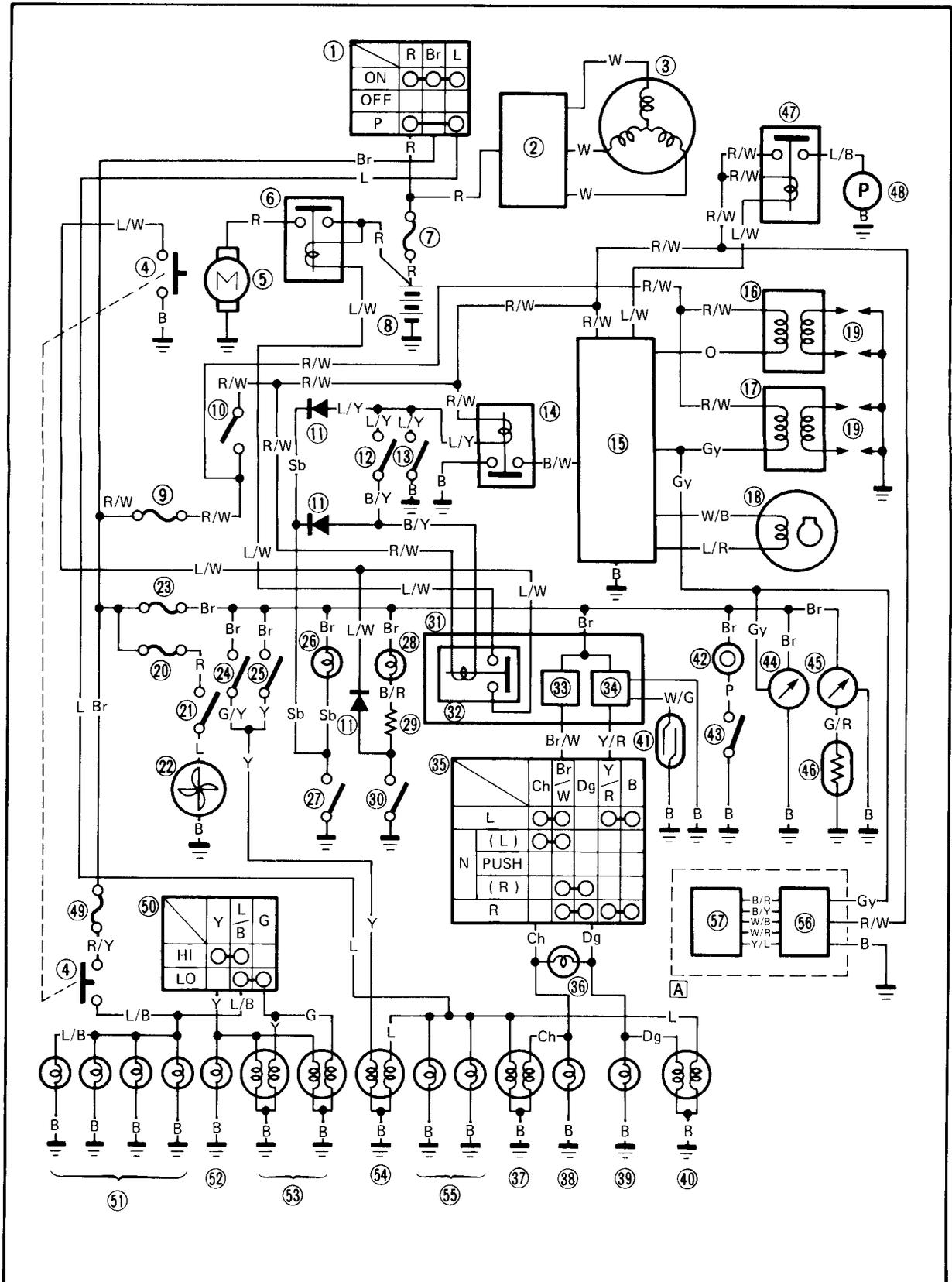




ELECTRICAL

FZR400U/SUC CIRCUIT DIAGRAM





- | | |
|--|--|
| <ul style="list-style-type: none"> 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 | <ul style="list-style-type: none"> 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 Ⓚ Meter light Ⓛ "HIGH BEAM" indicator light Ⓜ Headlight Ⓨ Tail/Brake light Ⓩ License light ⓐ EXUP control unit ⓑ EXUP servomotor <p style="margin-top: 10px;">Ⓐ For California only</p> |
|--|--|

COLOR CODE

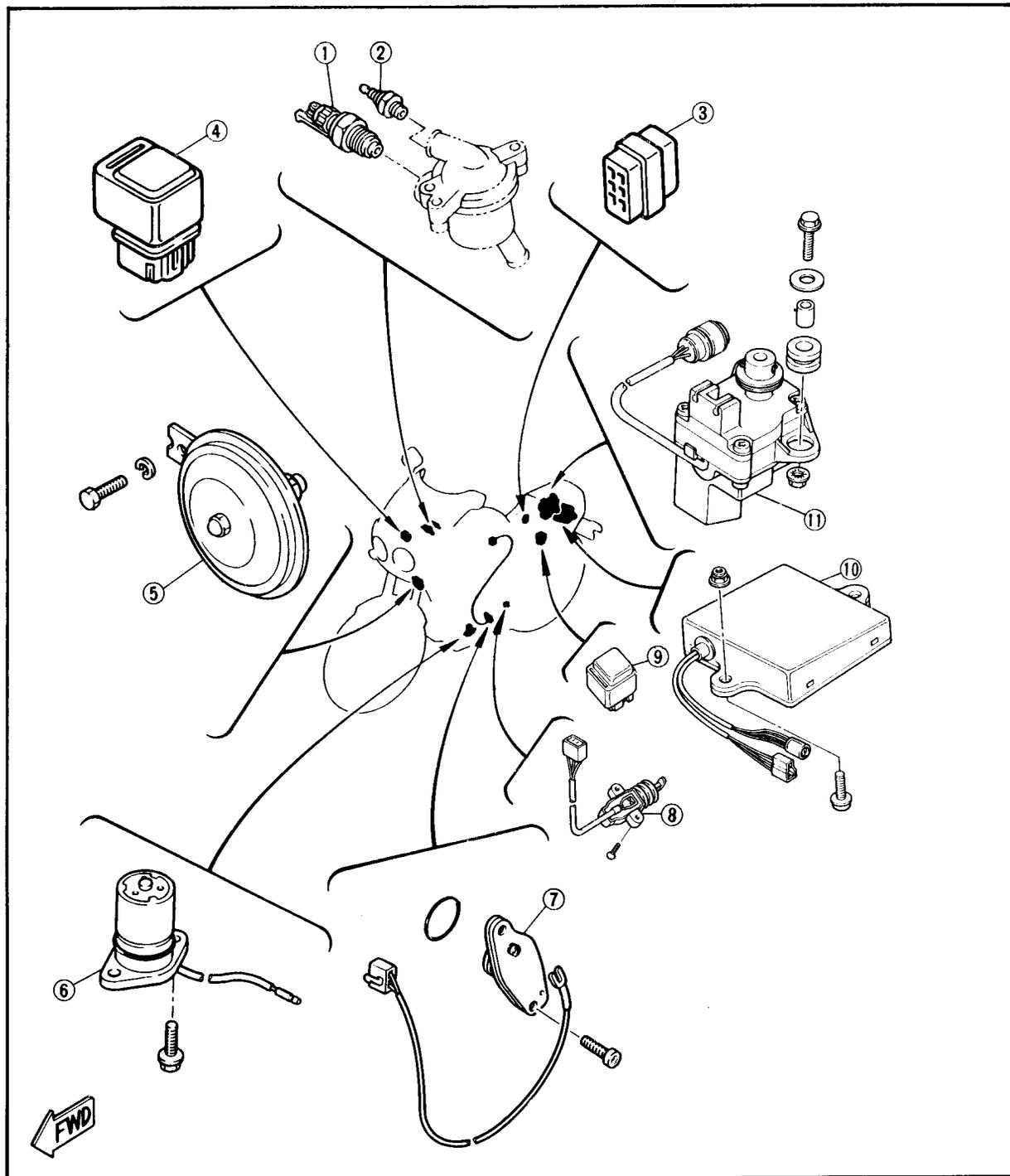
| | | | |
|----|------------|------|--------------|
| O | Orange | Y/R | Yellow/Red |
| R | Red | Br/W | Brown/White |
| L | Blue | R/W | Red/White |
| Br | Brown | R/Y | Red/Yellow |
| B | Black | B/R | Black/Red |
| Y | Yellow | B/W | Black/White |
| W | White | B/Y | Black/Yellow |
| G | Green | L/W | 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)

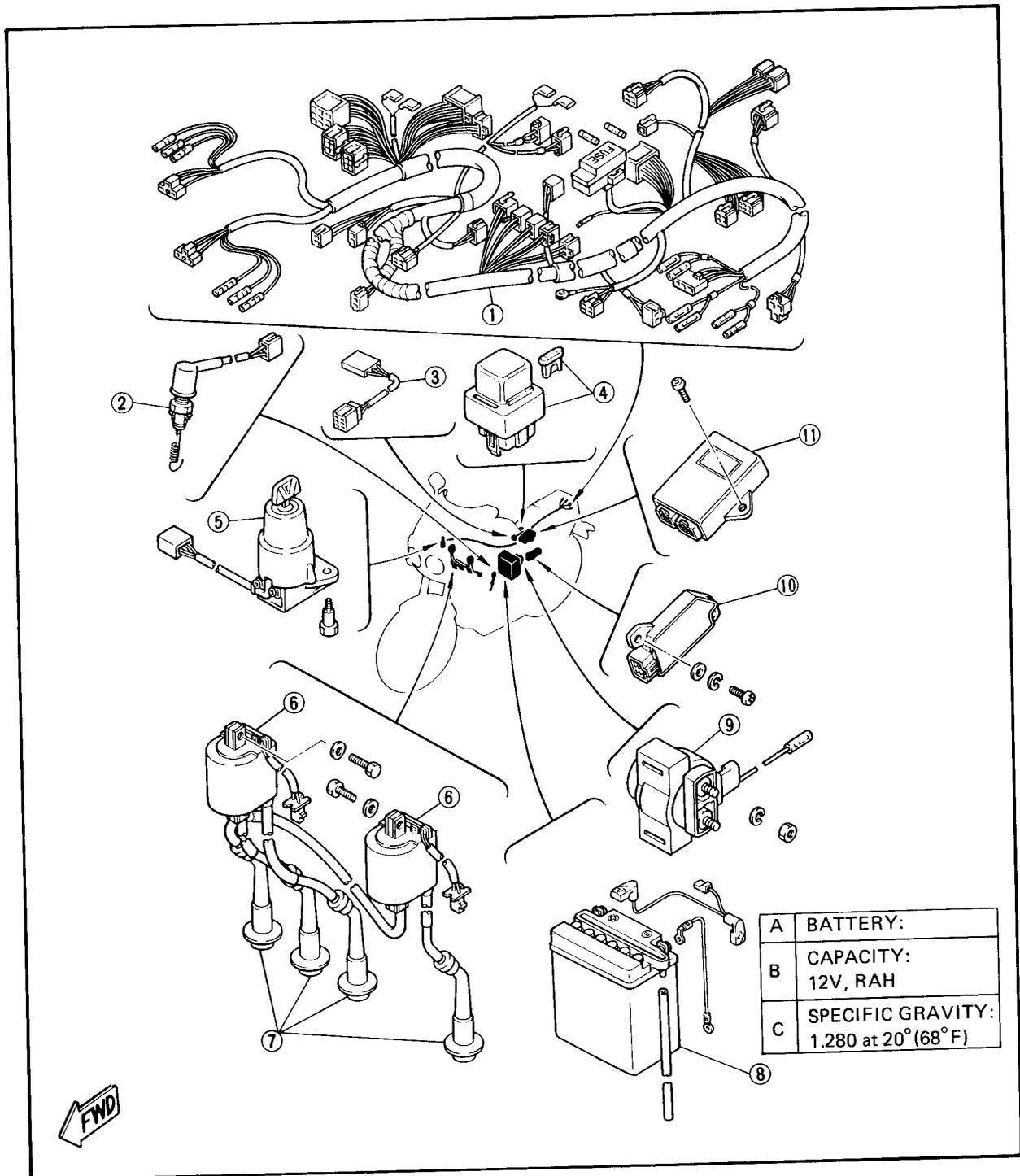
- ① Thermo switch
- ② Thermo unit
- ③ Relay assembly
- ④ Fuel pump relay
- ⑤ Horn
- ⑥ Oil level switch
- ⑦ Neutral switch
- ⑧ Sidestand switch
- ⑨ Sidestand relay
- ⑩ EXUP control unit
(For California only)
- ⑪ EXUP servomotor
(For California only)

| 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



| | |
|---|--|
| 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.

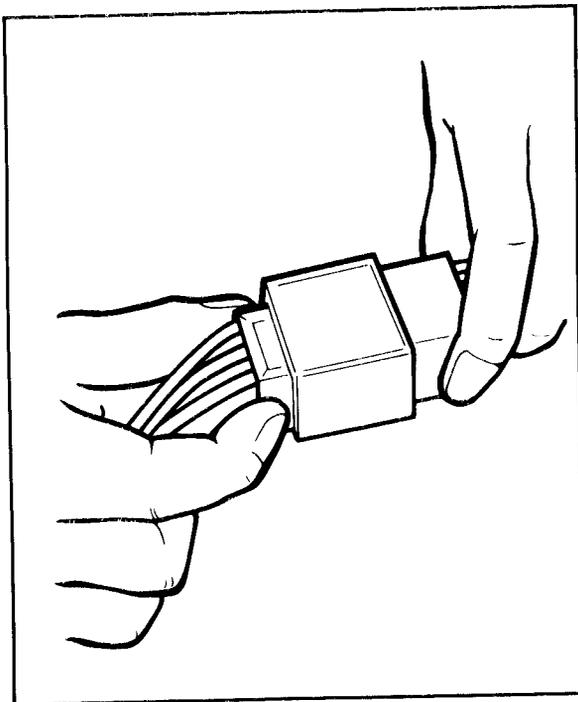
“B and B/W” is continuous with the “LOCK” switch position.

“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.

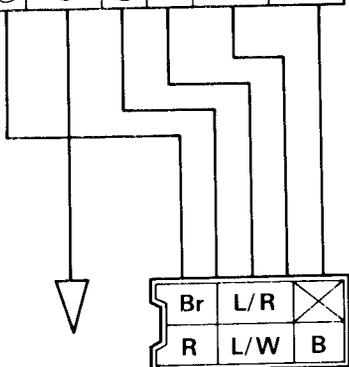
2. Inspect whether any lead is off the terminal inside the coupler. If it is, repair it.

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.

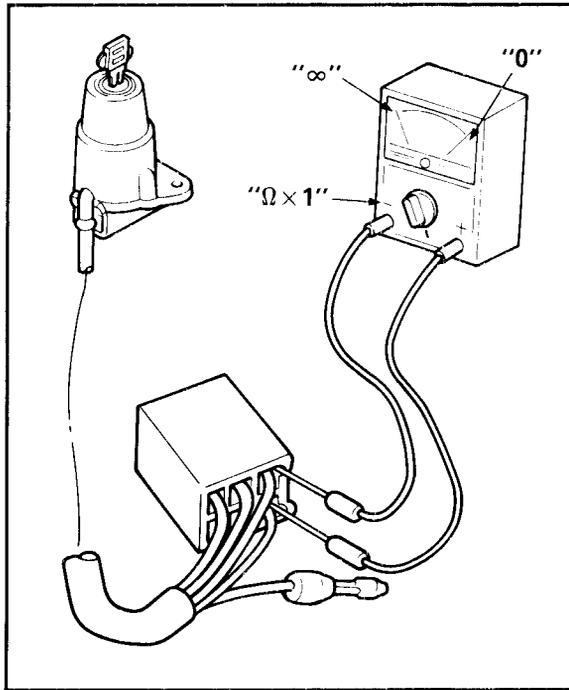
“B and B/W” and “R and L/R” are continuous with the “P” switch position.

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

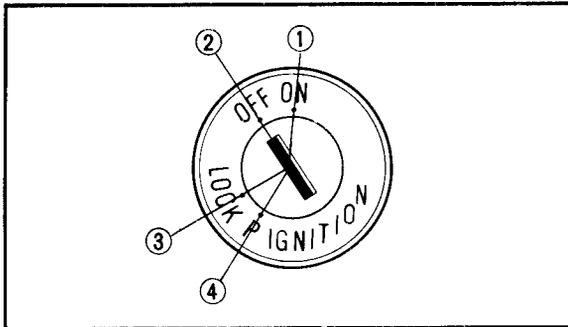
**NOTE:**

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.

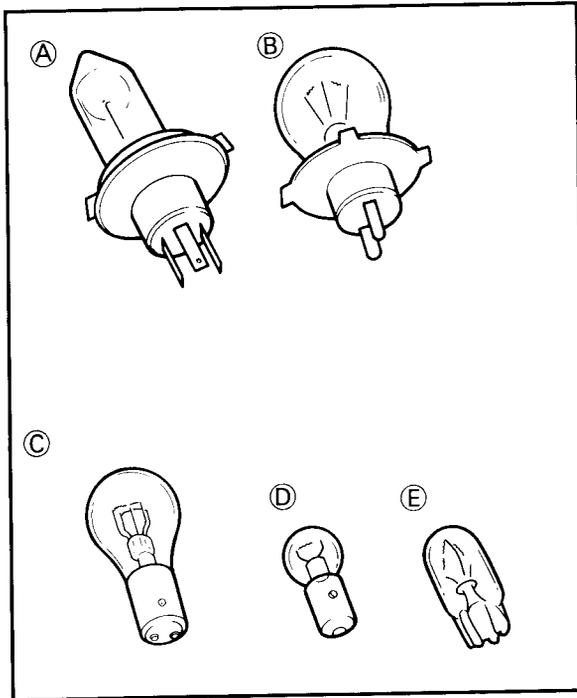


CHECKING OF BULBS (FOR HEADLIGHT, TAIL/BRAKE LIGHT, FLASHER LIGHT, METER LIGHT, ETC.)

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.



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

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

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

CHECKING BULB CONDITION

1. Remove the bulb.

NOTE:

- Bulbs of the (A) and (B) type uses a bulb holder. Remove the bulb holder before removing the bulb itself. Most of the bulb holders for this type can be removed by turning them 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:

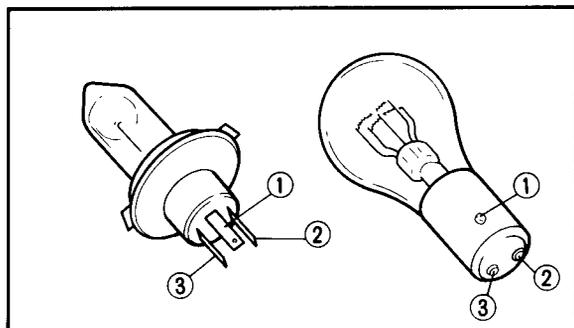
Keep flammable products or your hands away from the headlight bulb while it is on. It will be hot. Do not touch the bulb until it cools down.



2. Check the bulb terminals for continuity.

Checking steps:

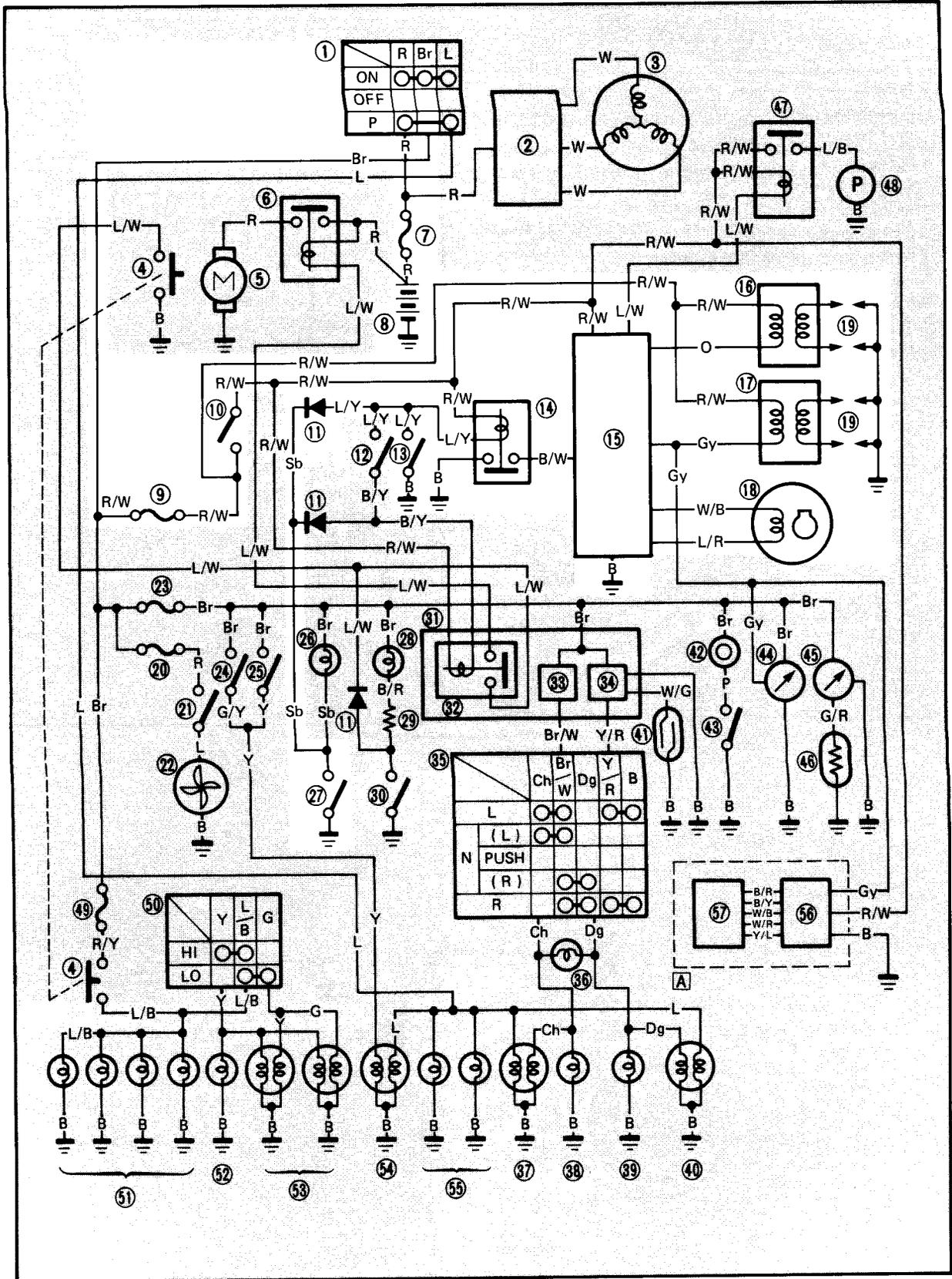
- Set the pocket tester selector to the " $\Omega \times 1$ ".
- Connect the tester leads to the respective bulb terminals. Take for example a 3-terminal bulb as shown left. First check the continuity between the ① and ② terminals by connecting the tester (+) lead to the ① terminal and the tester (-)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



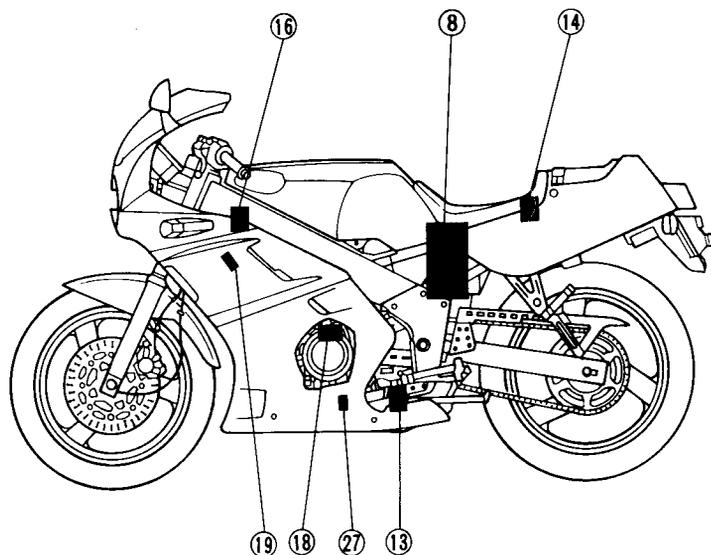
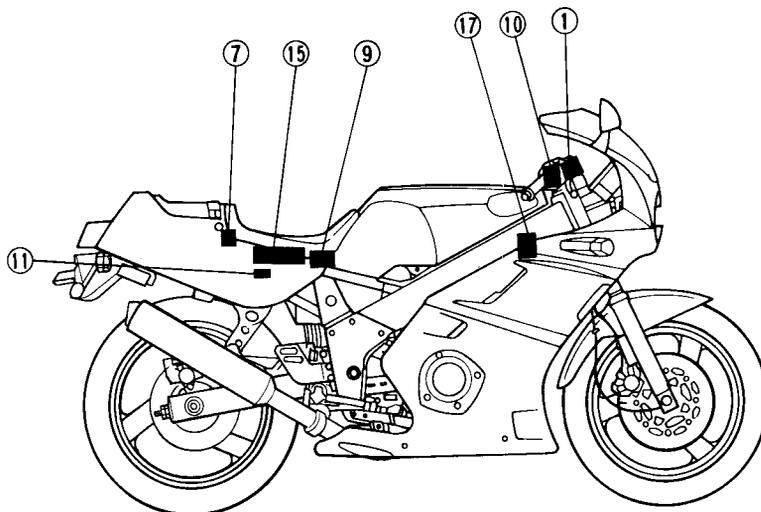


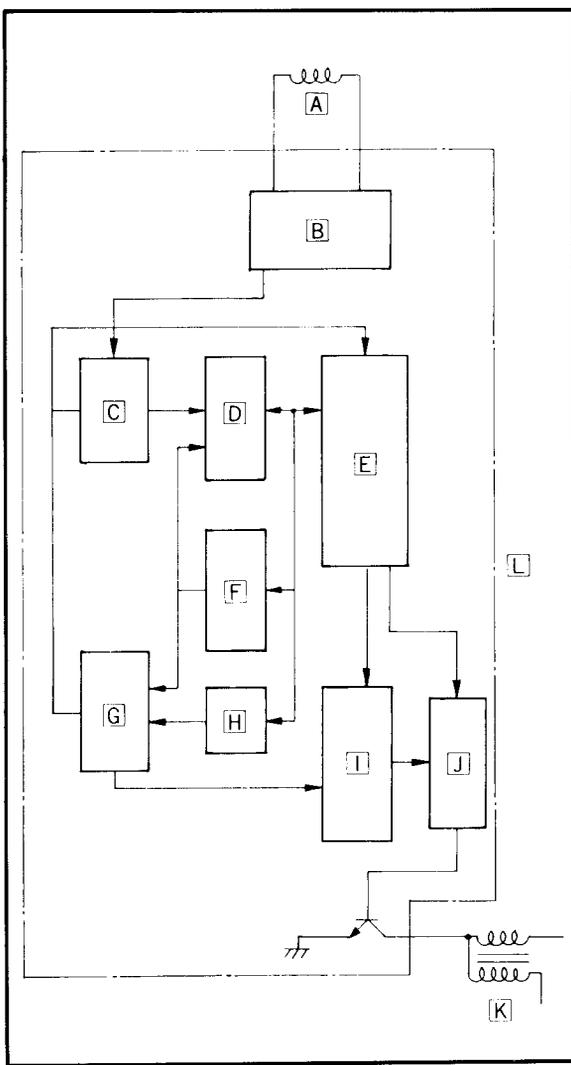
Aforementioned circuit diagram shows the ignition circuit in the wiring diagram.

