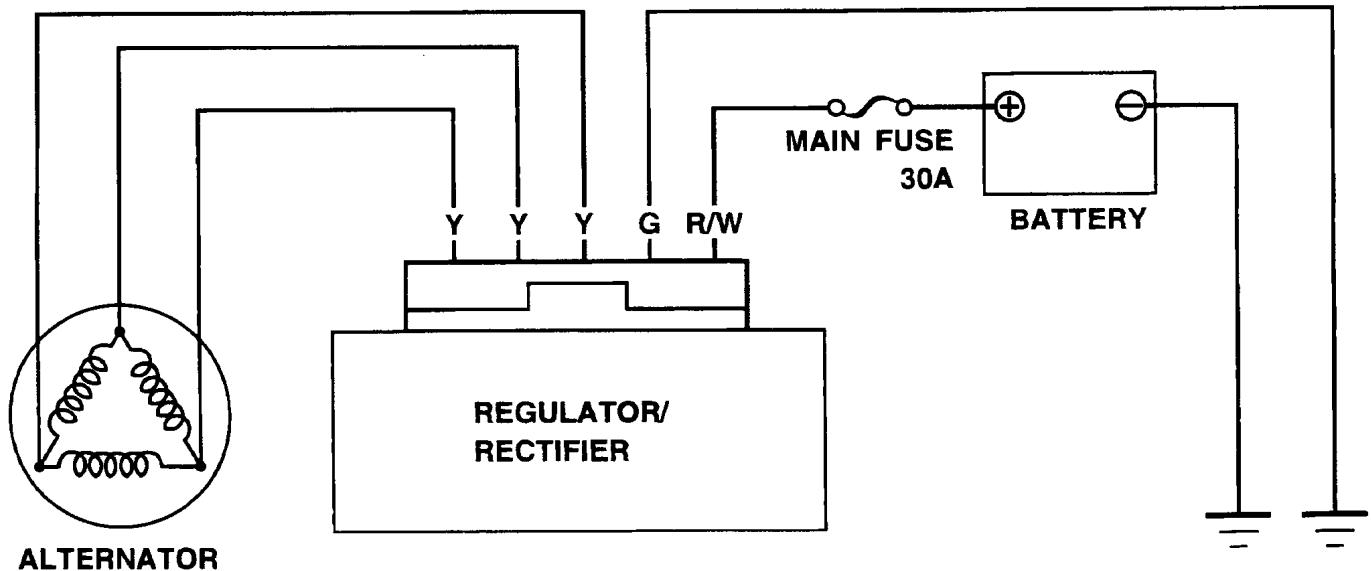
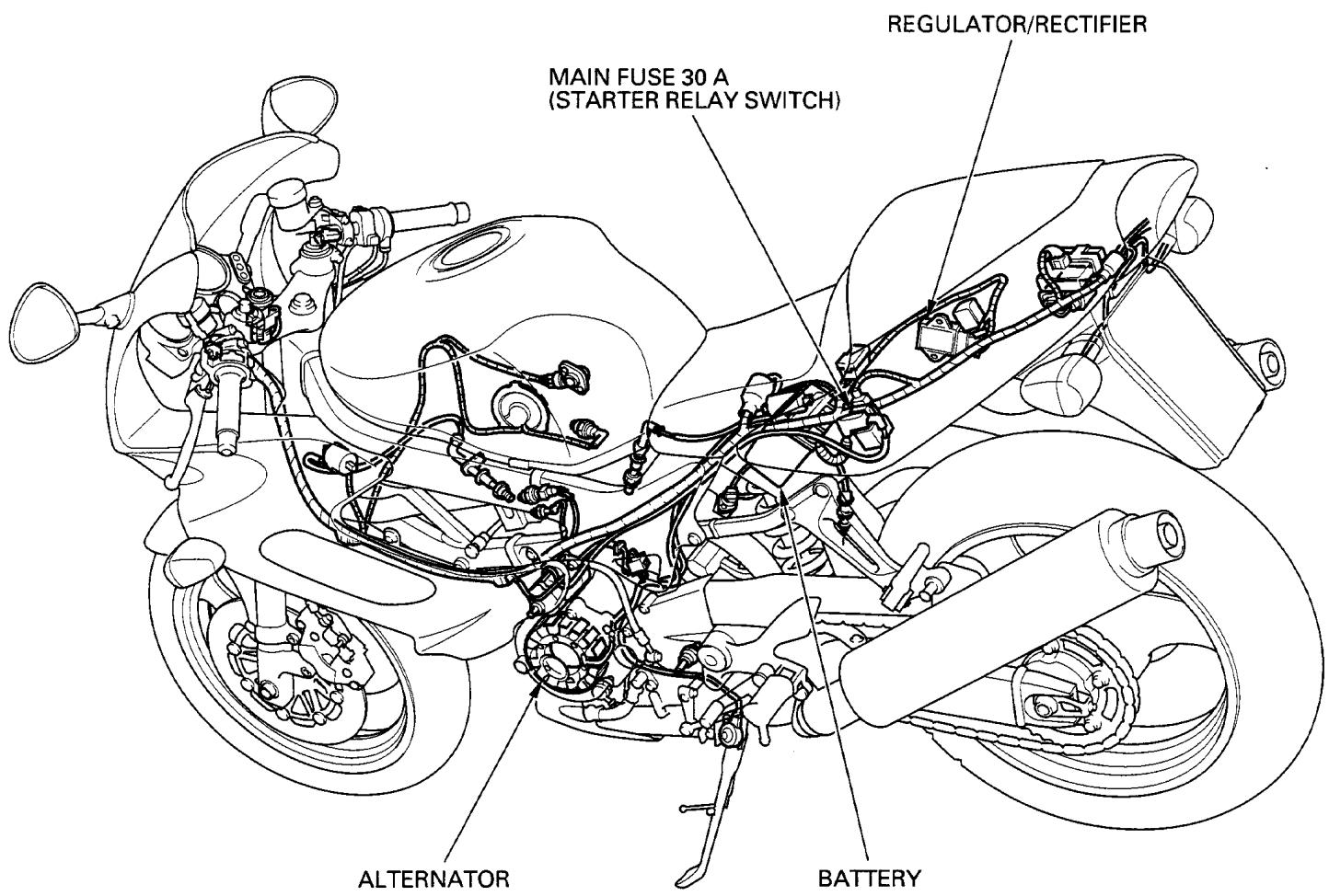


BATTERY/CHARGING SYSTEM



Y: Yellow

G: Green

R: Red

W: White

16. BATTERY/CHARGING SYSTEM

SERVICE INFORMATION	16-1	CHARGING SYSTEM INSPECTION	16-6
TROUBLESHOOTING	16-3	ALTERNATOR CHARGING COIL	16-8
BATTERY	16-5	REGULATOR/RECTIFIER	16-8

SERVICE INFORMATION

GENERAL

WARNING

- *The battery gives off explosive gases; keep sparks, flames and cigarettes away. Provide adequate ventilation when charging.*
- *The battery contains sulfuric acid (electrolyte). Contact with skin or eyes may cause severe burns. Wear protective clothing and a face shield.*
 - *If electrolyte gets on your skin, flush with water.*
 - *If electrolyte gets in your eyes, flush with water for at least 15 minutes and call a physician immediately.*
- *Electrolyte is poisonous.*
If swallowed, drink large quantities of water or milk and follow with milk of magnesia or vegetable oil and call a physician. KEEP OUT OF REACH OF CHILDREN.
- Always turn off the ignition switch before disconnecting any electrical component.

CAUTION:

Some electrical components may be damaged if terminals or connectors are connected or disconnected while the ignition switch is ON and current is present.

- For extended storage, remove the battery, give it a full charge, and store it in a cool, dry place.
- For a battery remaining in a stored motorcycle, disconnect the negative battery cable from the battery.

NOTE:

The maintenance free battery must be replaced when it reaches the end of its service life.

16

CAUTION:

The battery caps should not be removed. Attempting to remove the sealing caps from the cells may damage the battery.

- The battery can be damaged if overcharged or undercharged, or if left to discharge for long period. These same conditions contribute to shortening the "life span" of the battery. Even under normal use, the performance of the battery deteriorates after 2—3 years.
- Battery voltage may recover after battery charging, but under heavy load, the battery voltage will drop quickly and eventually die out. For this reason, the charging system is often suspected as the problem. Battery overcharge often results from problems in the battery itself, which may appear to be an overcharging symptom. If one of the battery cells is shorted and battery voltage does not increase, the regulator/rectifier supplies excess voltage to the battery. Under these conditions, the electrolyte level goes down quickly.
- Before troubleshooting the charging system, check for proper use and maintenance of the battery. Check if the battery is frequently under heavy load, such as having the headlight and taillight ON for long periods of time without riding the motorcycle.
- The battery will self-discharge when the motorcycle is not in use. For this reason, charge the battery every two weeks to prevent sulfation from occurring.
- Filling a new battery with electrolyte will produce some voltage, but in order to achieve its maximum performance, always charge the battery. Also, the battery life is lengthened when it is initially charged.
- When checking the charging system, always follow the steps in the troubleshooting flow chart (page 16-3).
- For alternator service, refer to section 10.

16-1

BATTERY/CHARGING SYSTEM

- This model comes with a maintenance free (MF) battery. Remember the following about MF batteries.
 - Use only the electrolyte that comes with the battery.
 - Use all of the electrolyte.
 - Seal the battery properly.
 - Never open the seals again.

CAUTION:

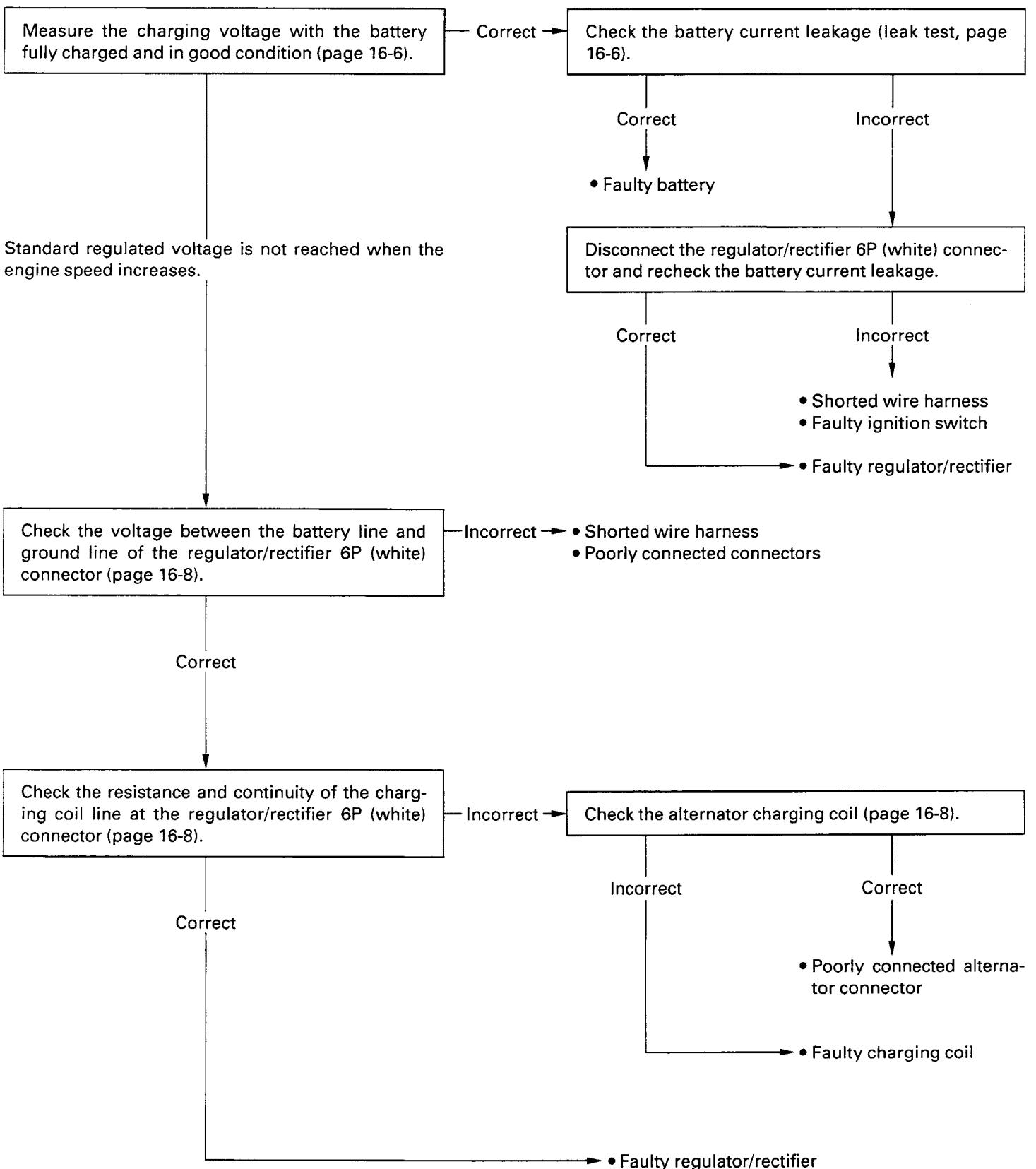
For battery charging, do not exceed the charging current and time specified on the battery. Using excessive current or extending the charging time may damage the battery.

SPECIFICATIONS

ITEM		SPECIFICATIONS
Battery	Capacity	12 V – 10 AH
	Current leakage	0.1 mA max.
	Voltage (68 °F/20 °C)	13.0 – 13.2 V
	Fully charged	Below 12.3 V
	Needs charging	1.2 A × 5 – 10 h
Alternator	Charging current	5.0 A × 1.0 h
	Capacity	0.280 kW
Charging coil resistance (68 °F/20 °C)		0.2 – 0.5 Ω
Regulator/rectifier regulated voltage		13.5 – 15.5 V/5,000 min ⁻¹ (rpm)

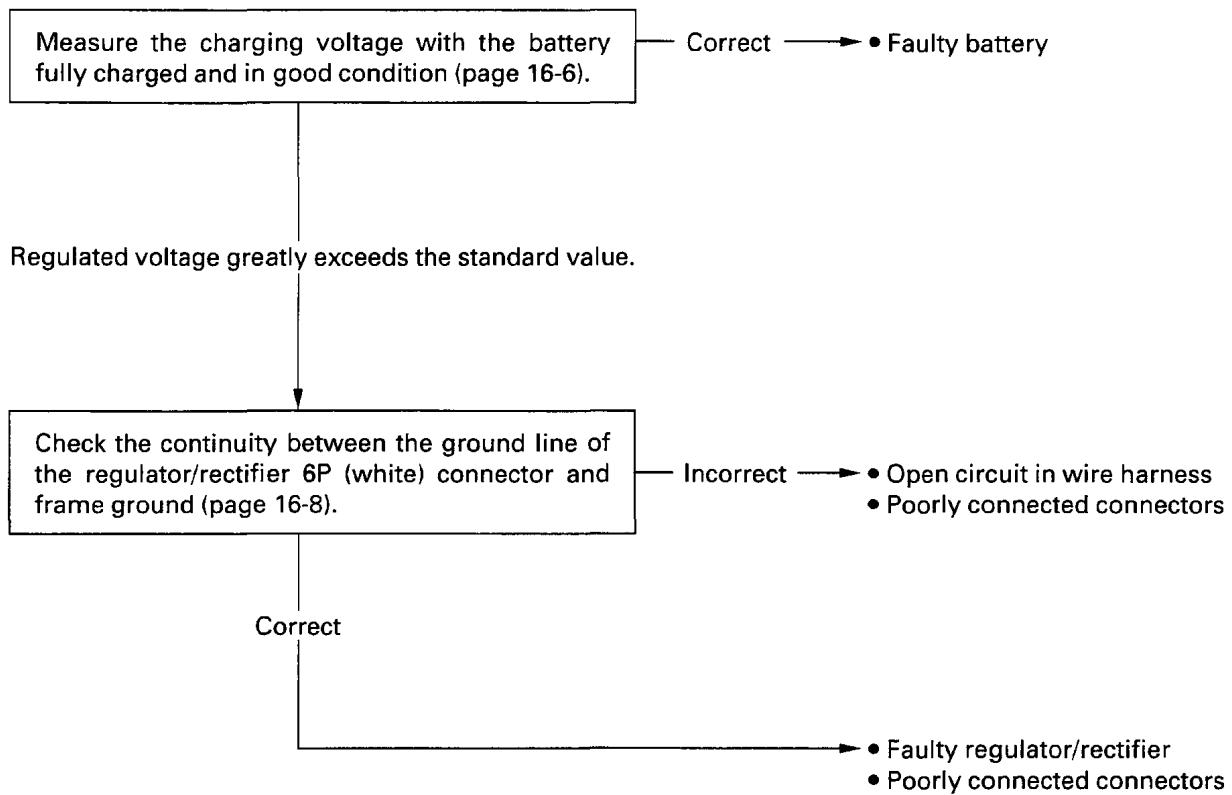
TROUBLESHOOTING

Battery undercharging (voltage not raised to regulated voltage)



BATTERY/CHARGING SYSTEM

Battery overcharging (regulated voltage too high).



BATTERY

REMOVAL/INSTALLATION

Remove the seat (page 2-2).

