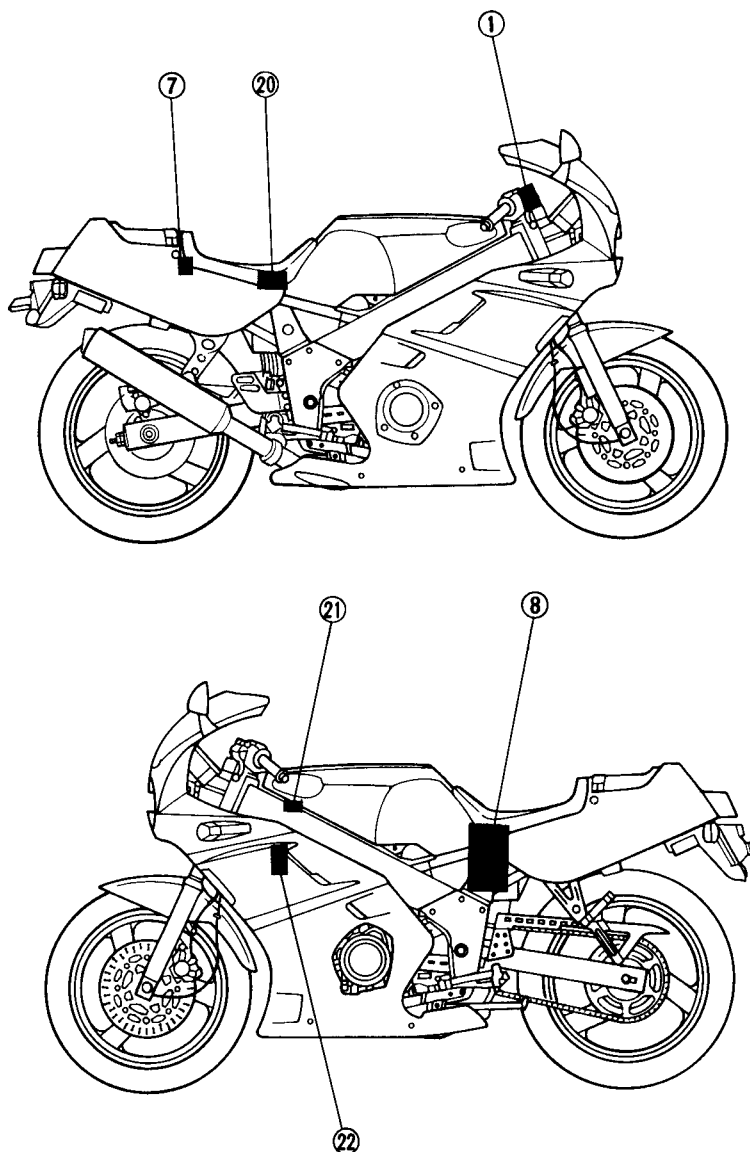


A forementioned circuit diagram shows the cooling circuit in the circuit diagram.

NOTE:

For the color codes, see page 8-2.

- ① Main switch
- ⑦ Fuse "MAIN"
- ⑧ Battery
- ⑩ Fuse "FAN"
- ⑪ Thermo switch
- ⑫ Fan motor





TROUBLESHOOTING

FAN MOTOR DOES NOT TURN.

Procedure

Check;

- | | |
|-----------------------|-------------------------|
| 1. Fuse "MAIN/FAN" | 5. Thermo switch |
| 2. Battery | 6. Wiring connection |
| 3. Fan motor (Test 1) | (Entire cooling system) |
| 4. Fan motor (Test 2) | |

NOTE:

- Remove the following before troubleshooting.

1) Seat	3) Air filter case
2) Top cover	
- Use the following special tool in this troubleshooting.



Pocket Tester:
P/N. YU-03112

1. Fuse "MAIN/FAN"

- Remove the fuse "MAIN" and "FAN".
- Connect the Pocket Tester ($\Omega \times 1$) to the fuse "MAIN" and "FAN".
- Check the fuse for continuity.

NO CONTINUITY

Replace fuse "MAIN" and/or "FAN".

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)

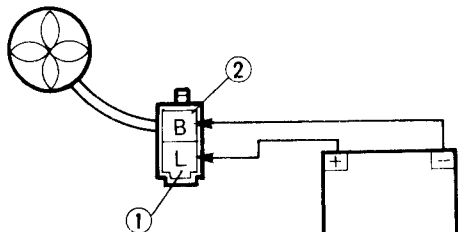
CORRECT

*

**3. Fan motor (Test 1)**

- Disconnect the fan motor coupler.
- Connect the battery voltage as shown.

Battery (+) Lead → Blue ① Terminal
Battery (-) Lead → Black ② Terminal



- Check the fan motor for operation.

NO OPERATIVE

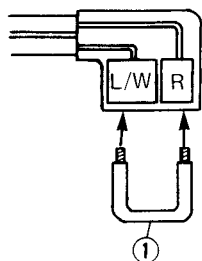
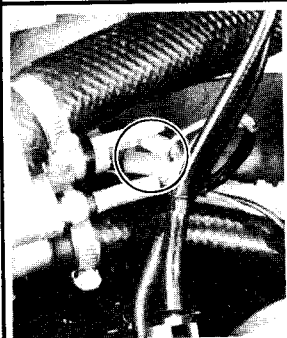
Replace fan motor.



OPERATIVE

4. Fan motor (Test 2)

- Disconnect the thermo switch coupler.
- Connect the terminal with the jumper ① lead as shown.



NO OPERATIVE

Check wiring connection(s).



OPERATIVE



5. Thermo switch

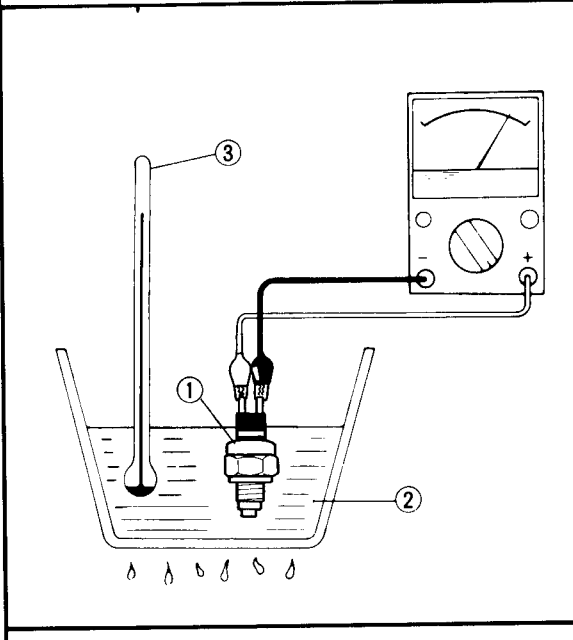
- Remove the thermo switch from the thermostat housing.
- Connect the pocket tester ($\Omega \times 1$) to the thermo switch ①.
- Immerse the thermo switch in the water ②.
- Check the thermo switch for continuity. Note temperatures while heating the water with the temperature gauge ③.

Test Step	Water Temperature	Good Condition
1	0 ~ 98°C (32 ~ 208.4°F)	X
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)	X

Test 1 & 2; Heat-up tests

Test 3* & 4*; Cool-down tests

○ : Continuity X : No continuity



⚠ 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:

8 Nm (0.8 m·kg, 5.8 ft·lb)

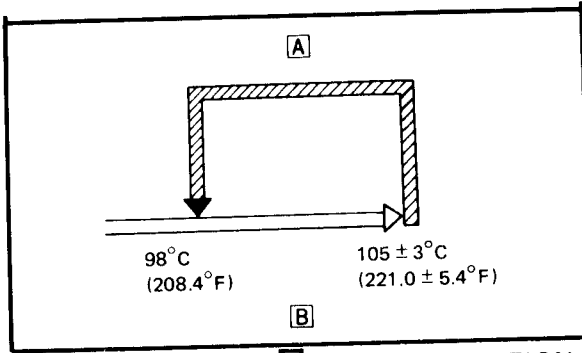
Three Bond Sealock® # 10

⚠ CAUTION:

After replacing the thermo switch, check the coolant level in the radiator and also check for any leakage.

NOTE:

The electric fan is controlled by the thermo switch whenever the main switch is "ON" or "OFF". Thus, under certain operating conditions, this fan may continue to run until the engine temperature has cooled down to about 98°C (208°F).



- A THERMO SWITCH "ON", FAN "ON"
B COOLANT TEMPERATURE

BAD CONDITION

Replace thermo switch.

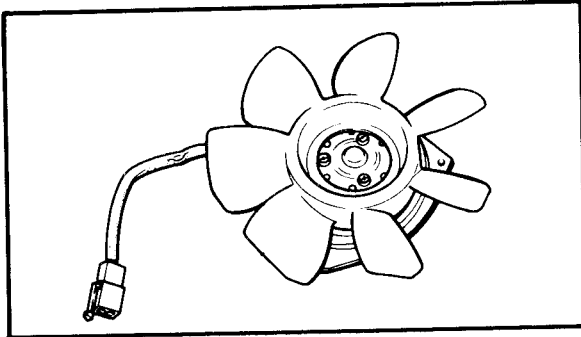
GOOD CONDITION

POOR CONNECTION

Correct.