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 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-programmed ignition advance curve.

This programmed 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.

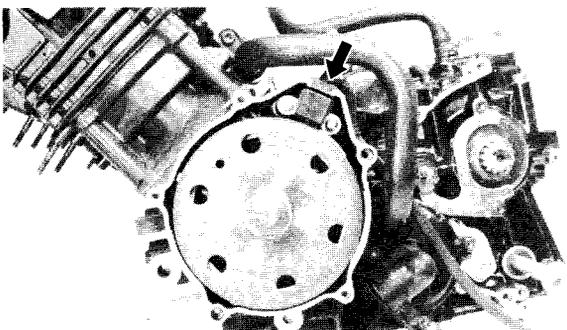
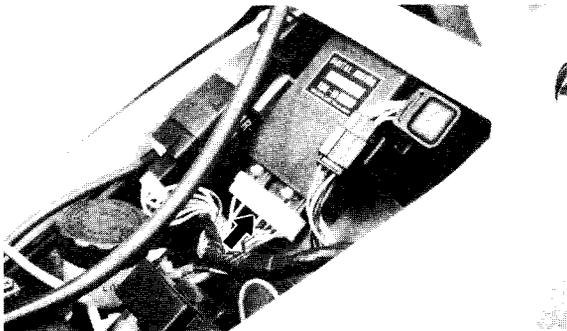
The digital ignitor also includes the control unit for the electric fuel pump.

- 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;

- | | |
|---|---|
| <ol style="list-style-type: none"> 1. Fuse "MAIN" 2. Battery 3. Spark plug 4. Ignition spark gap 5. Spark plug cap resistance 6. Ignition coil resistance 7. Main switch | <ol style="list-style-type: none"> 8. "ENGINE STOP" switch 9. Neutral switch 10. Sidestand switch 11. Sidestand relay 12. Pickup coil resistance 13. Wiring connection (Entire ignition system) |
|---|---|

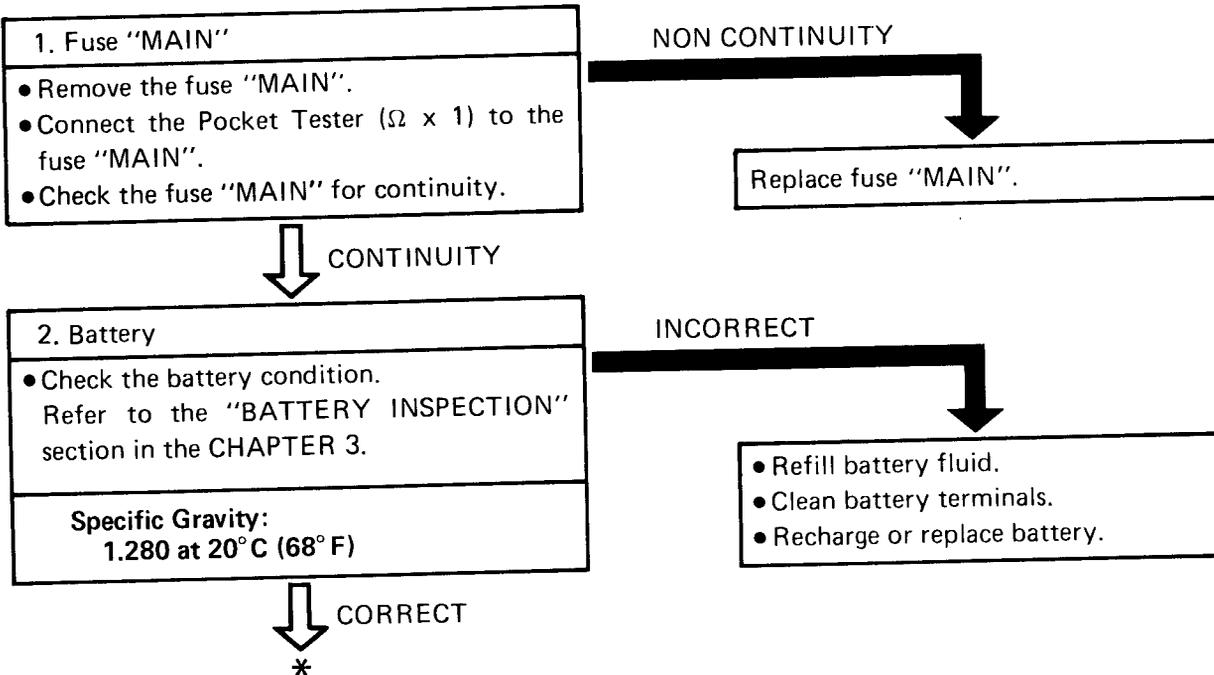
NOTE:

- 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)

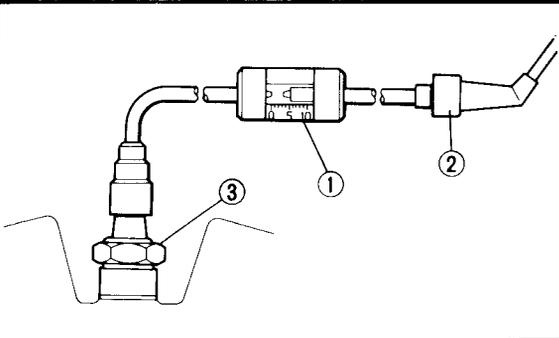
INCORRECT

Repair or replace spark plug.



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".

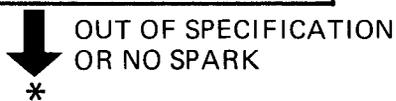


- Check the ignition spark gap.
- Start engine, and increase spark gap until misfire occurs.

 **Minimum Spark Gap:**
6.0 mm (0.24 in)

MEETS SPECIFICATION

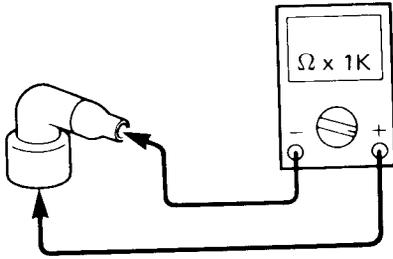
Ignition system is good.





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

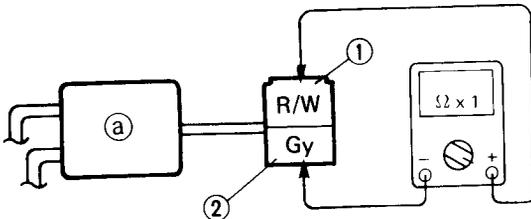
Replace spark plug cap.

MEETS SPECIFICATION

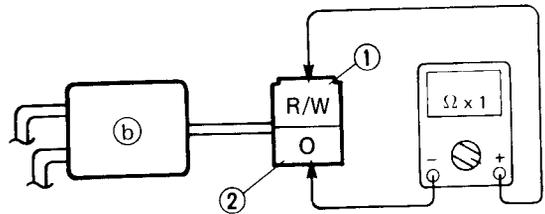
6. Ignition coil resistance

- 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.

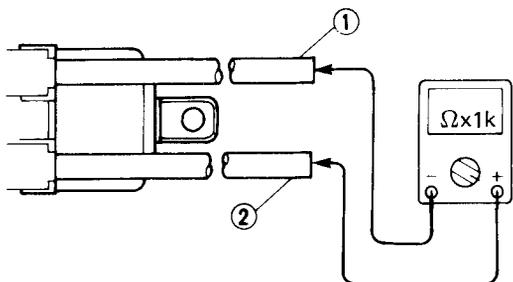


Primary Coil Resistance:
1.8 ~ 2.2 Ω at 20°C (68°F)



• Connect the Pocket Tester ($\Omega \times 1k$) to the ignition coil.

Tester (+) Lead \rightarrow Spark Plug Lead ①
 Tester (-) Lead \rightarrow 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)

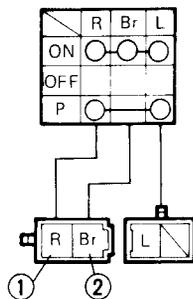
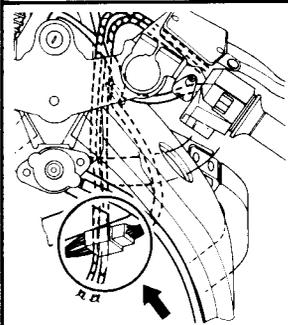
OUT OF SPECIFICATION

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

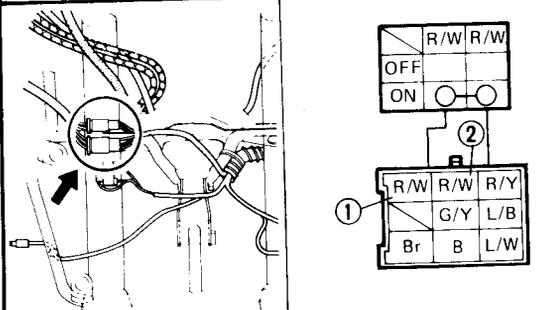
Replace main switch.

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

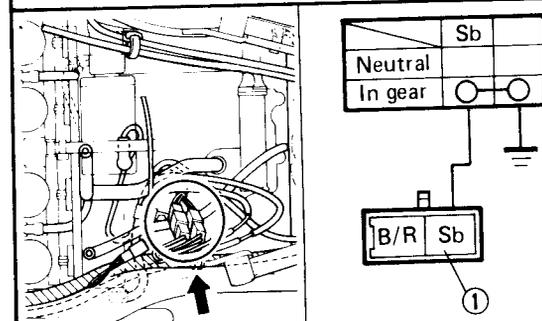
Replace handlebar switch (Right).



CORRECT

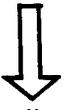
9. Neutral switch

- 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.



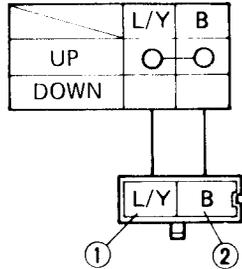
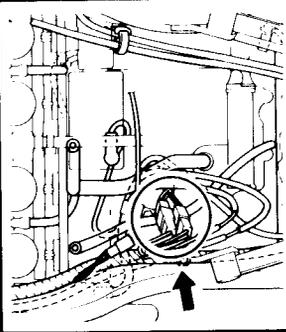
CORRECT

*



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.

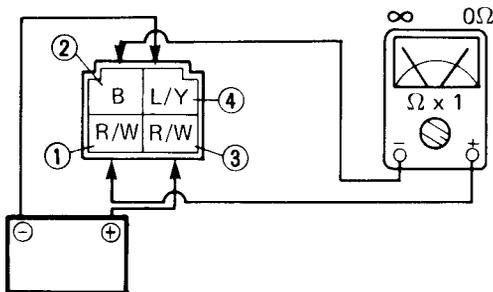


CORRECT

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.

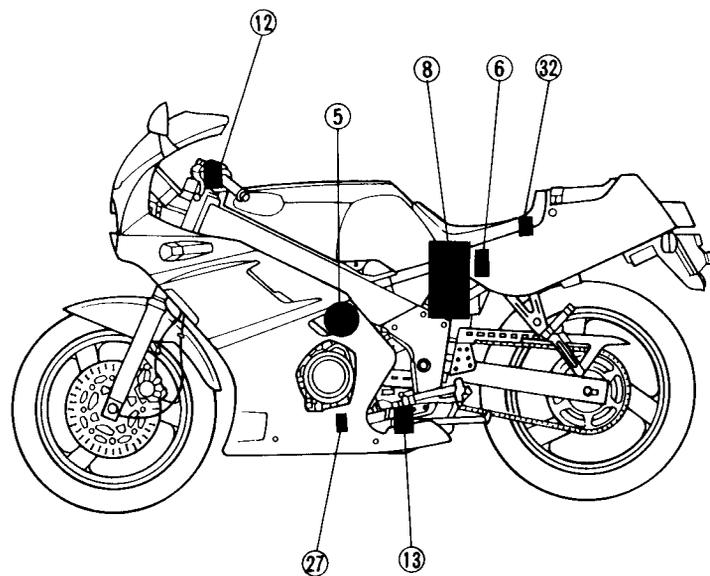
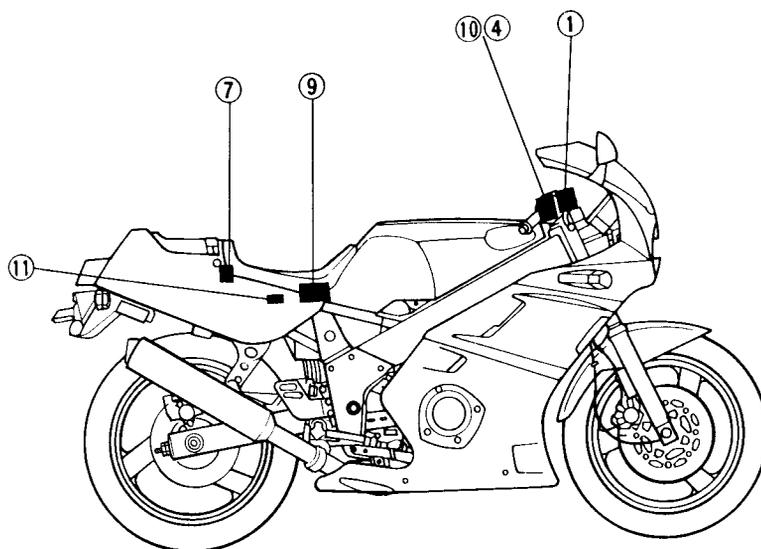


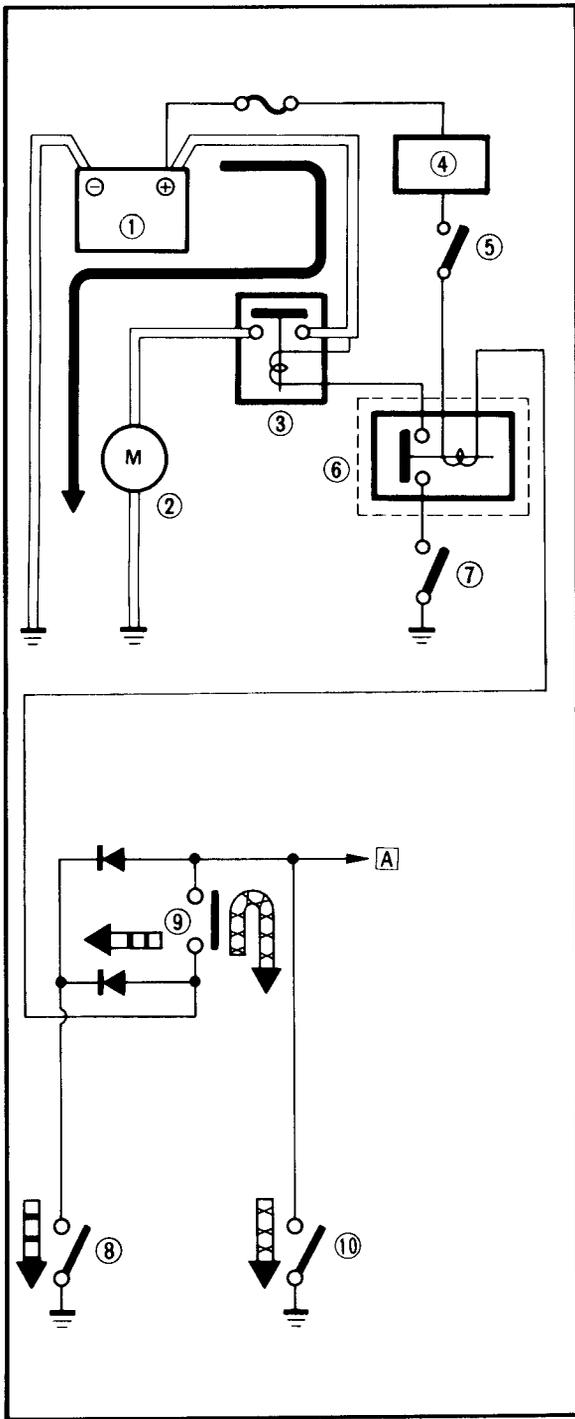
A forementioned circuit diagram shows the electric starting circuit in the wiring diagram.

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
- ← [X X X] 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;

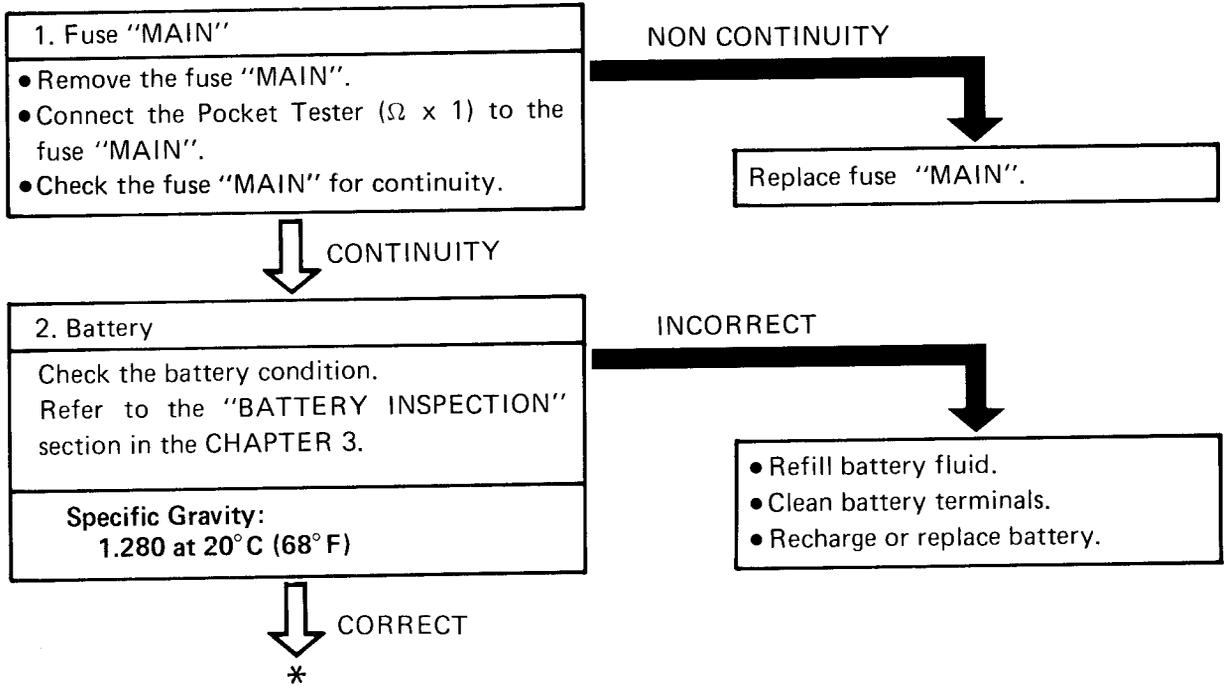
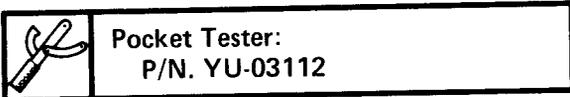
- | | |
|-----------------------------------|-----------------------------------|
| 1. Fuse "MAIN" | 8. Neutral switch |
| 2. Battery | 9. Sidestand switch |
| 3. Starter motor | 10. Clutch switch |
| 4. Starter relay | 11. "START" switch |
| 5. Starting circuit cut-off relay | 12. Wiring connection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

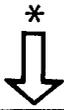
NOTE:

Remove the following before troubleshooting.

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

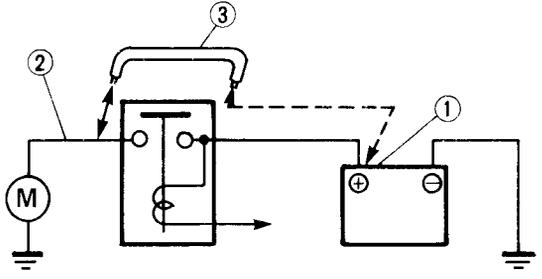
• Use the following special tool in this troubleshooting.





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.

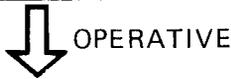
*

⚠ 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.

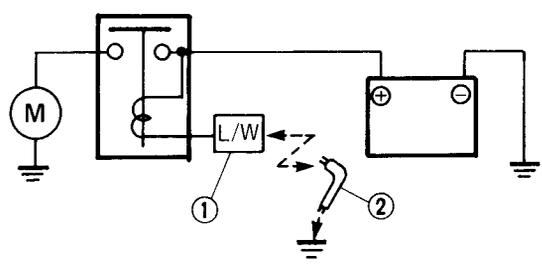
NO OPERATIVE

Repair or replace starter motor.



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.

NO OPERATIVE

Replace starter relay.



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.



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.