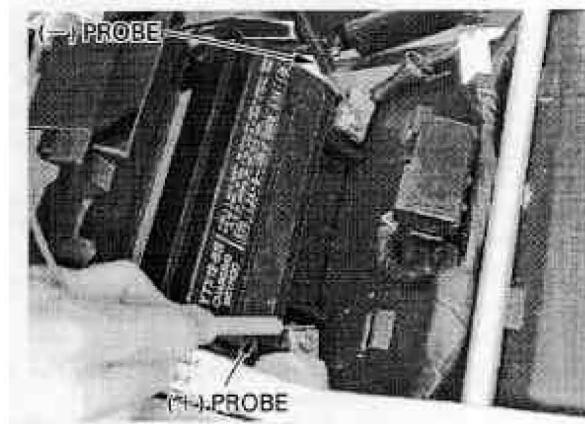
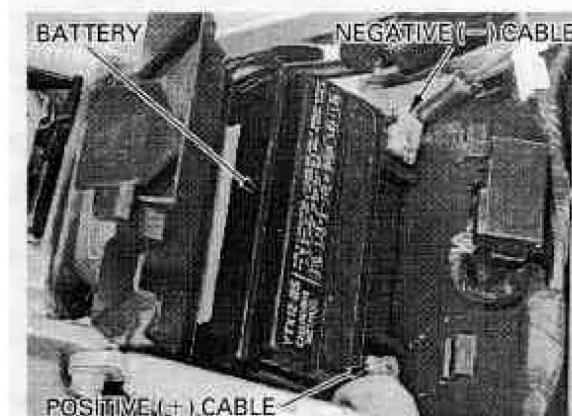
Open the battery case cover.

With the ignition switch OFF, disconnect the negative (-) cable first, then the positive (+) cable.
Remove the battery from the battery case.

Install the battery in the reverse order of removal.

NOTE:

- Connect the positive (+) cable first, then the negative (-) cable.
- After connecting the battery cables, coat the terminals with grease.



VOLTAGE INSPECTION

Open the battery case cover.

Measure the battery voltage using a commercially available digital multimeter.

VOLTAGE (68 °F/20 °C):

- Fully charged:** 13.0–13.2 V
Under charged: Below 12.3 V

BATTERY CHARGING

WARNING

- *The battery gives off explosive gases; keep sparks, flames and cigarettes away. Provide adequate ventilation when charging.*
- *Turn the power ON/OFF at the charger, not at the battery terminals.*

Remove the battery.

BATTERY/CHARGING SYSTEM

Connect the charger positive (+) cable to the battery positive (+) terminal.

Connect the charger negative (-) cable to the battery negative (-) terminal.

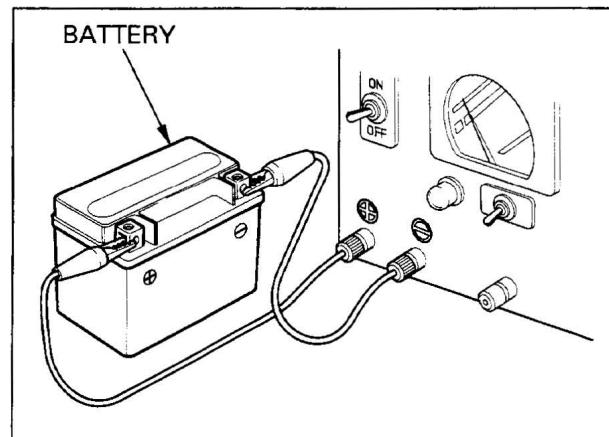
CHARGING CURRENT/TIME:

Standard: $1.2\text{ A} \times 5\text{--}10\text{ h}$

Quick: $5.0\text{ A} \times 1.0\text{ h}$

CAUTION:

- **Quick charging should only be done in an emergency; slow charging is preferred.**
- **For battery charging, do not exceed the charging current and time specified on the battery. Using excessive current or extending the charging time may damage the battery.**



CHARGING SYSTEM INSPECTION

Open the battery case cover (page 16-5).

CURRENT LEAKAGE TEST

Turn the ignition switch OFF, and disconnect the negative (-) cable from the battery.

Connect the ammeter (+) probe to the negative (-) cable and the ammeter (-) probe to the battery (-) terminal.

With the ignition switch OFF, check for current leakage.

NOTE:

- When measuring current using a tester, set it to a high range, and then bring the range down to an appropriate level. Current flow higher than the range selected may blow out the fuse in the tester.
- While measuring current, do not turn the ignition switch ON. A sudden surge of current may blow out the fuse in the tester.



SPECIFIED CURRENT LEAKAGE: 0.1 mA max.

If current leakage exceeds the specified value, a shorted circuit is likely.

Locate the short by disconnecting connections one by one and measuring the current.

REGULATED VOLTAGE INSPECTION

WARNING

If the engine must be running to do some work, make sure the area is well-ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that may cause loss of consciousness and may lead to death. Run the engine in an open area or with an exhaust evacuation system in an enclosed area.

NOTE:

Be sure that the battery is in good condition before performing this test.

Start the engine and warm it up to the operating temperature; stop the engine.

Connect the multimeter between the positive and negative terminals of the battery.

CAUTION:

- **To prevent short, make absolutely certain which are the positive and negative terminals or cable.**
- **Do not disconnect the battery or any cable in the charging system without first switching off the ignition switch. Failure to follow this precaution can damage the tester or electrical components.**



With the headlight Hi beam, restart the engine.

Measure the voltage on the multimeter when the engine runs at 5,000 min⁻¹ (rpm).

REGULATED VOLTAGE:

13.5 – 15.5 V/5,000 min⁻¹ (rpm)

The charging system is normal if the voltage reads the regulated voltage on the tester.

NOTE:

The speed at which voltage starts to rise cannot be checked as it varies with the temperature and loads on the alternator.

A frequently discharged battery is an indication that it is deteriorated even if it proves normal in the regulated voltage inspection.

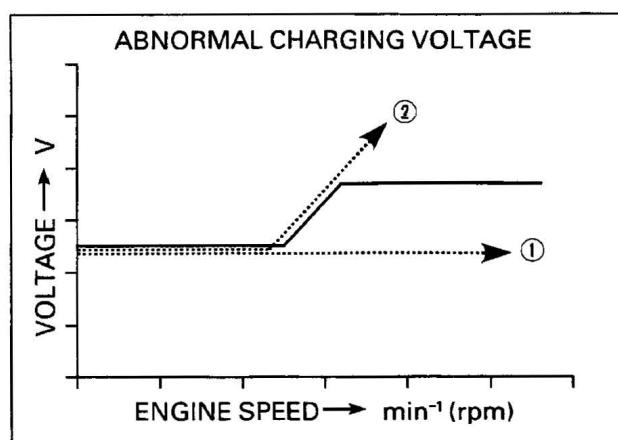
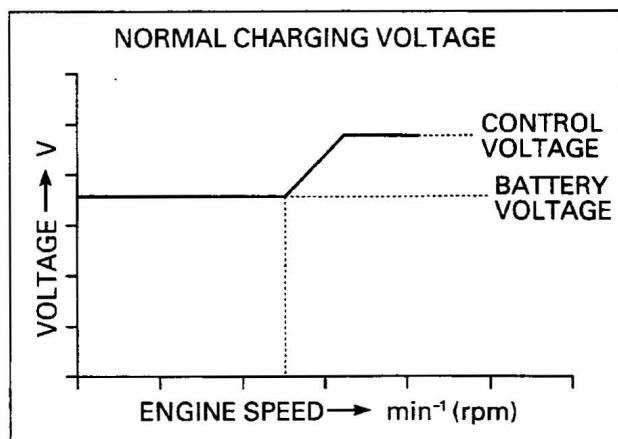
The charging circuit may be abnormal if any of the following symptoms is encountered:

1. Voltage not raised to regulated voltage (page 16-3)

- Open or short circuit in the charging system wire harness or poorly connected connector
- Open or shorted alternator
- Faulty regulator/rectifier

2. Regulated voltage too high (page 16-4)

- Poorly grounded regulator/rectifier
- Faulty battery
- Faulty regulator/rectifier



ALTERNATOR CHARGING COIL

INSPECTION

Remove the seat (page 2-2).

Disconnect the alternator 3P (white) connector.

Measure the resistance between the wire terminals of the alternator side connector.

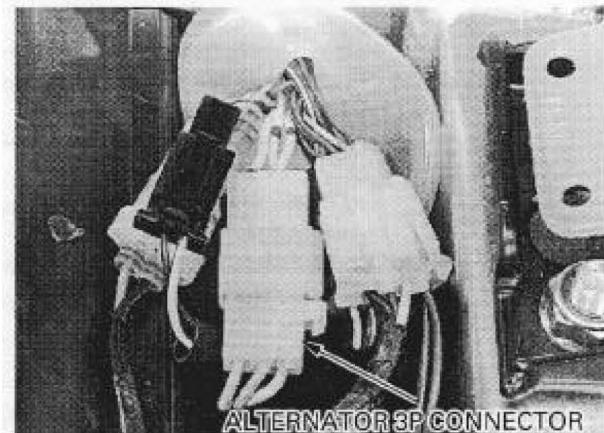
STANDARD: $0.2 - 0.5 \Omega$ ($68^{\circ}\text{F}/20^{\circ}\text{C}$)

Check for continuity between each wire terminal of the alternator side connector and ground.

There should not be continuity.

Replace the alternator stator if resistance is out of specification, or if any wire has continuity to ground.

Refer to section 10 for alternator stator replacement.



REGULATOR/RECTIFIER

WIRE HARNESS INSPECTION

Remove the seat cowl (page 2-2).

Disconnect the regulator/rectifier 6P (white) connector.

Check the connector for loose contact or corroded terminals.

BATTERY LINE

Measure the voltage between the red/white wire terminal and ground.

There should be battery voltage at all time.

GROUND LINE

Check the continuity between the green wire terminal and ground.

There should be continuity at all time.

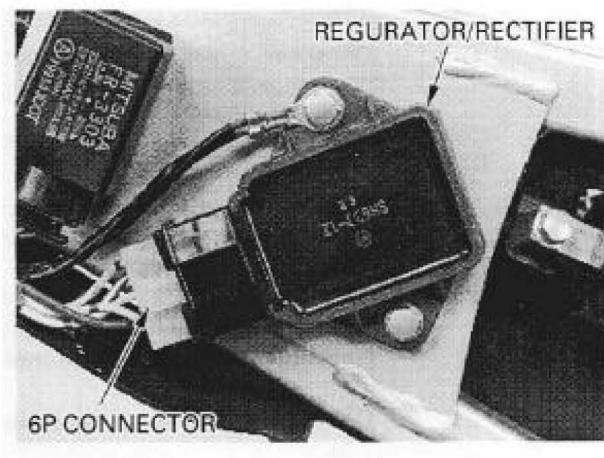
CHARGING COIL LINE

Measure the resistance between the yellow wire terminals.

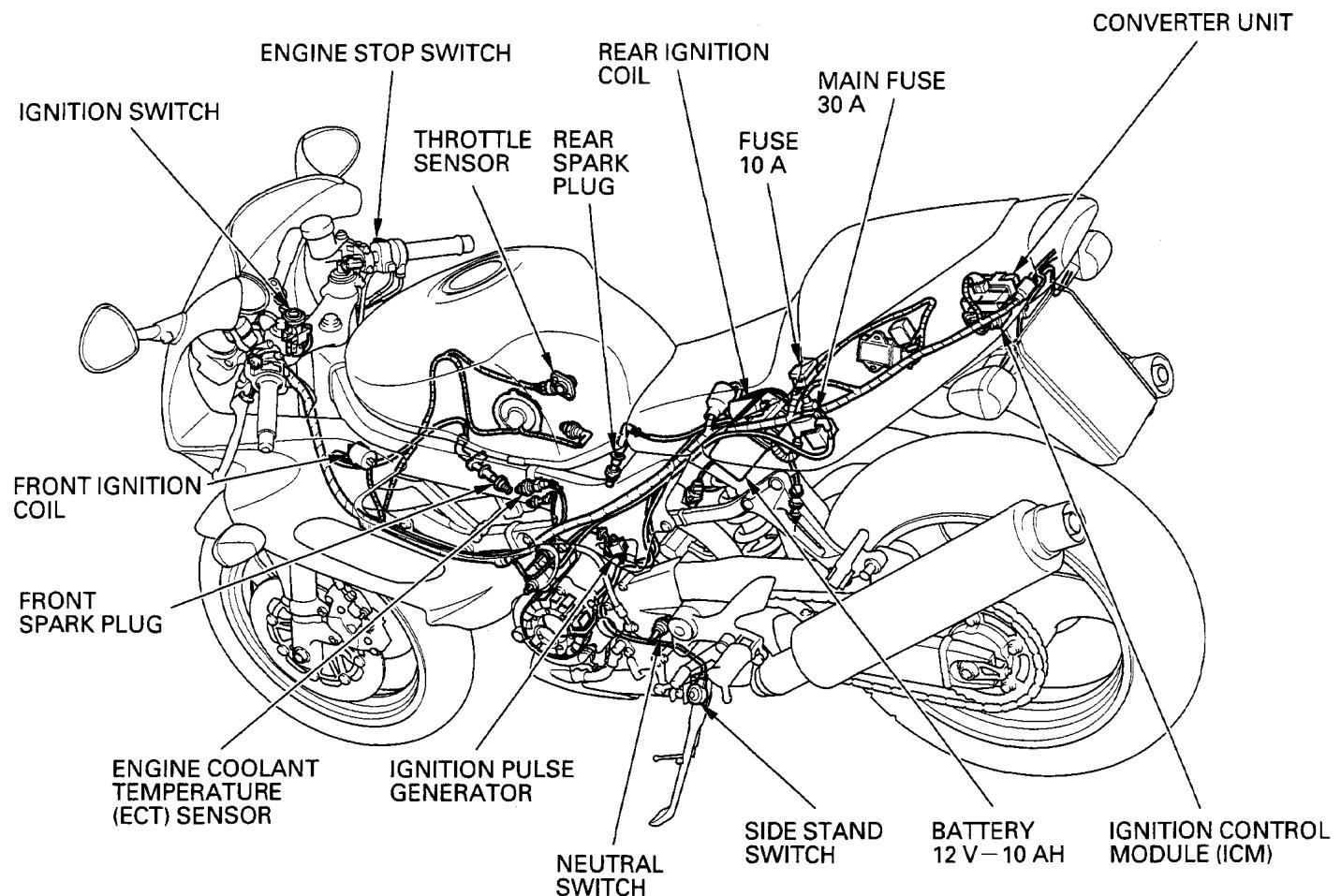
STANDARD: $0.2 - 0.5 \Omega$ ($68^{\circ}\text{F}/20^{\circ}\text{C}$)

Check for continuity between each yellow wire terminal and ground.

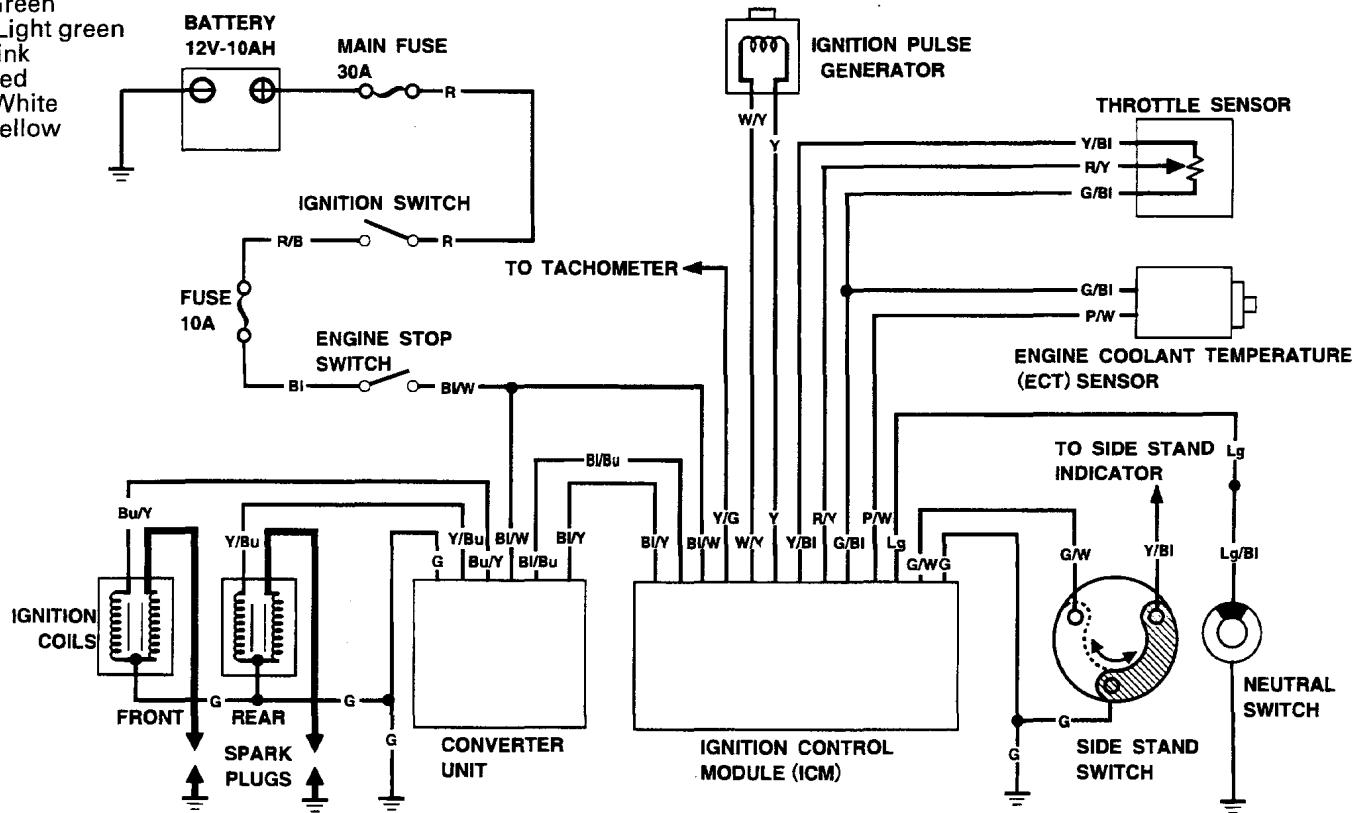
There should not be continuity.