6. Wiring connection

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



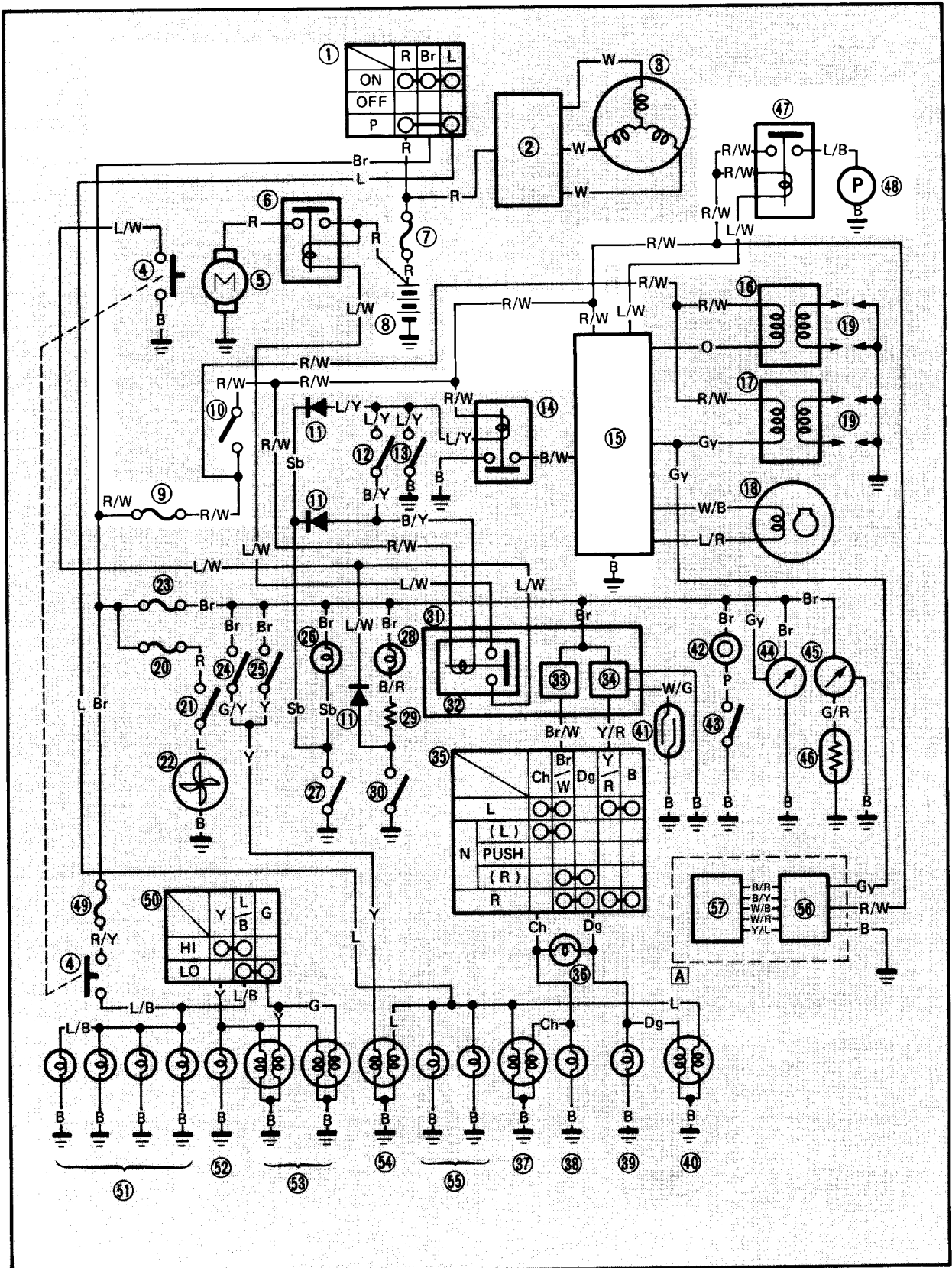
Fan Motor Inspection

The following problems may require repair or replacement of components

Component	Condition
Fan motor	Unsmooth operation
Fan motor	Excessive vibration
Fan motor bracket	Cracks
Fan blades	Cracks
Securing bolts	Looseness



FUEL SYSTEM CIRCUIT DIAGRAM



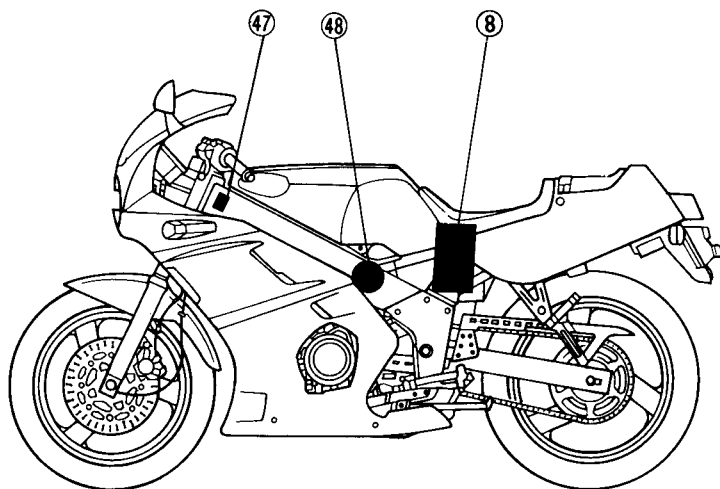
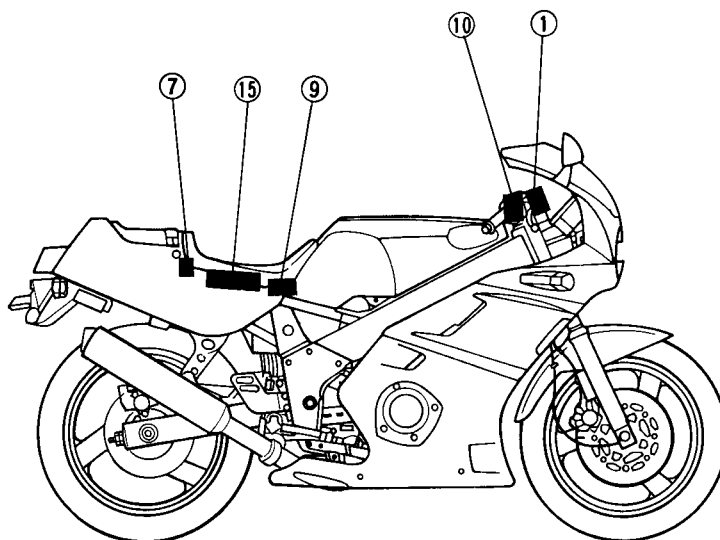


A forementioned circuit diagram shows the fuel circuit in the circuit diagram.

NOTE:

For the color codes, see page 8-2.

- ① Main switch
- ⑦ Fuse "MAIN"
- ⑧ Battery
- ⑨ Fuse "IGNITION"
- ⑩ "ENGINE STOP" switch
- ⑮ Digital ignitor unit
- ④⑦ Fuel pump relay
- ④⑧ Fuel pump





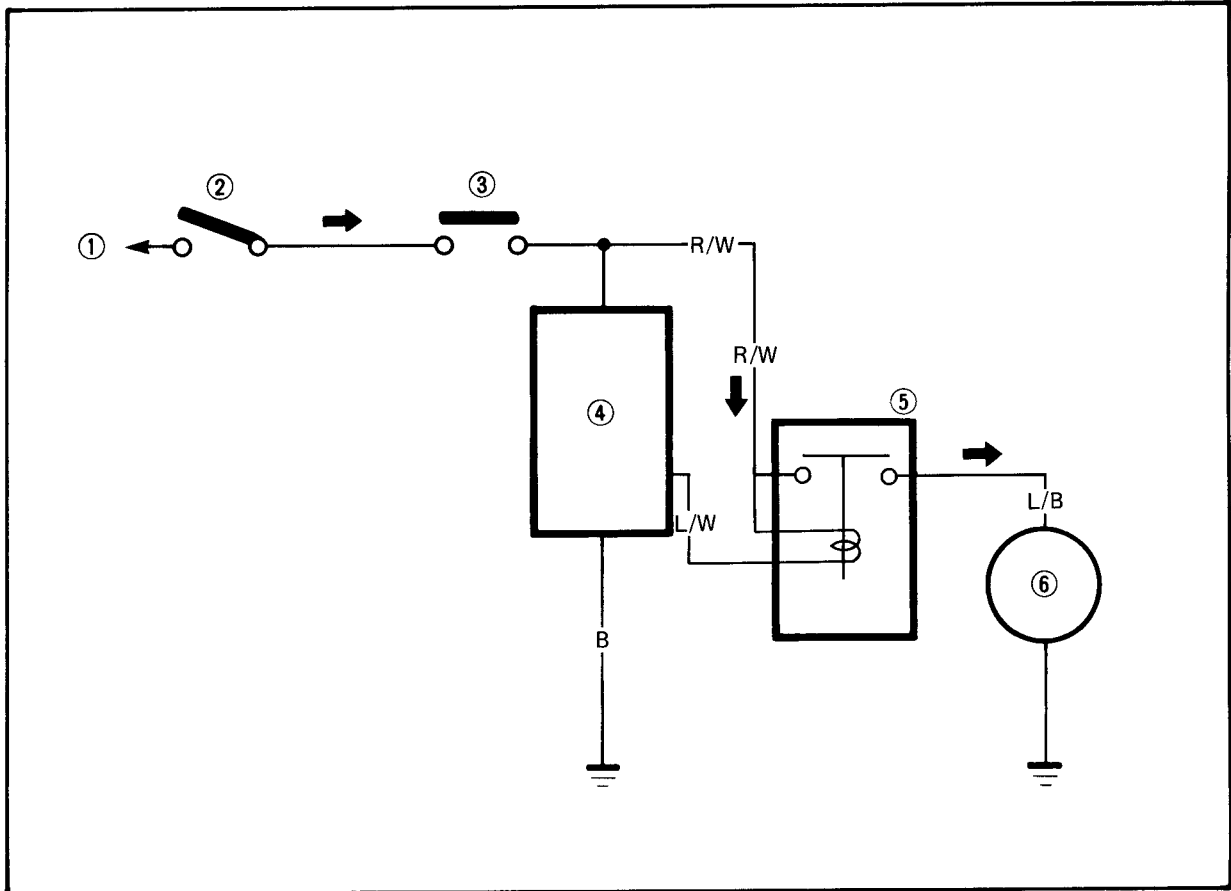
FUEL PUMP CIRCUIT OPERATION

The fuel pump circuit consists of the fuel pump relay, fuel pump, "ENGINE STOP" switch and digital ignition unit.

The digital ignition unit includes the control unit for the fuel pump.

The fuel pump starts and stops as indicated in the chart below.

- ① To main fuse and battery
- ② Main switch
- ③ "ENGINE STOP" switch
- ④ Digital ignitor unit
- ⑤ Fuel pump relay
- ⑥ Fuel pump



FUEL PUMP		
START		STOP
• Main/Engine stop switch turned to "ON"	• Engine turned on	• Engine turned off
For about 5 seconds when carburetor fuel level is low	After about 0.1 second	After about 5 seconds



TROUBLESHOOTING

FUEL PUMP FAILS TO OPERATE.