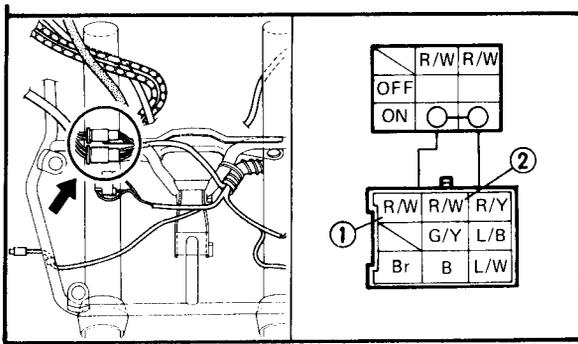
INCORRECT

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.



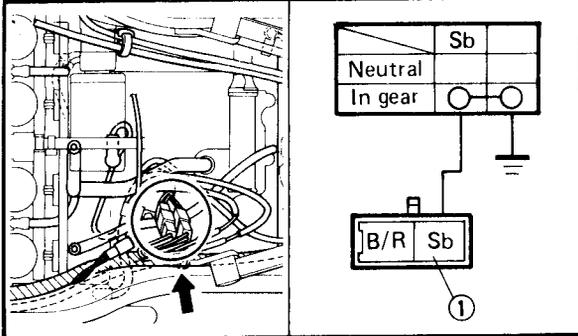
INCORRECT

Replace handlebar switch (Right).

↓ CORRECT

8. Neutral switch

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



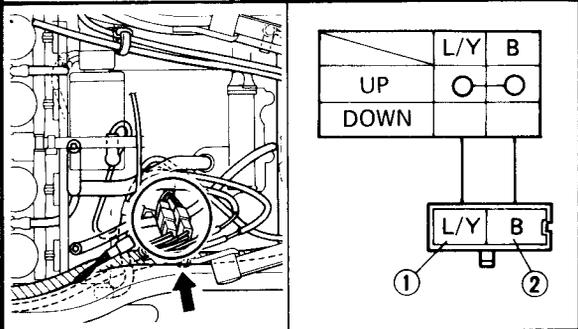
INCORRECT

Replace neutral switch.

↓ CORRECT

9. Sidestand switch

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



INCORRECT

Replace sidestand switch.

↓ CORRECT



10. Clutch switch

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

| | | |
|---------|-----|-----|
| | L/Y | B/Y |
| Release | | |
| Hold | ○ | ○ |

| | | |
|---|-----|-----|
| | L/Y | B/Y |
| ① | | ② |

INCORRECT

Replace clutch switch.



11. "START" switch

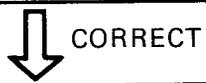
- Disconnect the "START" switch coupler from wire harness.
- Check the "START" switch component for the continuity between "Blue/White ① and Black ② ". Refer to the "CHECKING OF SWITCHES" section.

| | | | | |
|-----|-----|---|-----|-----|
| | L/W | B | R/Y | L/B |
| OFF | | | ○ | ○ |
| ON | ○ | ○ | | |

| | | | |
|----|-----|-----|-----|
| | R/W | R/W | R/Y |
| | G/Y | L/B | |
| Br | B | L/W | |
| ② | | ① | |

INCORRECT

Replace handlebar switch (Right).

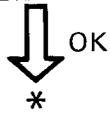


12. Wiring connection

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

POOR CONNECTION

Correct.





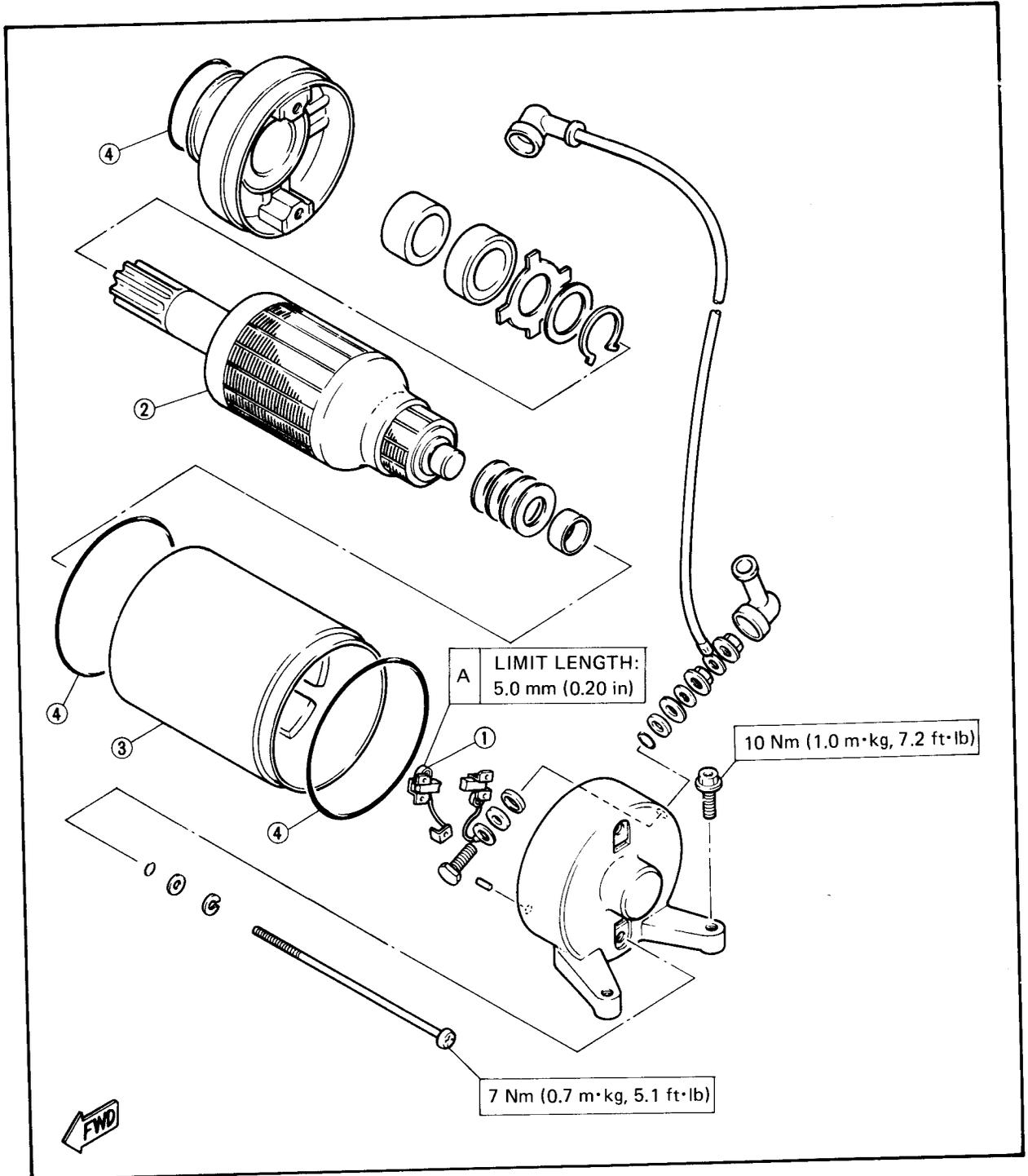
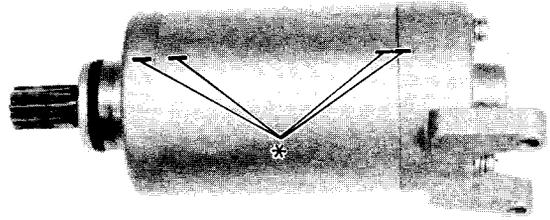
Diode block is faulty.
Replace the diode block.



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:

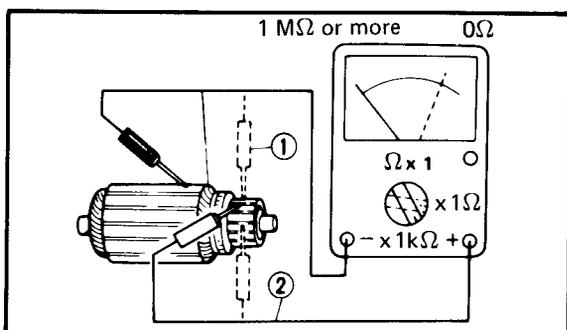
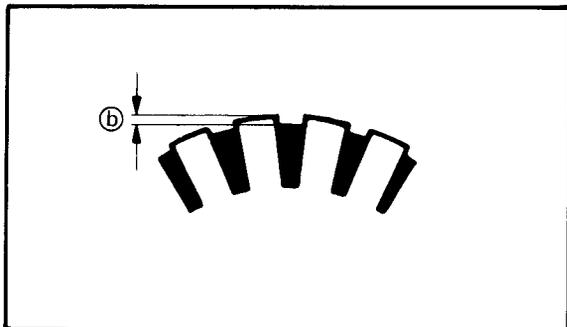
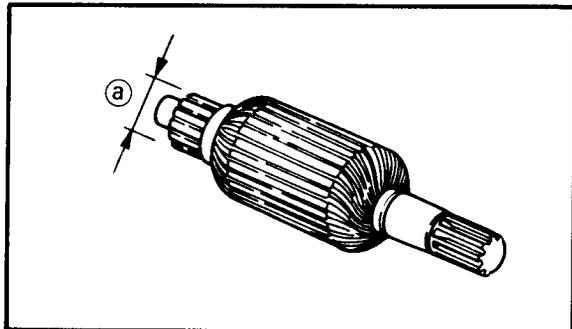
- Mica undercut (b)

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. | |

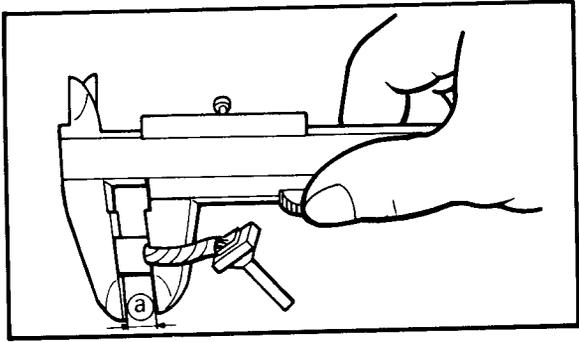


Armature Coil Resistance:
Continuity Check ① :
 0Ω at 20°C (68°F)
Insulation Check ② :
 More than 1MΩ at 20°C (68°F)

- 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:

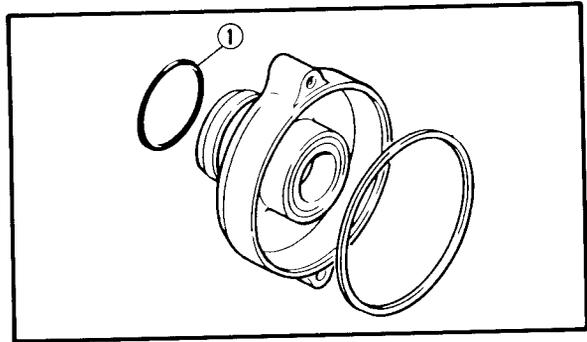
- Brush spring pressure
 Fatigue/Out of specification → Replace as a set.



Brush Spring Pressure:
 540 ~ 660 g (19.05 ~ 23.28 oz)

7. Inspect:

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



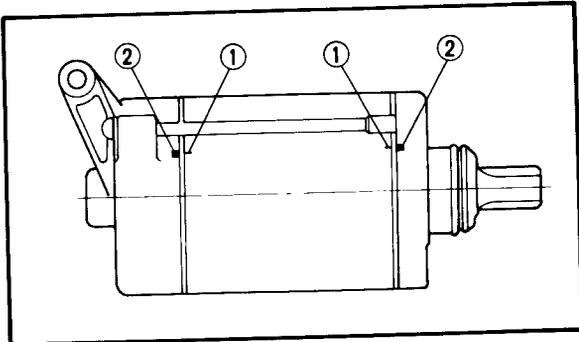
Installation

1. Install:

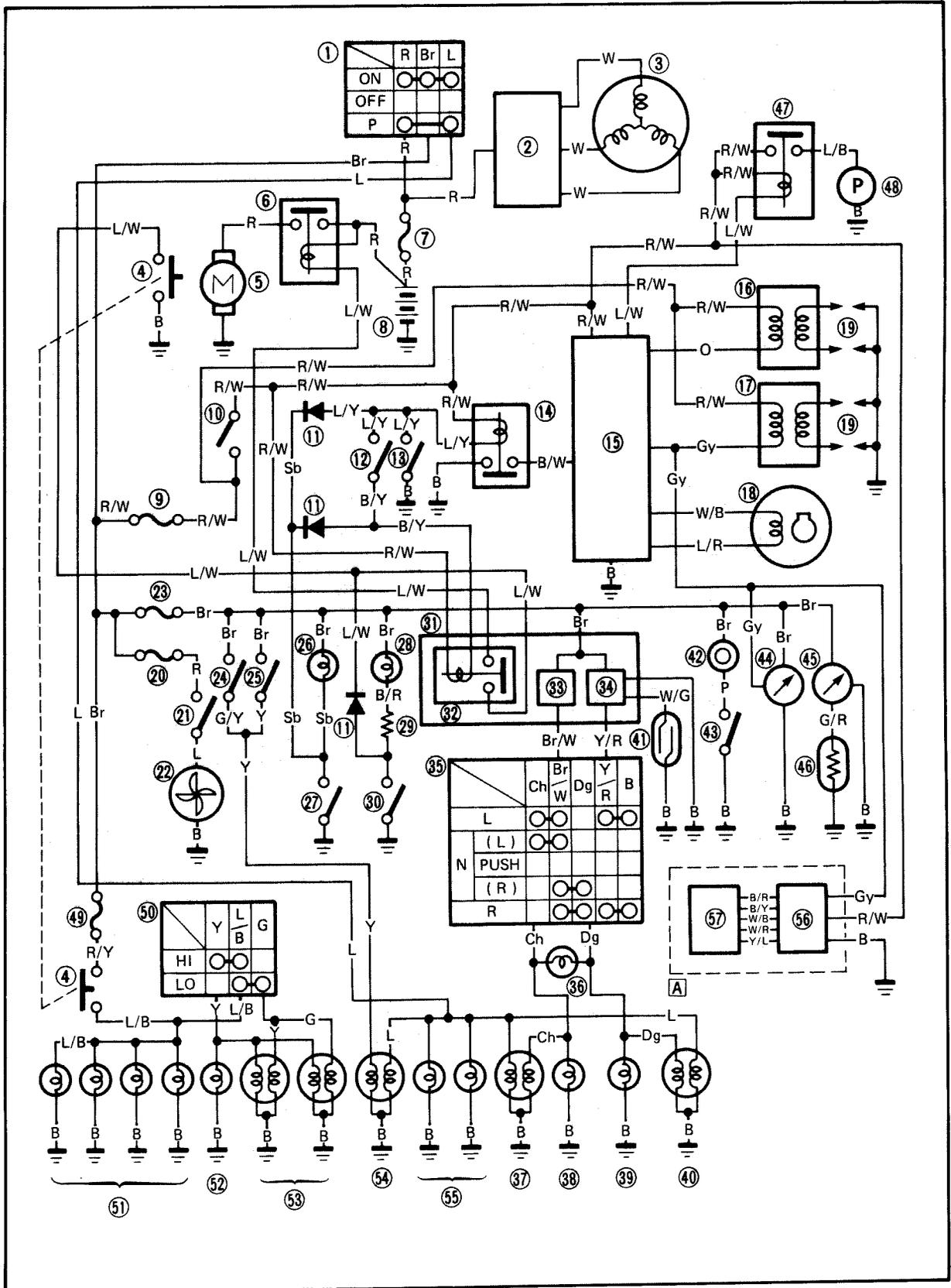
- Starter motor

NOTE:

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



CHARGING SYSTEM
CIRCUIT DIAGRAM



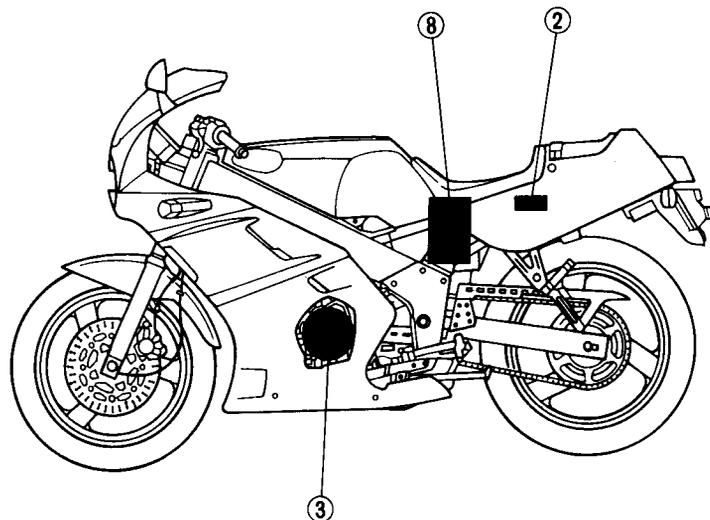
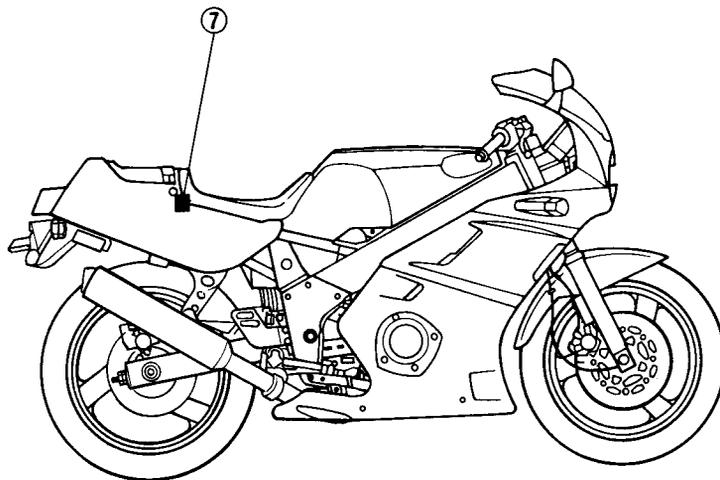


Aforementioned circuit diagram show the charging circuit in the wiring diagram.

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

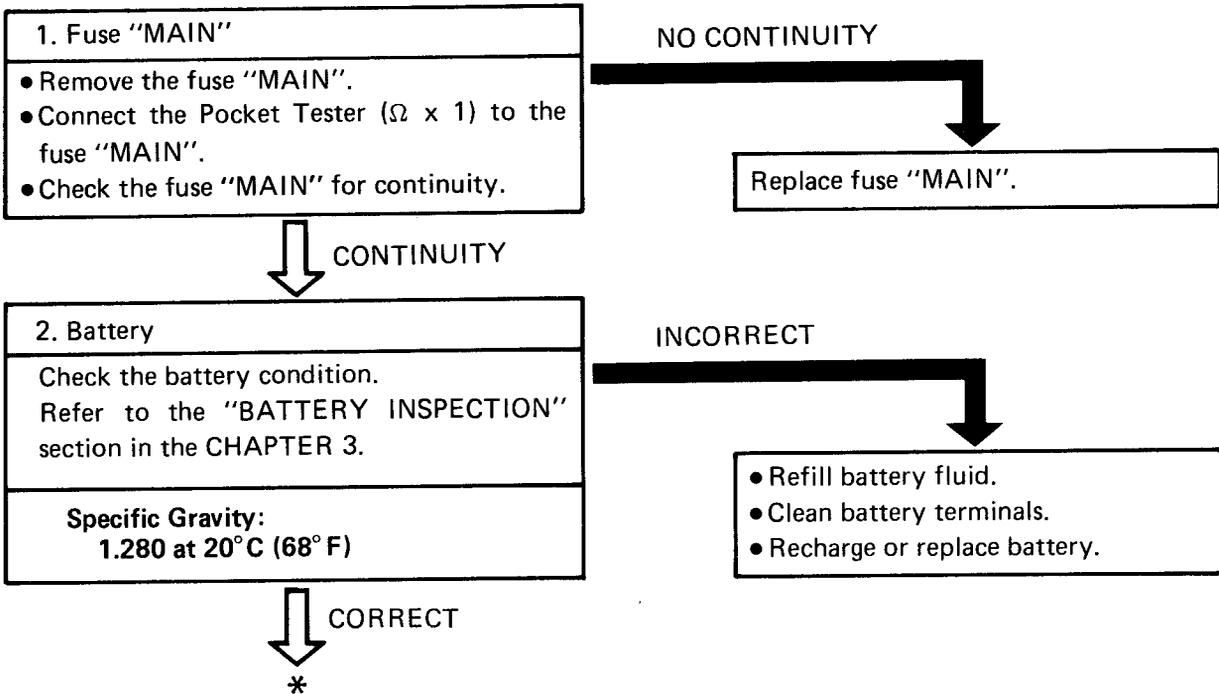
NOTE:

- Remove the following parts before troubleshooting.

| | |
|-----------------|------------------|
| 1) Seat | 4) Fuel tank |
| 2) Seat colwing | 5) Lower cowling |
| 3) Top cover | |
- Use the following special tools in this troubleshooting.

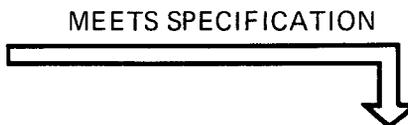
Inductive Tachometer:
P/N. YU-08036

Pocket Tester:
P/N. YU-03112

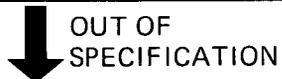




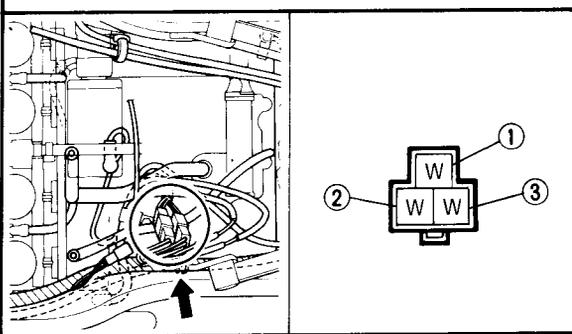
| | |
|---|--|
| 3. Charge voltage | |
| <ul style="list-style-type: none"> • Connect the Inductive Tachometer to spark plug lead. • Connect the Pocket Tester (DC20V) to the battery. | |
| Tester (+) Lead → Battery (+) Terminal Tester (-) Lead → Battery (-) Terminal | |
| | |
| <ul style="list-style-type: none"> • 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 |



Replace battery.



| | |
|--|--|
| 4. Stator coil resistance | |
| <ul style="list-style-type: none"> • 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 ~ 0.66Ω at 20°C (68°F)
- White ① – White ③
0.44 ~ 0.66Ω at 20°C (68°F)

↓ BOTH RESISTANCES MEET SPECIFICATIONS

5. Wiring connection

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

↓ CORRECT

Replace rectifier/regulator.

OUT OF SPECIFICATION

Replace stator coil.