IGNITION SYSTEM



BI: Black
 Bu: Blue
 G: Green
 Lg: Light green
 P: Pink
 R: Red
 W: White
 Y: Yellow



17. IGNITION SYSTEM

SERVICE INFORMATION	17-1	IGNITION TIMING	17-7
TROUBLESHOOTING	17-3	THROTTLE SENSOR	17-8
IGNITION SYSTEM INSPECTION	17-4	ENGINE COOLANT TEMPERATURE (ECT) SENSOR	17-10
IGNITION COIL	17-6		
IGNITION PULSE GENERATOR	17-7		

SERVICE INFORMATION

GENERAL

AWARNING

When the engine must be running to do some work, make sure the area is well ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that may cause loss of consciousness and lead to death. Run the engine in an open area or with an exhaust evacuation system in an enclosed area.

CAUTION:

Some electrical components may be damaged if terminals or connectors are connected or disconnected while the ignition switch is ON and current is present.

- When servicing the ignition system, always follow the steps in the troubleshooting sequence on page 17-3.
- The transistorized ignition system uses an electrically controlled ignition timing system. No adjustments can be made to the ignition timing.
- The ignition control module (ICM) varies ignition timing according to the engine speed. The engine coolant temperature (ECT) sensor and throttle sensor signal the ICM to compensate the ignition timing according to the coolant temperature and throttle opening.
- The ICM may be damaged if dropped. Also, if the connector is disconnected when current is flowing, the excessive voltage may damage the ICM. Always turn off the ignition switch before servicing.
- A faulty ignition system is often related to poor connections. Check those connections before proceeding.
- Make sure the battery is adequately charged. Using the starter motor with a weak battery results in a slower engine cranking speed as well as no spark at the spark plugs.
- This motorcycle's spark plug is equipped with platinum type electrodes. Do not use spark plugs other than specified.
- For spark plug inspection, see section 3.
- See section 19 for following components:
 - Ignition switch
 - Engine stop switch
 - Neutral switch
 - Side stand switch
 - Clutch switch

SPECIFICATIONS

ITEM		SPECIFICATIONS
Spark plug		DPR9EVX-9 (NGK)
Spark plug gap		0.80 – 0.90 mm (0.031 – 0.035 in)
Ignition coil primary peak voltage		100 V minimum
Ignition pulse generator peak voltage		0.7 V minimum
Ignition timing ("F" mark)		15° BTDC at idle
Engine coolant temperature (ECT) sensor resistance	At 68 °F (20 °C) At 176 °F (80 °C)	2 – 3 kΩ 200 – 400 Ω
Throttle sensor	Resistance (68 °F/20 °C) Input voltage	4 – 6 kΩ 4.7 – 5.3 V

TORQUE VALUES

Ignition coil mounting bolt	10 N·m (1.0 kgf·m , 7 lbf·ft)
Ignition pulse generator bolt	12 N·m (1.2 kgf·m , 9 lbf·ft)
Engine coolant temperature (ECT) sensor	23 N·m (2.3 kgf·m , 17 lbf·ft)

TOOL

Peak voltage adaptor	07HGJ-0020100 with commercially available digital multimeter (impedance 10 MΩ/DCV minimum)
Inspection adaptor	07VMJ-0020100

TROUBLESHOOTING

- Inspect the following before diagnosing the system.
 - Faulty spark plug
 - Loose spark plug cap or spark plug wire connections
 - Water got into the spark plug cap (Leaking the ignition coil secondary voltage)
- If there is no spark at any cylinder, temporarily exchange the ignition coil with the other good one and perform the spark test. If there is spark, the exchanged ignition coil is faulty.

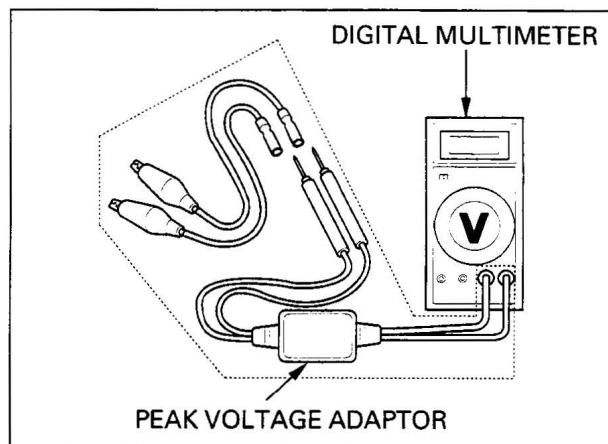
NO SPARK AT SPARK PLUGS

UNUSUAL CONDITION		PROBABLE CAUSE (Check in numerical order)
Ignition coil primary voltage	Low peak voltage	1. Incorrect peak voltage adaptor connections. 2. The multimeter impedance is too low; below $10\text{ M}\Omega/\text{DCV}$. (System is normal if measured voltage is over the specifications with reverse connections.) 3. Cranking speed is too low. (Battery is undercharged) 4. The sampling timing of the tester and measured pulse were not synchronized. (System is normal if measured voltage is over the standard voltage at least once.) 5. Poorly connected connectors or an open circuit in ignition system. 6. Faulty side stand switch or neutral switch. 7. An open circuit or loose connection in No. 6 related circuit wires. <ul style="list-style-type: none"> • Side stand switch line: green/white wire • Neutral switch line: light green and light green/black wires 8. Faulty ignition control module (ICM) and/or converter unit (in case when above No. 1 thru. 7 are normal).
	No peak voltage	1. Incorrect peak voltage adaptor connections. (System is normal if measured voltage is over the specifications with reverse connections.) 2. Battery is undercharged. (Voltage drops largely when the engine is started.) 3. Faulty ignition switch or engine stop switch. 4. Loose or poorly connected ICM or converter unit connectors. 5. No voltage at the black/white wire of the ICM or converter unit. 6. Open circuit or poor connection in green (ground) wire of the ICM or converter unit. 7. Faulty side stand switch or neutral switch. 8. An open circuit or loose connection in No. 7 related circuit wires. <ul style="list-style-type: none"> • Side stand switch line: green/white wire • Neutral switch line: light green and light green/black wires 9. Faulty peak voltage adaptor. 10. Faulty ignition pulse generator. (Measure peak voltage.) 11. Faulty ICM and/or converter unit (in case when above No. 1 thru. 10 are normal).
	Peak voltage is normal, but does not spark	1. Faulty spark plug or leaking ignition coil secondary current ampere. 2. Faulty ignition coils.
Ignition pulse generator	Low peak voltage	1. The multimeter impedance is too low; below $10\text{ M}\Omega/\text{DCV}$. 2. Cranking speed is too slow. (Battery is undercharged.) 3. The sampling timing of the tester and measured pulse were not synchronized. (System is normal if measured voltage is over the standard voltage at least once.) 4. Faulty ignition pulse generator (in case when above No. 1 thru. 3 are normal).
	No peak voltage	1. Faulty peak voltage adaptor. 2. Faulty ignition pulse generator.

IGNITION SYSTEM INSPECTION

NOTE:

- If no spark jumps at the plugs, check that all connections for loose or poor contact before measuring each peak voltage.
- Use recommended digital multimeter or commercially available digital multimeter with an impedance $10\text{ M}\Omega/\text{DCV}$ minimum.
- The display value differs depending upon the internal impedance of the multimeter.
- If using Imrie diagnostic tester (model 625), follow the manufacturer's instructions.



Connect the peak voltage adaptor to the digital multimeter.

TOOLS:

Imrie diagnostic tester (model 625) or
 Peak voltage adaptor 07HGJ-0020100
 with commercially available digital multimeter
 (impedance $10\text{ M}\Omega/\text{DCV}$ minimum)

IGNITION PRIMARY PEAK VOLTAGE

NOTE:

- Check all system connections before this inspection. If the system is disconnected, incorrect peak voltage might be measured.
- Check cylinder compression at each cylinder and check that the spark plugs are installed correctly in the cylinder heads.

Disconnect the spark plug caps from the spark plugs.

Connect good known spark plugs to the spark plug caps and ground the spark plugs to the cylinder heads as done in a spark test.

Front: Remove the front fairing (page 2-3).

Rear: Remove the seat (page 2-2).

Disconnect the ignition coil 2P (white) connector.



Connect the inspection adaptor.

TOOL:

Inspection adaptor 07VMJ-0020100

Connect the peak voltage adaptor to the inspection adaptor.

CONNECTIONS:

Red clip (−) — Green clip (+)

Turn the ignition switch ON and engine stop switch to RUN.

Shift the transmission into neutral.

Crank the engine with the starter motor and measure the ignition coil primary peak voltage.

PEAK VOLTAGE: 100 V minimum

WARNING

Avoid touching the spark plugs and tester probes to prevent electric shock.

NOTE:

Although measured values are different for each ignition coil, they are normal as long as voltage is higher than the specified value.

If the peak voltage is lower than standard value, follow the checks described in the troubleshooting chart (page 17-3).

Install the removed parts in the reverse order of removal.

IGNITION PULSE GENERATOR PEAK VOLTAGE

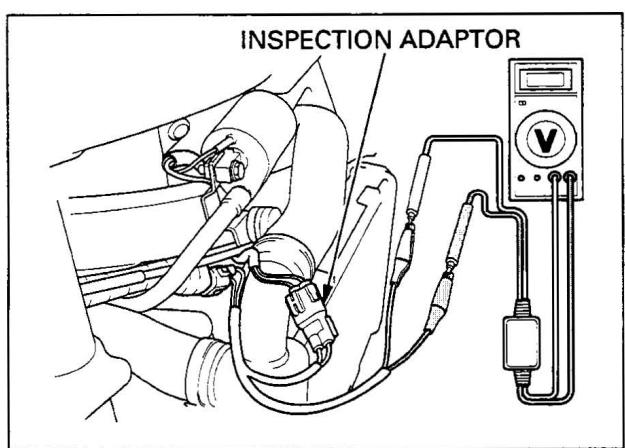
NOTE:

Check cylinder compression at each cylinder and check that the spark plugs are installed correctly in the cylinders.

Remove the seat (page 2-2).

Remove the converter unit from the stay.

Remove the ignition control module (ICM) from the stay and disconnect the ICM connector.



IGNITION SYSTEM

Connect the peak voltage adaptor probes to the connector terminals of the wire harness side.

CONNECTION:

White/Yellow terminal—Yellow terminal

Turn the ignition switch ON and engine stop switch to RUN.

Shift the transmission into neutral.

Crank the engine with the starter motor and measure the ignition pulse generator peak voltage.

PEAK VOLTAGE: 0.7 V minimum

If the peak voltage measured at ICM connector is abnormal, measure the peak voltage at the pulse generator connector.

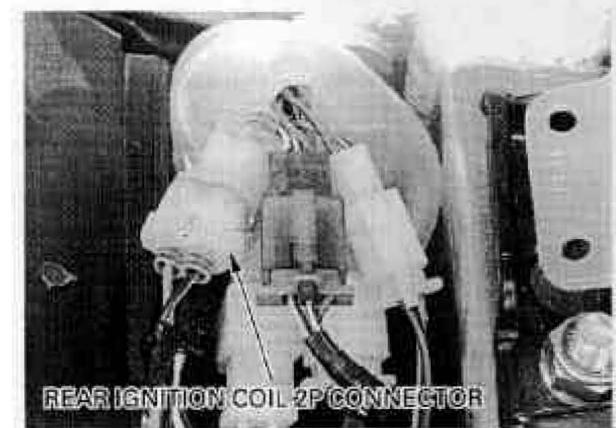
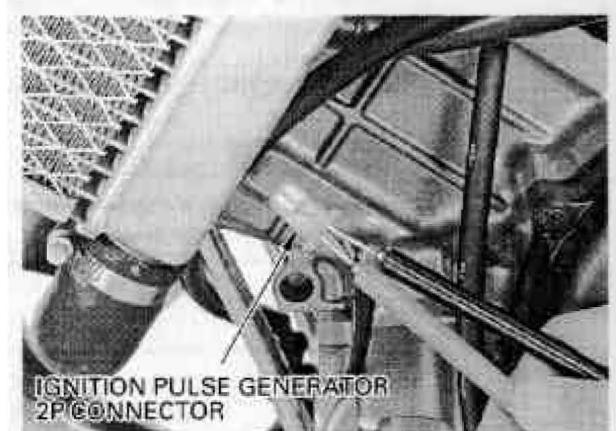
Remove the front fairing (page 2-3).

Disconnect the ignition pulse generator 2P (white) connector and connect the peak voltage adaptor probes to the connector terminals of the ignition pulse generator side.

In the same manner as at the ICM connector, measure the peak voltage and compare it to the voltage measured at the ICM connector.

- If the peak voltage measured at the ICM is abnormal and the one measured at the ignition pulse generator is normal, the wire harness has an open or short circuit, or loose connection.
- If both peak voltage are lower than standard value, follow the checks described in the troubleshooting chart (page 17-3).

Install the removed parts in the reverse order of removal.



IGNITION COIL

REPLACEMENT

Front: Remove the front fairing (page 2-3).

Rear: Remove the seat cowl (page 2-2).

Disconnect the spark plug cap from the plug.

Disconnect the ignition coil connector.

Remove the two mounting bolts and the ignition coil.

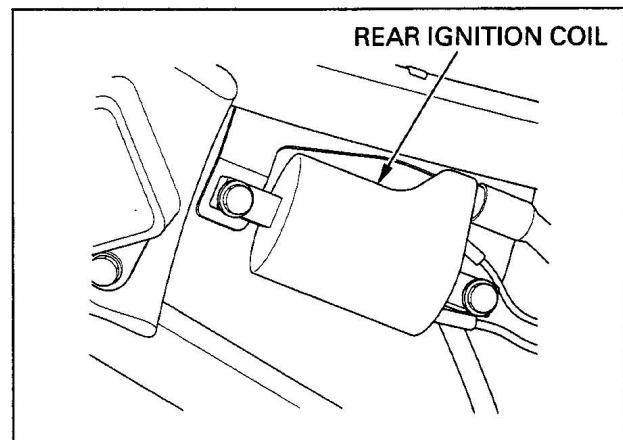
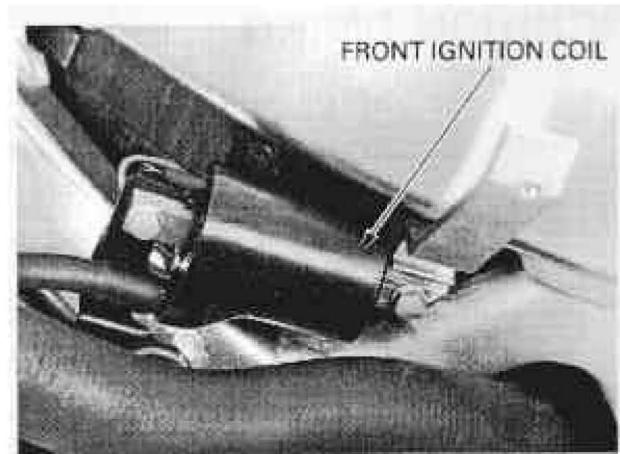
Install the ignition coil and tighten the mounting bolts.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)

Install the removed parts in the reverse order of removal.

NOTE:

Route the ignition coil wire and spark plug wire properly (page 1-18).



IGNITION PULSE GENERATOR REPLACEMENT

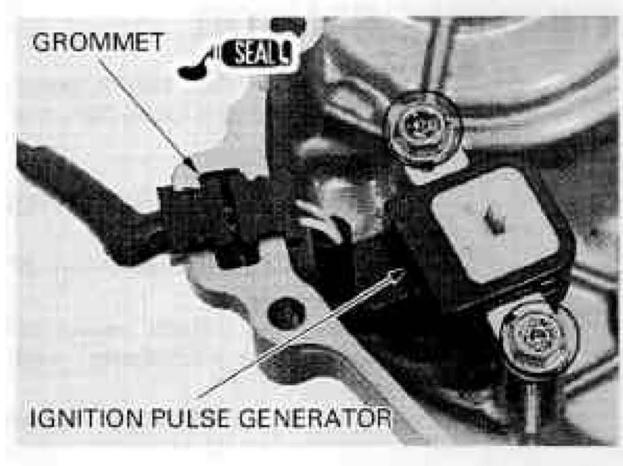
Remove the right crankcase cover (page 6-12).

Remove the two bolts and ignition pulse generator.

Apply sealant to the grommet seating surfaces.
Install a new ignition pulse generator and the grommet into the cover groove properly.
Tighten the bolts.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

Install the right crankcase cover (page 6-14).



IGNITION TIMING

NOTE:

Read the instructions for timing light operation.