Procedure

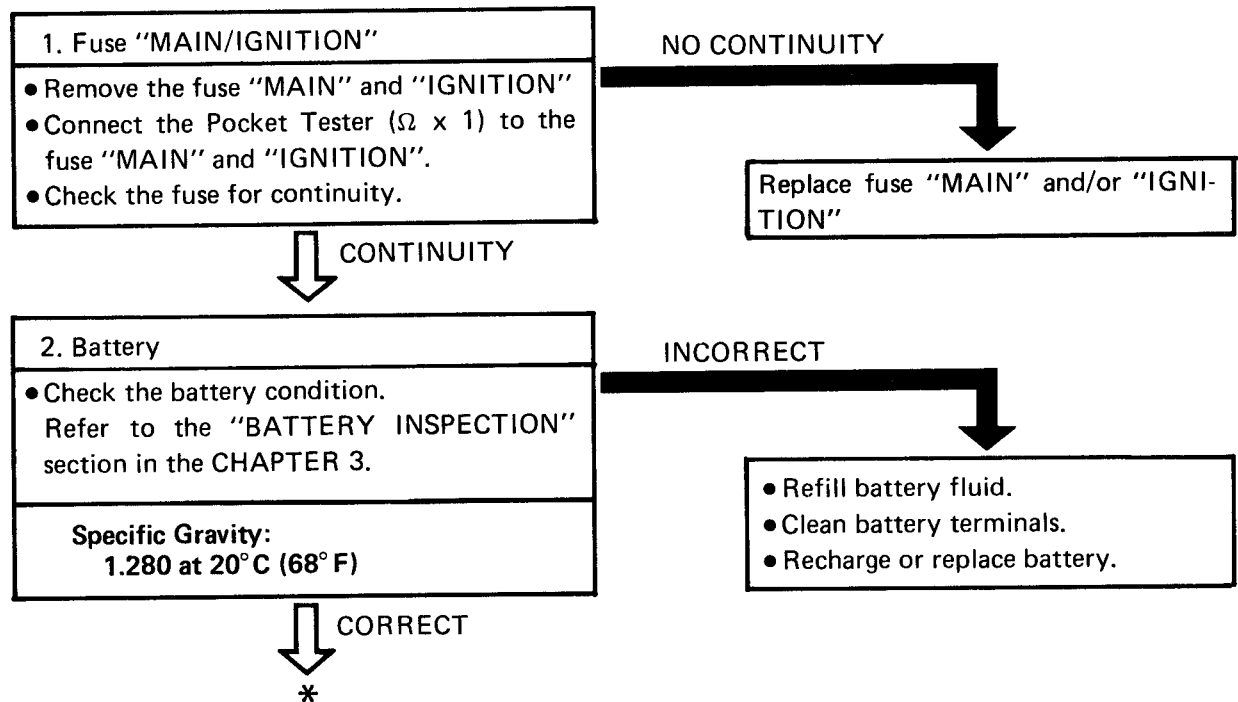
- | | |
|-------------------------|----------------------|
| 1. Fuse "MAIN/IGNITION" | 5. Fuel pump relay |
| 2. Battery | 6. Fuel pump |
| 3. Main switch | 7. Wiring connection |
| 4. "ENGINE STOP" switch | (Entire fuel system) |

NOTE:

- Remove the following before troubleshooting.
 - 1) Seat
 - 2) Fuel tank
- Use the following special tool in this troubleshooting.



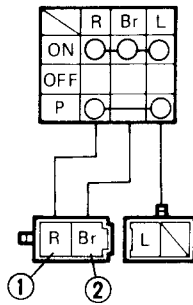
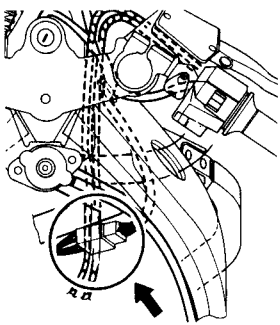
Pocket Tester:
YU-03112





3. 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

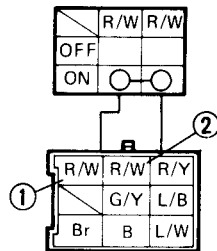
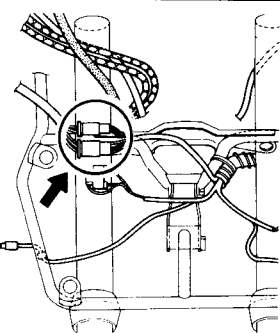
Replace main switch.



CORRECT

4. "ENGINE STOP" switch

- Disconnect the "ENGINE STOP" switch 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).



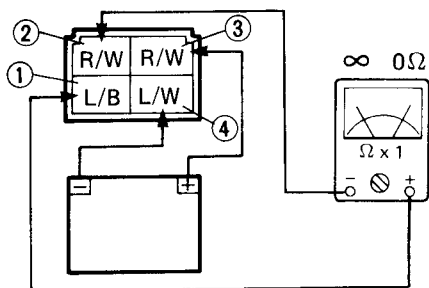
CORRECT



5. Fuel pump relay

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

Tester (+) Lead → Blue/Black ① Terminal
 Tester (–) Lead → Red/White ② Terminal
 Battery (+) Lead → Red/White ③ Terminal
 Battery (–) Lead → Blue/White ④ Terminal



- Check the relay for continuity.

NO CONTINUITY

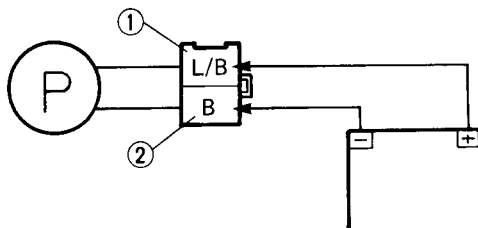
Replace fuel pump relay.

CONTINUITY

6. Fuel pump

- Disconnect the fuel pump coupler from the wire harness.
- Connect the battery voltage as shown.

Battery (+) Lead → Blue/Black ① Terminal
 Battery (–) Lead → Black ② Terminal



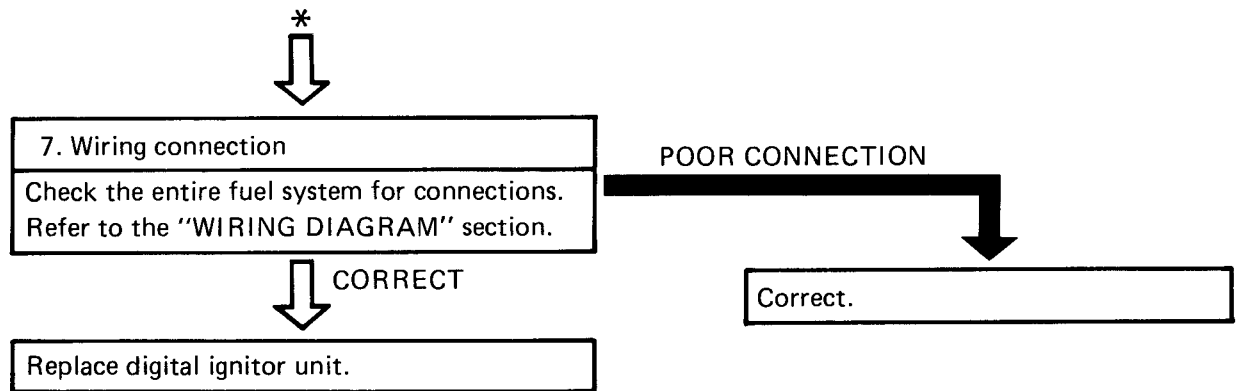
- Check the fuel pump operation.

NO OPERATIVE

Replace fuel pump.

OPERATIVE

*





FUEL PUMP TEST

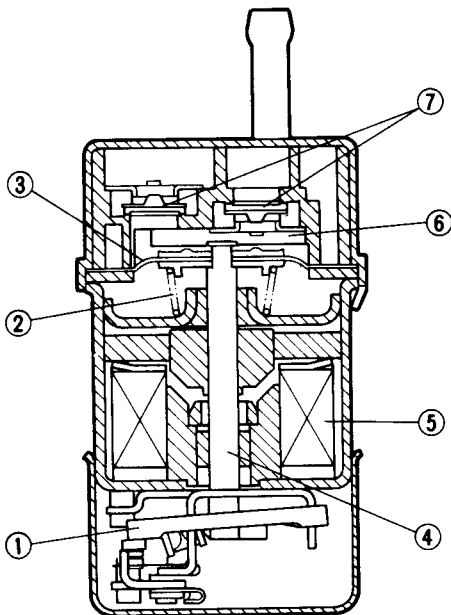
Operation

The diaphragm is pulled in by the plunger allowing fuel to be sucked into the fuel chamber. Fuel is pushed out from the pump until carb float chamber is filled with fuel, and then the cut-off switch cuts off the circuit.

When the spring pushes the diaphragm further to the end, the cut-off switch turns on and the solenoid coil pulls the plunger with the diaphragm forcing fuel into the fuel chamber.

NOTE:

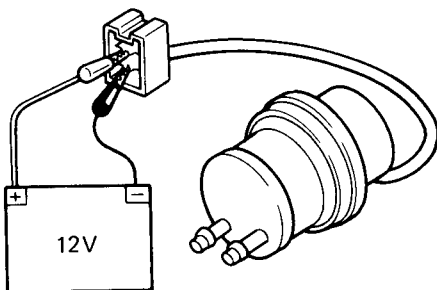
When the main and "ENGINE STOP" switches are ON, the fuel pump relay is activated for five (5) seconds at which time the fuel pump operates.