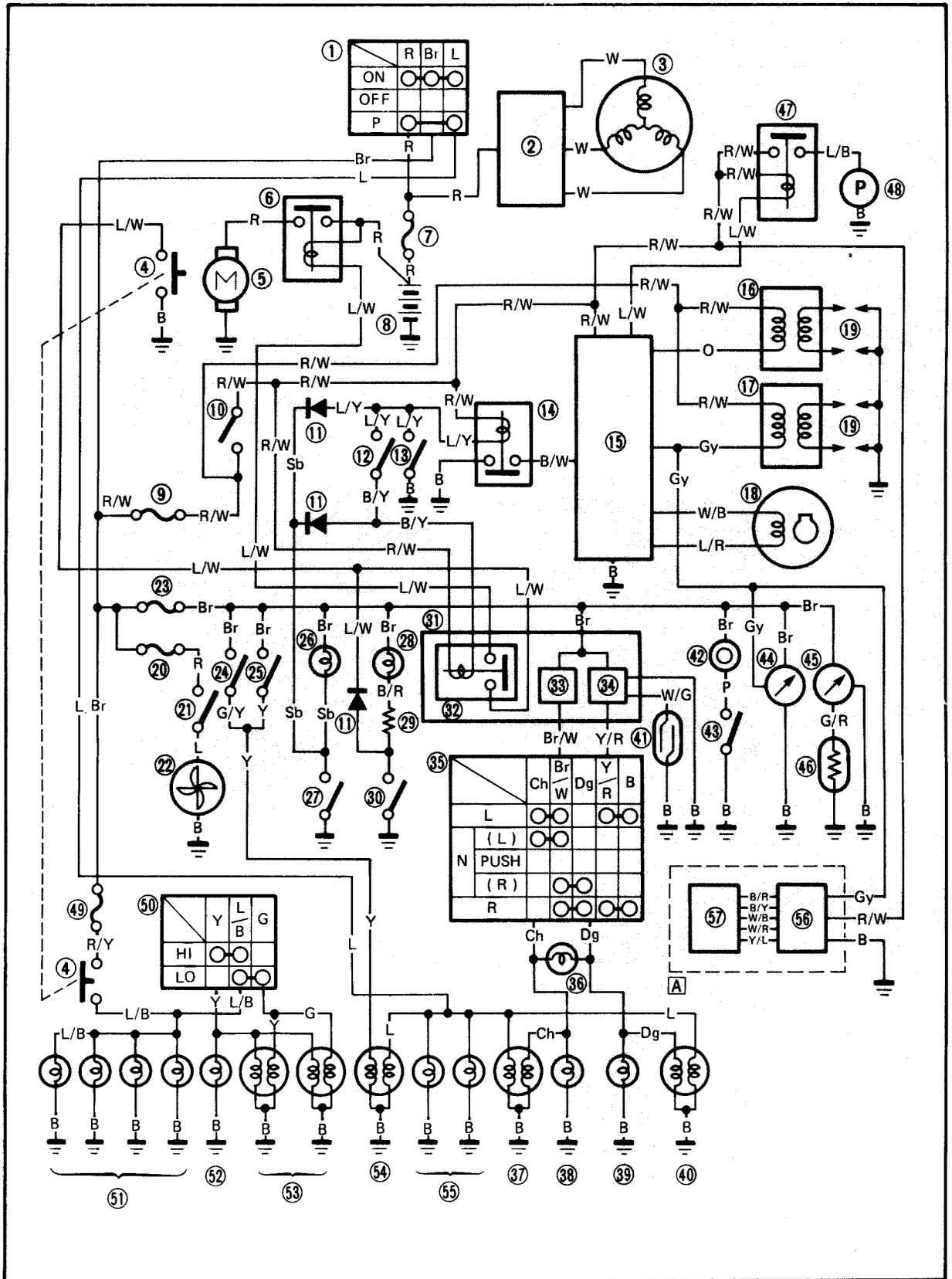
POOR CONNECTION

Correct.



LIGHTING SYSTEM

CIRCUIT DIAGRAM



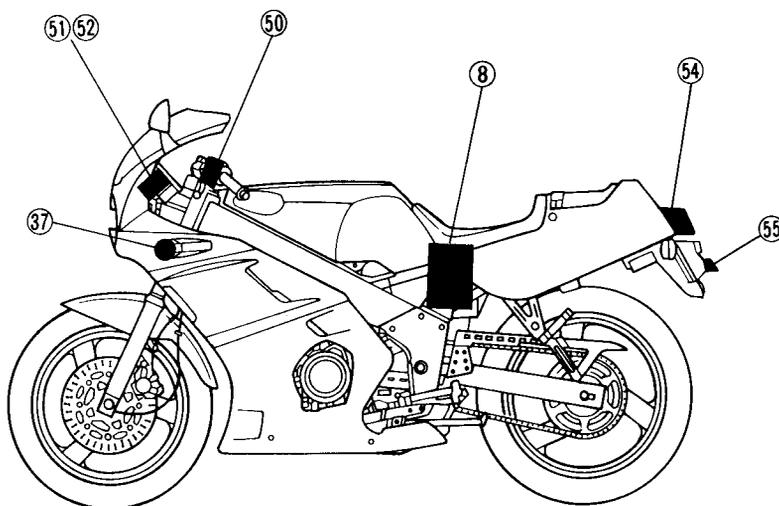
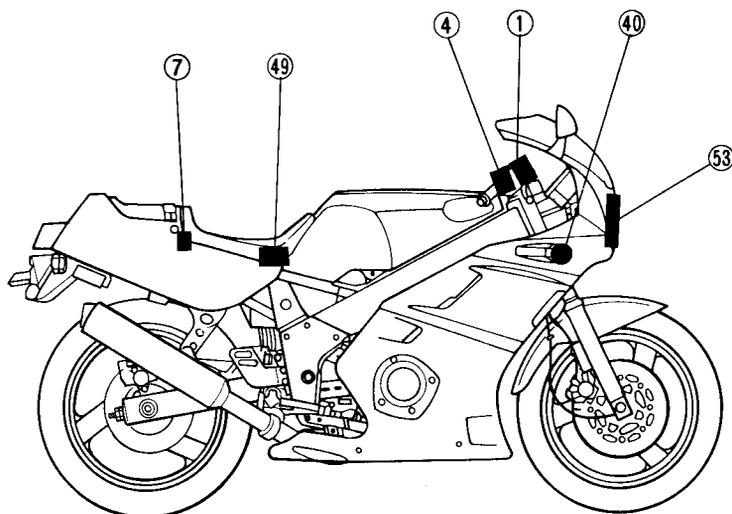


Aforementioned circuit diagram shows the lighting circuit in the wiring diagram.

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;

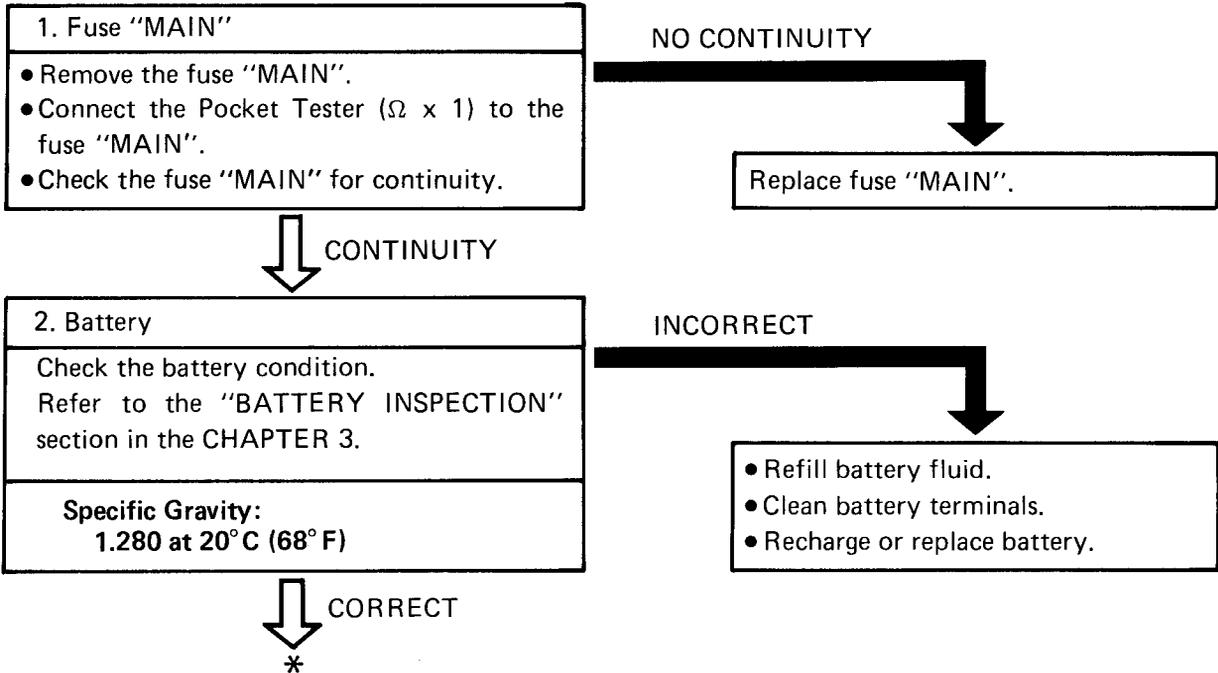
- | | |
|--|--|
| <ul style="list-style-type: none"> 1. Fuse "MAIN" 2. Battery 3. Main switch | <ul style="list-style-type: none"> 4. "LIGHTS" (Dimmer) switch 5. Wiring connection (Entire lighting system) |
|--|--|

NOTE:

- Remove the following parts before troubleshooting.

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

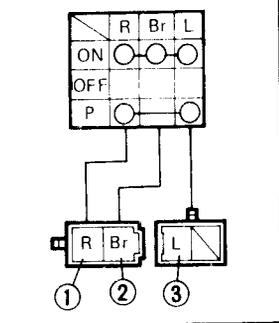
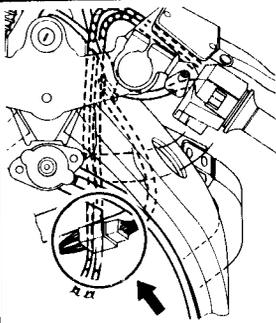
| | |
|---|--|
|  | <p>Pocket Tester: P/N. YU-03112</p> |
|---|--|





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

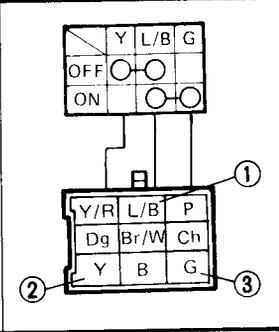
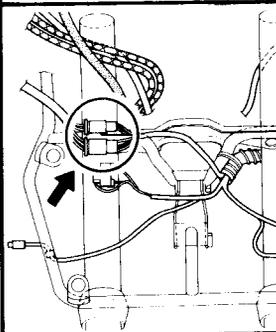
Replace main switch.



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).



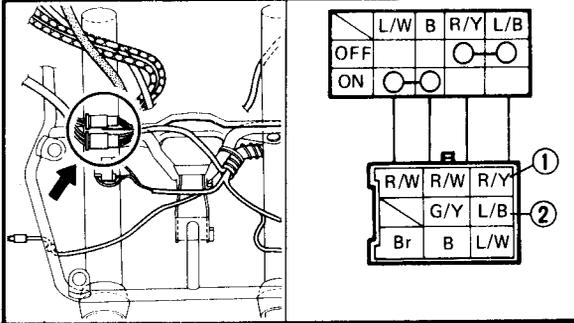
CORRECT

*



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

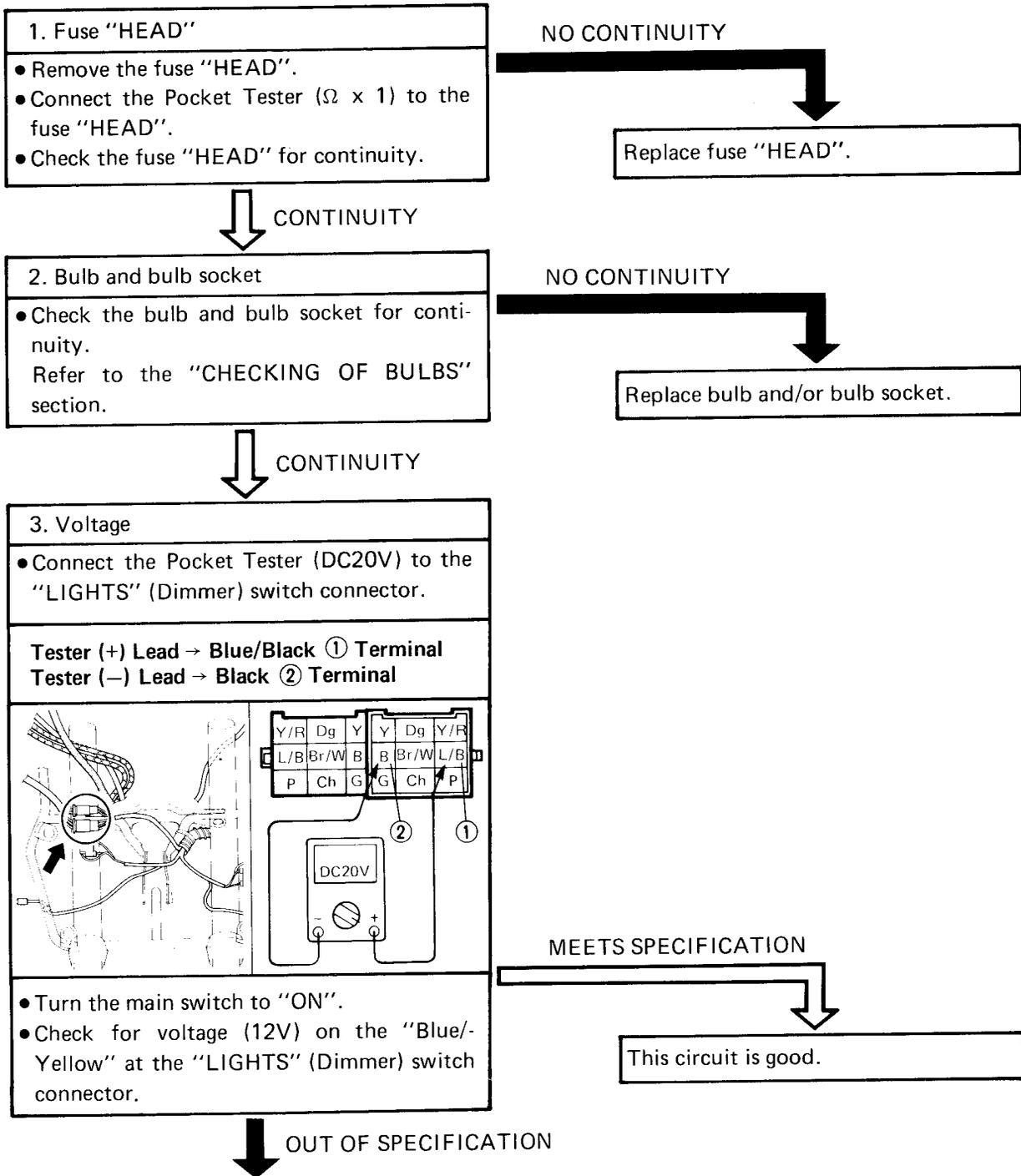
Correct.

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.



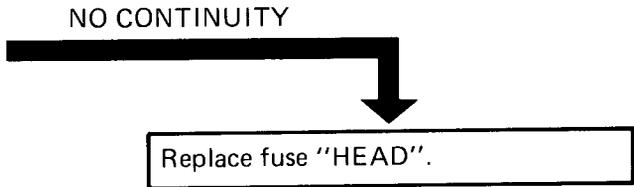


4. Wiring connection
 Check the entire lighting system for connections.
 Refer to the "WIRING DIAGRAM" section.

2. Meter light does not come on.

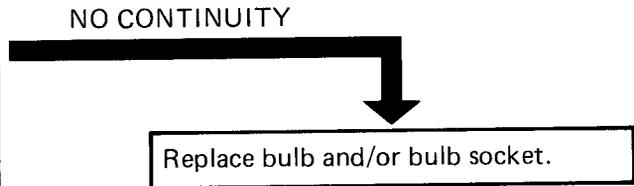
1. Fuse "HEAD"

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



2. Bulb and bulb socket

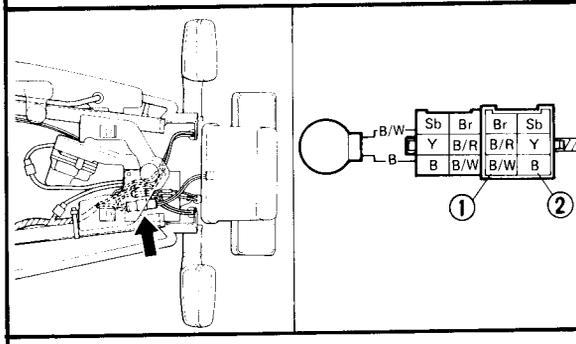
- Check the bulb and bulb socket for continuity.
 Refer to the "CHECKING OF BULBS" section.



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

NO CONTINUITY

Replace bulb and/or bulb socket.

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.

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.

CONTINUITY

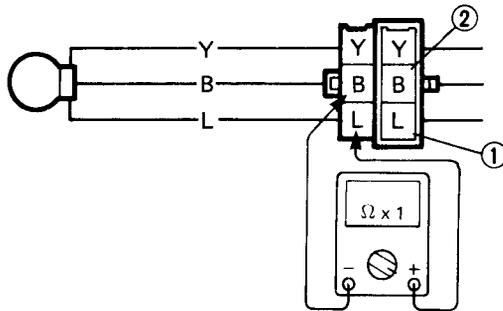
NO CONTINUITY

Replace bulb and/or bulb socket.

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.

MEETS SPECIFICATION (12V)

OUT OF SPECIFICATION

3. Wiring connection

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

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

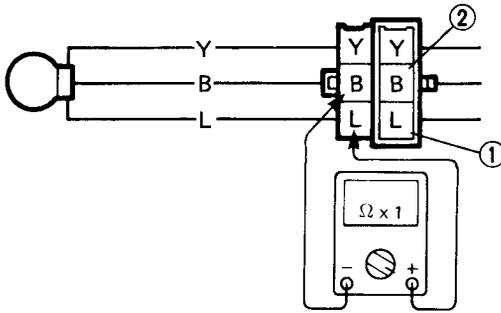
Replace bulb and/or bulb socket.

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

3. Wiring connection

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

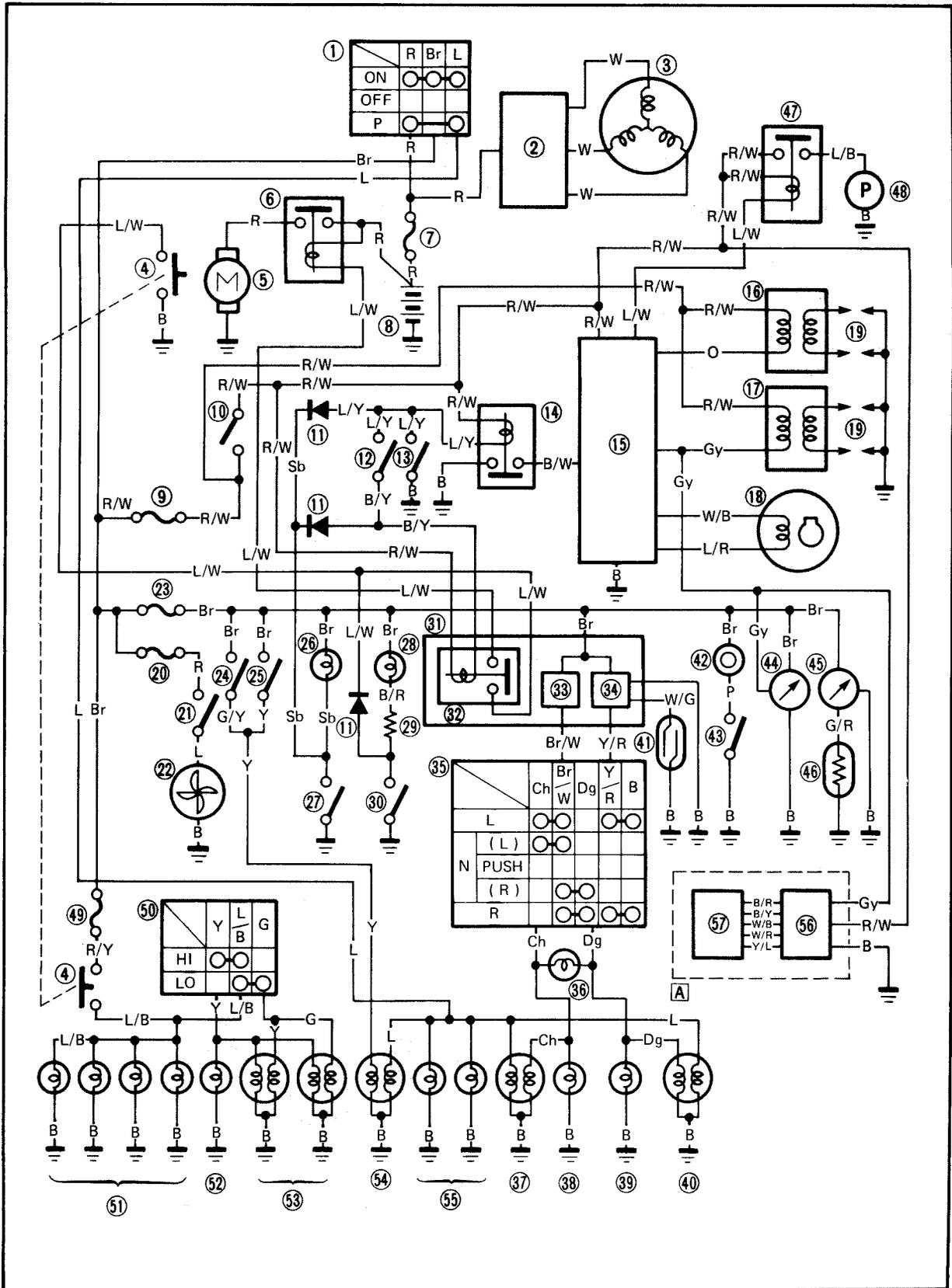
- Turn the main switch to "ON".
- Turn the "LIGHTS" switch to "ON".
- Check for voltage (12V) on the "Blue" lead at the bulb socket connector.

MEETS SPECIFICATION (12V)

This circuit is good.



SIGNAL SYSTEM
CIRCUIT DIAGRAM



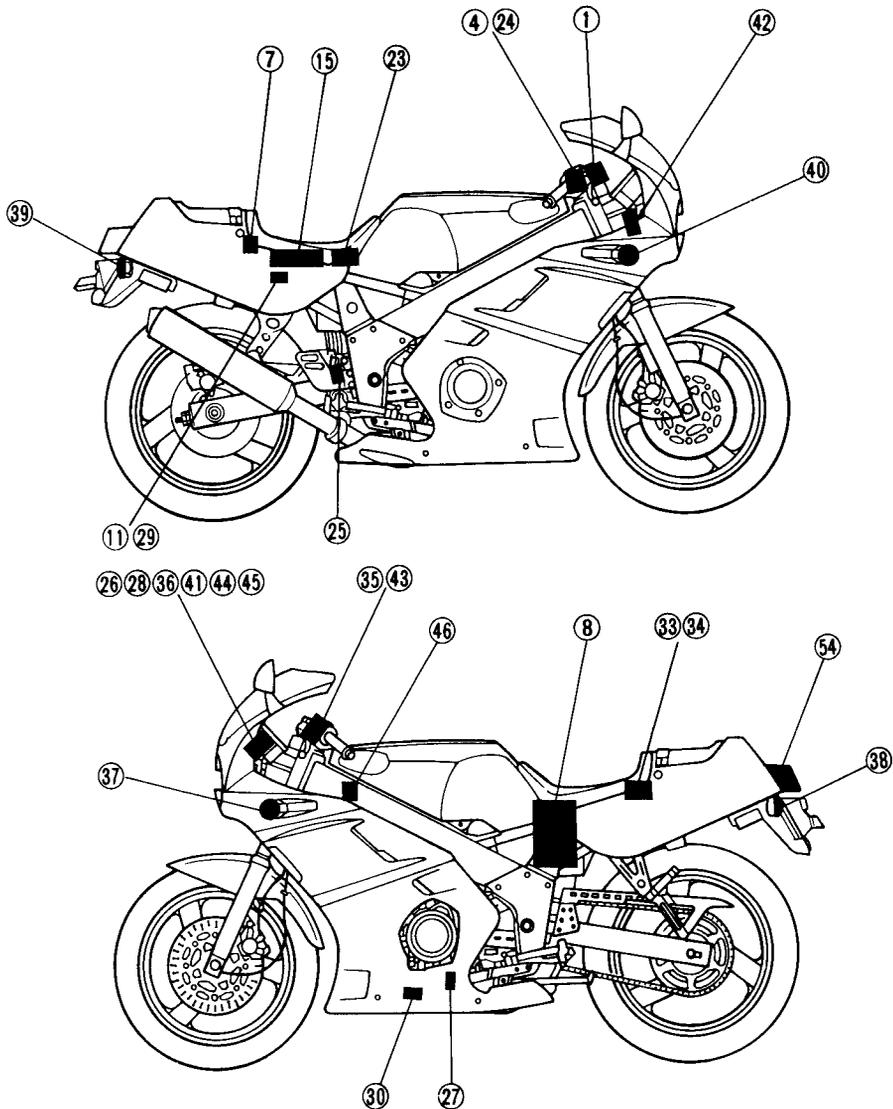


Aforementioned circuit diagram shows the signal circuit in the wiring diagram.