Start the engine and warm it up to operating temperature.

Stop the engine and remove the timing hole cap.

Connect the timing light to the spark plug wire.

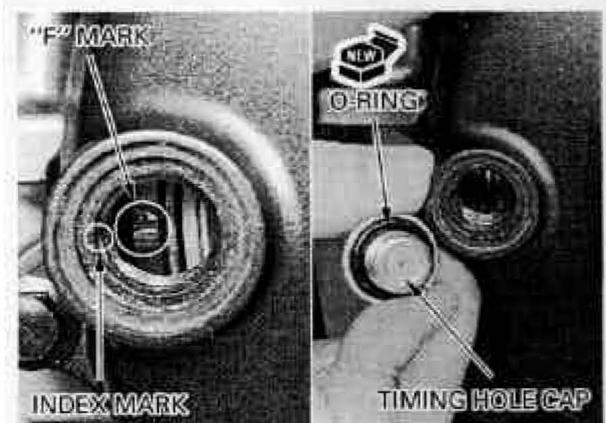
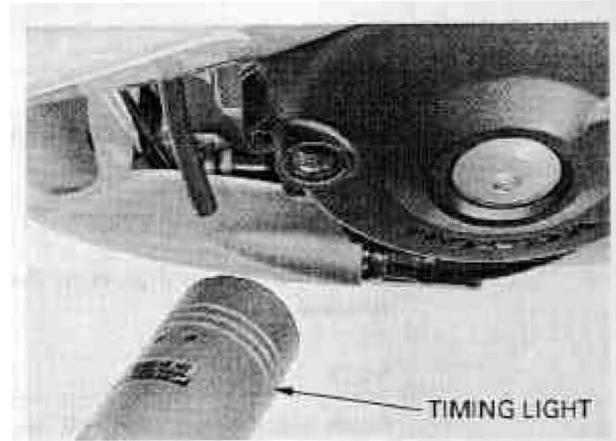
Start the engine, let it idle and check the ignition timing.

The ignition timing is correct if the "F" mark on the flywheel aligns with the index mark on the left crankcase cover at idle.

Coat a new O-ring with grease and install it onto the timing hole cap.

Apply grease to the timing hole cap threads.
Install and tighten the timing hole cap.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)



THROTTLE SENSOR

Remove the fuel tank without disconnecting the fuel and vacuum tubes from the fuel valve (page 2-4).

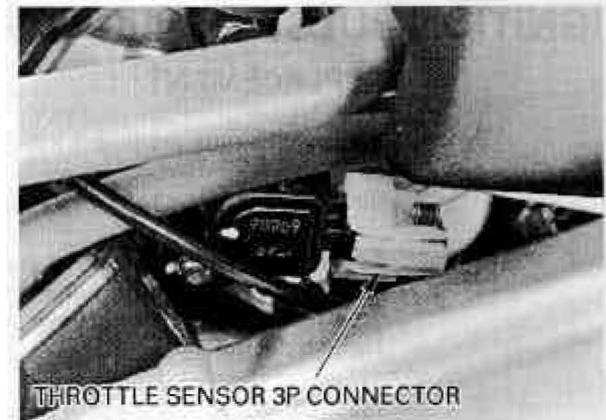
OPERATION INSPECTION

Disconnect the throttle sensor 3P connector.

Start the engine.

Connect the throttle sensor connector when the engine speed is $3,500 \text{ min}^{-1}$ (rpm) or above (throttle angle is 4–12°).

The engine speed should increase.



SYSTEM INSPECTION

Disconnect the ignition control module (ICM) connector (17-5).

Measure the resistance between the yellow/black and green/black wire terminals of the wire harness side connector.

STANDARD: 4–6 k Ω (68 °F/20 °C)



Check that the resistance between the red/yellow and green/black wire terminals varies with the throttle position while operating the throttle grip.

Fully open—Fully closed position: Resistance decreases

Fully closed—Fully open position: Resistance increases

If the correct measurements cannot be obtained, disconnect the throttle sensor 3P connector and perform the same inspections at the sensor terminals.

- If the measurement at the ICM is abnormal and the one at the throttle sensor is normal, check for open or short circuit, or loose or poor connections in the wire harness.
- If both measurements are abnormal, replace the throttle sensor.

Connect the ICM connector.

Turn the engine stop switch to RUN and the ignition switch ON.

Measure the input voltage between the yellow/black (+) and green/black (-) wire terminals of the wire harness side throttle sensor connector.

STANDARD: 4.7—5.3 V

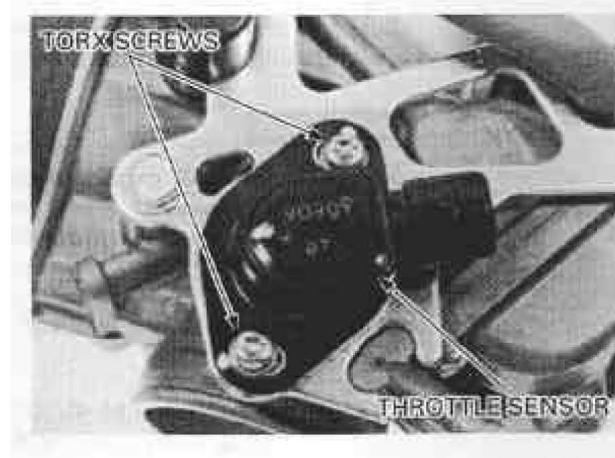
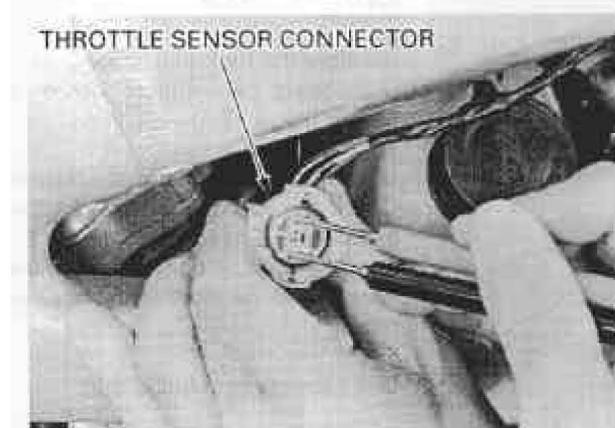
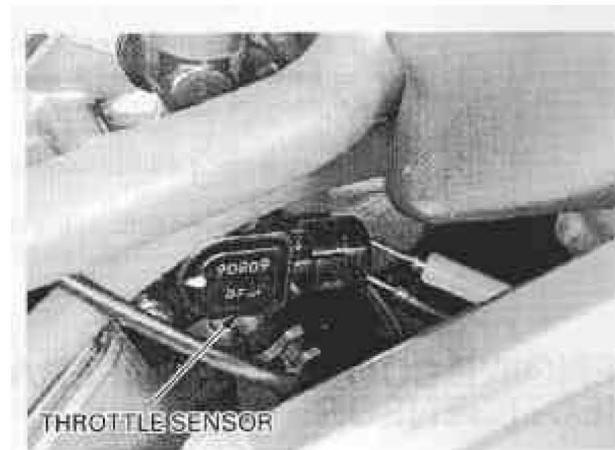
If the input voltage is abnormal, or if there is no input voltage, check for open or short circuit in the wire harness, or loose or poor ICM connector contact.

REPLACEMENT

Remove the carburetors from the insulators (page 5-5).

Disconnect the throttle sensor connector.

Remove the two torx screws and the throttle sensor.

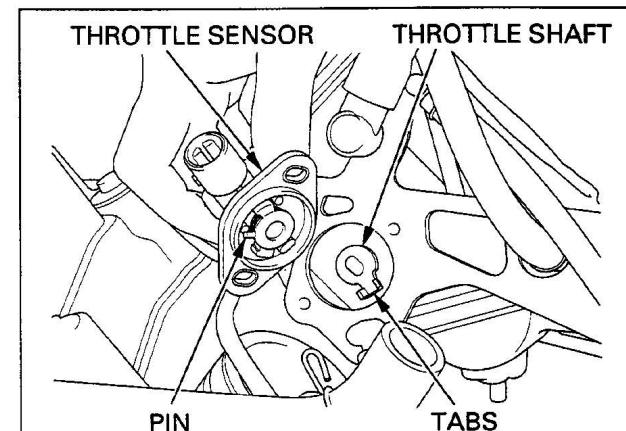


Install the throttle sensor so that the pin of the throttle sensor is positioned between the tabs of the throttle shaft.

Apply locking agent to the torx screw threads and loosely install the screws.

CAUTION:

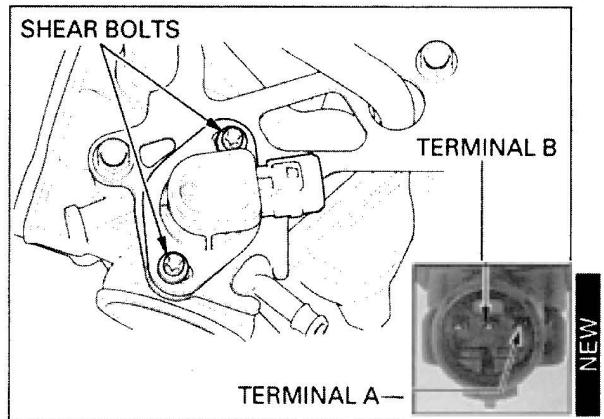
Install the throttle sensor properly. Improper installation can cause damage to the throttle sensor.



Adjust the throttle sensor position so that the resistance between terminals A and B is $490\text{--}510\Omega$, and tighten the shear bolts until the bolt heads break off.

Connect the throttle sensor connector.

Install the removed parts in the reverse order of removal.



ENGINE COOLANT TEMPERATURE (ECT) SENSOR

INSPECTION

Remove the fuel tank (page 2-4).

Disconnect the ignition control module (ICM) connector (page 17-5).

Disconnect the ECT sensor connector.

Check for continuity between the ECT sensor connector and ICM connector.

There should be continuity between the same color wires, and no continuity between different color wires.

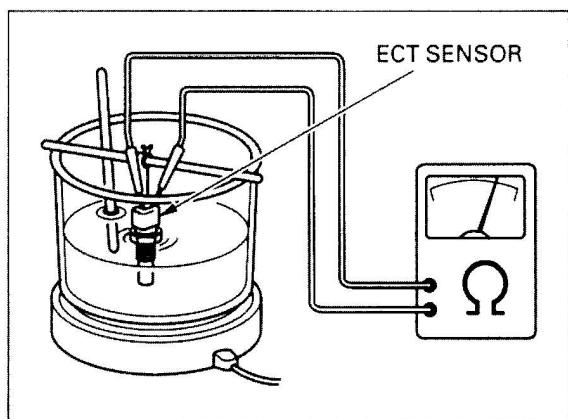
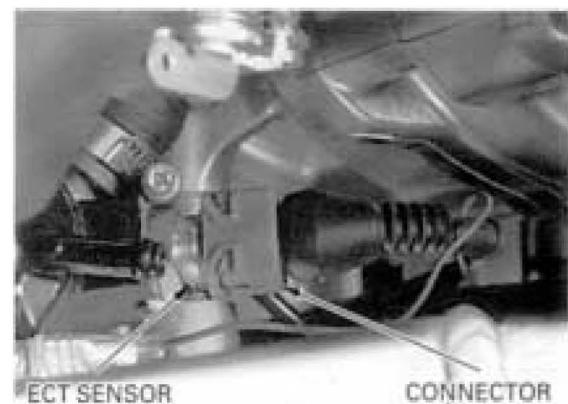
Drain the coolant (page 6-5).

Remove the ECT sensor from the thermostat housing.

Suspend the sensor in cold water. Heat the water slowly, using an electric heating element.

WARNING

Keep all flammable materials away from the electric heating element. Wear protective clothing, insulated gloves and eye protection.



Measure the resistance between the sensor terminals.

STANDARD: $2\text{--}3\text{ k}\Omega$ at 20°C (68°F)
 $200\text{--}400\ \Omega$ at 80°C (178°F)

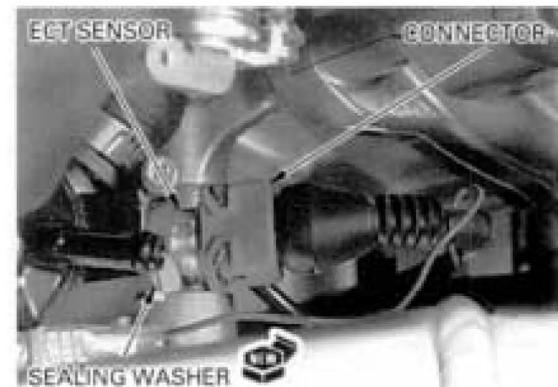
If the resistance is out of above ranges, replace the ECT sensor.

Install the ECT sensor with a new sealing washer and tighten it.

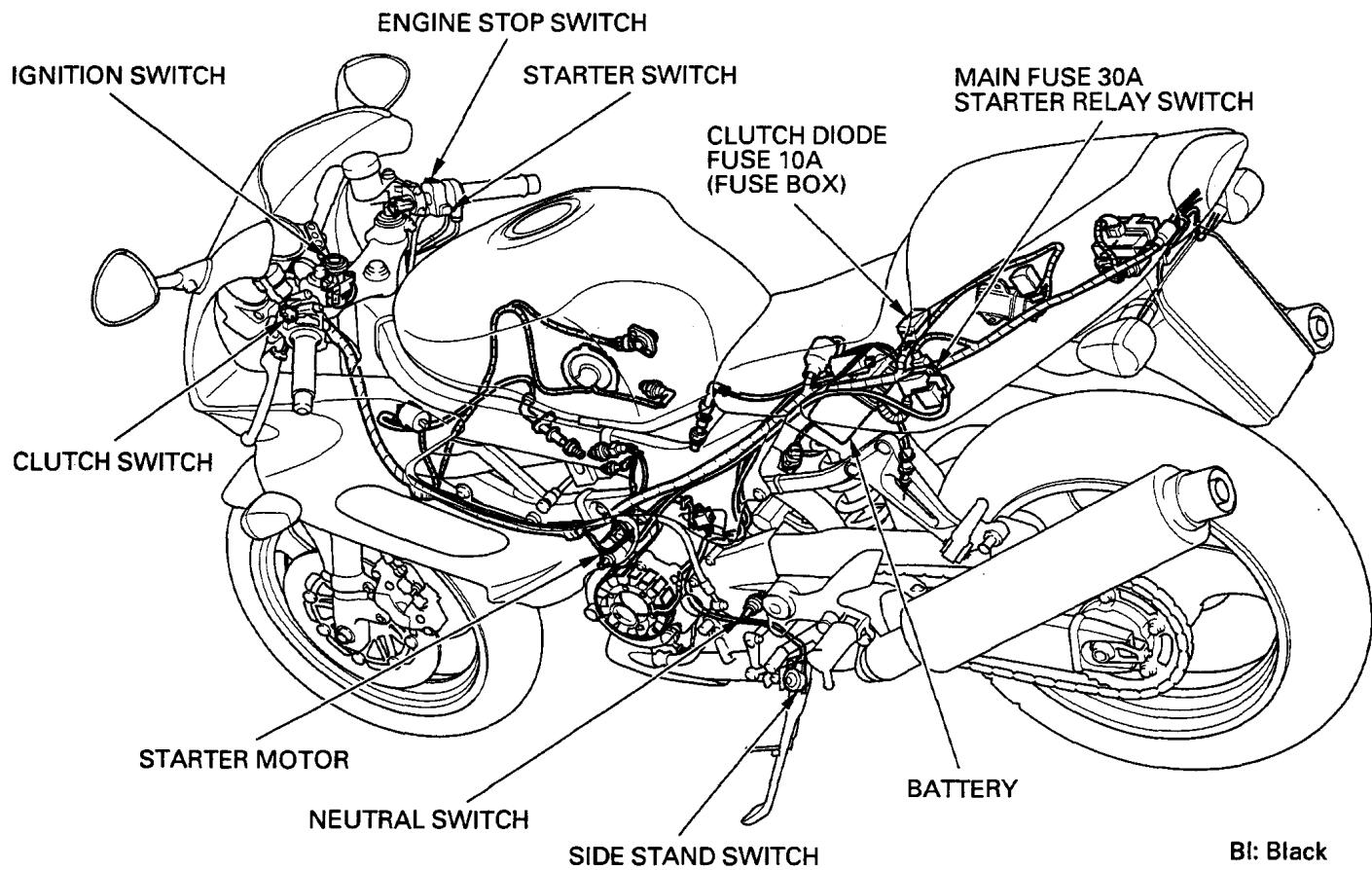
TORQUE: $23\text{ N}\cdot\text{m}$ ($2.3\text{ kgf}\cdot\text{m}$, $17\text{ lbf}\cdot\text{ft}$)

Install the removed parts in the reverse order of removal.