- ① Cut-off switch
- ② Spring
- ③ Diaphragm
- ④ Plunger
- ⑤ Solenoid coil
- ⑥ Fuel chamber
- ⑦ Valve
- ⑧ Outlet
- ⑨ Inlet

Inspection

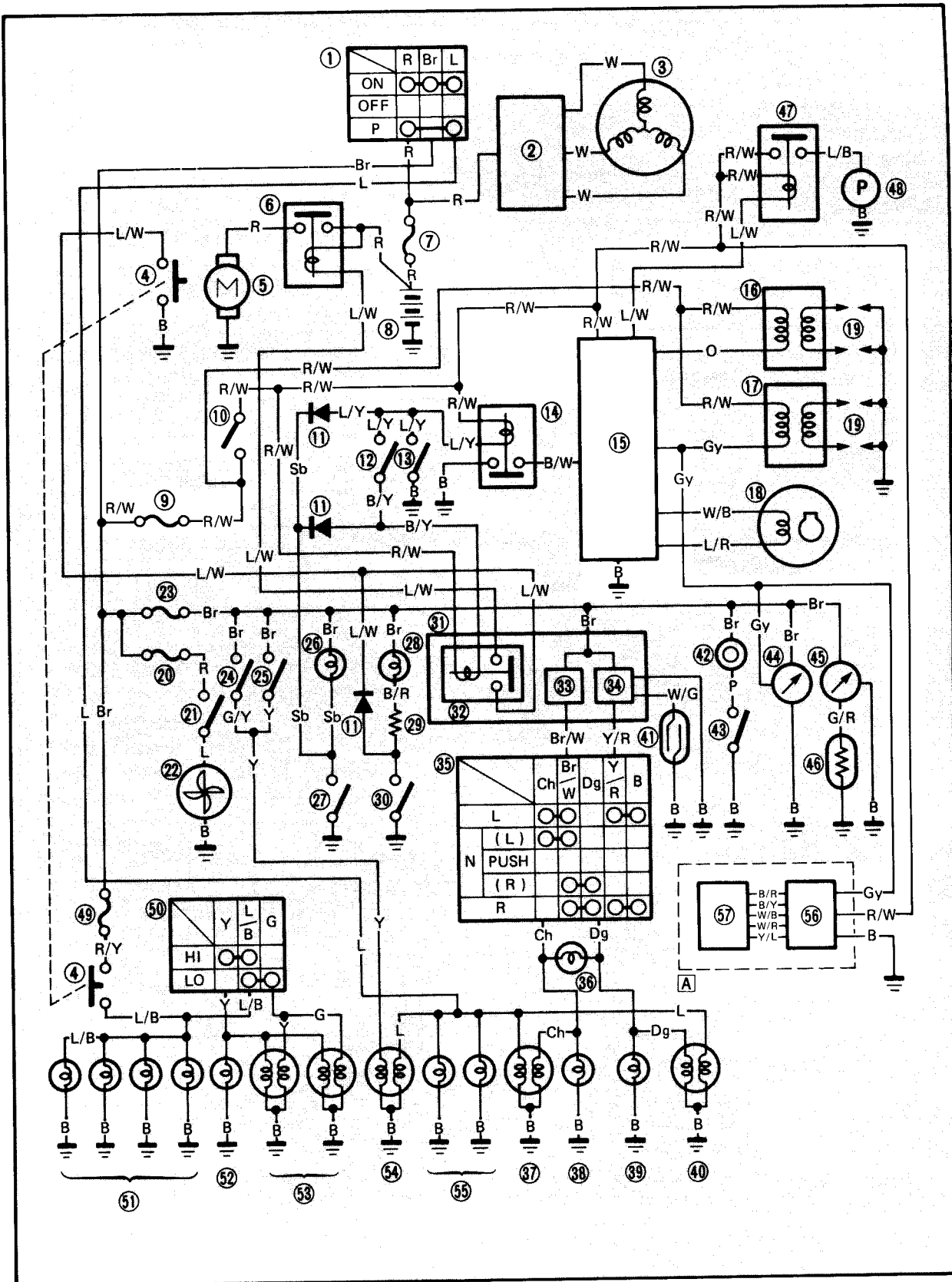
1. Connect:
 - Battery (12V)
2. Inspect:
 - Fuel pump
 - Cracks/Damage → Replace.
3. Check:
 - Fuel pump operation
 - Faulty operation → Replace.





YAMAHA EXHAUST VARIABLE VALVE SYSTEM (For California only)

CIRCUIT DIAGRAM



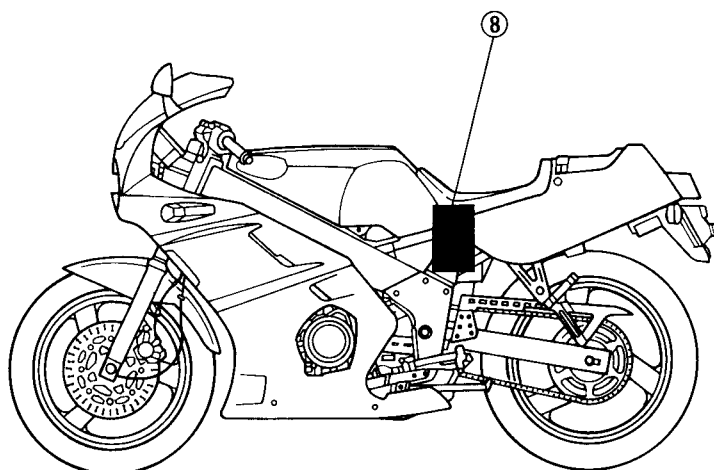
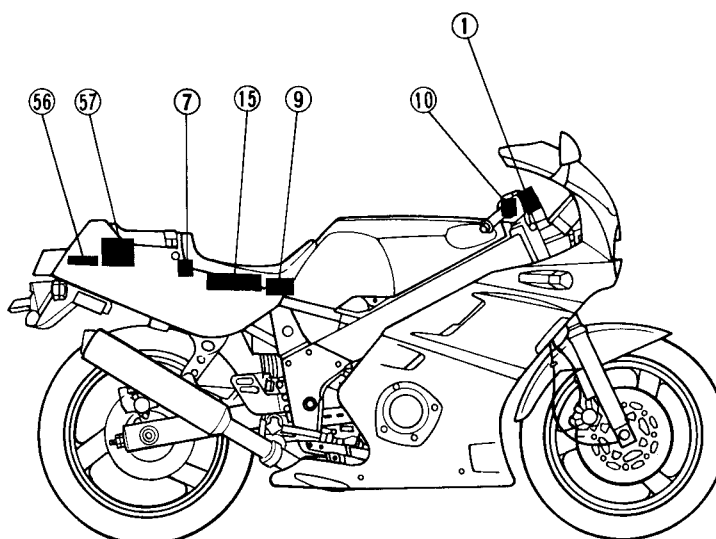


A forementioned circuit diagram shows the cooling circuit in the circuit diagram.

NOTE:

For the color codes, see page 8-2.

- ① Main switch
- ⑦ Fuse "MAIN"
- ⑧ Battery
- ⑨ Fuse "IGNITION"
- ⑩ "ENGINE STOP" switch
- ⑮ Digital ignition unit
- ⑤⑥ EXUP control unit
- ⑤⑦ EXUP servomotor





TROUBLESHOOTING

WHEN MAIN SWITCH IS TURNED TO "ON", EXUP SERVOMOTOR DOES NOT OPERATE ONE CYCLE.

Procedure (1)

Check;

1. Voltage
2. EXUP servomotor operation
3. EXUP servomotor operation
4. Wiring connection
(Entire EXUP system)

Procedure (2)

Check;

1. Fuse "MAIN/IGNITION"
2. Battery
3. Main switch
4. "ENGINE STOP" switch
5. Wiring connection
(Entire EXUP system)

NOTE:

- Remove the following parts before troubleshooting.
 - 1) Seat
 - 2) Seat cowling
 - 3) Lower cowling (Left)
- Use the following special tool in this troubleshooting.

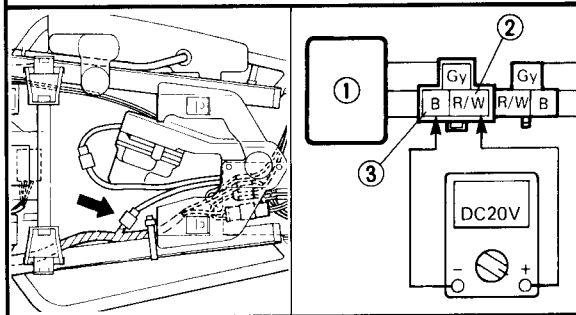


Pocket Tester:
P/N. YU-03112

Procedure (1)**1. Voltage**

- Connect the pocket tester (DC20V) to the "EXUP control unit" ① connector.

Tester (+) Lead → Red/White ② Terminal
Tester (–) Lead → Black ③ Terminal





- Turn the main switch to "ON" and check for the voltage between "Black and Red/-White".



Voltage (Red/White – Black):
10 ~ 14V

MEETS
SPECIFICATION

OUT OF SPECIFICATION

Go to the "Procedure (2)".

2. EXUP servomotor operation

- Disconnect the EXUP cables from the pulley.
- Turn the main switch to "ON" and check the EXUP servomotor operation.

OPERATIVE

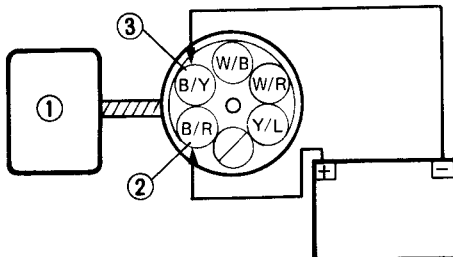
Seized or damaged power valve at muffler.

NO OPERATIVE

3. EXUP servomotor operation

- Disconnect the EXUP servomotor ① coupler.
- Connect the battery leads to the EXUP servomotor terminal.

Battery Positive Lead → Black/Red ② Lead
Battery Negative Lead → Black/Yellow ③ Lead



⚠ CAUTION:

This test should be performed within a few seconds to prevent further damage.

NO OPERATIVE

Replace EXUP servomotor.

OPERATIVE

*

**4. Wiring connection**

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

POOR CONNECTION

Correct.



CORRECT

Replace EXUP control unit.

Procedure (2)**1. Fuse "MAIN/IGNITION"**

- Remove the fuse "MAIN" and "IGNITION".
- Connect the Pocket Tester ($\Omega \times 1$) to the fuse "MAIN" and "IGNITION".
- Check the fuse for continuity.

NOCONTINUITY

Replace fuse "MAIN" and/or "IGNITION".



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

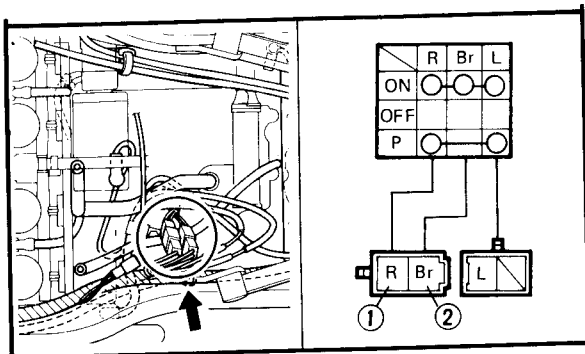
- Refill battery fluid.
- Clean battery terminals.
- Recharge or replace battery.