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" | ④⑩ Front flasher light (Right) |
| ⑳ Front brake switch | ④① Reed switch |
| ㉑ Rear brake switch | ④② Horn |
| ㉒ "NEUTRAL" indicator light | ④③ "HORN" switch |
| ㉓ Neutral switch | ④④ Tachometer |
| ㉔ "OIL" indicator light | ④⑤ Temp meter |
| ㉕ Resistor | ④⑥ Thermo unit |
| ③⑩ Oil level switch | ⑤④ Brake light |
| ③③ 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;

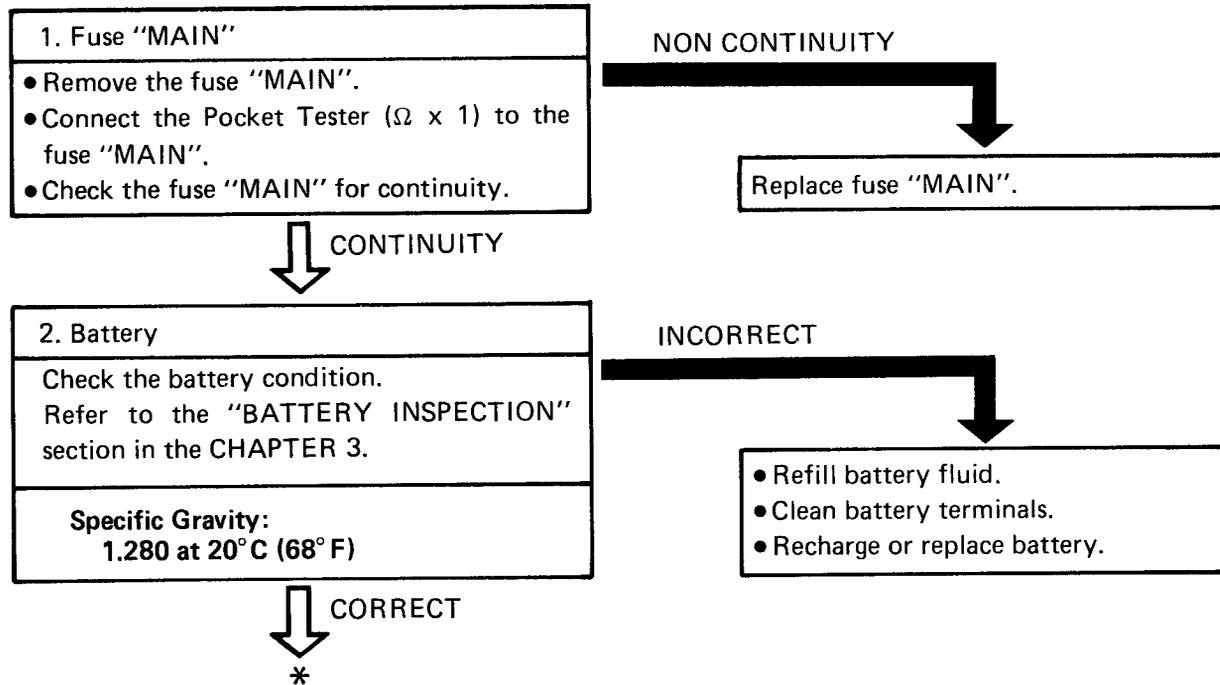
- | | |
|--|---|
| <ul style="list-style-type: none"> 1. Fuse "MAIN" 2. Battery 3. Main switch | <ul style="list-style-type: none"> 4. Wiring connection (Entire signal system) |
|--|---|

NOTE:

- Remove the following parts before troubleshooting.

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

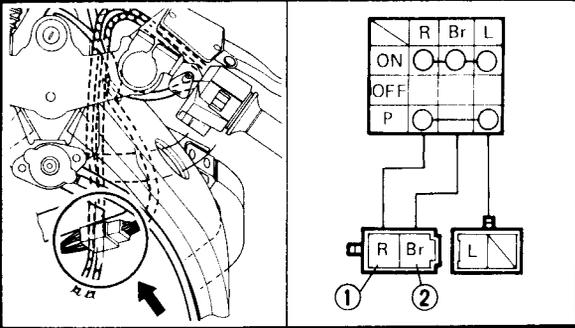
| | |
|--|--|
| | Pocket Tester: P/N. YU-03112 |
|--|--|





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

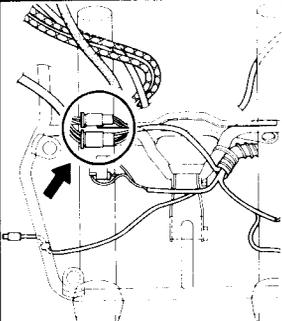
Correct.

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.



| | | |
|------------|---|---|
| | P | B |
| OFF (Free) | | |
| ON (Push) | ○ | ○ |

| | | |
|-----|------|----|
| Y | B | G |
| Dg | Br/W | Ch |
| Y/R | L/W | P |

INCORRECT

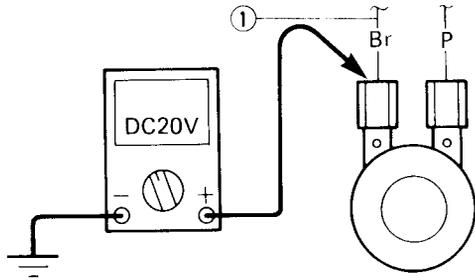
Replace handlebar switch (Left).

CORRECT

2. Voltage

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

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



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

OUT OF SPECIFICATION

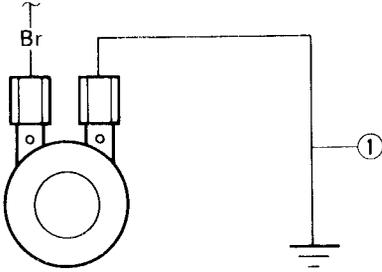
Check the entire lighting system for connections.

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

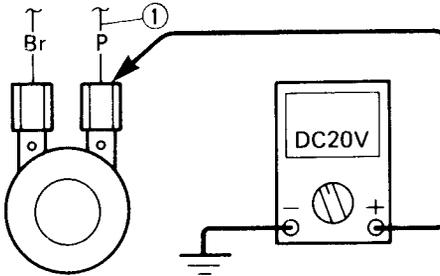
Horn is good.

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



OUT OF SPECIFICATION

Replace horn.

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

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.

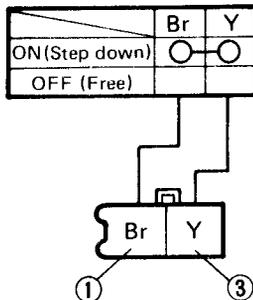
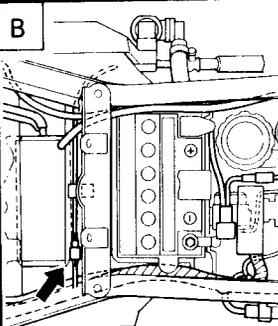
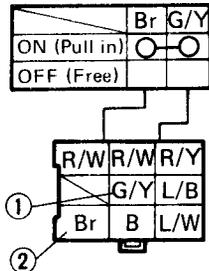
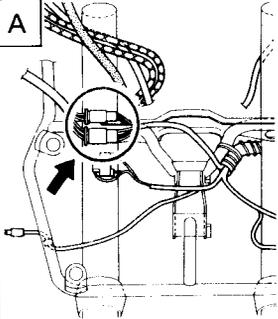
NON CONTINUITY

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

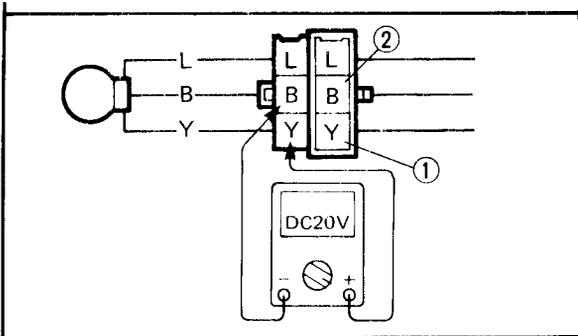
Replace brake switch.

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

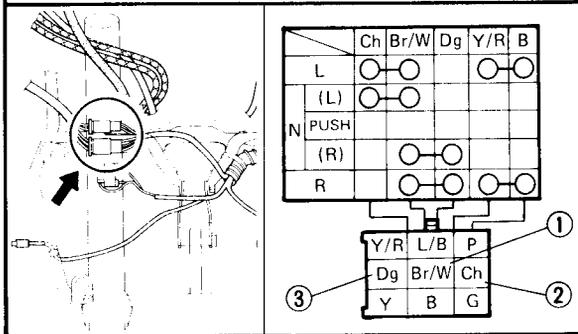
- Check the bulb and bulb socket for continuity. Refer to the "CHECKING OF BULBS" section.

NO CONTINUITY

CONTINUITY

2. "TURN" switch

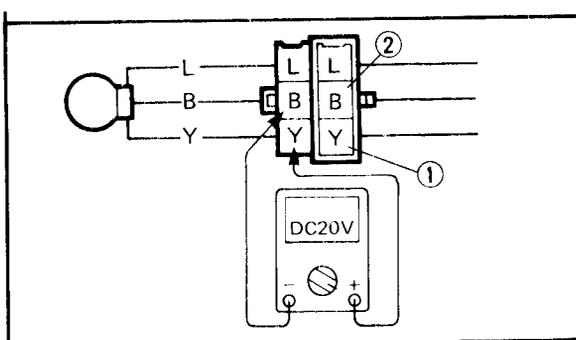
- Disconnect the handlebar switch coupler from the wire harness.
- Check the switch component for the continuity between "Brown/White ① and Chocolate ②" and "Brown/White ① and Dark green ③". Refer to the "CHECKING OF SWITCHES" section.



INCORRECT

Replace handlebar switch (Left).

CORRECT *



- 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

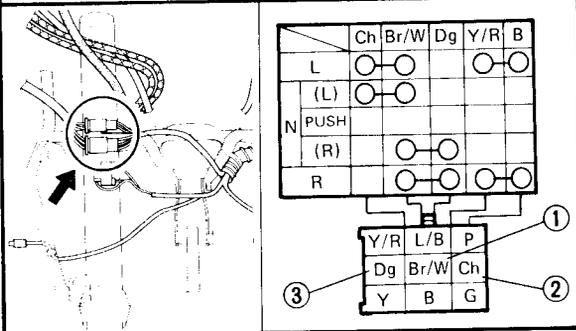
- Check the bulb and bulb socket for continuity. Refer to the "CHECKING OF BULBS" section.

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

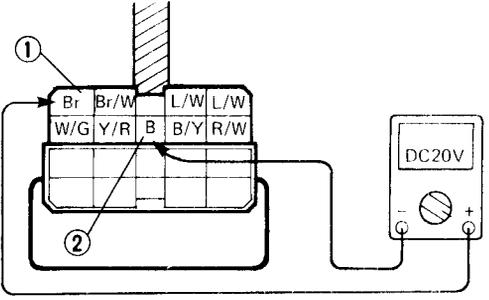
*



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

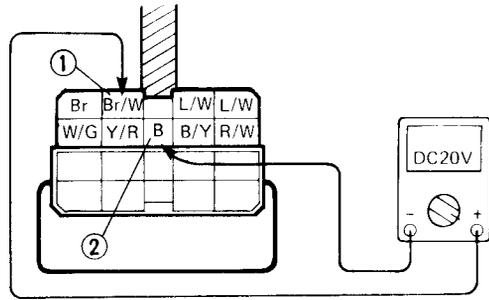
Check the entire signal system for connections.

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)





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

OUT OF SPECIFICATION

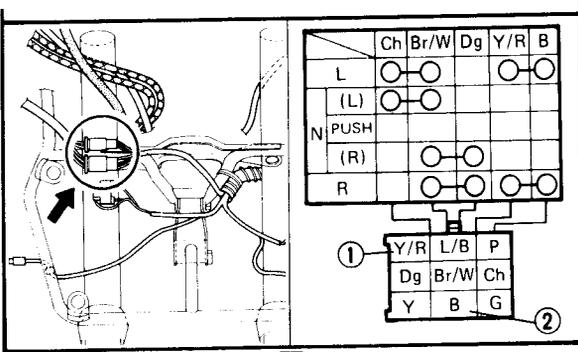
MEETS SPECIFICATION (12V)

This circuit is good.

| |
|--|
| <p>6. Wiring connection</p> <p>Check the entire signal system for connections. Refer to the "WIRING DIAGRAM" section.</p> |
|--|

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

| |
|--|
| <p>1. "TURN" switch</p> <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". <p>Refer to the "CHECKING OF SWITCHES" section.</p> |
|--|



INCORRECT

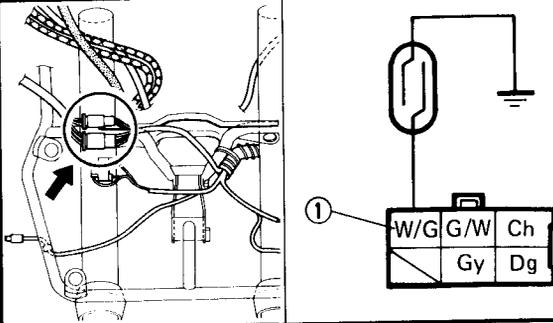
Replace handlebar switch (Left).

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



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

- 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.

OUT OF SPECIFICATION

Replace speedometer assembly.

MEETS SPECIFICATION

3. Wiring connection

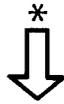
Check the entire signal system for connections.
 Refer to the "WIRING DIAGRAM" section.

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

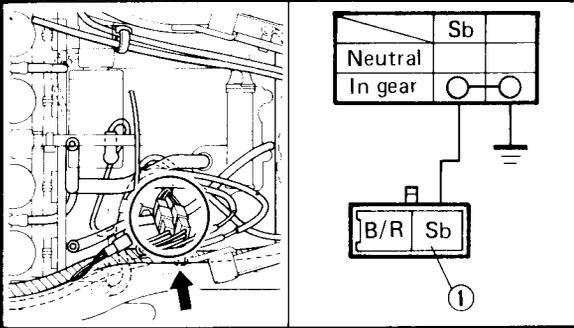
Replace bulb and/or bulb socket.



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.

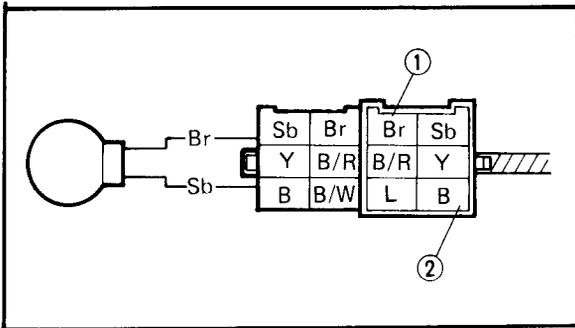


CORRECT

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.

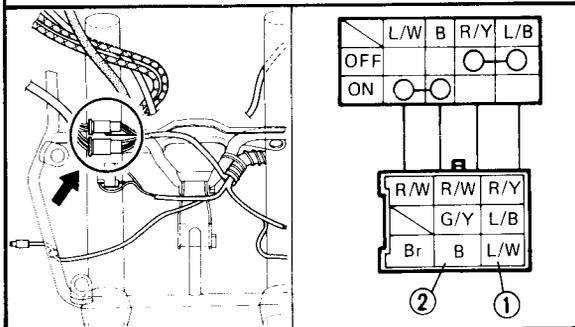
CONTINUITY

NO CONTINUITY

Replace bulb and/or bulb socket.

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

INCORRECT

Replace handlebar switch (Right).



3. Diode

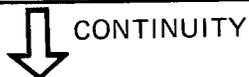
- Disconnect the diode unit coupler from the wire harness.
- Connect the pocket tester ($\Omega \times 1$) to the diode leads.

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

- Check the diode for continuity.

NO CONTINUITY

Replace diode unit.



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.

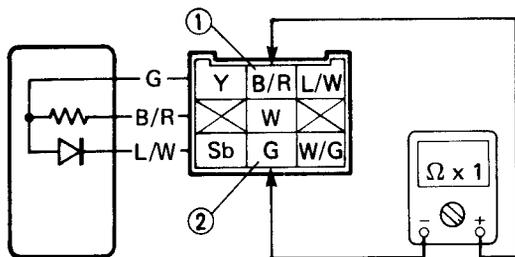
CONTINUITY

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

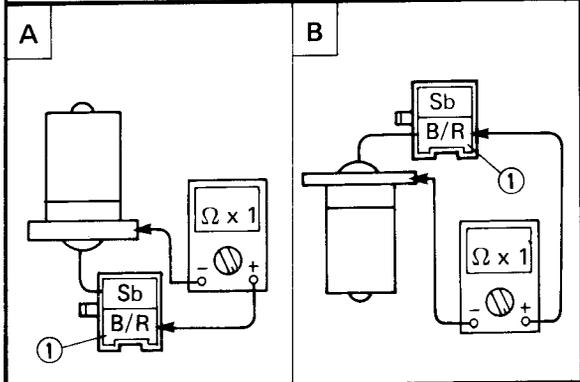
Replace diode unit.



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.

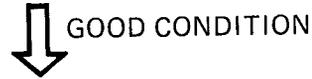
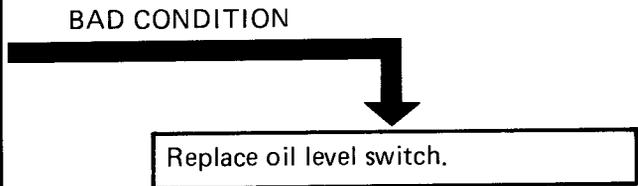
Tester (+) Lead → Black/Red ① Terminal
 Tester (-) Lead → Oil Level Switch Body



• Check the oil level switch for continuity.

| Switch position | Good condition | | Bad condition | |
|------------------------|----------------|---|---------------|---|
| | ○ | X | ○ | X |
| A Upright position | X | ○ | X | ○ |
| B Upside down position | ○ | X | X | ○ |

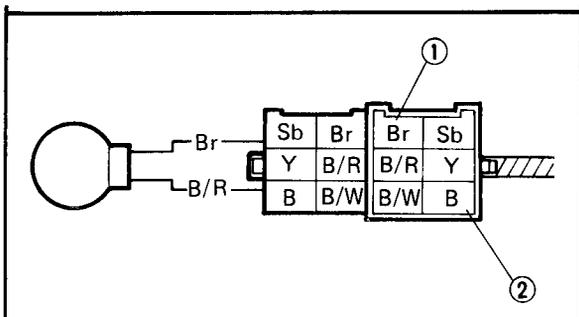
○ : Continuity X : No continuity



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

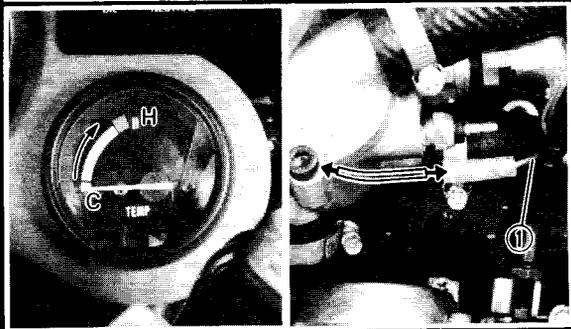
5. Wiring connection

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

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 tempmeter.

CORRECT

Check wiring connection.

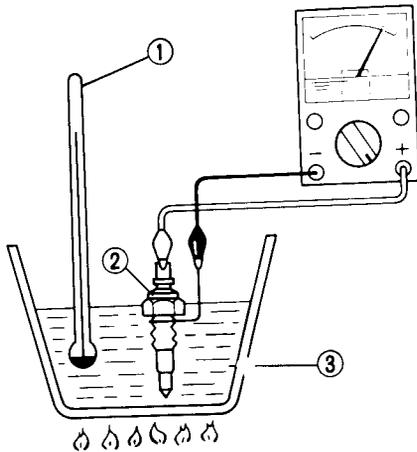
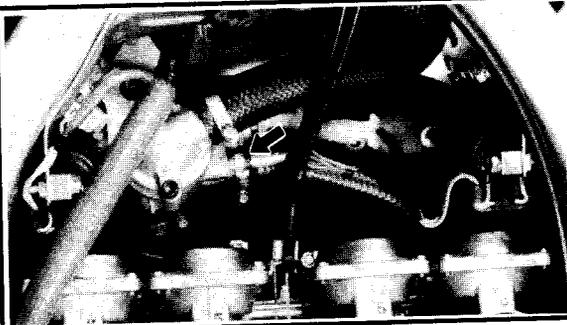


2. Thermo unit

- 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) | 154 Ω |
| 80° C (176° F) | 47 ~ 57 Ω |
| 100° C (212° F) | 26 ~ 29 Ω |
| 120° C (248° F) | 16 Ω |



- 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.

MEETS SPECIFICATIONS

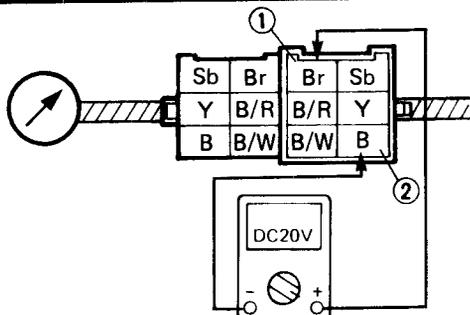
OUT OF SPECIFICATION

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.

MEETS SPECIFICATION (12V)

OUT OF SPECIFICATION

Check the entire signal system for connections.

6. Wiring connection

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

POOR CONNECTION

Correct.

CORRECT

Replace tempmeter.

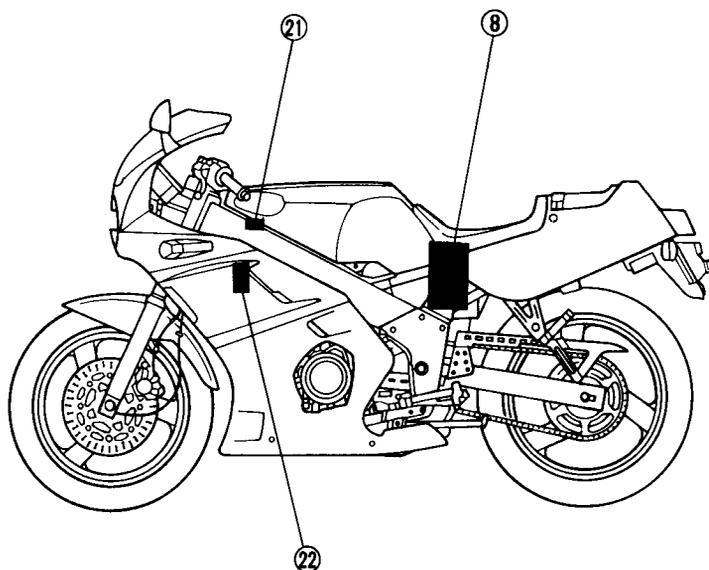
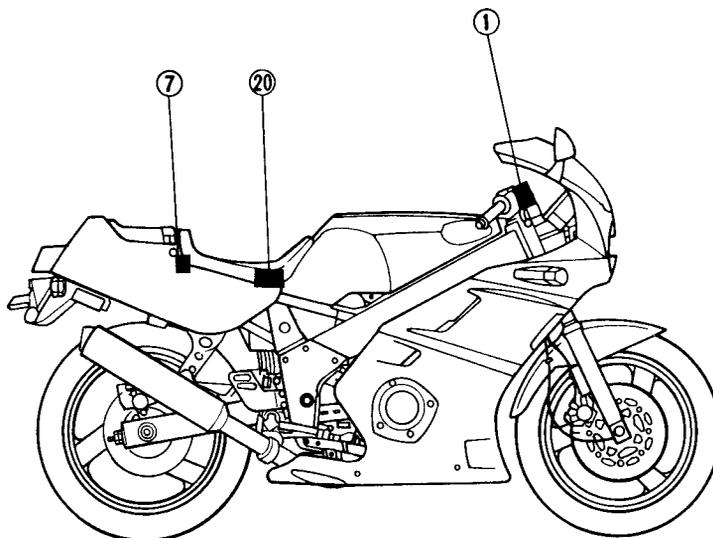


A forementioned circuit diagram shows the cooling circuit in the circuit diagram.

NOTE:

For the color codes, see page 8-2.

- ① Main switch
- ⑦ Fuse "MAIN"
- ⑧ Battery
- ⑳ Fuse "FAN"
- ㉑ Thermo switch
- ㉒ Fan motor



TROUBLESHOOTING

FAN MOTOR DOES NOT TURN.