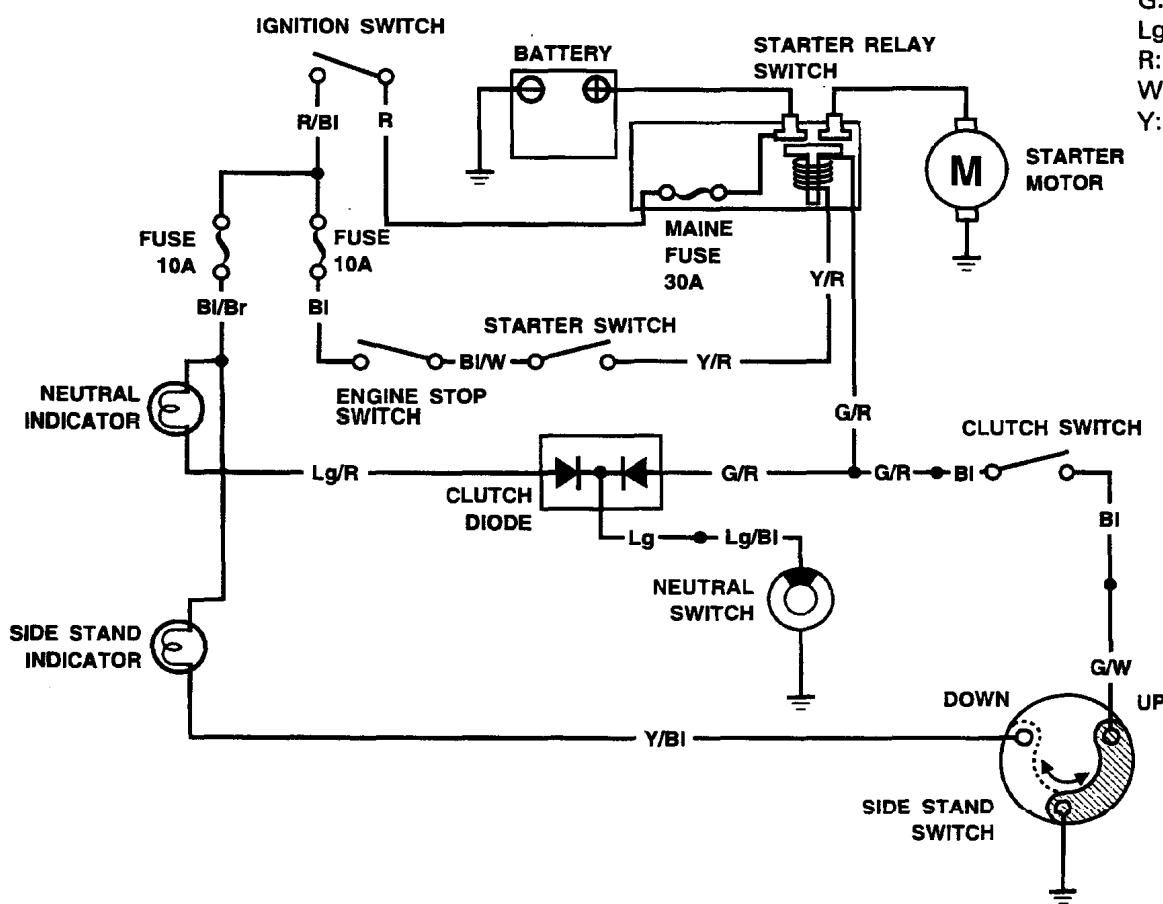
Fill and bleed the cooling system (page 6-5).



ELECTRIC STARTER



Bl: Black
 Br: Brown
 G: Green
 Lg: Light green
 R: Red
 W: White
 Y: Yellow



18. ELECTRIC STARTER

SERVICE INFORMATION	18-1	STARTER RELAY SWITCH	18-10
TROUBLESHOOTING	18-2	CLUTCH DIODE	18-11
STARTER MOTOR	18-4		

SERVICE INFORMATION

GENERAL

WARNING

Always turn the ignition switch OFF before servicing the starter motor. The motor could suddenly start, causing serious injury.

- The starter motor can be serviced with the engine in the frame.
- When checking the starter system, always follow the steps in the troubleshooting flow chart (page 18-2).
- A weak battery may be unable to turn the starter motor quickly enough, or supply adequate ignition current.
- If the current is kept flowing through the starter motor to turn it while the engine is not cranking over, the starter motor may be damaged.
- See section 10 for starter clutch servicing.
- See section 19 for following components:
 - Ignition switch
 - Engine stop switch
 - Starter switch
 - Neutral switch
 - Side stand switch
 - Clutch switch

SPECIFICATIONS

Unit: mm (in)

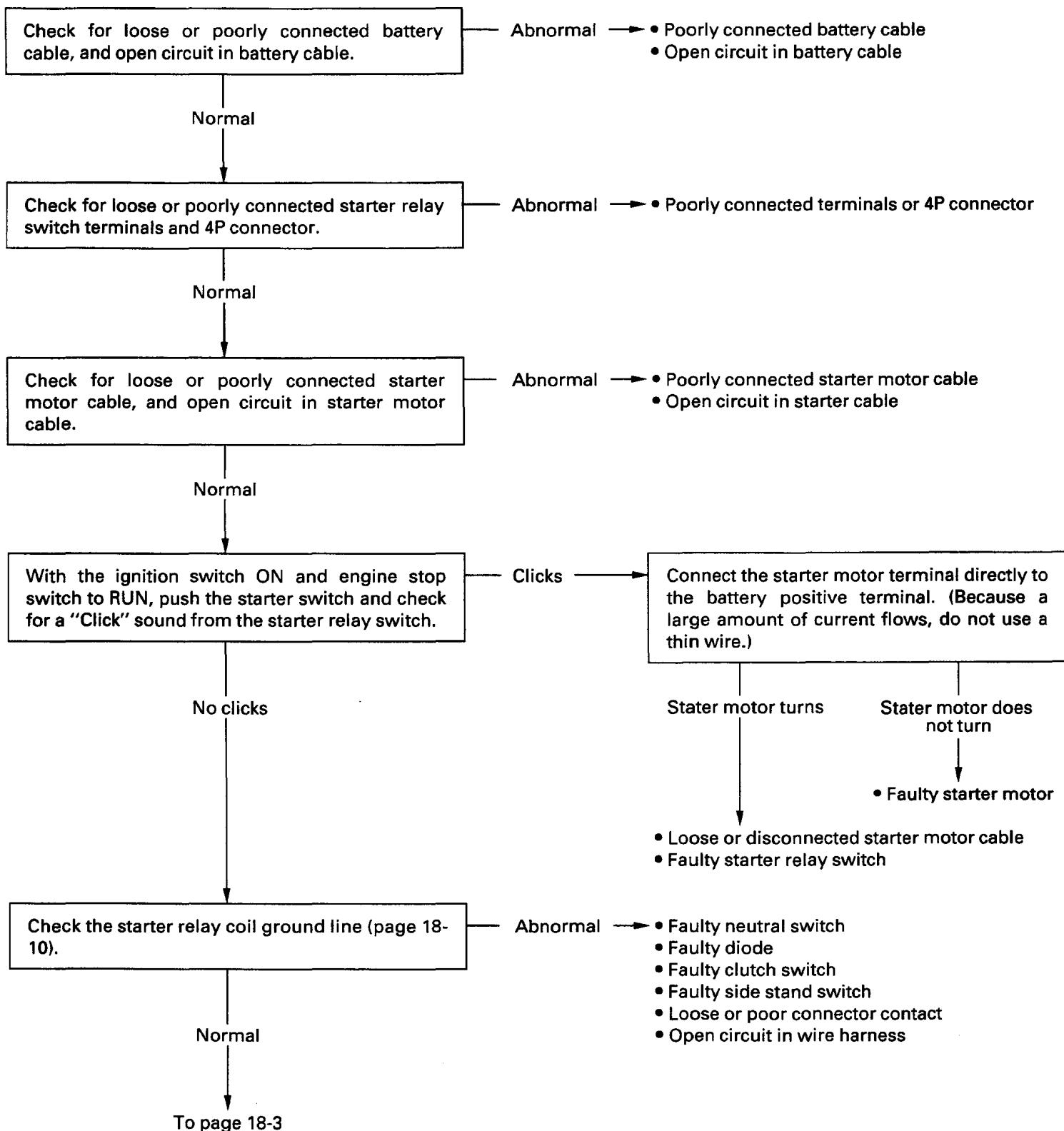
ITEM	STANDARD	SERVICE LIMIT
Starter motor brush length	12.0 – 13.0 (0.47 – 0.51)	6.5 (0.26)

TORQUE VALUE

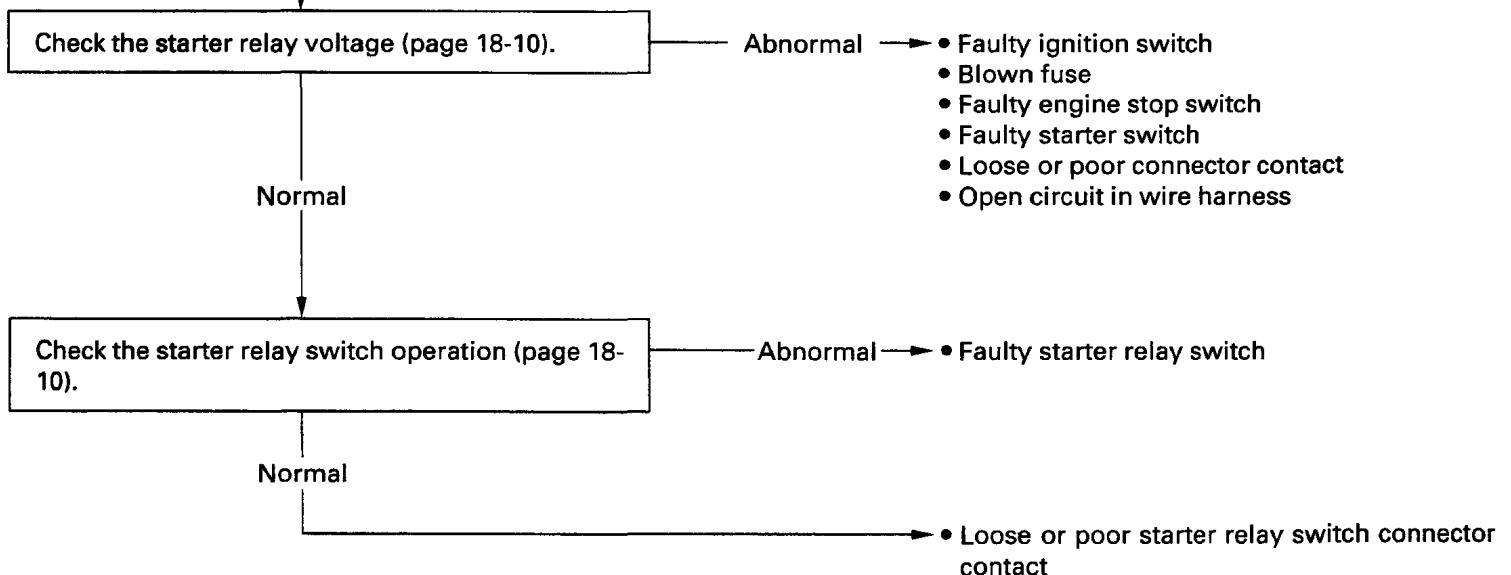
Starter motor terminal nut 10 N·m (1.0 kgf·m , 7 lbf·ft)

TROUBLESHOOTING**Starter motor will not turn**

- Check for a blown main fuse (30 A) or sub-fuse (10 A)
- Check that the battery is fully charged and in good condition.



From page 18-2



Starter motor turns slowly

- Weak battery
- Poorly connected battery cable
- Poorly connected starter motor cable
- Faulty starter motor

Starter motor turns, but engine does not turn

- Faulty starter clutch (section 10)

Starter relay switch “clicks”, but engine does not turn over

- Crankshaft does not turn due to engine problem
- Faulty starter clutch (section 10)
- Faulty starter reduction gear (section 10)

STARTER MOTOR REMOVAL

WARNING

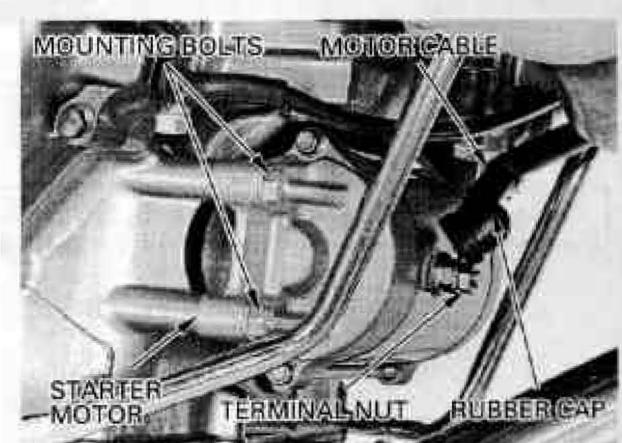
Always turn the ignition switch OFF before servicing the starter motor. The motor could suddenly start, causing serious injury.

Remove the engine under cover (page 2-4).

Remove the rubber cap, terminal nut and starter motor cable.

Remove the two mounting bolts and the starter motor from the crankcase.

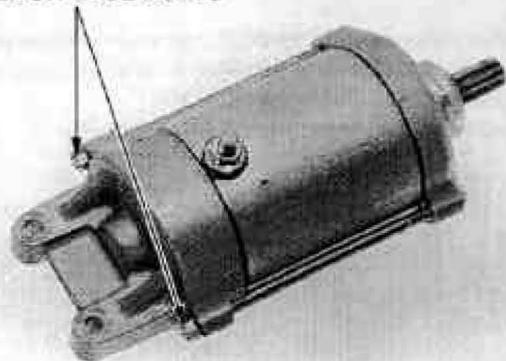
Remove the O-ring from the starter motor.



DISASSEMBLY

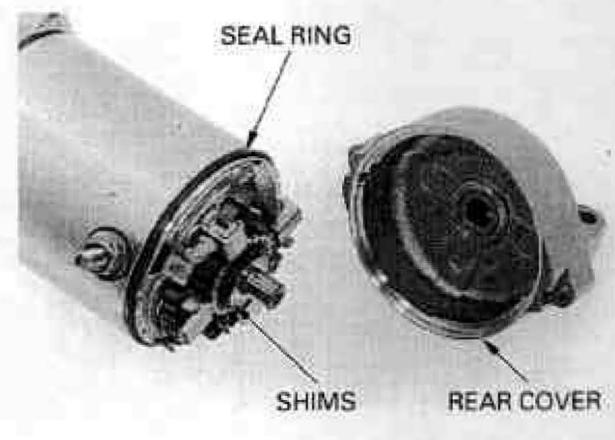
Remove the starter motor case bolts.

MOTOR CASE BOLTS



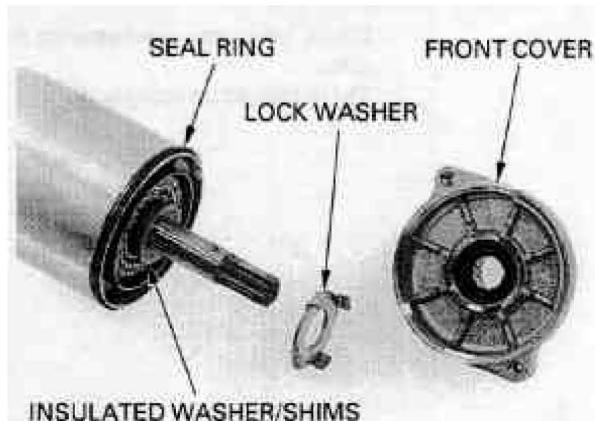
Record the location and number of shims.

Remove the rear cover, seal ring and shims.



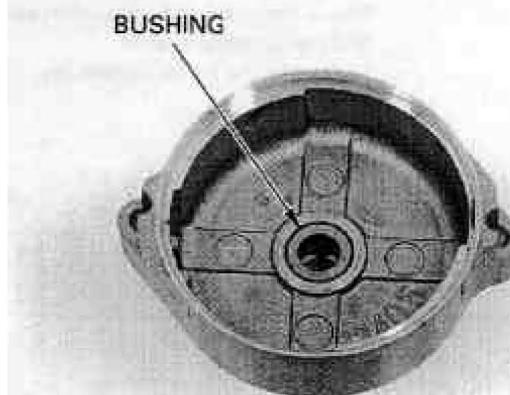
Remove the following:

- front cover
- seal ring
- lock washer
- insulated washer
- shims
- armature

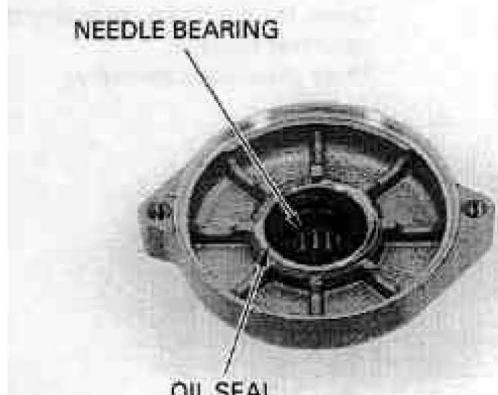


INSPECTION

Check the bushing in the rear cover for wear or damage.



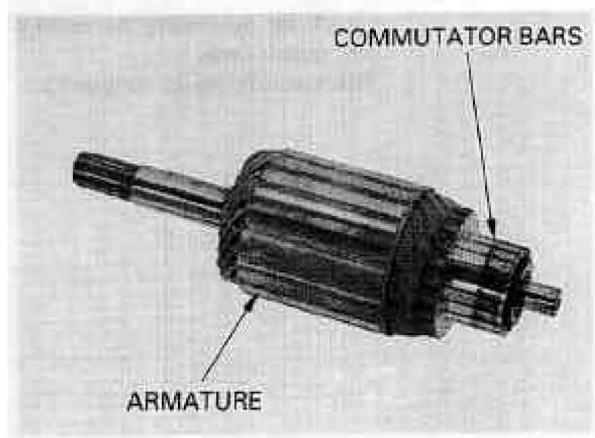
Check the oil seal and needle bearing in the front cover for deterioration, wear or damage.