CORRECT

3. Main switch

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



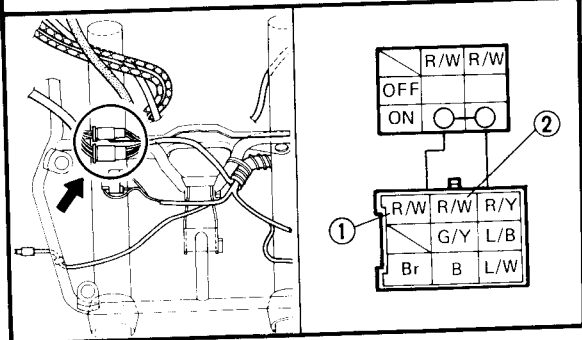
INCORRECT

Replace main switch.

CORRECT

4. "ENGINE STOP" switch

- Disconnect the "ENGINE STOP" switch 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

5. Wiring connection

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

POOR CONNECTION

Correct.

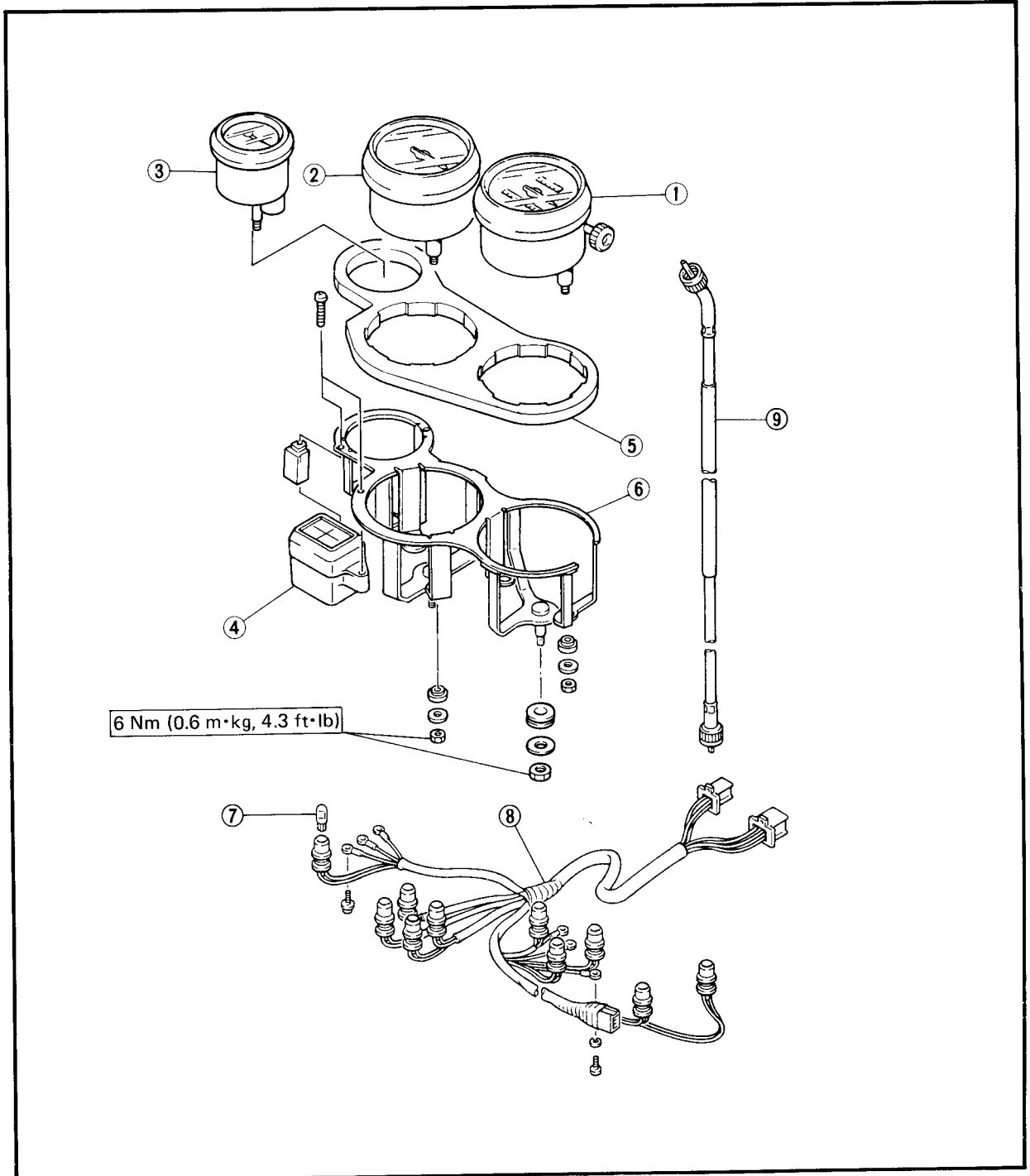
CORRECT

Go to "Procedure (1)"



METER ASSEMBLY

- ① Speedometer
- ② Tachometer
- ③ Tempmeter
- ④ Indicator lights unit
- ⑤ Damper
- ⑥ Meter bracket
- ⑦ Bulb
- ⑧ Bulb socket leads
- ⑨ Speedometer cable



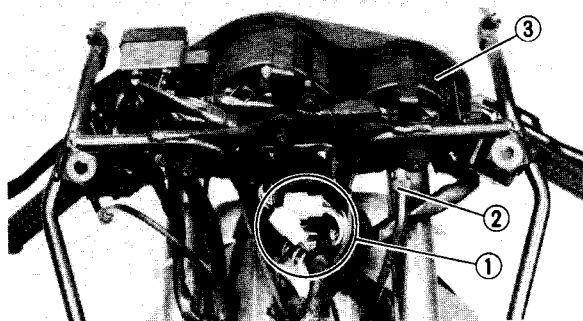


REMOVAL

1. Remove:

- Upper cowl

Refer to the "COWLING REMOVAL AND INSTALLATION — REMOVAL" section in the CHAPTER 3.

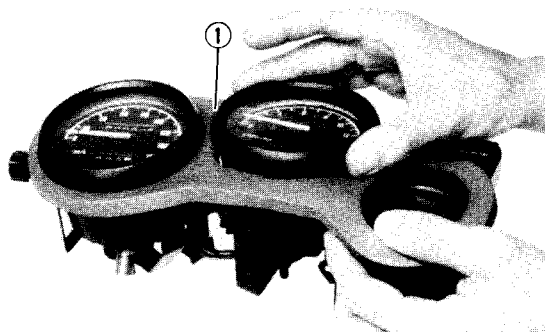


2. Disconnect:

- Bulb socket coupler (1)
- Speedometer cable (2)

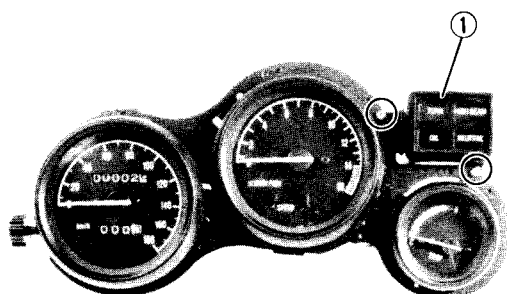
3. Remove:

- Speedometer assembly (3)



4. Remove:

- Damper (1)

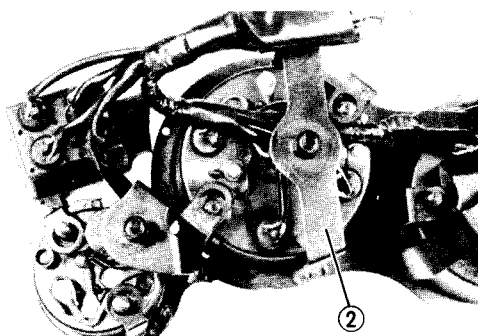


5. Remove:

- Indicator light unit (1)
- Meter bracket (2)

6. Remove:

- Bulb socket lead



TROUBLESHOOTING

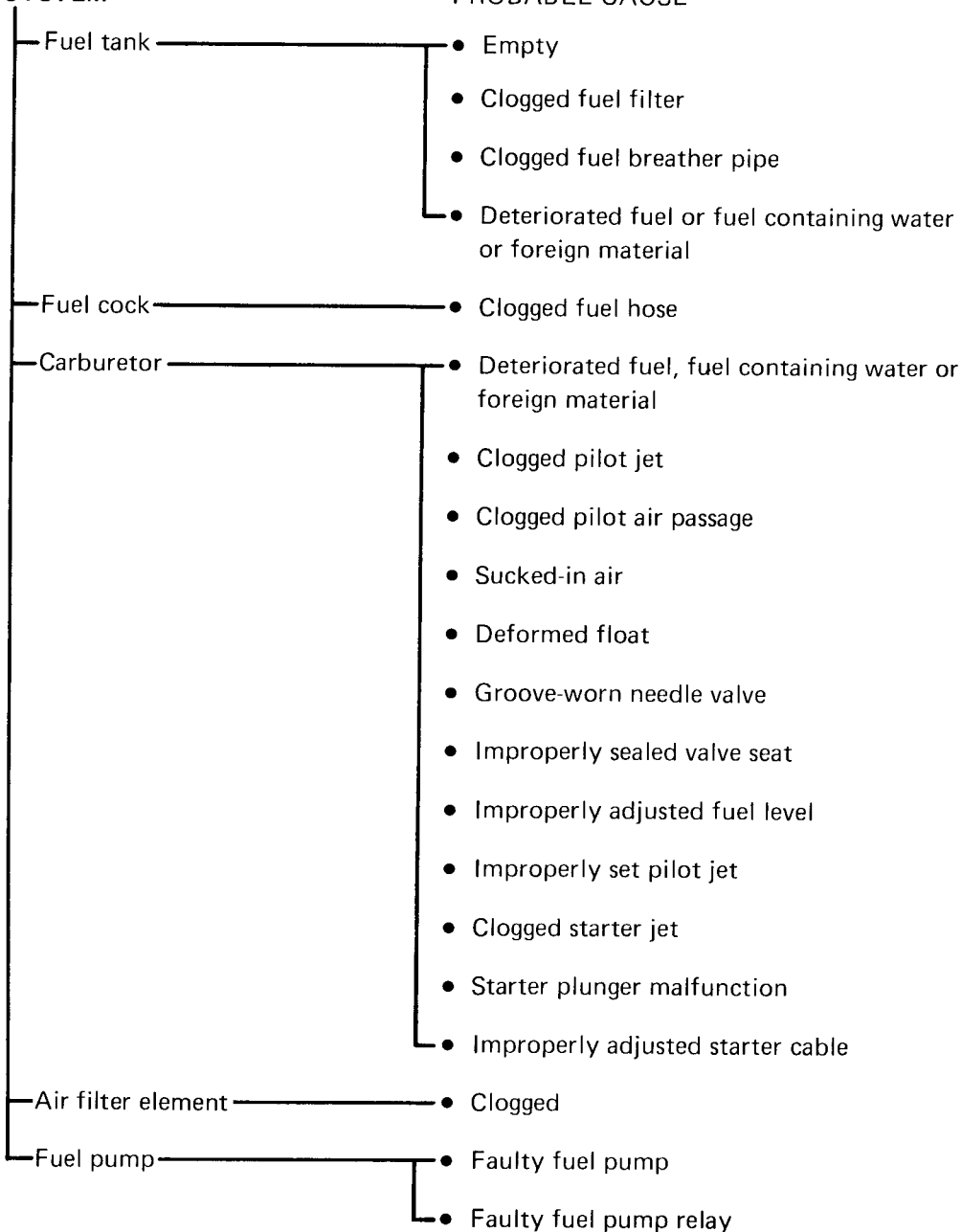
NOTE:

The following troubleshooting does not cover all the possible causes of trouble. It should be helpful, however, as a guide to troubleshooting. Refer to the relative procedure in this manual for inspection, adjustment and replacement of parts.

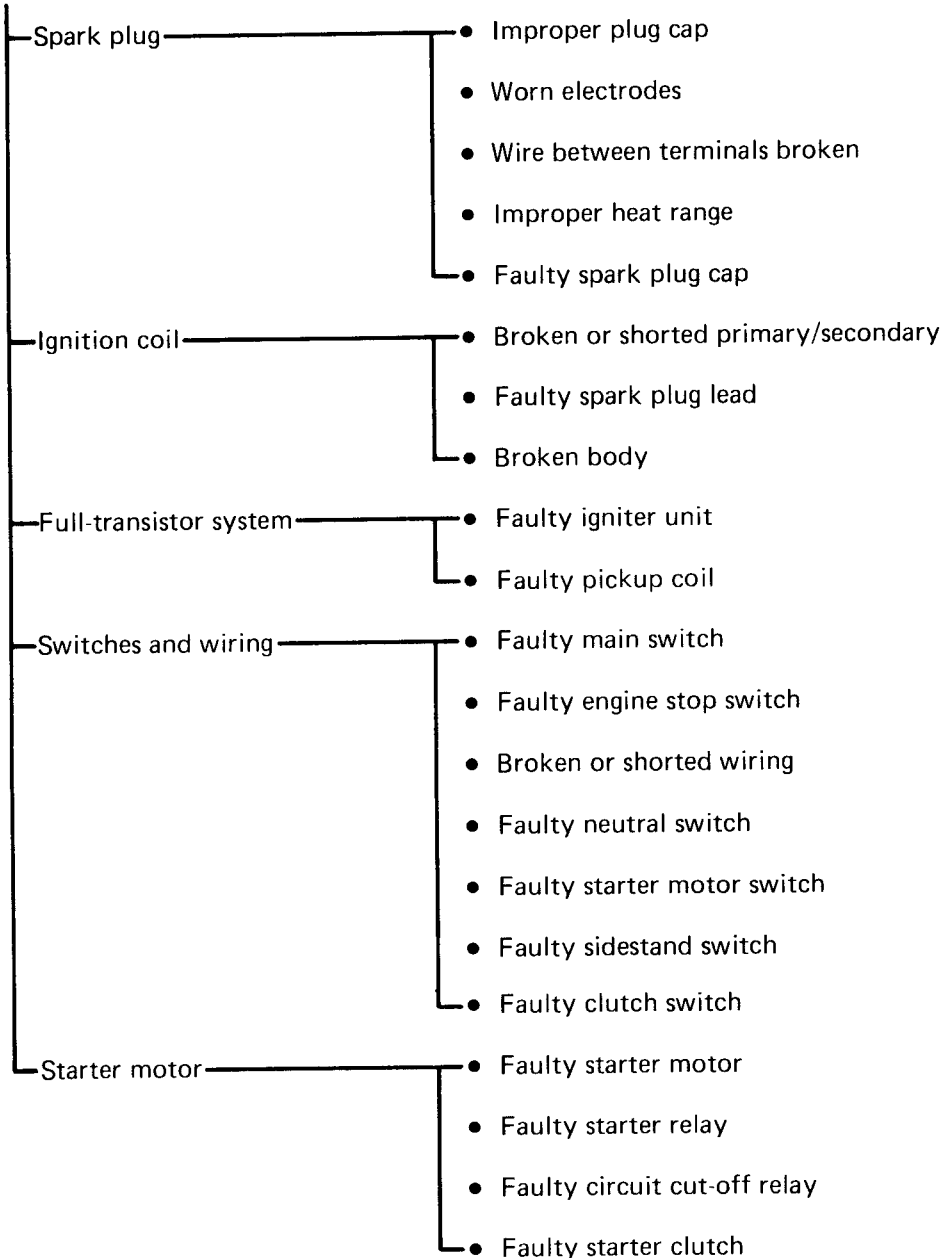
STARTING FAILURE/HARD STARTING

FUEL SYSTEM

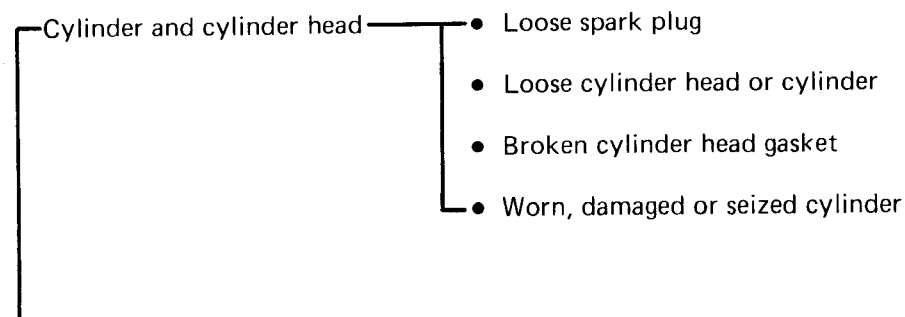
PROBABLE CAUSE



ELECTRICAL SYSTEM



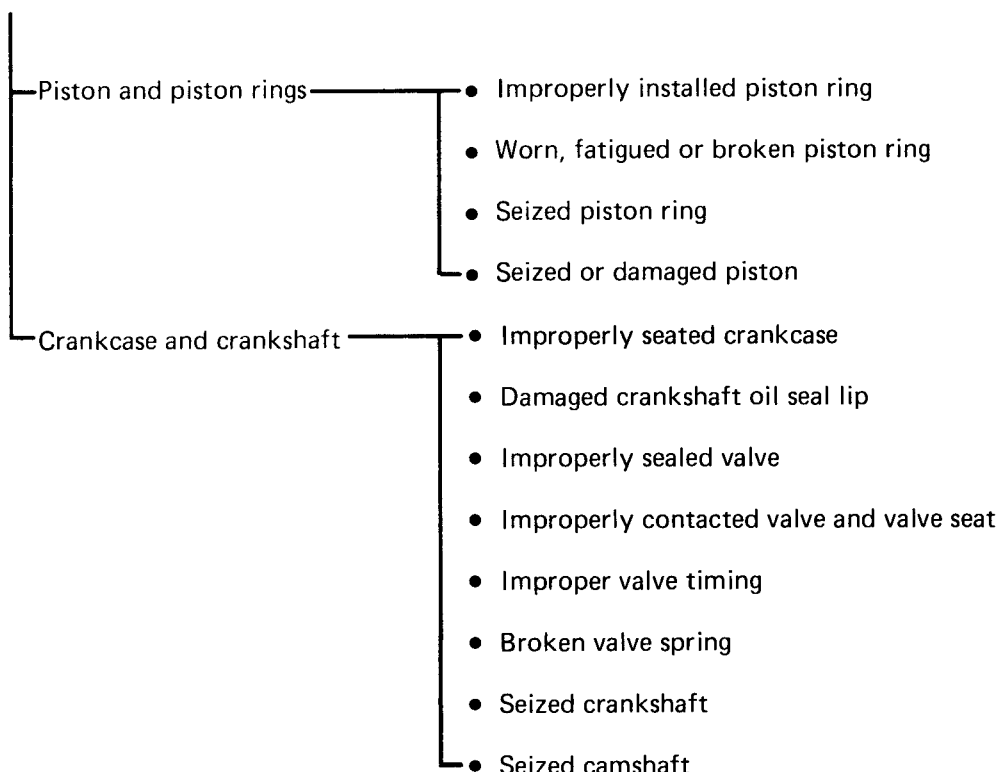
COMPRESSION SYSTEM



POOR IDLE SPEED PERFORMANCE

TRBL
SHTG

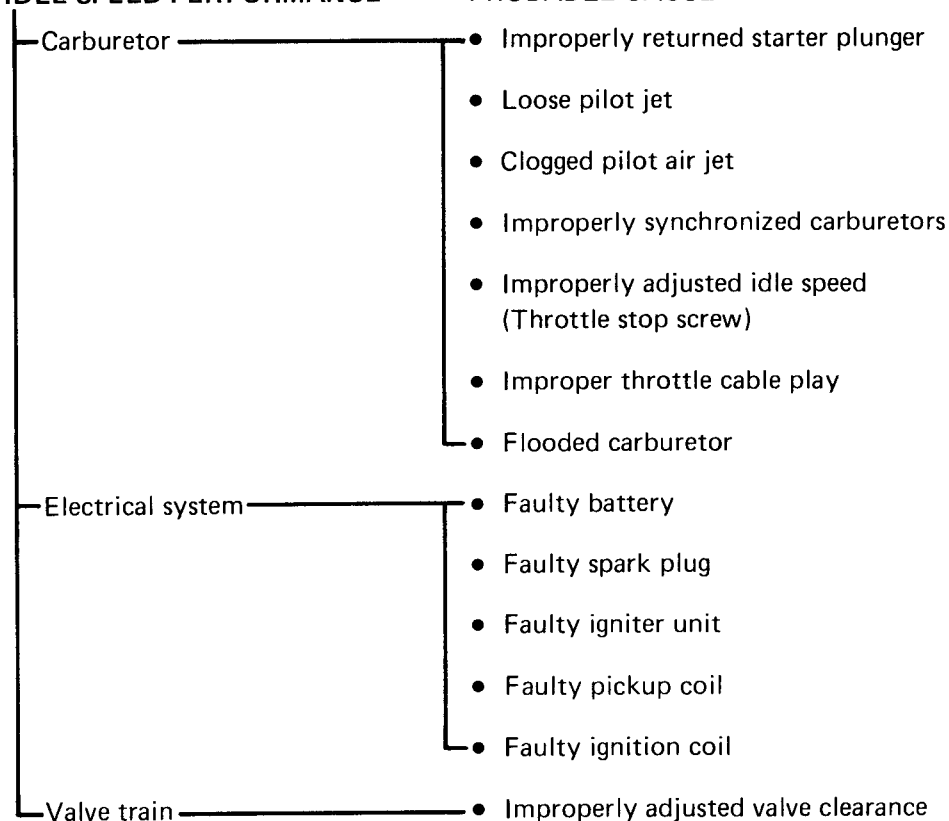
?