Procedure

Check;

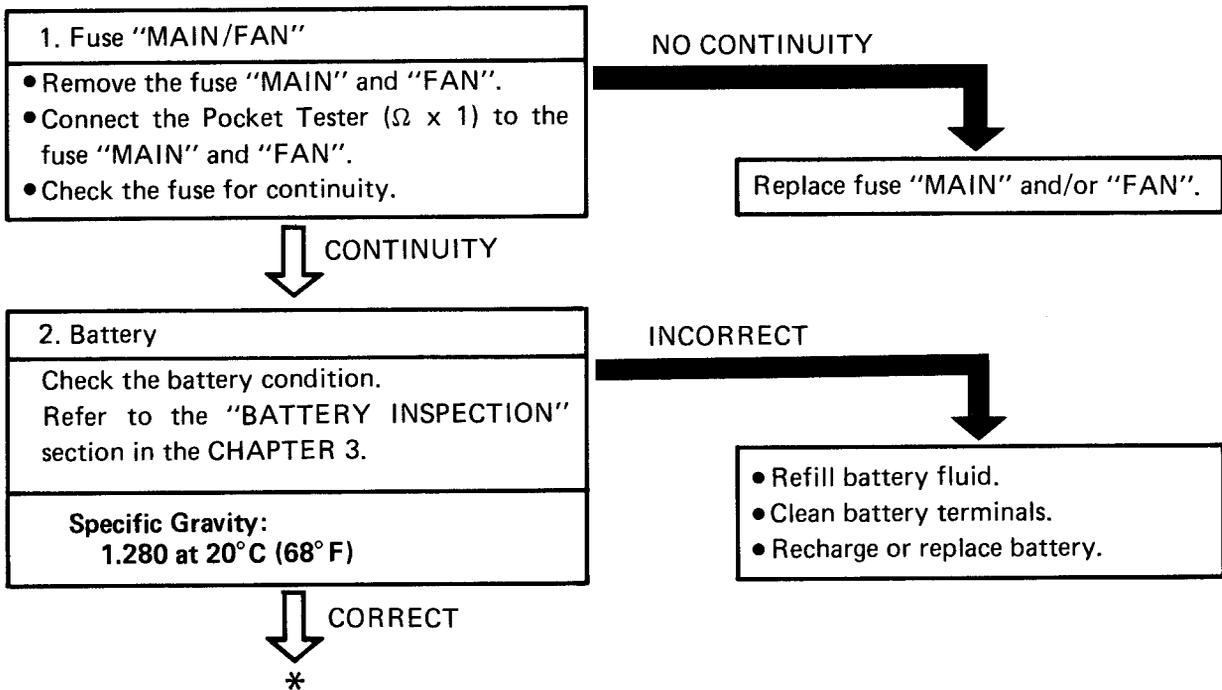
- | | |
|-----------------------|-------------------------|
| 1. Fuse "MAIN/FAN" | 5. Thermo switch |
| 2. Battery | 6. Wiring connection |
| 3. Fan motor (Test 1) | (Entire cooling system) |
| 4. Fan motor (Test 2) | |

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 |
|---|--|





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.



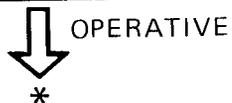
4. Fan motor (Test 2)

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

- Check the fan motor for operation.

NO OPERATIVE

Check wiring connection(s).



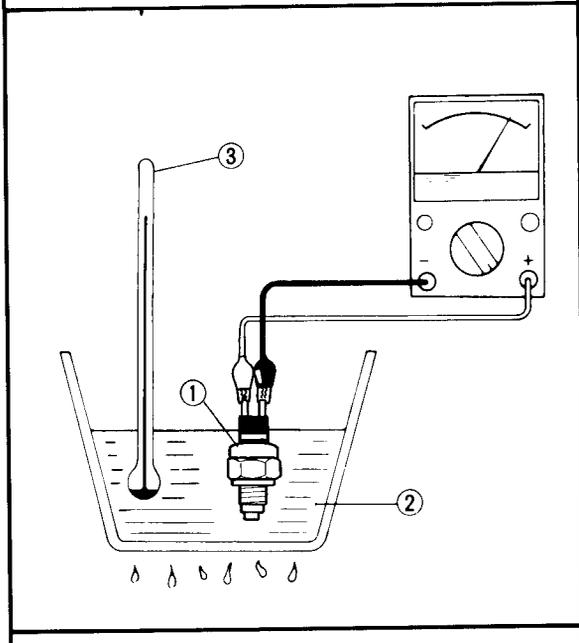


5. Thermo switch

- 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.

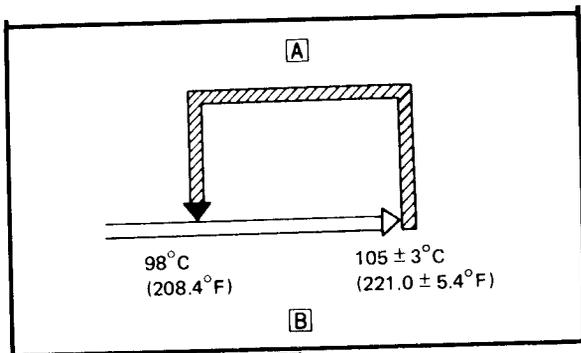
Thermo Switch:
 8 Nm (0.8 m·kg, 5.8 ft·lb)
 Three Bond Sealock® # 10

⚠ 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.

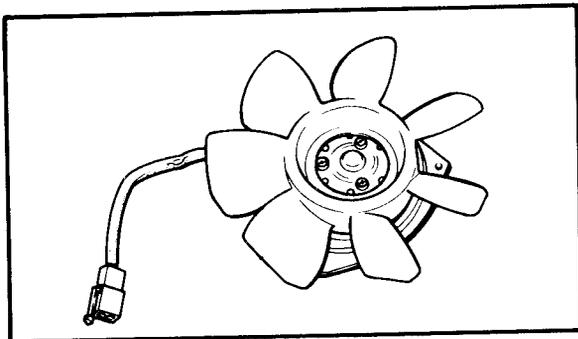
GOOD CONDITION

6. Wiring connection

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

POOR CONNECTION

Correct.



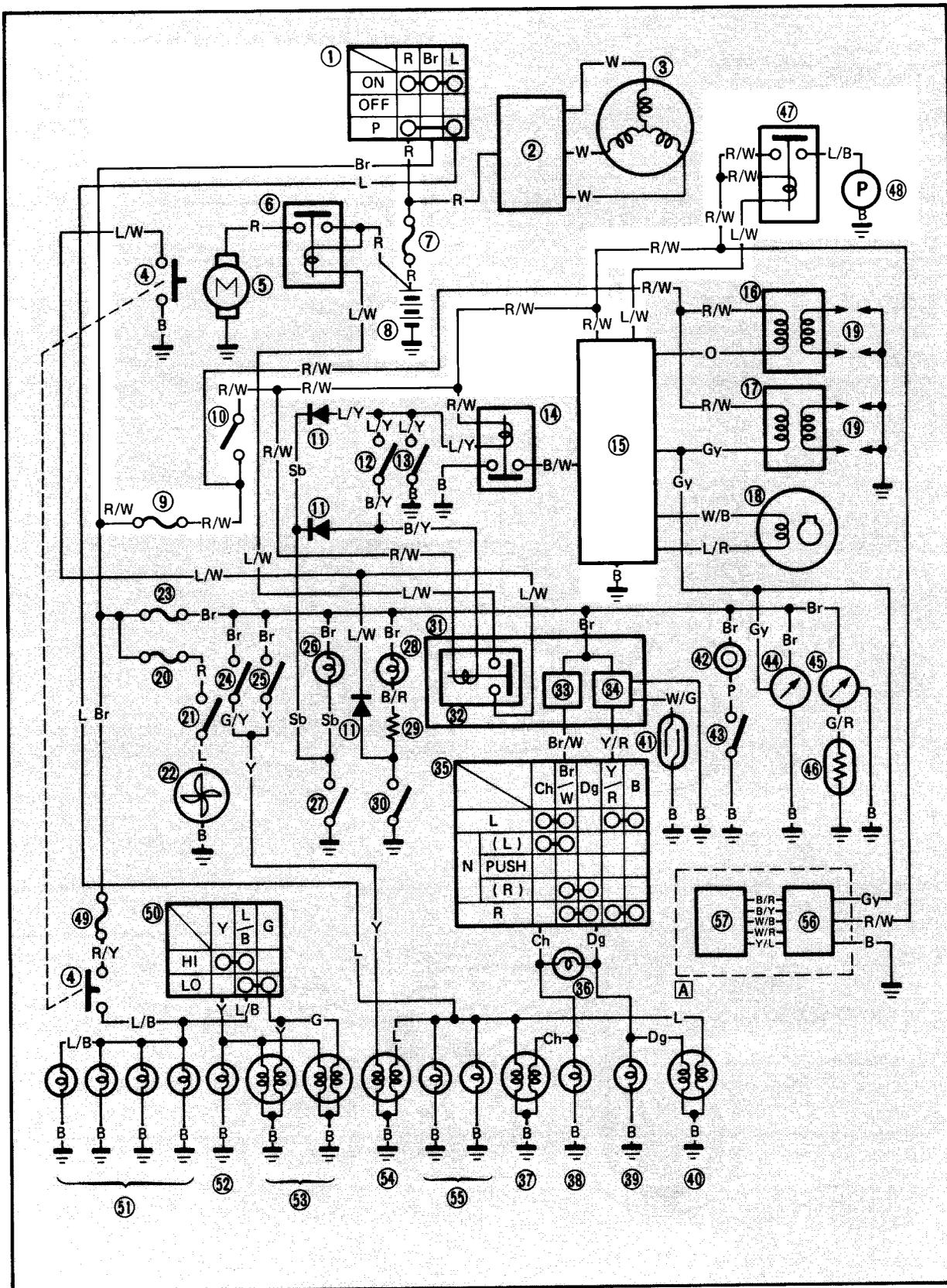
Fan Motor Inspection

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



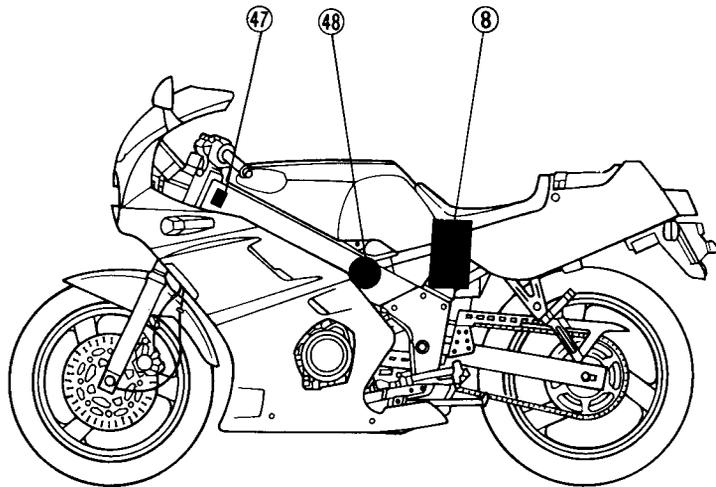
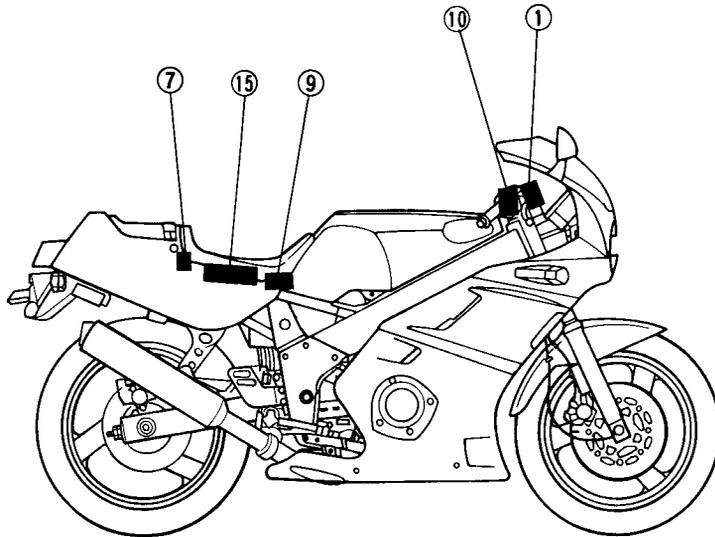


A forementioned circuit diagram shows the fuel circuit in the circuit diagram.

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





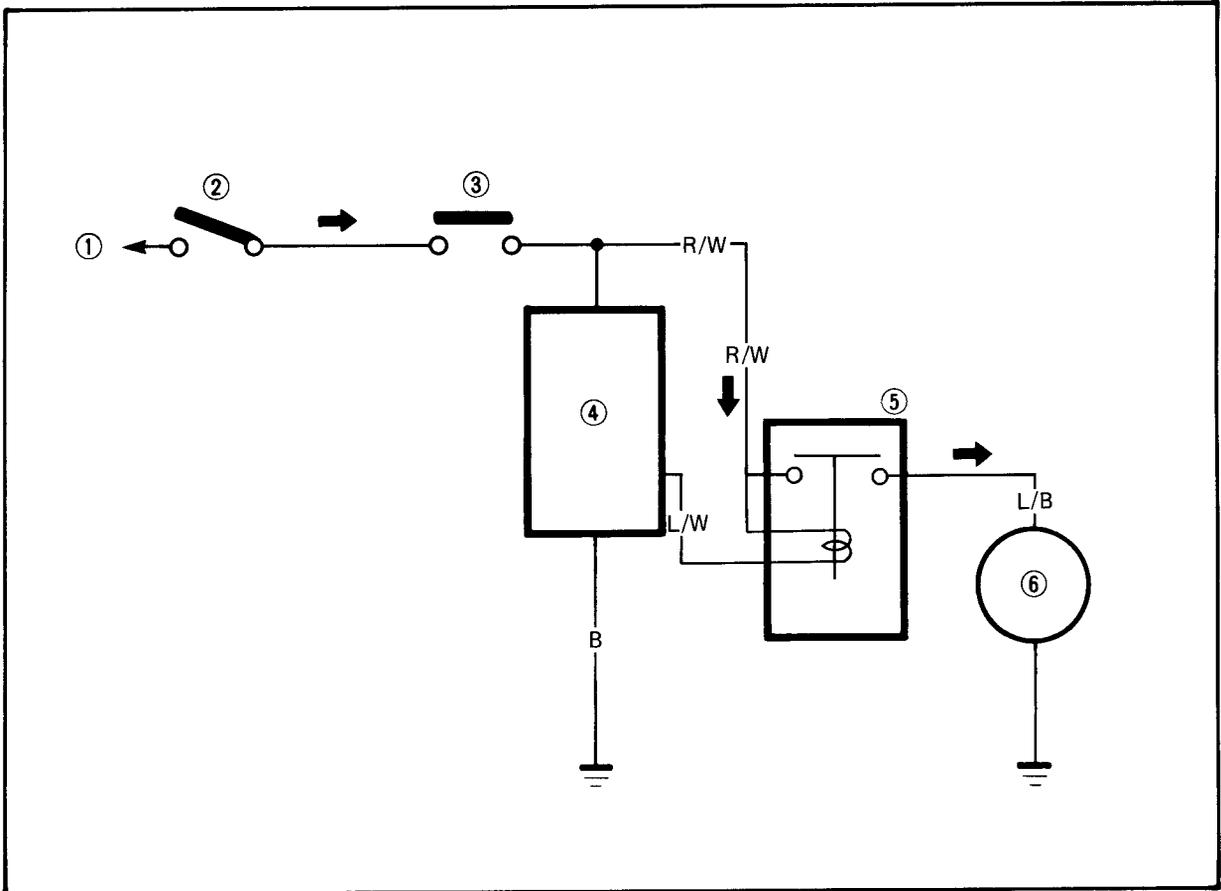
FUEL PUMP CIRCUIT OPERATION

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 |
| <ul style="list-style-type: none"> ● Main/Engine stop switch turned to "ON" | <ul style="list-style-type: none"> ● Engine turned on | <ul style="list-style-type: none"> ● 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.

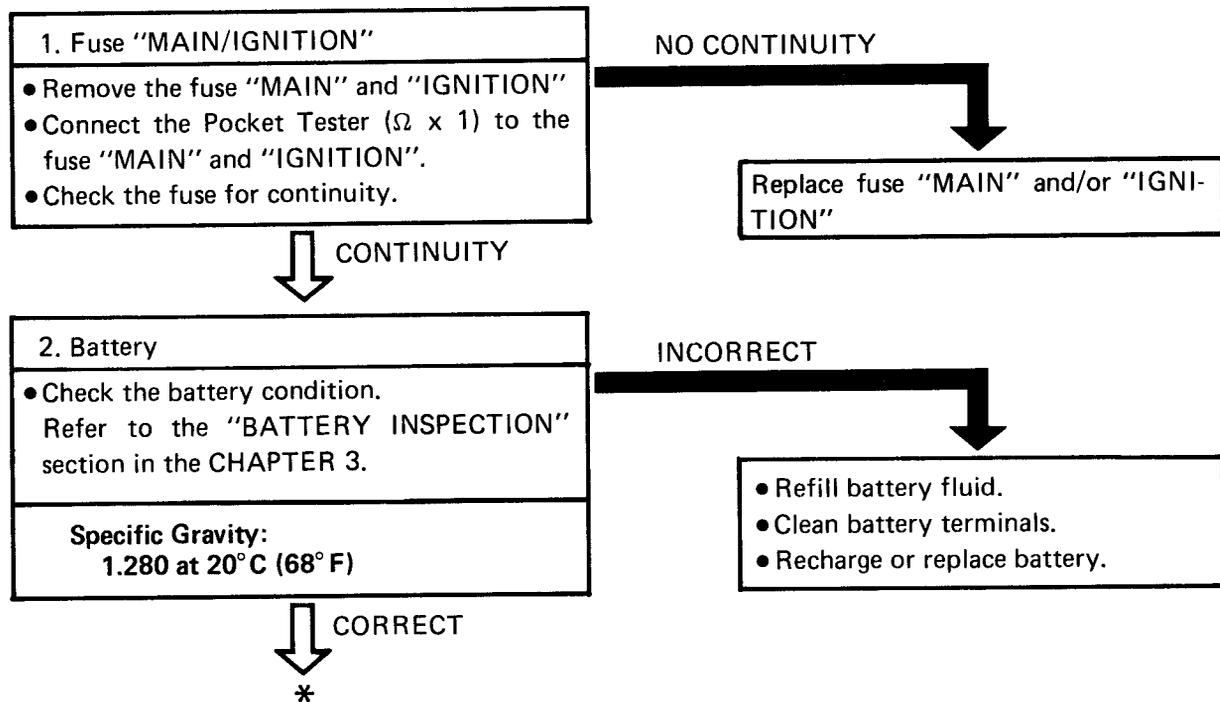
Procedure

- | | |
|-------------------------|----------------------|
| 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.

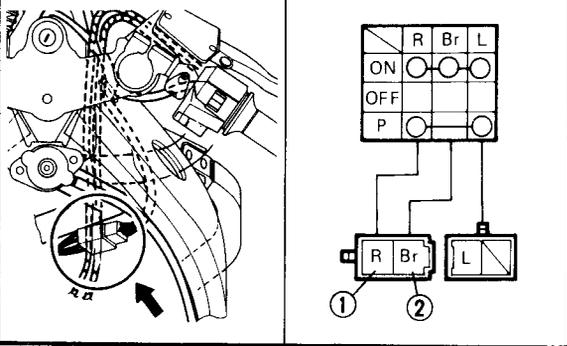
| | |
|---|-----------------------------------|
|  | Pocket Tester: YU-03112 |
|---|-----------------------------------|





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

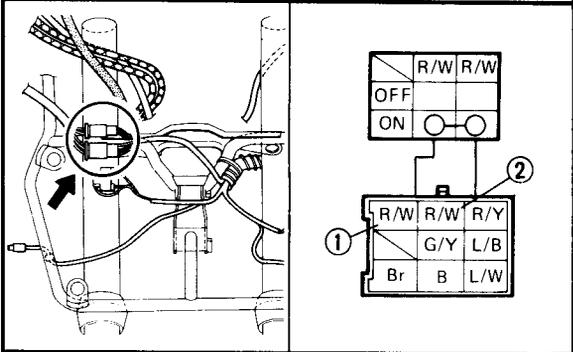
Replace main switch.



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.

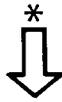


INCORRECT

Replace handlebar switch (Right).



CORRECT

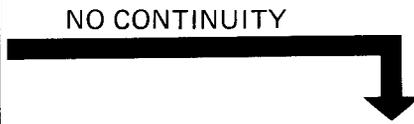


5. Fuel pump relay

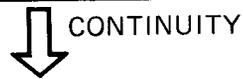
- Disconnect the fuel pump relay coupler from the wire harness.
- Connect the pocket tester ($\Omega \times 1$) and battery (12V) voltage to the fuel pump relay coupler terminals.

Tester (+) Lead \rightarrow Blue/Black ① Terminal
 Tester (-) Lead \rightarrow Red/White ② Terminal
 Battery (+) Lead \rightarrow Red/White ③ Terminal
 Battery (-) Lead \rightarrow Blue/White ④ Terminal

- Check the relay for continuity.



Replace fuel pump relay.

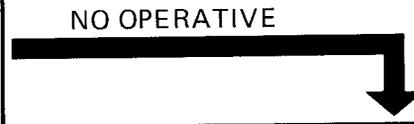


6. Fuel pump

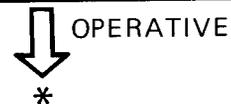
- Disconnect the fuel pump coupler from the wire harness.
- Connect the battery voltage as shown.

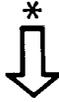
Battery (+) Lead \rightarrow Blue/Black ① Terminal
 Battery (-) Lead \rightarrow Black ② Terminal

- Check the fuel pump operation.



Replace fuel pump.





7. Wiring connection
Check the entire fuel system for connections.
Refer to the "WIRING DIAGRAM" section.

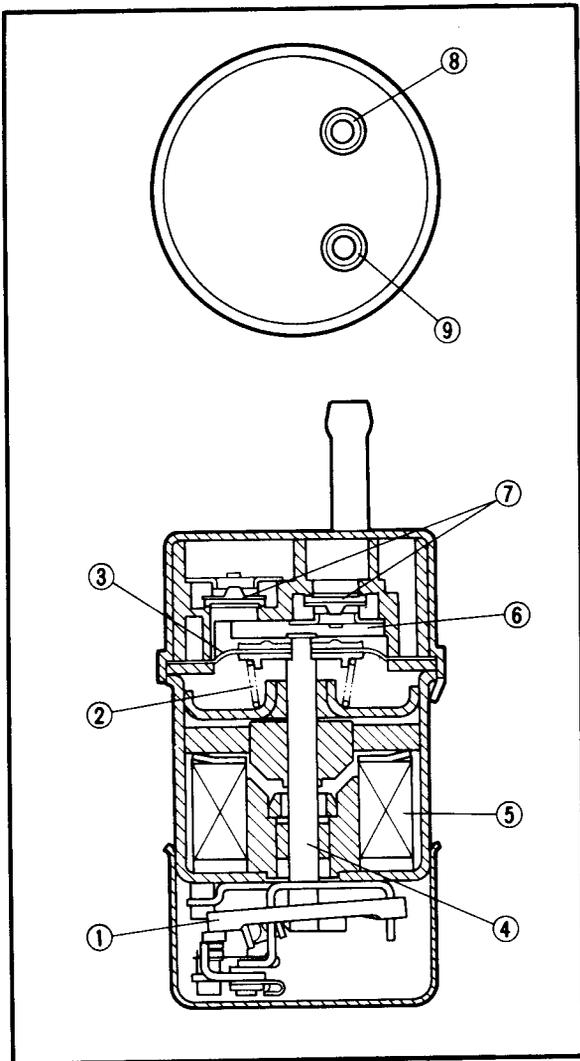
POOR CONNECTION



CORRECT

Correct.

Replace digital ignitor unit.



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.