Check the commutator bars of the armature for discoloration.

NOTE:

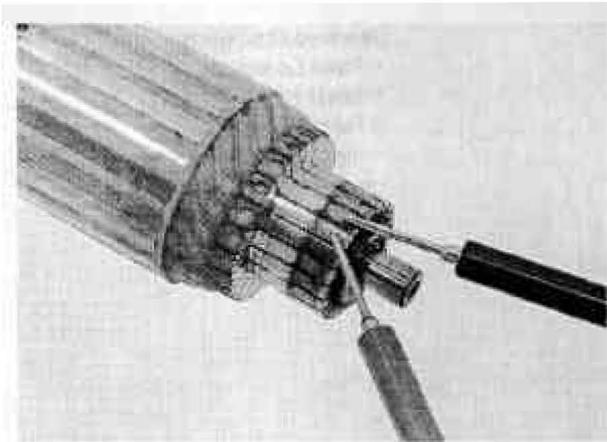
Do not use emery or sand paper on the commutator.



ELECTRIC STARTER

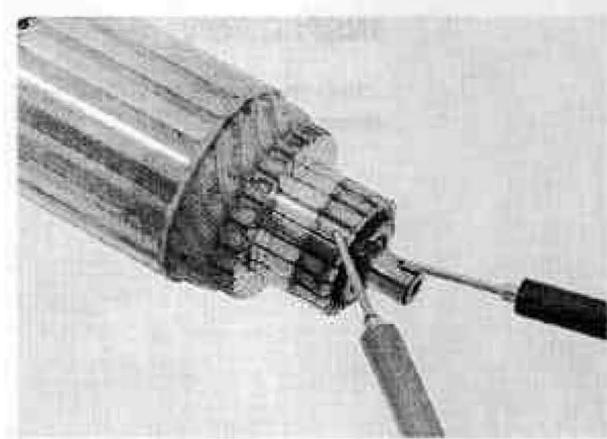
Check for continuity between pairs of commutator bars.

There should be continuity.



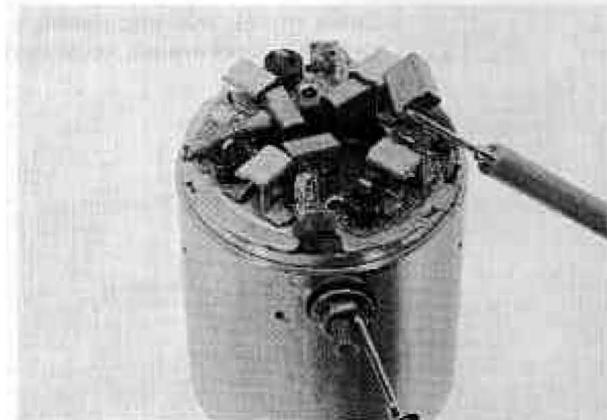
Check for continuity between each commutator bar and the armature shaft.

There should be no continuity.



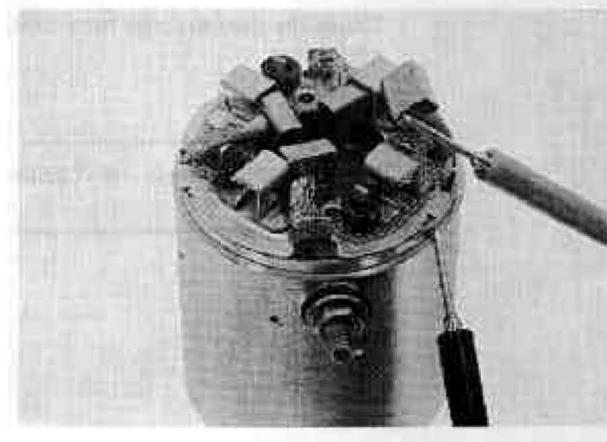
Check for continuity between the insulated brush and cable terminal.

There should be continuity.



Check for continuity between the insulated brush and motor case.

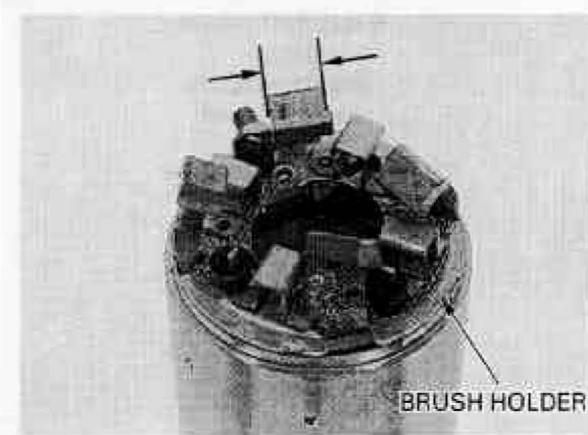
There should be no continuity.



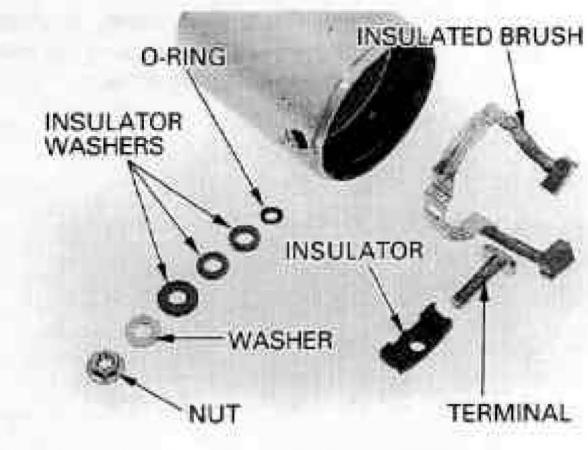
Measure the brush length.

SERVICE LIMIT: 6.5 mm (0.26 in)

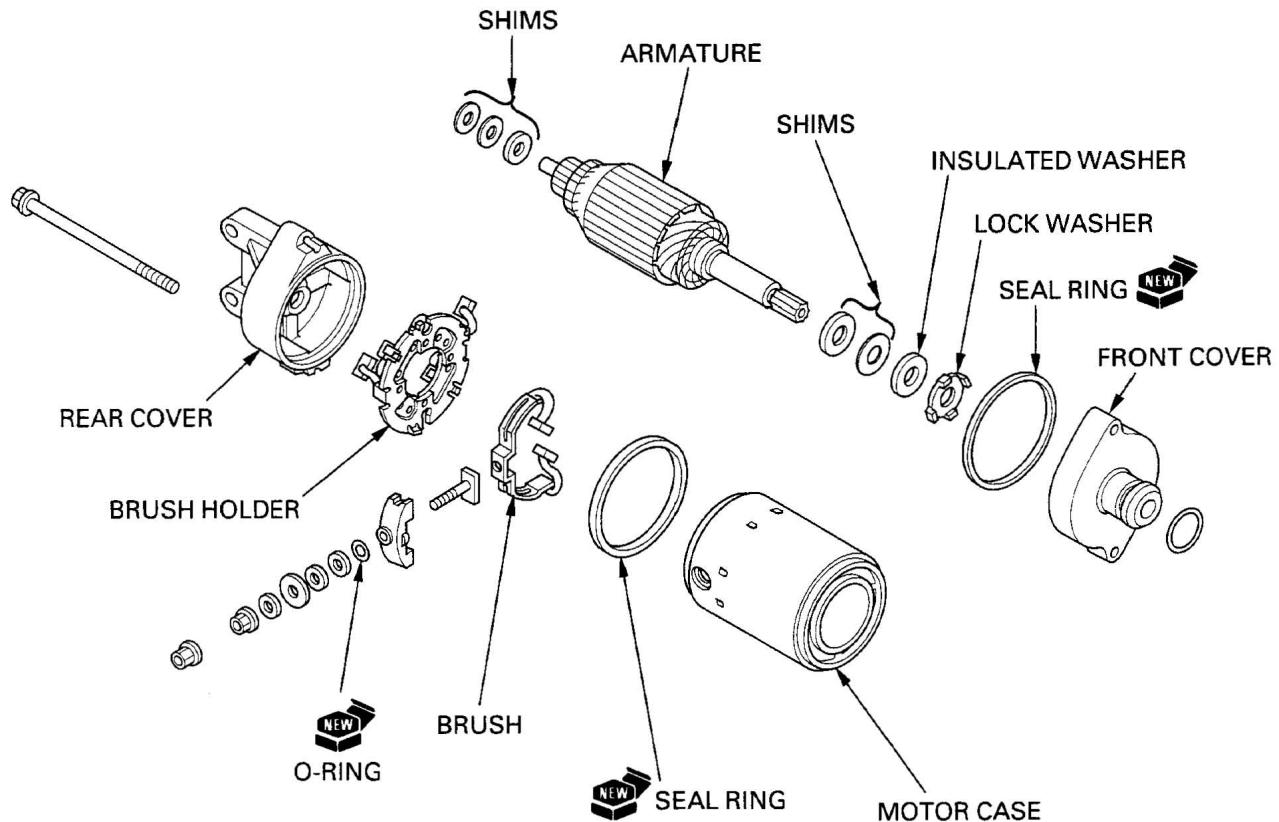
Remove the following if necessary:
— brush holder



- nut
- washer
- insulator washers
- O-ring
- cable terminal
- insulated brush
- insulator



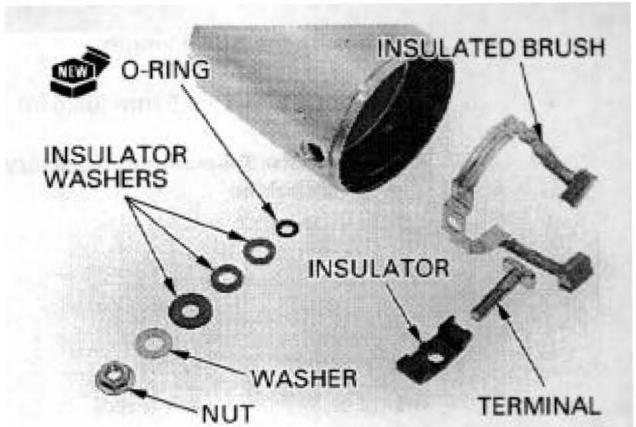
ASSEMBLY



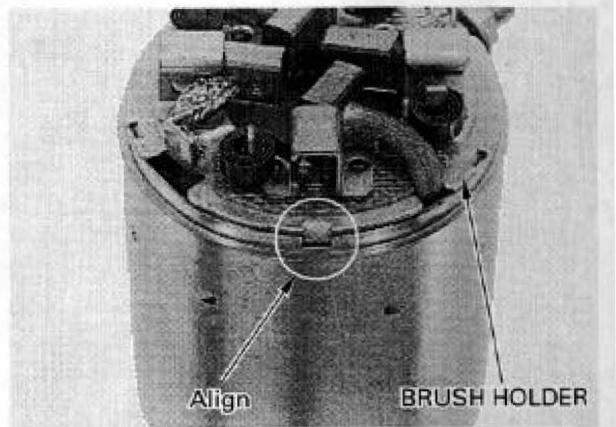
ELECTRIC STARTER

Install the following:

- insulator
- insulated brush
- cable terminal
- new O-ring
- insulator washers
- washer
- nut



Install the brush holder, aligning the holder tab with the case groove, and the holder grooves with the insulated brush wires.



Push and hold the brushes inside the brush holder, and install the armature through the motor case and brush holder.

When installing the armature into the motor case, hold the armature tightly to keep the magnet of the case from pulling the armature against it.

CAUTION:

The coil may be damaged if the magnet pulls the armature against the case.

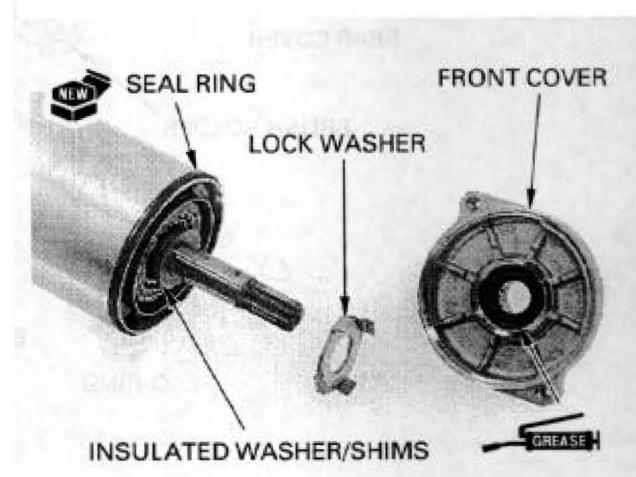
Install the shims and insulated washer onto the armature shaft.

Install a new seal ring onto the motor case.

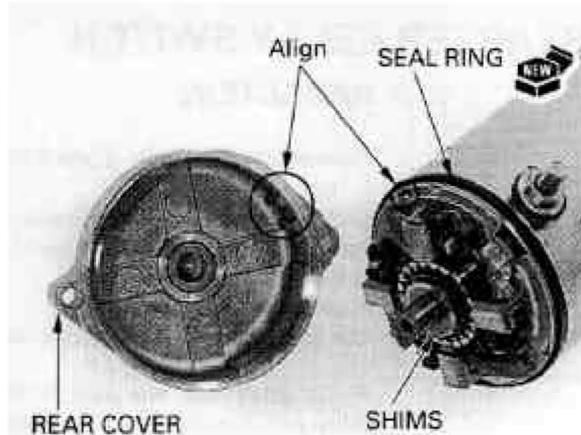
Apply grease to the oil seal lip and needle bearing in the front cover.

Install the lock washer onto the front cover.

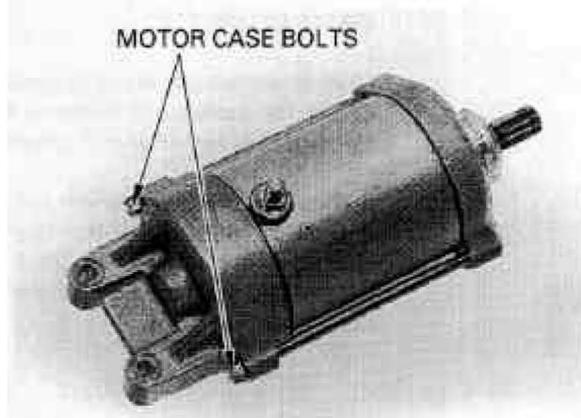
Install the front cover.



Install the same number of shims in the same locations as noted during disassembly.
 Install a new seal ring onto the motor case.
 Apply thin coat of grease to the armature shaft end.
 Install the rear cover aligning its groove with the brush holder tab.



Install and tighten the motor case bolts.



INSTALLATION

Coat a new O-ring with oil and install it into the starter motor groove.



Install the starter motor into the crankcase and tighten the mounting bolts.

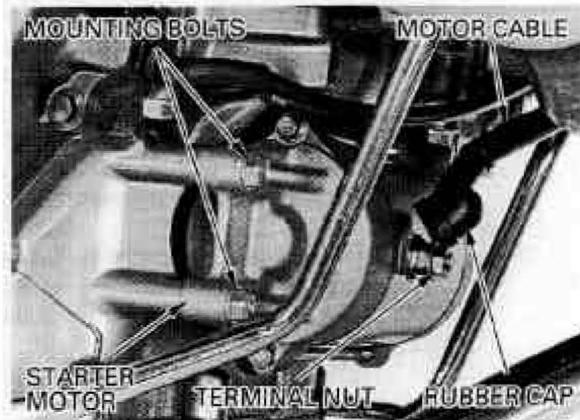
Connect the starter motor cable.

Install and tighten the terminal nut.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)

Install the rubber cap securely.

Install the engine under cover (page 2-4).



STARTER RELAY SWITCH

INSPECTION

Remove the seat cowl (page 2-2).

Shift the transmission into neutral.

Turn the ignition switch ON and engine stop switch to RUN.

Push the starter switch.

The coil is normal if the starter relay switch clicks.

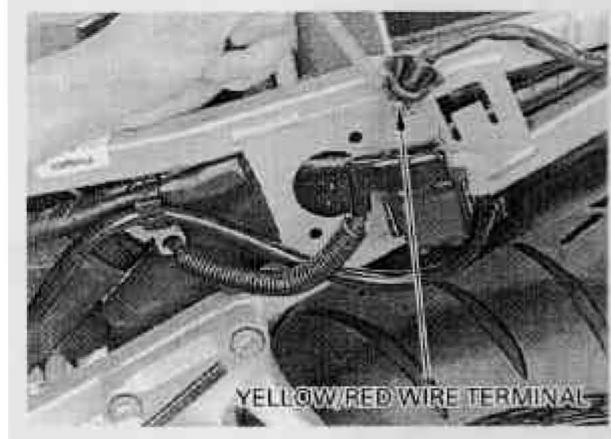
If you don't hear the switch "CLICK", inspect the relay switch using the procedure below.

GROUND LINE

Disconnect the starter relay switch 4P connector.

Check for continuity between the green/red wire (ground line) terminal and ground.

If there is continuity when the transmission is in neutral or when the clutch is disengaged and the side stand is retracted, the ground circuit is normal. (In neutral, there is a slight resistance due to the diode.)



STARTER RELAY VOLTAGE

Connect the starter relay switch 4P connector.