POOR IDLE SPEED PERFORMANCE

POOR IDLE SPEED PERFORMANCE

PROBABLE CAUSE

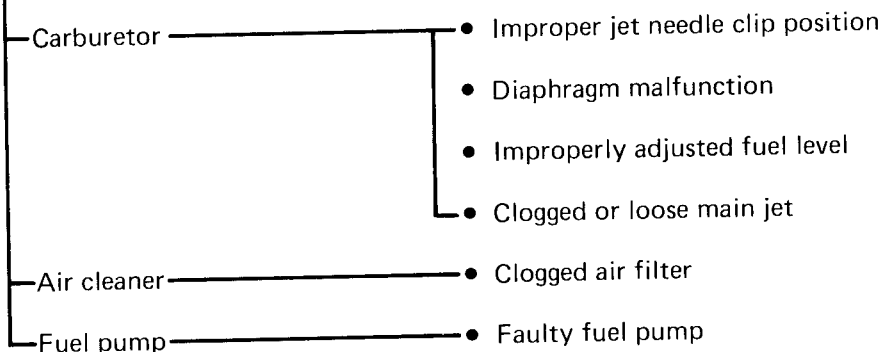


POOR MEDIUM AND HIGH SPEED PERFORMANCE

POOR MEDIUM AND HIGH SPEED PERFORMANCE

Refer to "Starting failure/Hard starting." (Fuel system, electrical system, compression system and valve train)

PROBABLE CAUSE



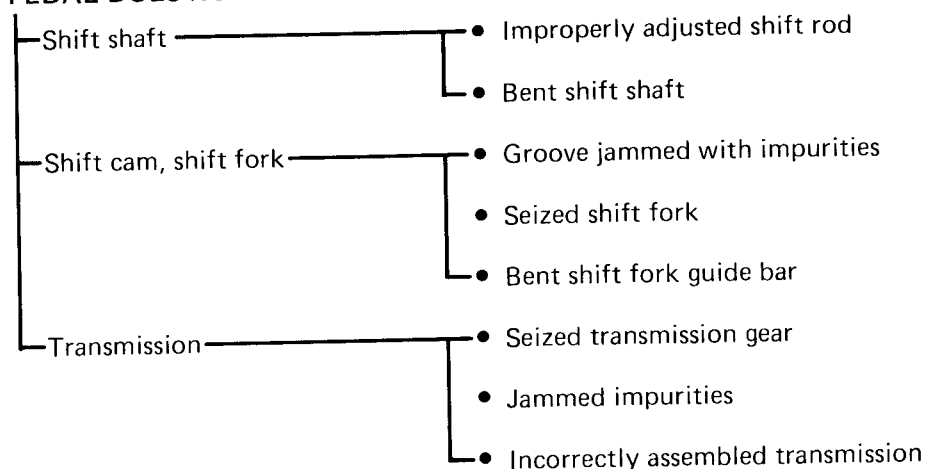
FAULTY GEAR SHIFTING

HARD SHIFTING

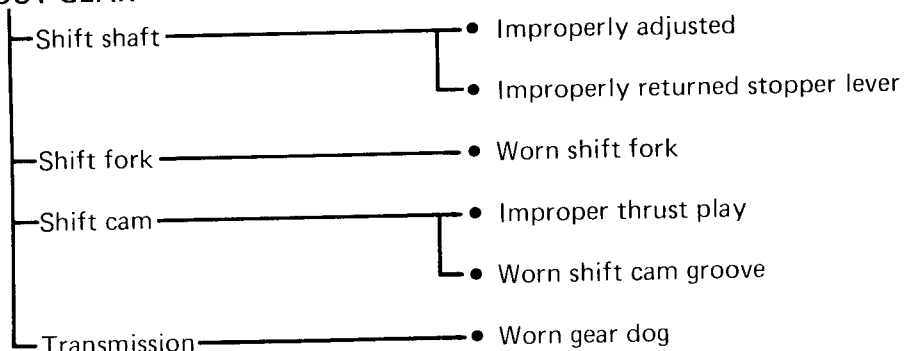
Refer to "Clutch dragging."

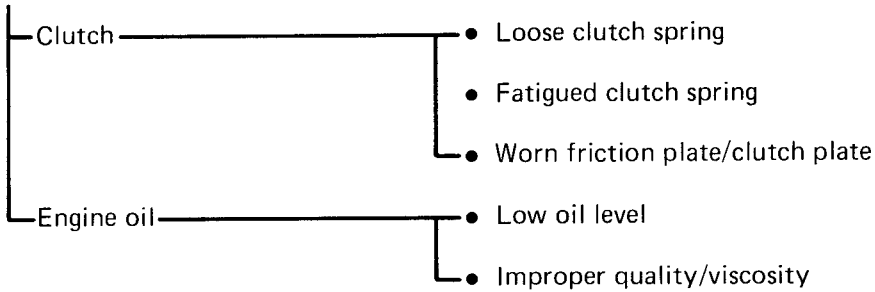
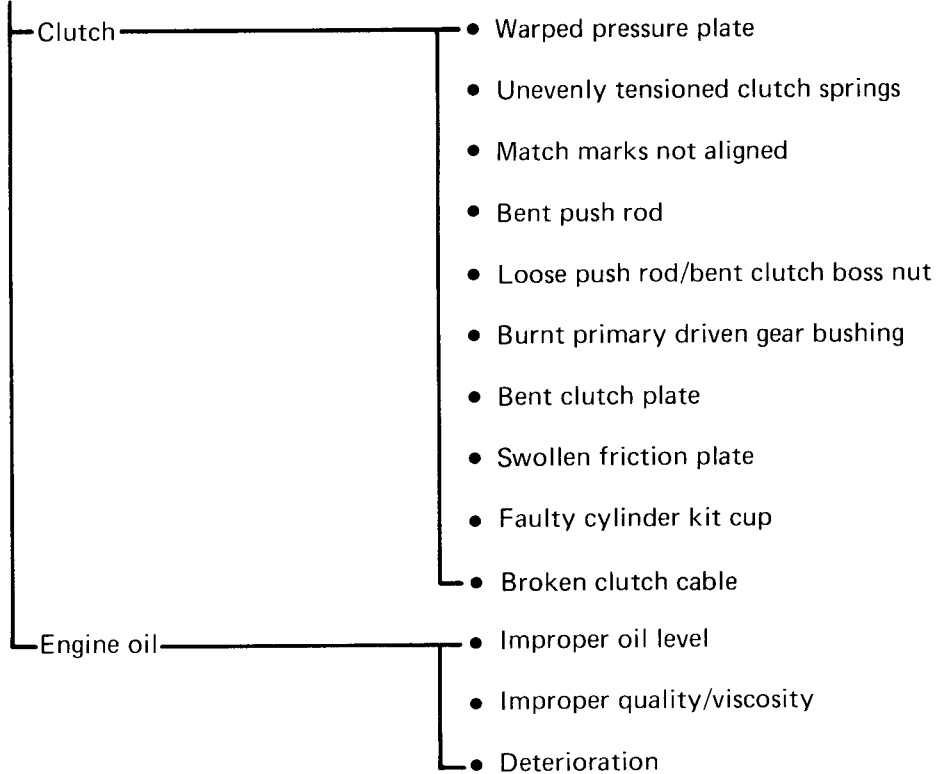
SHIFT PEDAL DOES NOT MOVE