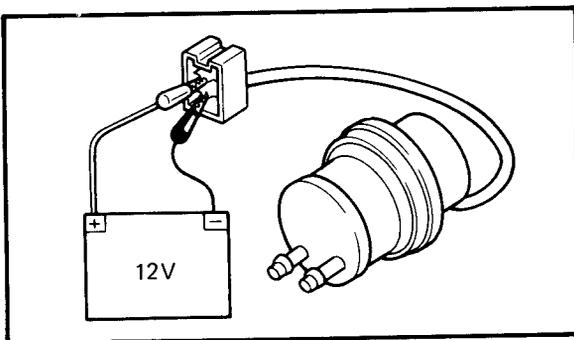
NOTE:

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.

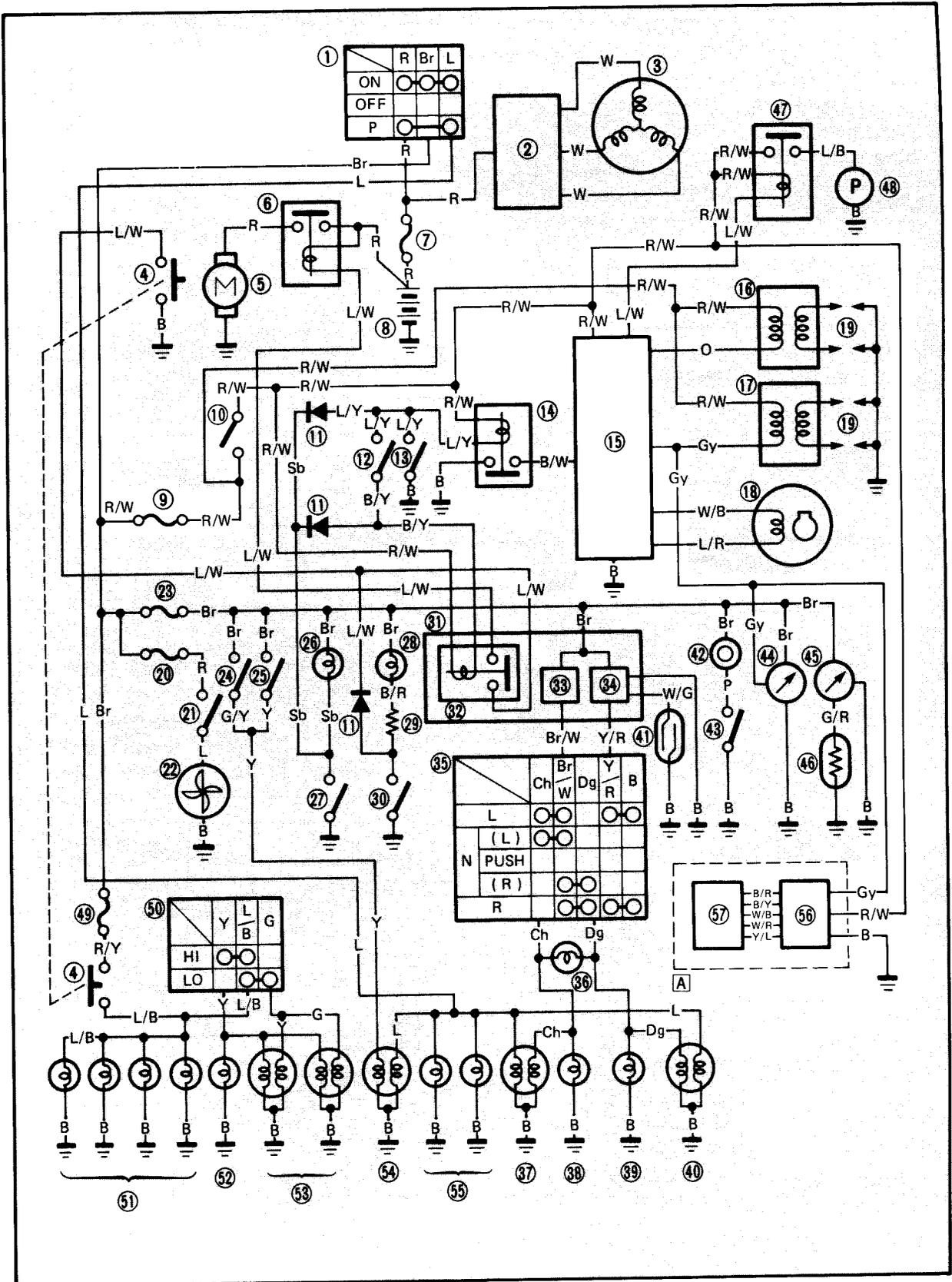
- ① Cut-off switch
- ② Spring
- ③ Diaphragm
- ④ Plunger
- ⑤ Solenoid coil
- ⑥ Fuel chamber
- ⑦ Valve
- ⑧ Outlet
- ⑨ Inlet

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



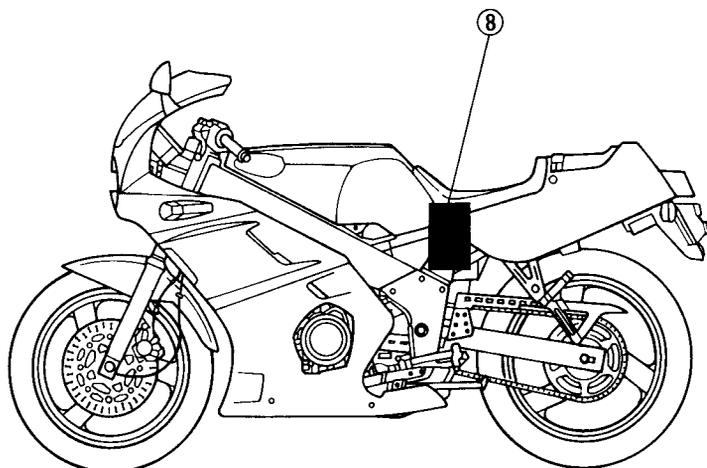
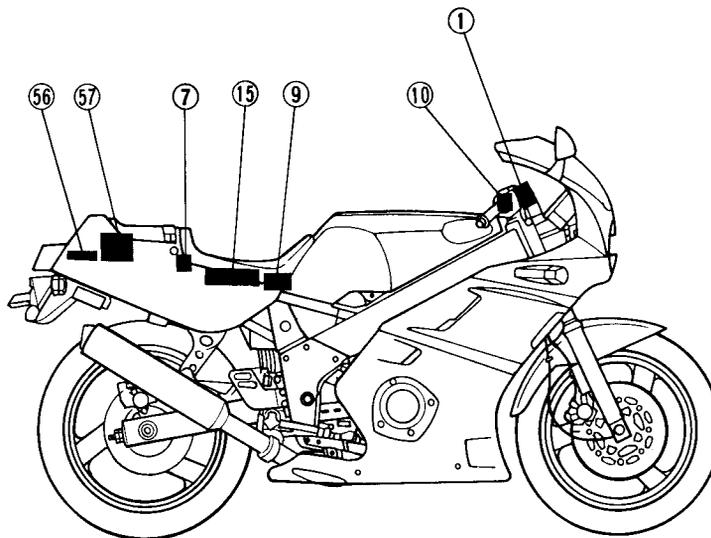


A forementioned circuit diagram shows the cooling circuit in the circuit diagram.

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

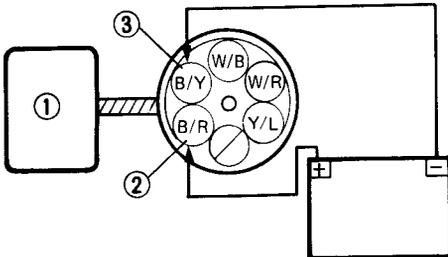
Seized or damaged power valve at muffler.

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



NO OPERATIVE

Replace EXUP servomotor.

CAUTION:

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

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.

INCORRECT

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

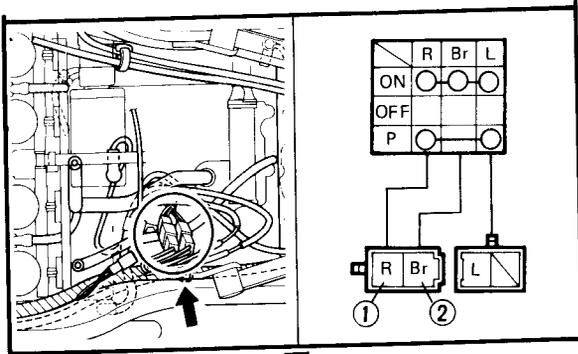
Specific Gravity:
 1.280 at 20°C (68°F)



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.



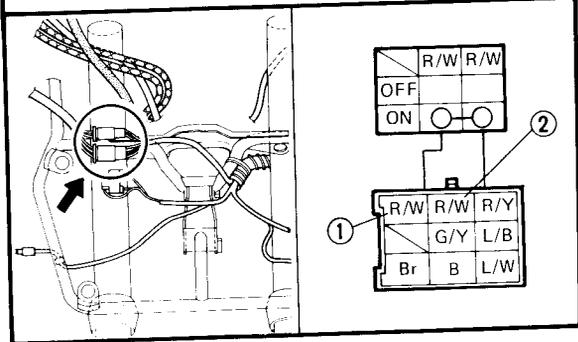
CORRECT

INCORRECT

Replace main switch.

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.



CORRECT

INCORRECT

Replace handlebar switch (Right).

5. Wiring connection

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

CORRECT

POOR CONNECTION

Correct.

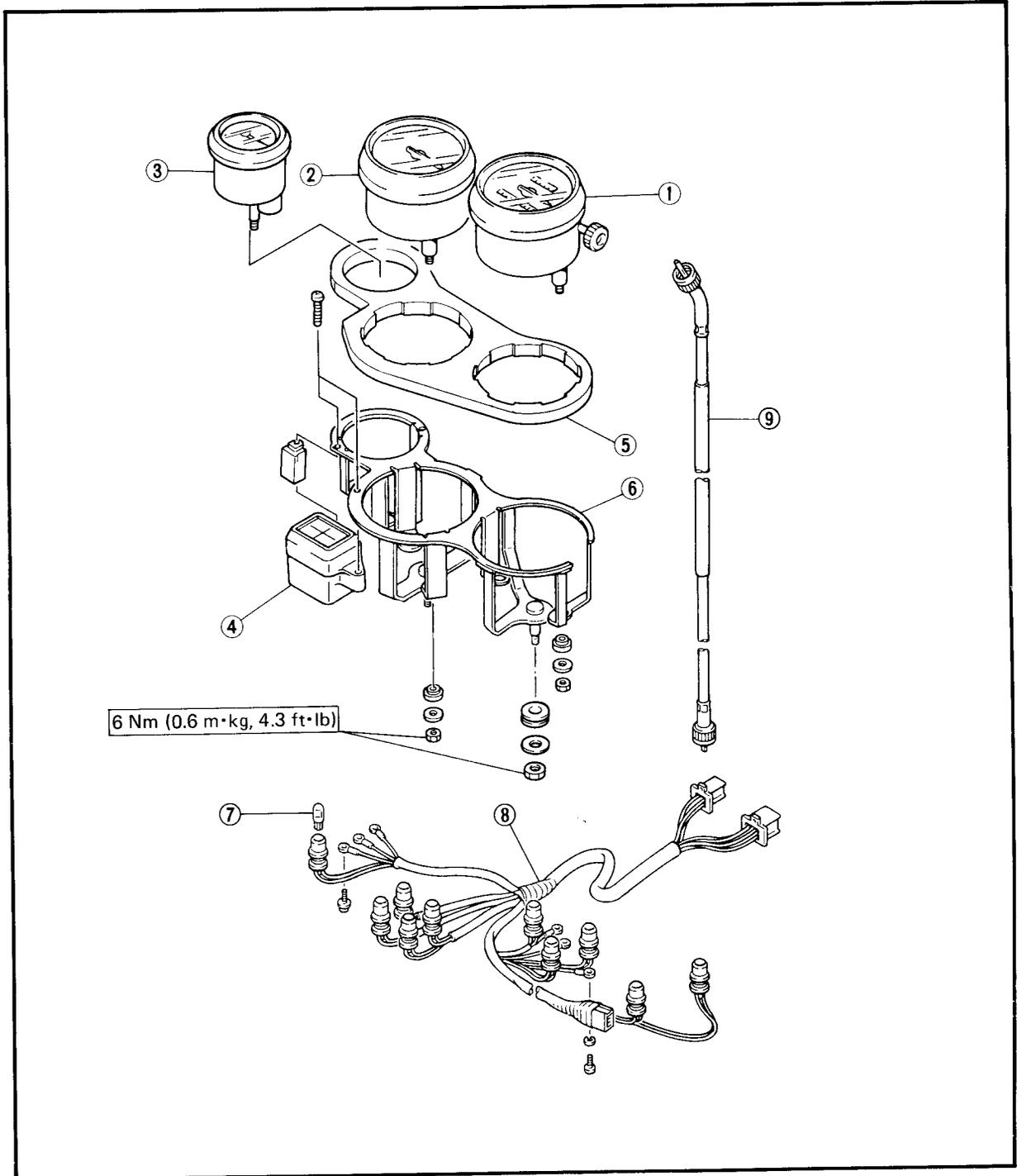
Go to "Procedure (1)"



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



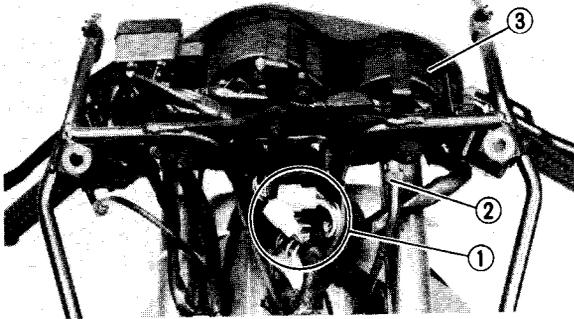


REMOVAL

1. Remove:

- Upper cowling

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

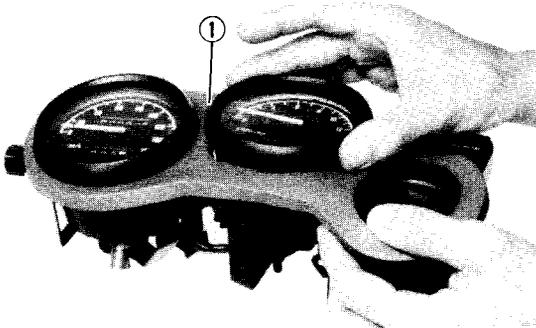


2. Disconnect:

- Bulb socket coupler ①
- Speedometer cable ②

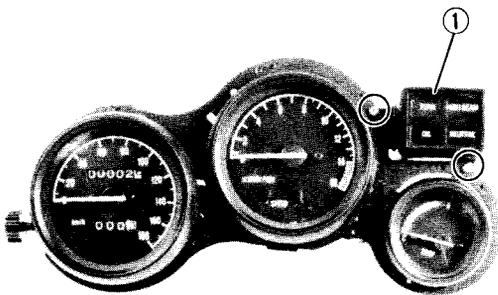
3. Remove:

- Speedometer assembly ③



4. Remove:

- Damper ①

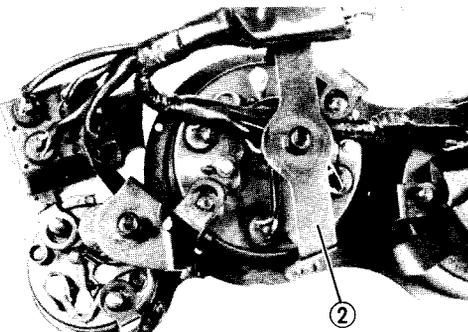


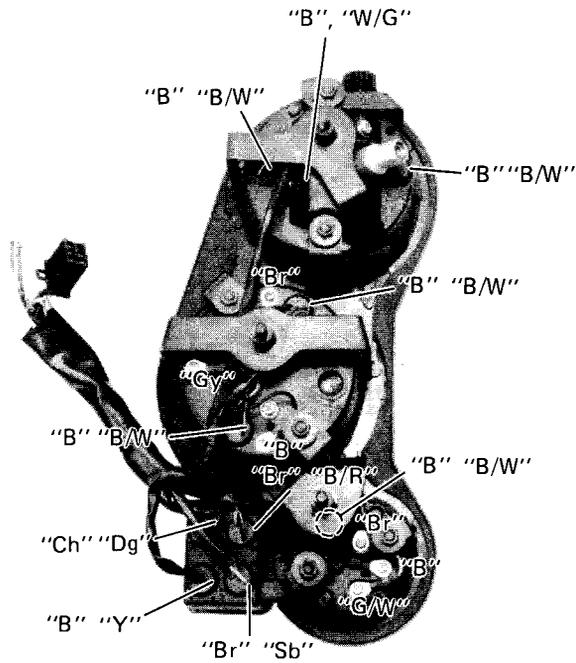
5. Remove:

- Indicator light unit ①
- Meter bracket ②

6. Remove:

- Bulb socket lead





INSTALLATION

Reverse the "REMOVAL" procedure.

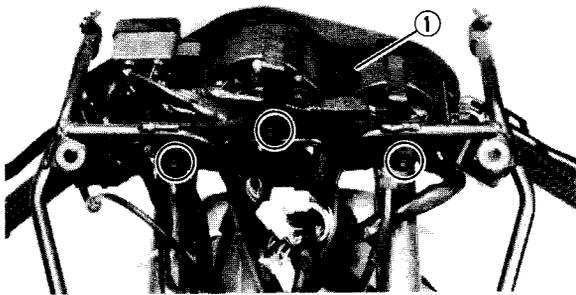
Note the following points.

1. Install the meter lights and leads as shown.

2. Install the indicator lights as shown.

3. Install:

- Meter assembly ①



| | |
|--|--|
|  | <p>Nut (Meter Assembly): 6 Nm (0.6 m · kg, 4.3 ft · lb)</p> |
|--|--|

TROUBLESHOOTING

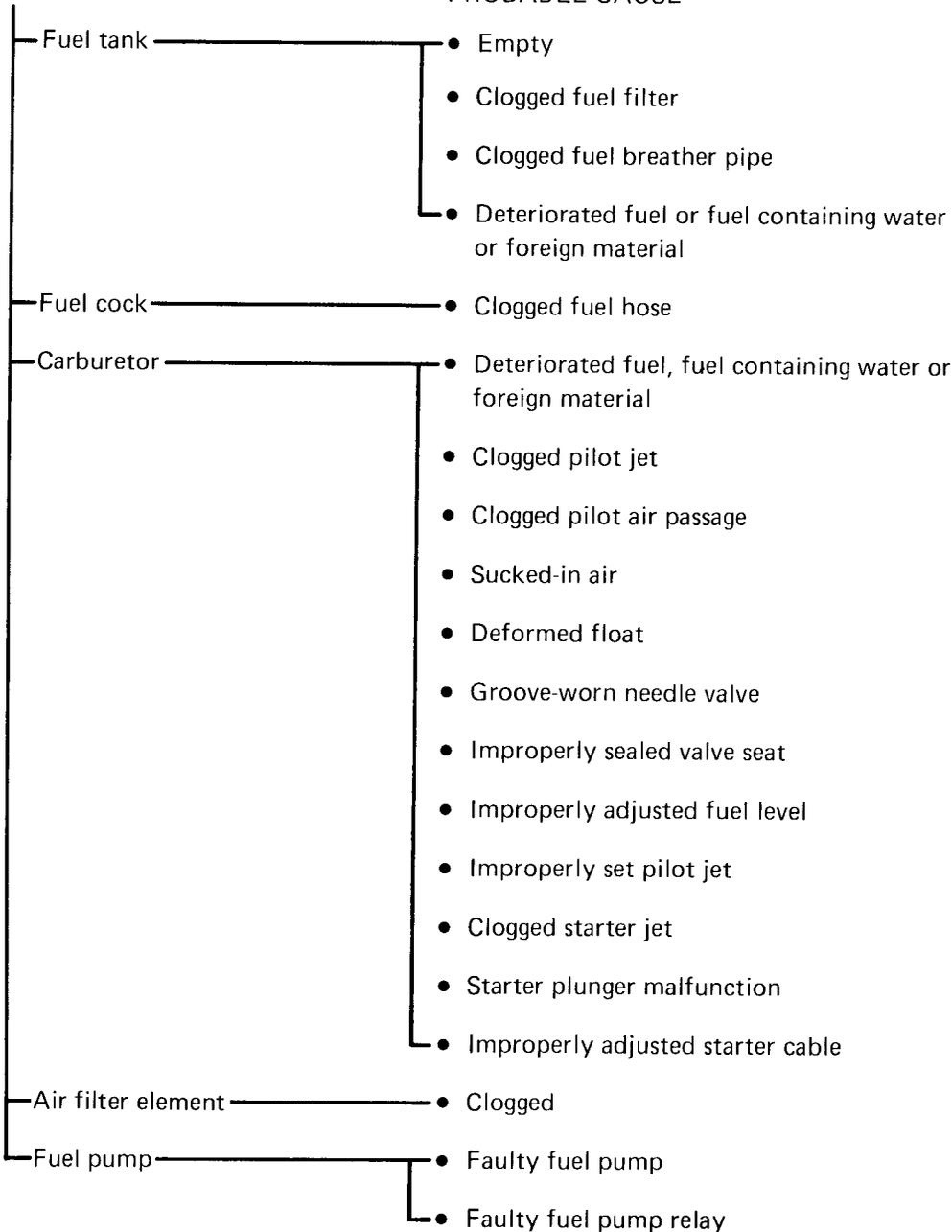
NOTE:

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.