Shift the transmission into neutral.

Measure the voltage between the yellow/red wire terminal (+) and ground (-).

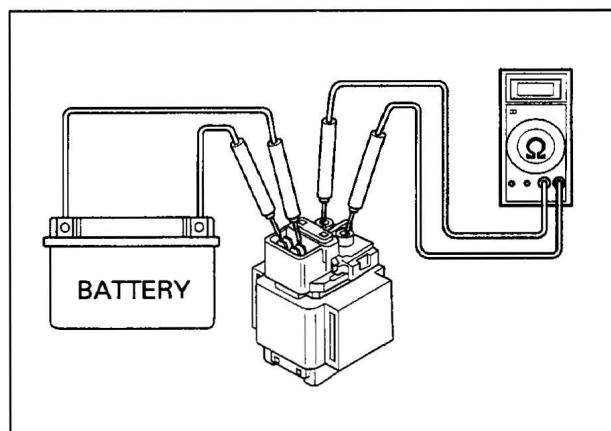
If the battery voltage appears only when the starter switch is pushed with the ignition switch ON and engine stop switch to RUN, it is normal.

OPERATION CHECK

Disconnect the starter relay switch 4P connector and cables.

Connect a fully charged 12 V battery positive wire to the relay switch yellow/red wire terminal and negative wire to the green/red wire terminal.

There should be continuity between the large terminals while the battery is connected, and no continuity when the battery is disconnected.



CLUTCH DIODE

INSPECTION

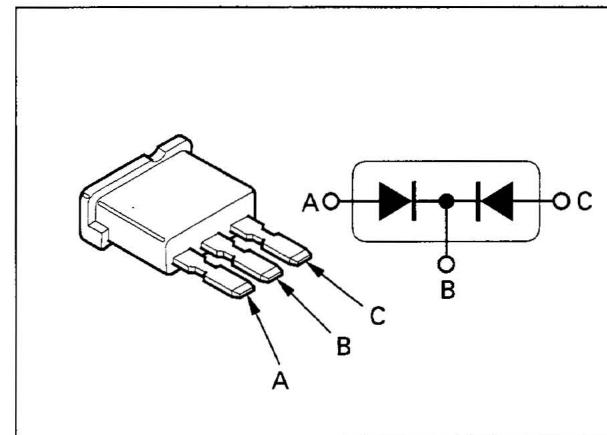
Remove the seat (page 2-2).

Remove the fuse box cover and clutch diode.



Check for continuity between the diode terminals.
When there is continuity, a small resistance value
will register.

If there is continuity in one direction, the diode is
normal.



19. LIGHTS/METERS/SWITCHES

SERVICE INFORMATION	19-1	OIL PRESSURE INDICATOR	19-13
HEADLIGHT	19-3	IGNITION SWITCH	19-13
POSITION LIGHT (Except U type)	19-4	HANDLEBAR SWITCHES	19-14
TURN SIGNAL LIGHT	19-4	BRAKE LIGHT SWITCH	19-15
BRAKE/TAILLIGHT	19-5	CLUTCH SWITCH	19-16
INSTRUMENTS	19-6	NEUTRAL SWITCH	19-16
SPEEDOMETER/SPEED SENSOR	19-8	SIDE STAND SWITCH	19-17
TACHOMETER	19-9	LOW FUEL INDICATOR/ FUEL RESERVE SENSOR	19-17
COOLANT TEMPERATURE GAUGE/ THERMOSENSOR	19-10	HORN	19-18
COOLING FAN MOTOR SWITCH	19-12	TURN SIGNAL RELAY	19-18

SERVICE INFORMATION

GENERAL

WARNING

- A halogen headlight bulb becomes very hot while the headlight is ON, and remains hot for a while after it is turned OFF. Be sure to let it cool down before servicing.
- Use an electric heating element to heat the water/coolant mixture for the fan motor switch inspection. Keep all flammable materials away from the electric heating element. Wear protective clothing, insulated gloves and eye protection.

- Note the following when replacing the halogen headlight bulb.
 - Wear clean gloves while replacing the bulb. Do not put finger prints on the headlight bulb, as they may create hot spots on the bulb and cause it to fail.
 - If you touch the bulb with your bare hands, clean it with a cloth moistened with alcohol to prevent its early failure.
 - Be sure to install the dust cover after replacing the bulb.
- Check the battery condition before performing any inspection that requires proper battery voltage.
- A continuity test can be made with the switches installed on the motorcycle.
- The following color codes used are indicated throughout this section.

Bu: Blue G: Green Lg: Light Green R: Red
Bl: Black Gr: Gray O: Orange W: White
Br: Brown Lb: Light Blue P: Pink Y: Yellow

LIGHTS/METERS/SWITCHES

SPECIFICATIONS

ITEM		SPECIFICATIONS
Bulbs	Headlight (High/low beam)	12 V–60/55 W
	Position light	12 V–5 W
	Brake/taillight	12 V–21/5 W ×2
	Turn signal light	12 V–21 W ×4
	Instrument light	12 V–1.7 W ×3
	Turn signal indicator	12 V–1.7 W ×2
	High beam indicator	12 V–1.7 W
	Neutral indicator	12 V–1.7 W
	Oil pressure indicator	12 V–1.7 W
	Side stand indicator	12 V–1.7 W
Fuse	Main fuse	30 A
	Sub-fuse	10 A, 20 A
Thermosensor resistance	At 176 °F (80 °C)	47–57 Ω
	At 248 °F (120 °C)	14–18 Ω
Fan motor switch	Starts to close (ON)	208–216 °F (98–102 °C)
	Stops to open (OFF)	199–207 °F (93–97 °C)

TORQUE VALUES

Thermosensor	12 N·m (1.2 kgf·m , 9 lbf·ft)	Apply sealant to the threads
Fan motor switch	18 N·m (1.8 kgf·m , 13 lbf·ft)	
Ignition switch mounting bolt	25 N·m (2.5 kgf·m , 18 lbf·ft)	
Neutral switch	12 N·m (1.2 kgf·m , 9 lbf·ft)	
Side stand switch bolt	10 N·m (1.0 kgf·m , 7 lbf·ft)	

HEADLIGHT

BULB REPLACEMENT

WARNING

A halogen headlight bulb becomes very hot while the headlight is ON, and remains hot for a while after it is turned OFF. Be sure to let it cool down before servicing.

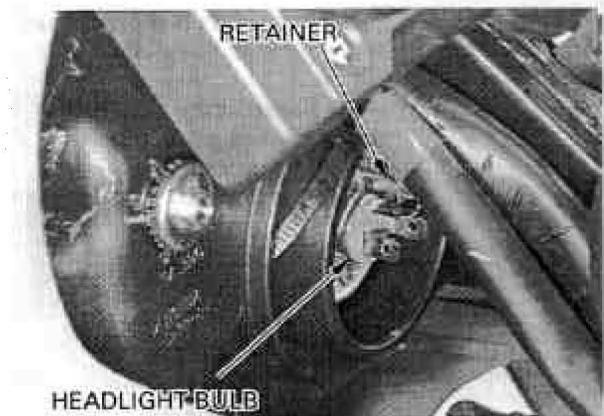
Disconnect the headlight connector.
Remove the dust cover.



Unhook the bulb retainer and replace the headlight bulb.

CAUTION:

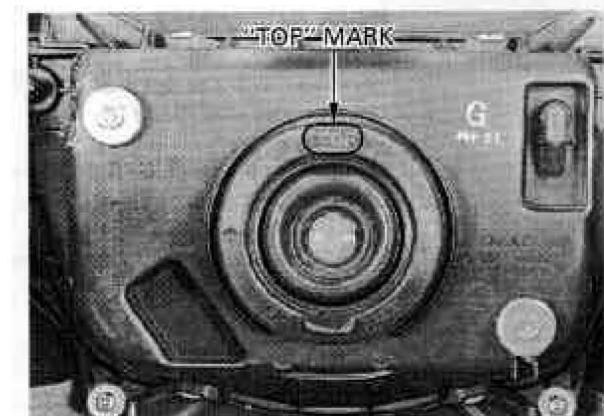
Avoid touching halogen headlight bulb. Finger prints can create hot spots that cause a bulb to break.



If you touch the bulb with your bare hands, clean it with a cloth moistened with alcohol to prevent its early failure.

Hook the bulb retainer properly.

Install the dust cover properly onto the headlight with the "TOP" mark facing up.
Connect the headlight connector.

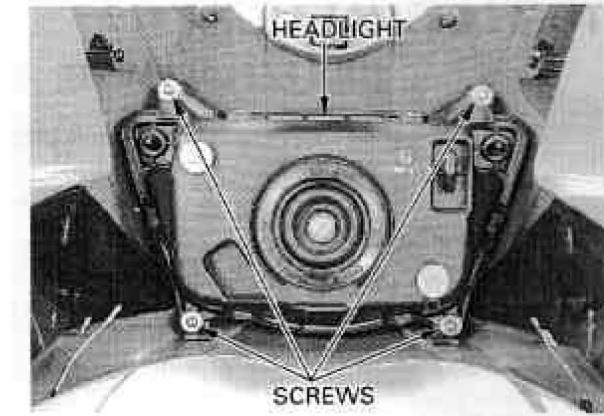


REMOVAL/INSTALLATION

Remove the front fairing (page 2-3).

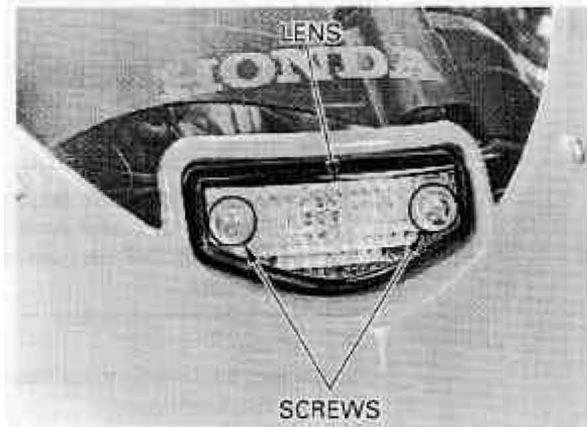
Remove the four screws and the headlight unit.

Install the headlight unit in the reverse order of removal.



POSITION LIGHT (Except U type)**BULB REPLACEMENT**

Remove the two screws and position light lens.



Pull the position light bulb out of the socket and replace it with a new one.

Make sure that the seal rubber is installed in position and is in good condition, and replace it with new one if necessary.

Install the position light lens and tighten the two screws.

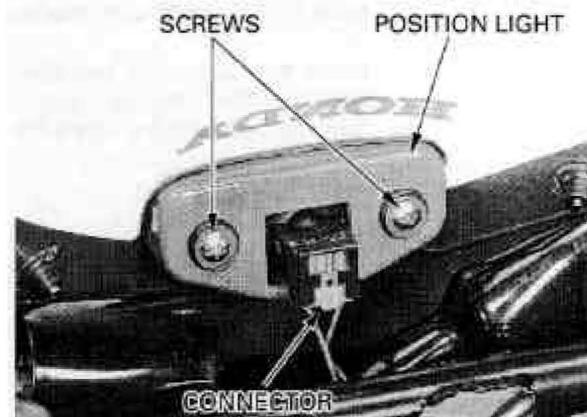
**REPLACEMENT**

Remove the three bolts and the instrument assembly from the stay (page 19-6).

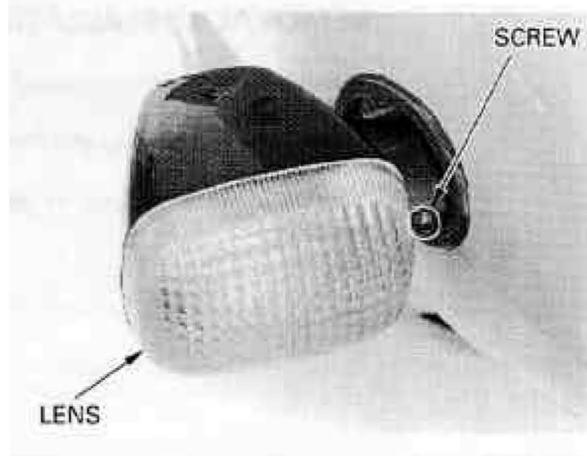
Disconnect the position light connector.

Remove the two screws and the position light.

Install the position light in the reverse order of removal.

**TURN SIGNAL LIGHT****BULB REPLACEMENT**

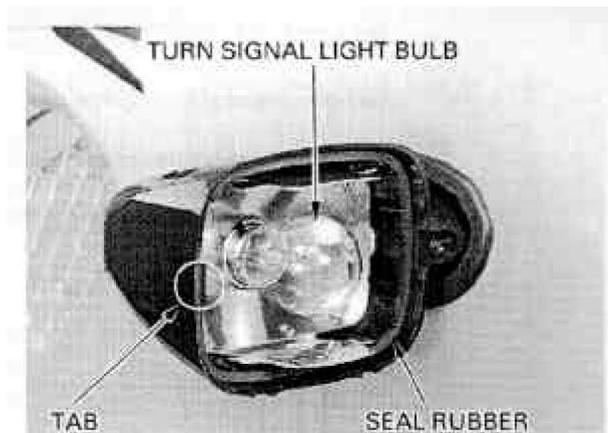
Remove the screw and turn signal light lens.



While pushing the bulb in, turn it counterclockwise to remove it, and replace it with a new one.

Make sure that the seal rubber is installed in position and is in good condition, and replace it with new one if necessary.

Install the lens, aligning the hook with the tab of the turn signal light, and tighten the screw.



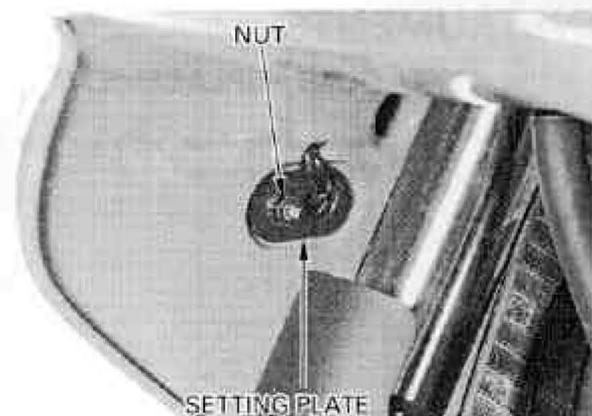
REMOVAL/INSTALLATION

Rear turn signal light: Remove the seat (page 2-2).

Disconnect the turn signal light connectors.

Remove the nut, setting plate and the turn signal light.

Install the turn signal light in the reverse order of removal.

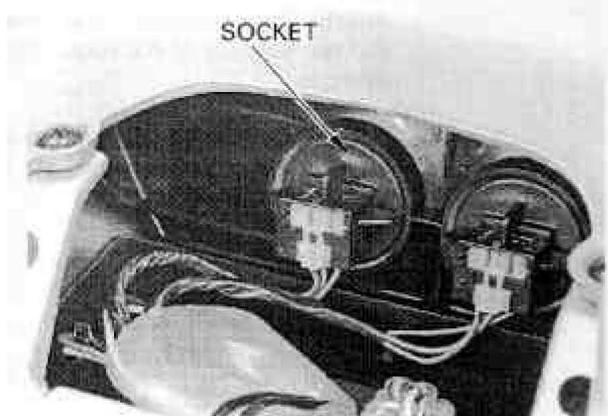


BRAKE/TAILLIGHT

BULB REPLACEMENT

Remove the seat (page 2-2).

Turn the socket counterclockwise and remove it from the brake/tailight.



Pull the brake/tailight bulb out of the socket and replace it with a new one.

Make sure that the seal rubber is installed in position and is in good condition, and replace it with new one if necessary.

Install the socket by turning it clockwise.

Install the seat (page 2-2).

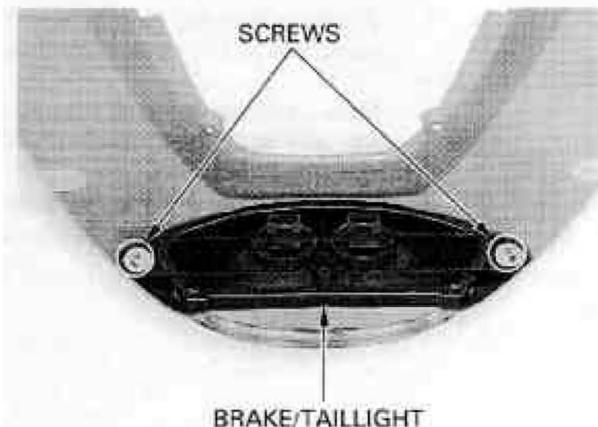


REMOVAL/INSTALLATION

Remove the seat cowl (page 2-2).

Remove the two screws and the brake/taillight.

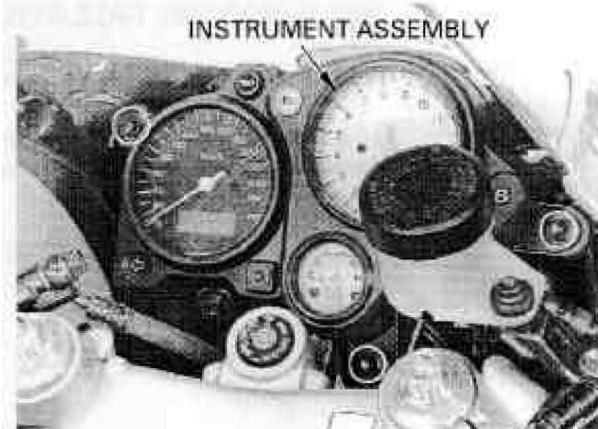
Install the brake/taillight in the reverse order of removal.