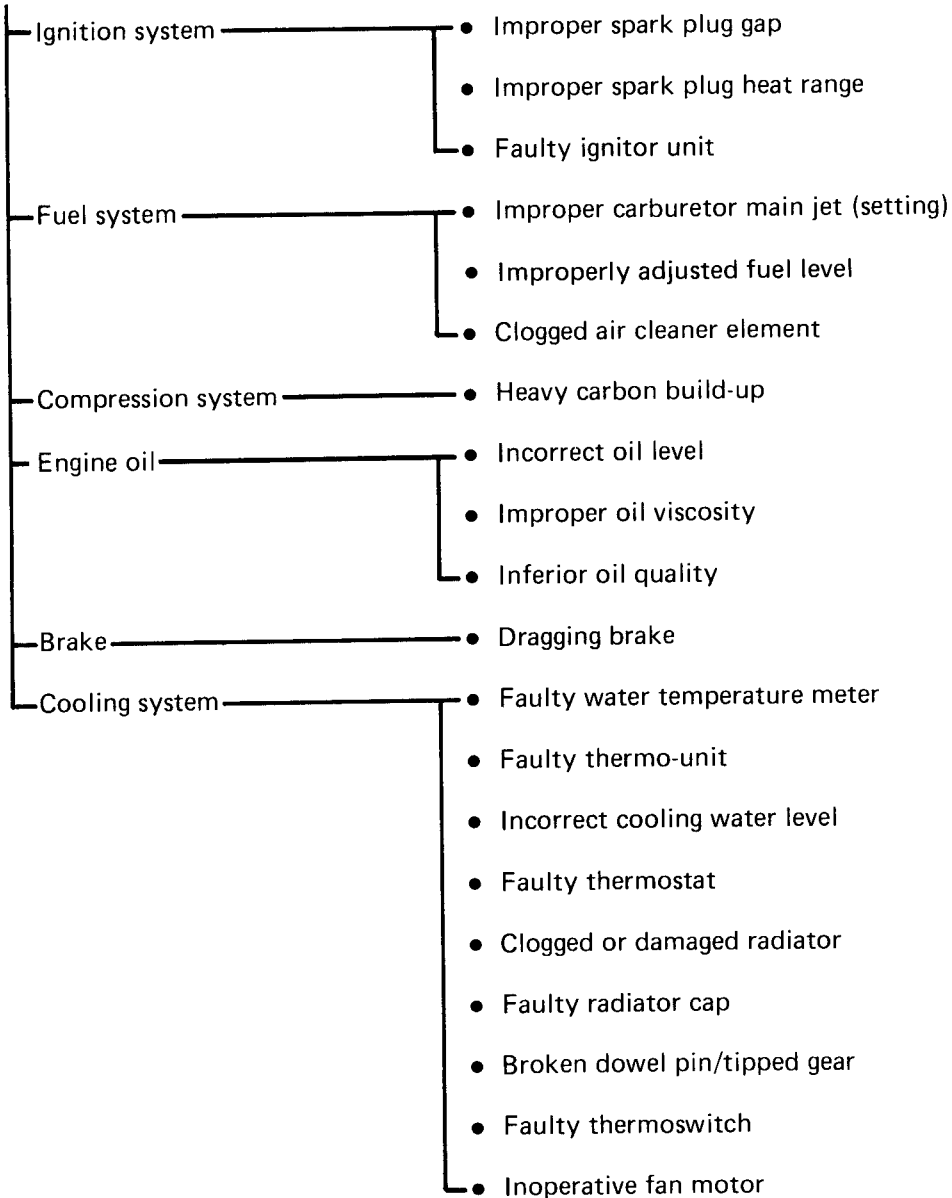
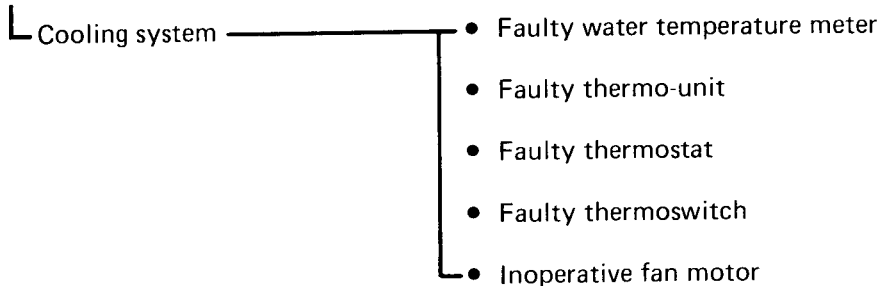
PROBABLE CAUSE



JUMP-OUT GEAR



CLUTCH SLIPPING/Dragging**CLUTCH SLIPPING****PROBABLE CAUSE****CLUTCH DRAGGING**

OVERHEATING OR OVER-COOLING**OVERHEATING****OVER-COOLING**

FAULTY BRAKE

POOR BRAKING EFFECT

- Worn brake pads
- Worn disc
- Air in brake fluid
- Leaking brake fluid
- Faulty cylinder kit cup
- Faulty caliper kit seal
- Loose union bolt
- Broken brake hose
- Oily or greasy disc/brake pads
- Improper brake fluid level

FRONT FORK OIL LEAKAGE/MALFUNCTION

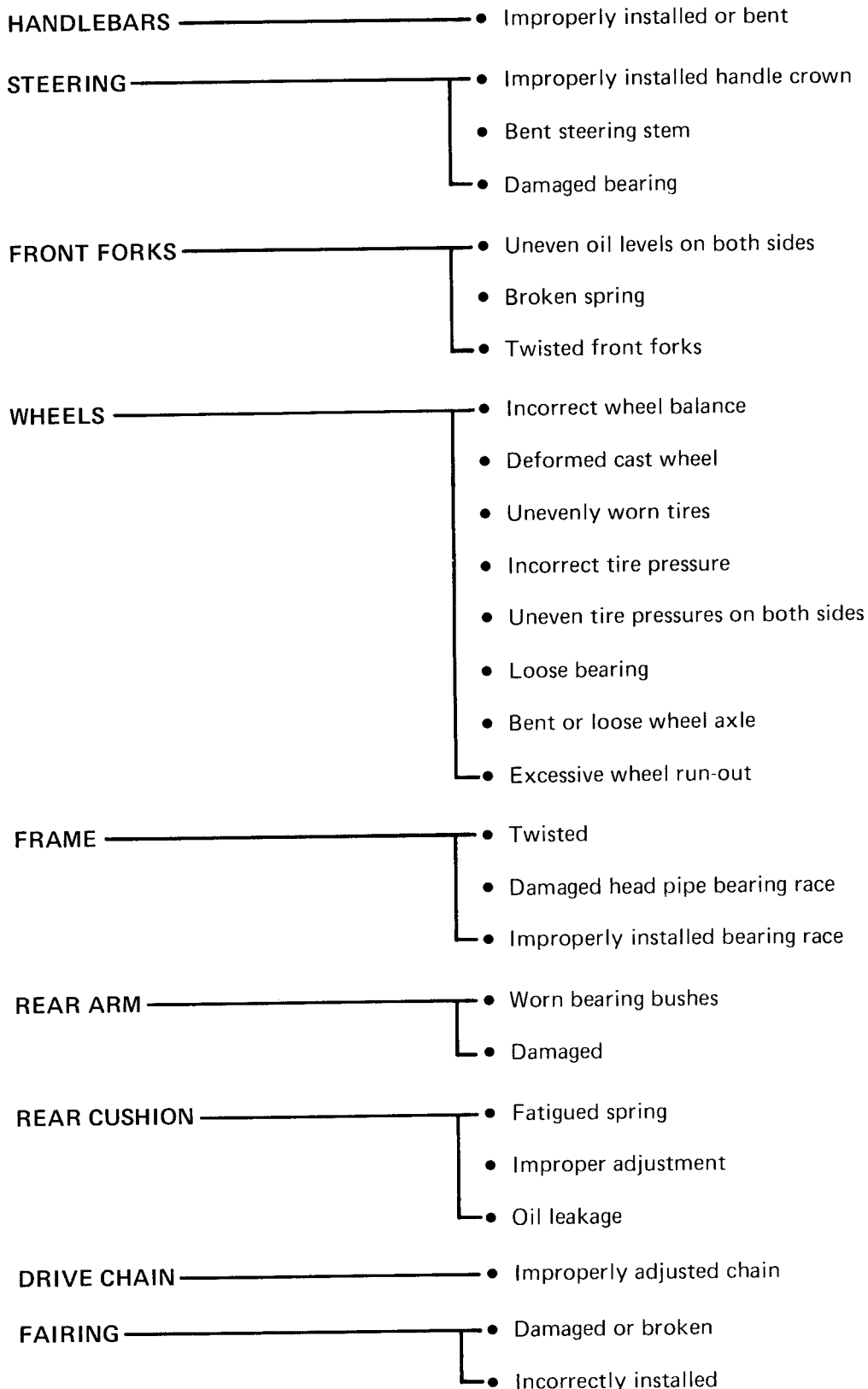
OIL LEAKAGE

- Bent, damaged or rusty inner tube
- Damaged or cracked outer tube
- Damaged oil seal lip
- Improperly installed oil seal
- Improper oil level (too much)
- Loose hexagon bolt (front fork bottom)
- Broken cap bolt O-ring
- Loose drain bolt
- Damaged drain bolt gasket

MALFUNCTION

- Bent, deformed or damaged inner tube
- Bent or deformed outer tube
- Damaged fork spring
- Worn or damaged slide metal
- Bent or damaged piston
- Improper oil viscosity or level

INSTABLE HANDLING



FAULTY SIGNALS AND LIGHTS

HEADLIGHT DARK

- Improper bulb
- Too many electrical accessories
- Hard charging (broken stator coil wire, faulty rectifier with regulator)
- Incorrectly connected coupler/connector/wire harness
- Improperly grounded
- Poor contacts (main or light switch)
- Bulb life expired

BULB BURNT OUT

- Improper bulb
- Faulty battery
- Faulty rectifier/regulator
- Improperly grounded
- Faulty switch (main and light switch)
- Bulb life expired

FLASHER DOES NOT LIGHT

- Improperly grounded
- Discharged battery
- Faulty flasher switch
- Faulty flasher relay
- Broken wire harness/loosely connected coupler
- Bulb burnt out

FLASHER KEEPS ON

- Faulty flasher relay
- Insufficient battery capacity (nearly discharged)
- Bulb burnt out (front or rear)

FAULTY SIGNALS AND LIGHTS

TRBL SHTG	?
--------------	---

- FLASHER WINKS SLOWER**
- Faulty flasher relay
 - Insufficient battery capacity (nearly discharged)
 - Improper bulb
 - Faulty switch (main or flasher switch)
- FLASHER WINKS QUICKER**
- Improper bulb
 - Faulty flasher relay
- HORN IS INOPERATIVE**
- Faulty battery
 - Faulty switch (main or horn switch)
 - Improperly adjusted horn
 - Faulty horn (coil wire broken or having poor contacts)
 - Broken wire harness

FAULTY EXUP (For California only)

FAULTY EXUP

- Power valve**
- Seized or damaged power valve
 - Carbon build-up
- Control cable**
- Improperly adjusted cable
 - Seized or discontinuous cable
- Electrical parts**
- Insufficient battery capacity (Improperly charged battery)
 - Faulty main switch
 - Faulty EXUP servo motor
 - Faulty ignitor unit
 - Faulty EXUP control unit
 - Broken or shorted wiring

FZR400U/FZR400SUC WIRING DIAGRAM

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