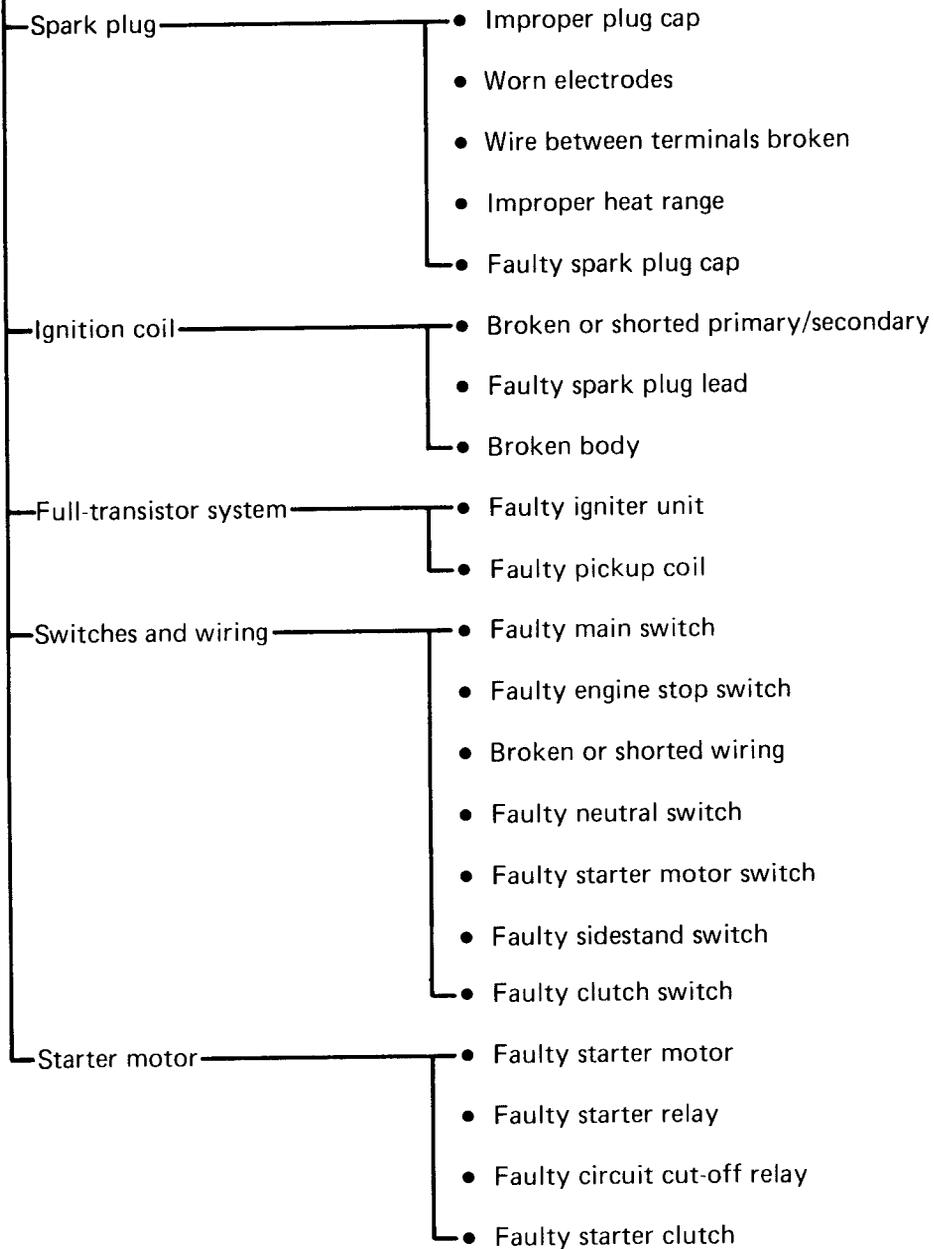
STARTING FAILURE/HARD STARTING

FUEL SYSTEM

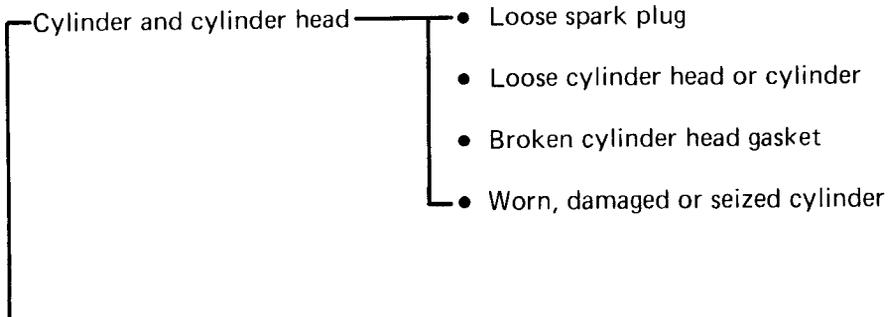
PROBABLE CAUSE

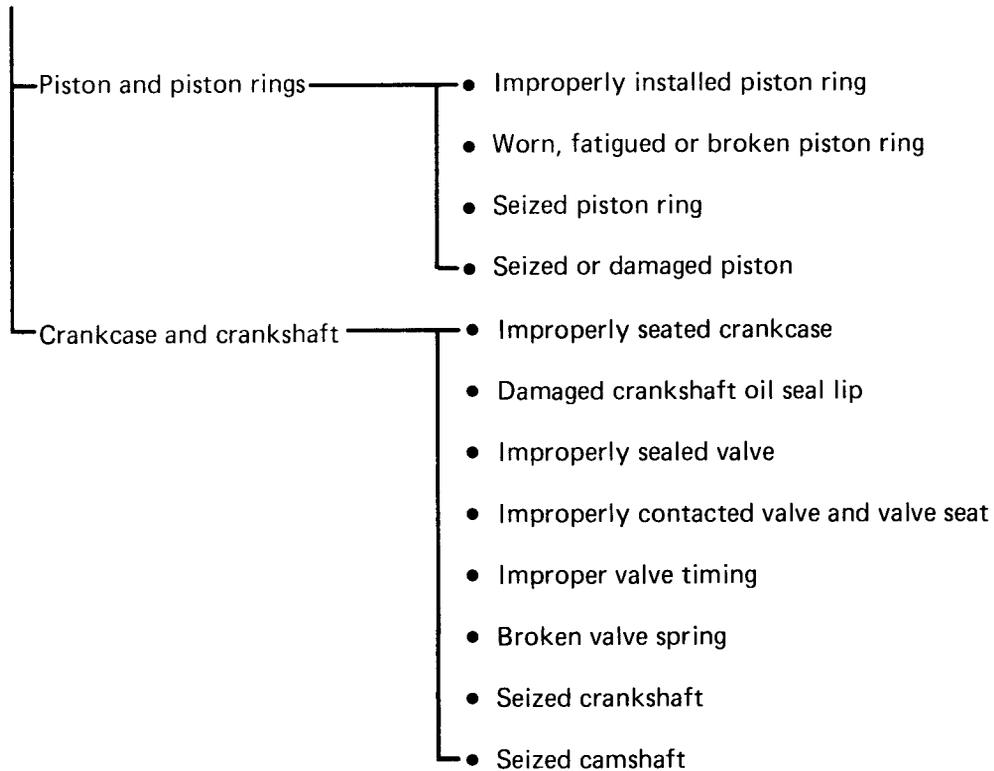


ELECTRICAL SYSTEM



COMPRESSION SYSTEM





POOR IDLE SPEED PERFORMANCE

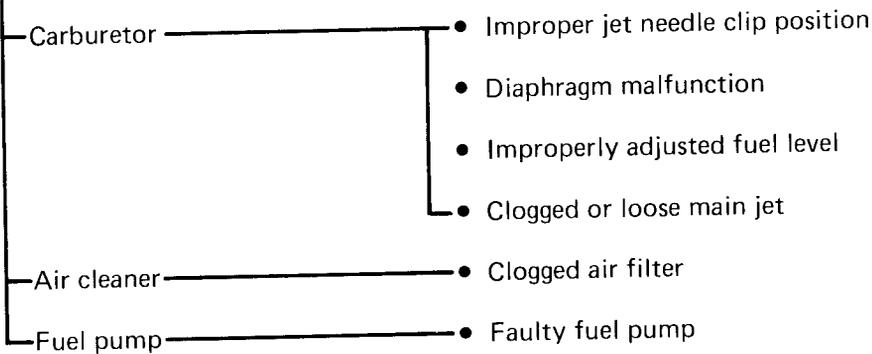
| POOR IDLE SPEED PERFORMANCE | PROBABLE CAUSE |
|-----------------------------|--|
| Carburetor | • Improperly returned starter plunger |
| | • Loose pilot jet |
| | • Clogged pilot air jet |
| | • Improperly synchronized carburetors |
| | • Improperly adjusted idle speed (Throttle stop screw) |
| | • Improper throttle cable play |
| | • Flooded carburetor |
| Electrical system | • Faulty battery |
| | • Faulty spark plug |
| | • Faulty igniter unit |
| | • Faulty pickup coil |
| | • Faulty ignition coil |
| Valve train | • Improperly adjusted valve clearance |

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



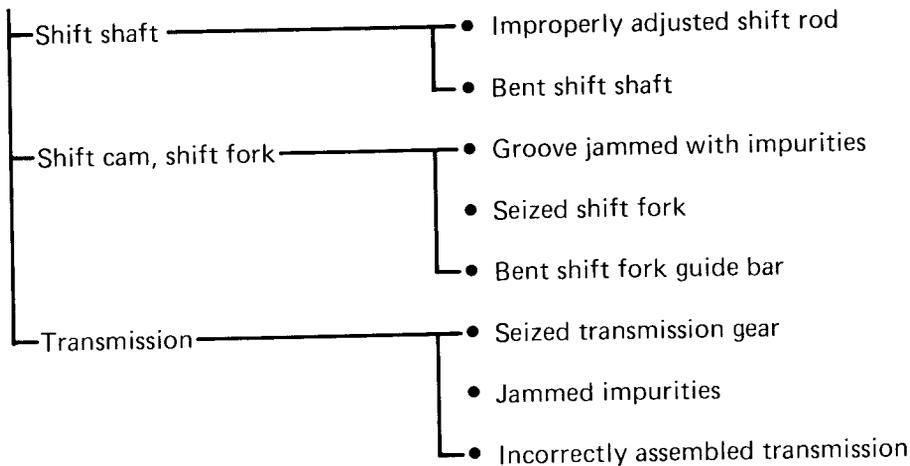
FAULTY GEAR SHIFTING

HARD SHIFTING

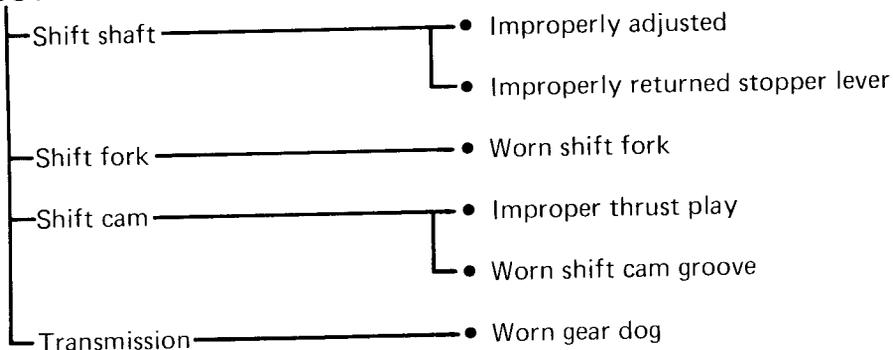
Refer to "Clutch dragging."

SHIFT PEDAL DOES NOT MOVE

PROBABLE CAUSE



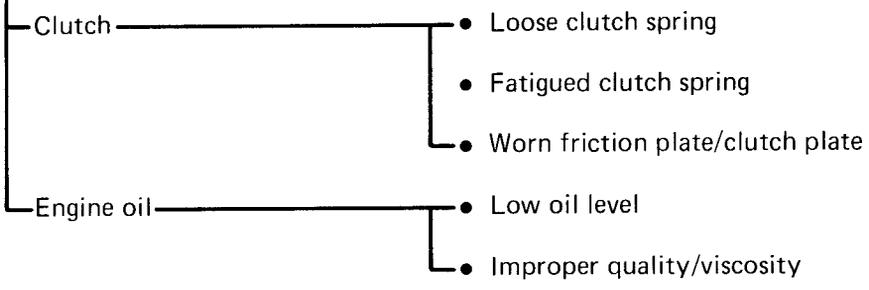
JUMP-OUT GEAR



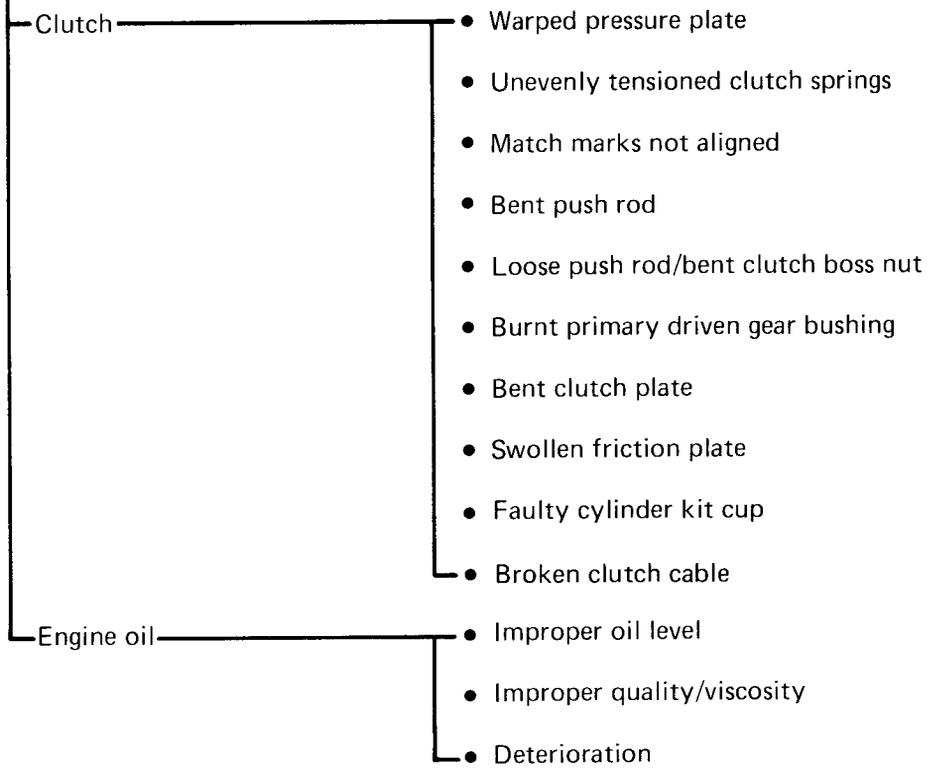
CLUTCH SLIPPING/DRAGGING

CLUTCH SLIPPING

PROBABLE CAUSE

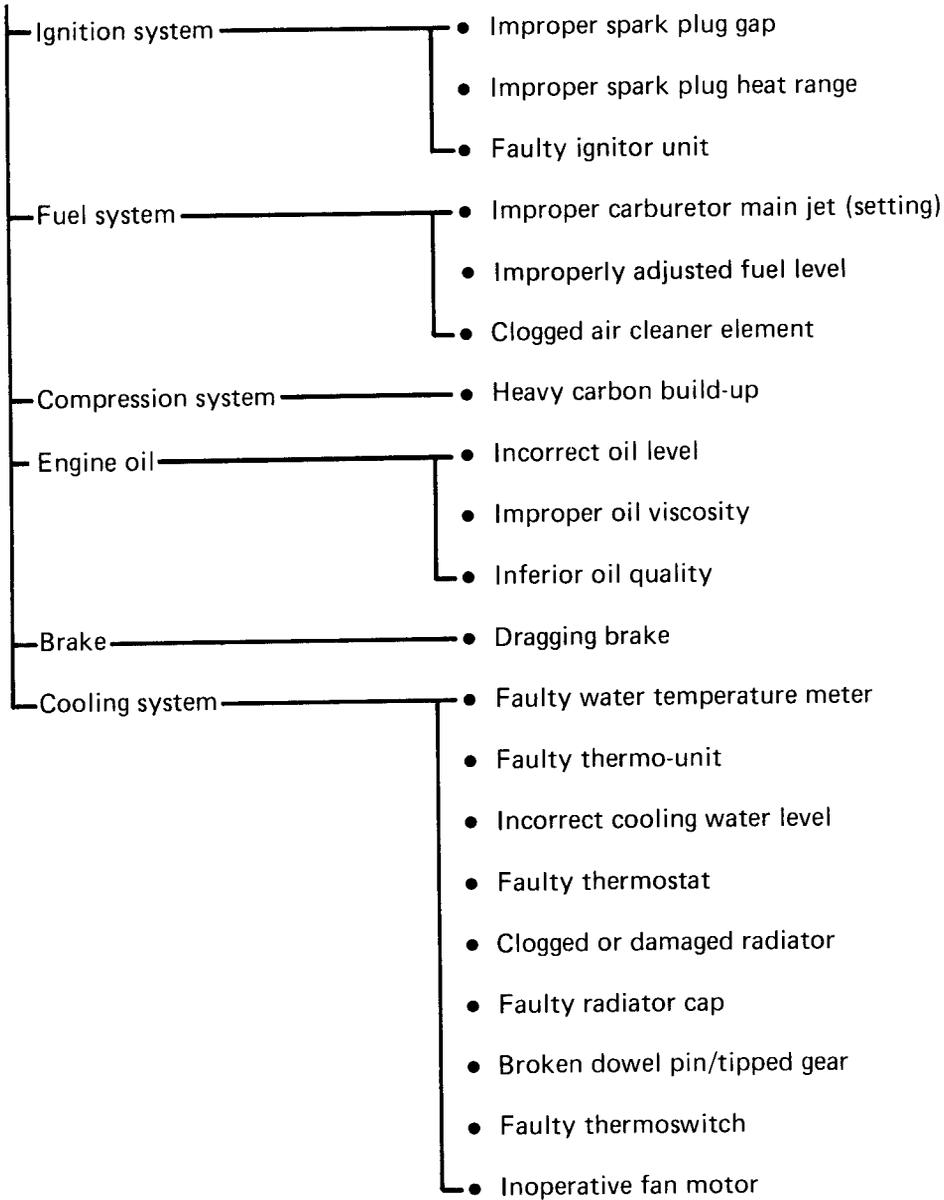


CLUTCH DRAGGING

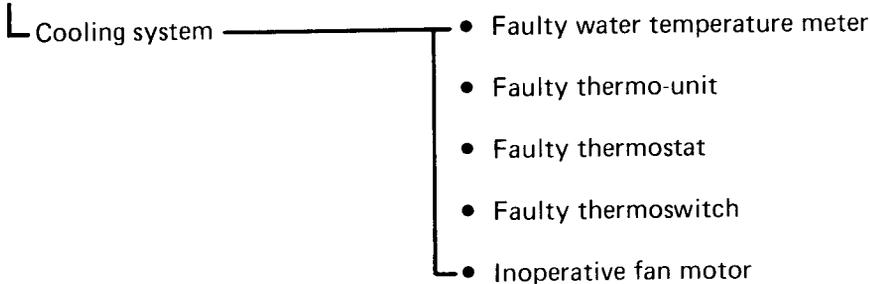


OVERHEATING OR OVER-COOLING

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

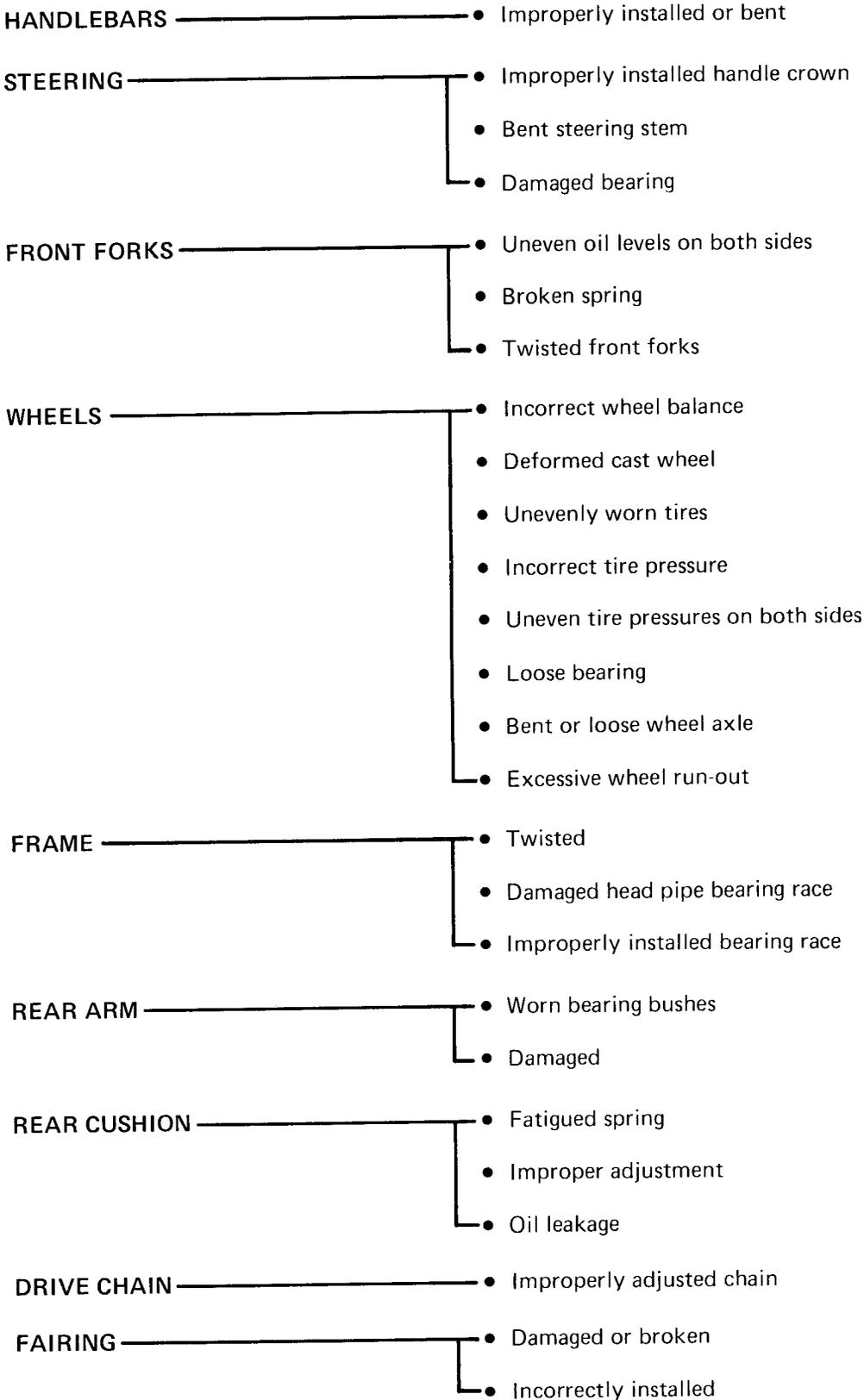
OIL LEAKAGE

- 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

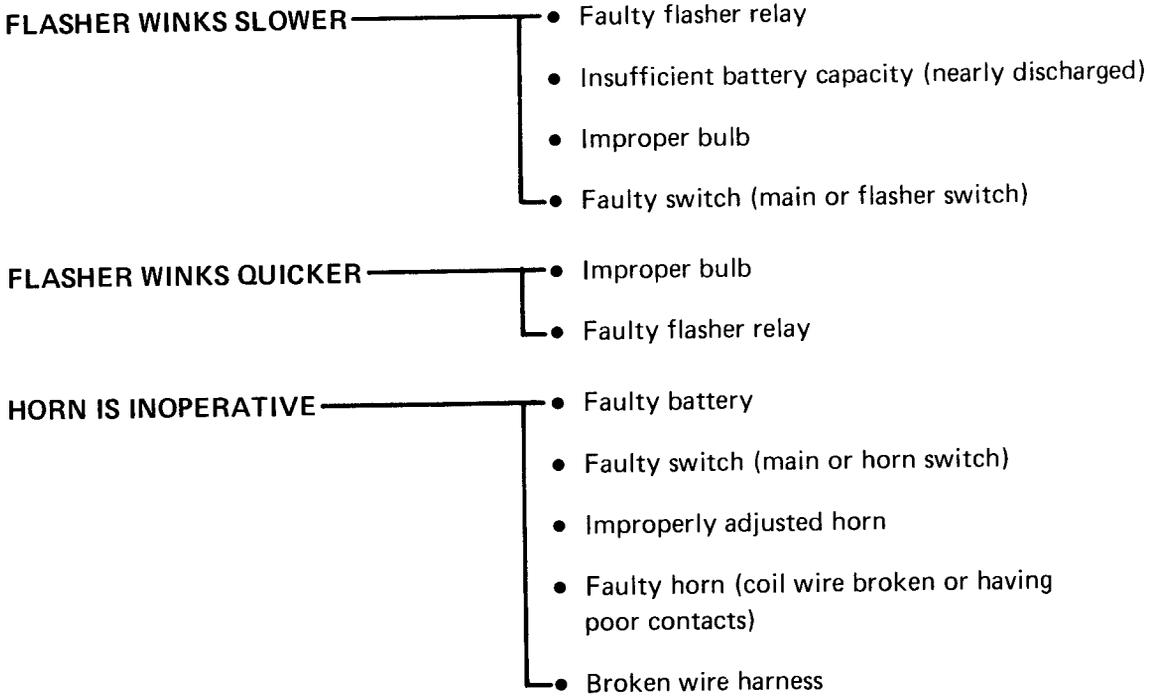
FLASHER DOES NOT LIGHT

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

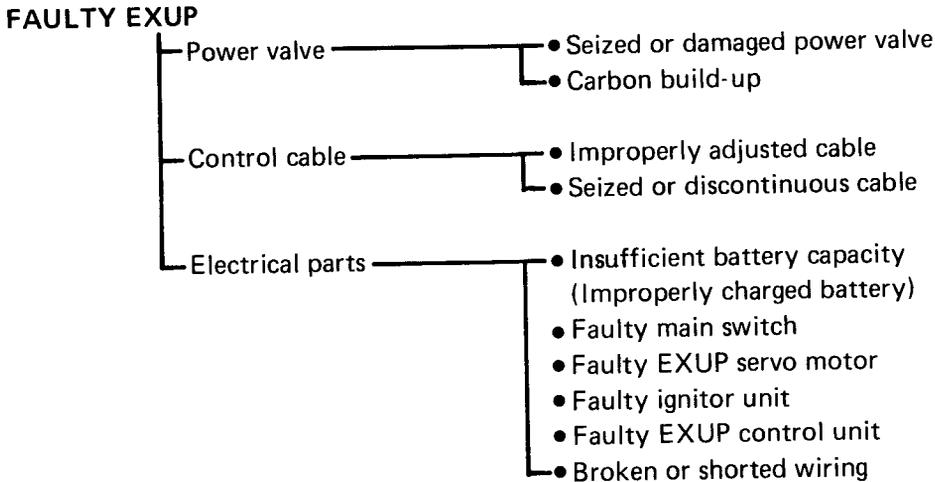
FLASHER KEEPS ON

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

FAULTY SIGNALS AND LIGHTS



FAULTY EXUP (For California only)



FZR400U/FZR400SUC WIRING DIAGRAM