INSTRUMENTS

BULB REPLACEMENT

Remove the three bolts and the instrument assembly from the stay.

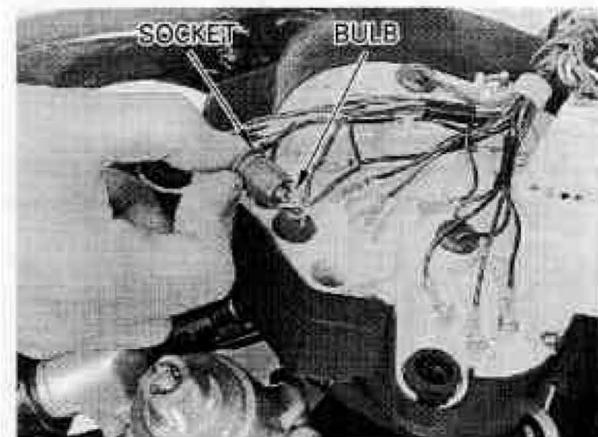


Pull the socket out of the instrument case.

Pull the bulb out of the socket and replace it with a new one.

Install the socket into the instrument case.

Install the instrument assembly onto the stay and tighten the three bolts.

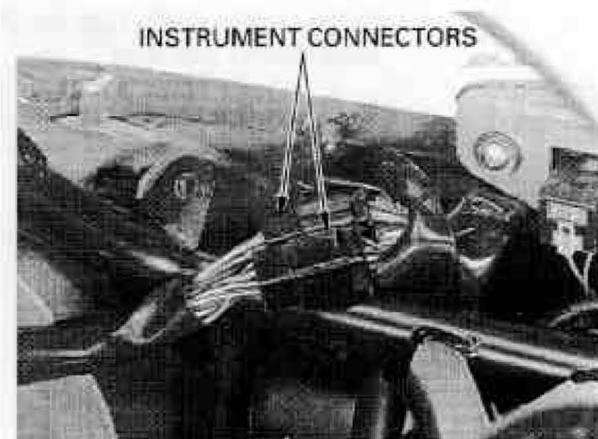


REMOVAL/INSTALLATION

Remove the three bolts and the instrument assembly from the stay (see above).

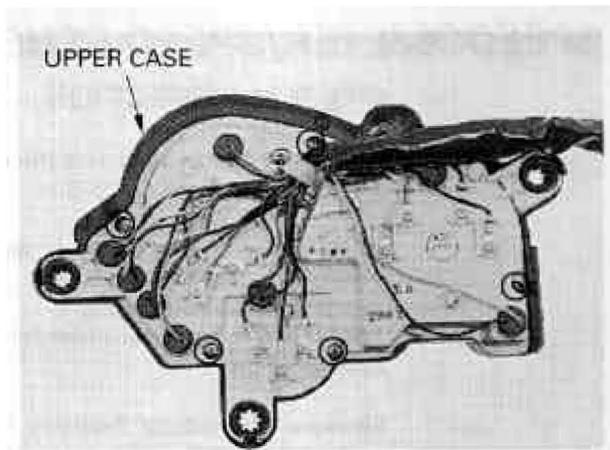
Disconnect the instrument 6P (black) and 9P (black) connectors.

Install the instrument assembly in the reverse order of removal.

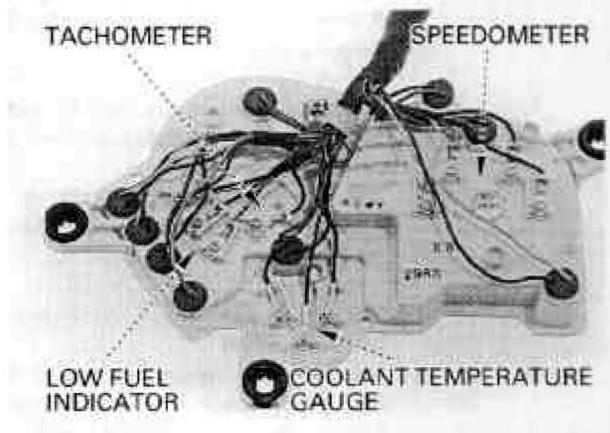


DISASSEMBLY

Remove the five screws and upper case.



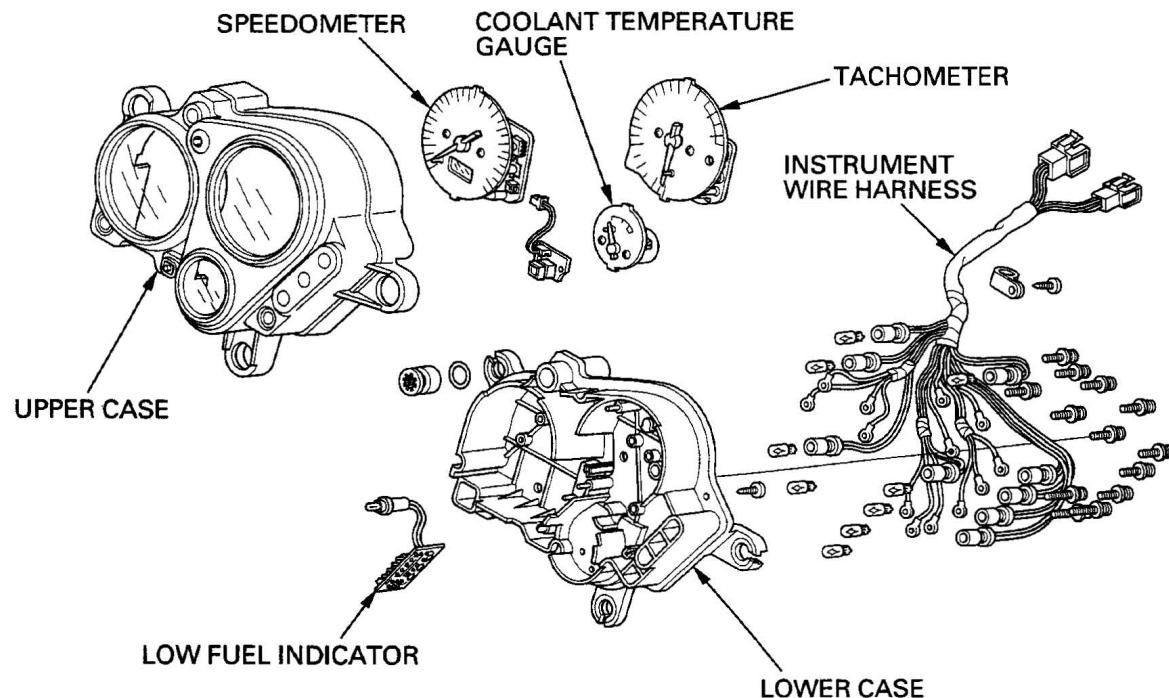
Remove the screws, speedometer, tachometer and coolant temperature gauge.
Remove the bulb sockets and instrument wire harness.



ASSEMBLY

NOTE:

Connect the wire terminal and install the bulb sockets according to the color codes on the lower case.



SPEEDOMETER/SPEED SENSOR SYSTEM INSPECTION

Remove the three bolts and the instrument assembly from the stay (page 19-6).

Check the continuity between the green/black wire terminal and body ground.

There should be continuity.

If there is no continuity, check for open circuit in the green/black wire.

Measure the voltage between the red/green (+) and green/black (-) wire terminals.

There should be battery voltage at all time.

If there is no voltage, check for open circuit in red/green wire.

Turn the ignition switch ON and measure the voltage between the black/brown (+) and green/black (-) wire terminals.

There should be battery voltage.

If there is no voltage, check for open circuit in black/brown wire.

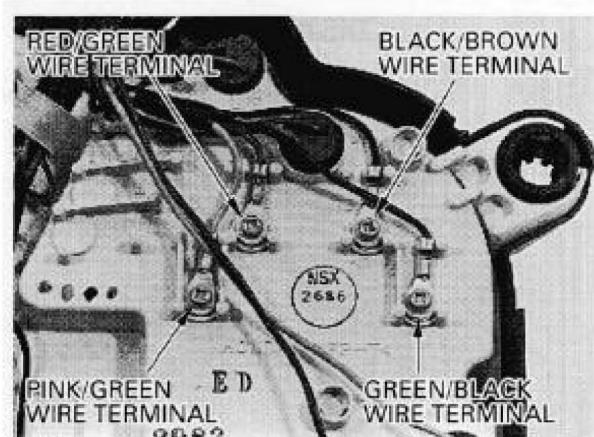
Shift the transmission in neutral and turn the ignition switch ON.

Measure the voltage between the pink/green (+) and green/black (-) wire terminals while slowly turning the rear wheel by hand.

There should be 0 to 5 V pulse voltage.

If pulse voltage does not appear, check for open or short circuit in pink/green wire.

If the pink/green wire is OK, check the speed sensor.



SPEED SENSOR INSPECTION

Remove the seat (page 2-2).

Turn the ignition switch ON and measure the voltage between the black/brown (+) and green/black (-) wire terminals at the speed sensor 3P (white) connector.

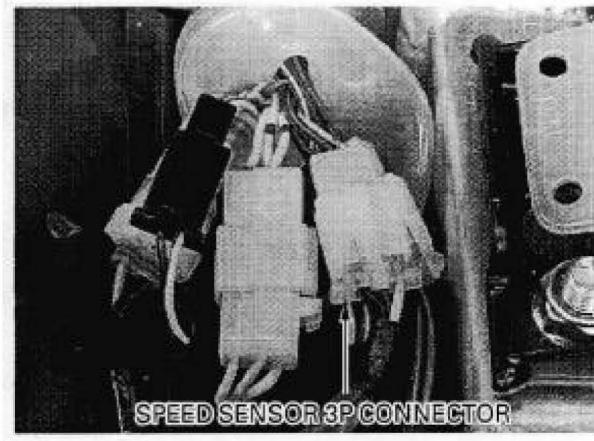
There should be battery voltage.

If there is no voltage, check for open circuit in black/brown and green/black wires.

Shift the transmission in neutral and turn the ignition switch ON.

Measure the voltage between the pink/green (+) and green/black (-) wire terminals while slowly turning the rear wheel by hand.

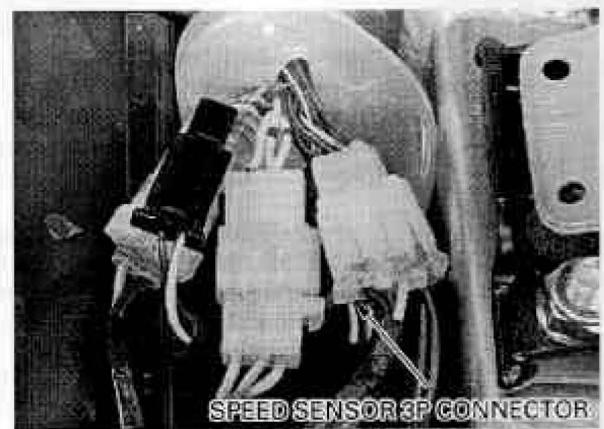
There should be 0 to 5 V pulse voltage.



SPEED SENSOR REMOVAL/INSTALLATION

Remove the seat (page 2-2).

Disconnect the speed sensor 3P (white) connector.



Remove the two bolt, battery ground cable and speed sensor.

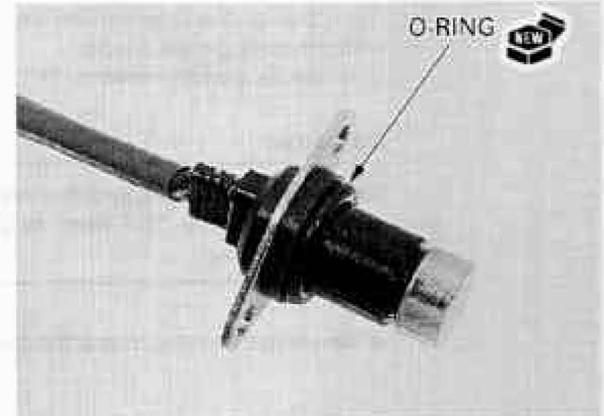


Coat a new O-ring with oil and install it onto the speed sensor.

Install the speed sensor in the reverse order of removal.

NOTE:

Route the speed sensor wire properly (page 1-18).



TACHOMETER

SYSTEM INSPECTION

Remove the three bolts and the instrument assembly from the stay (page 19-6).

Check the continuity between the green/black wire terminal and body ground.

There should be continuity.

If there is no continuity, check for open circuit in the green/black wire.



Turn the ignition switch ON and measure the voltage between the black/brown (+) and green/black (-) wire terminals.

There should be battery voltage.

If there is no voltage, check for open circuit in black/brown wire.

Turn the ignition switch ON and the engine stop switch to "RUN", and measure the voltage between the yellow/green (+) and green/black (-) wire terminals.

There should be battery voltage.

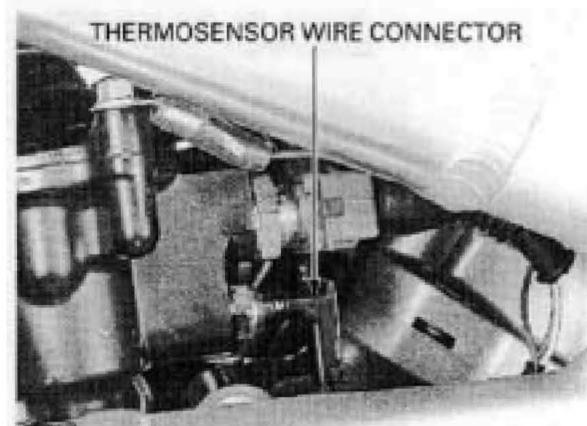
If there is no voltage, check for open circuit in yellow/green wire.



COOLANT TEMPERATURE GAUGE/ THERMOSENSOR

SYSTEM INSPECTION

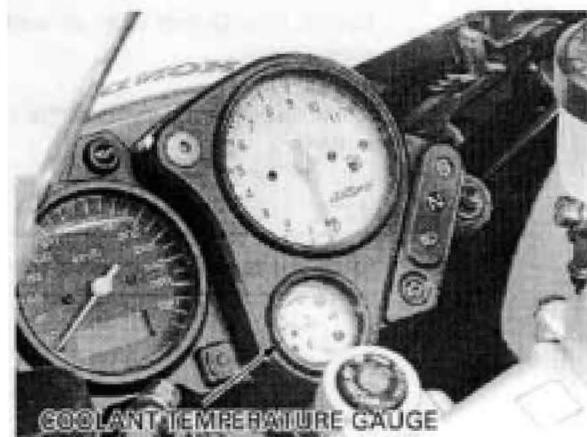
Disconnect the thermosensor wire connector and ground it with a jumper wire.



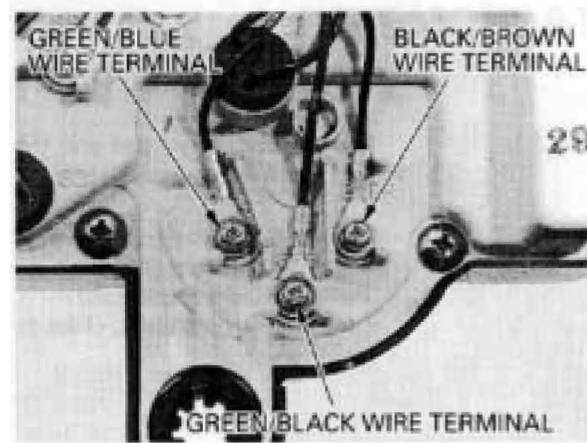
Turn the ignition switch ON and check the coolant temperature gauge needle.
The needle should move to "H".

CAUTION:

Immediately turn the ignition switch OFF when the needle moves to "H" (hot) to prevent the gauge from damaging.



If the needle moves, check the thermosensor.



If the needle does not move, check the following:

Remove the three bolts and the instrument assembly from the stay (page 19-6).

Check for open circuit in green/blue wire.

Turn the ignition switch ON and measure the voltage between the black/brown (+) and green/black (-) wire terminals.

There should be battery voltage.

If there is no voltage, check for open circuit in black/brown and green/black wires.

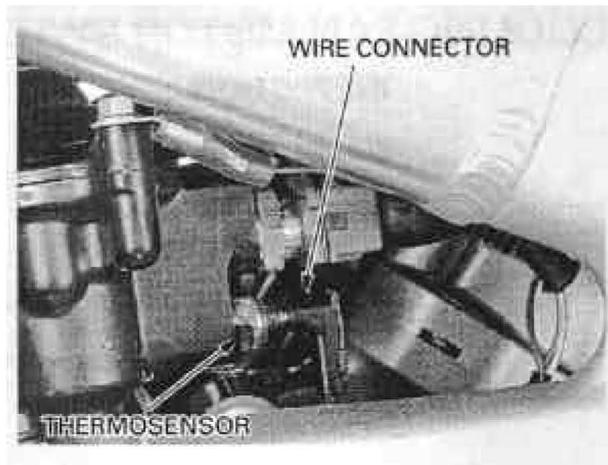
THERMOSENSOR INSPECTION

WARNING

Keep all flammable materials away from the electric heating element. Wear protective clothing, insulated gloves and eye protection.

Drain the coolant (page 6-5).

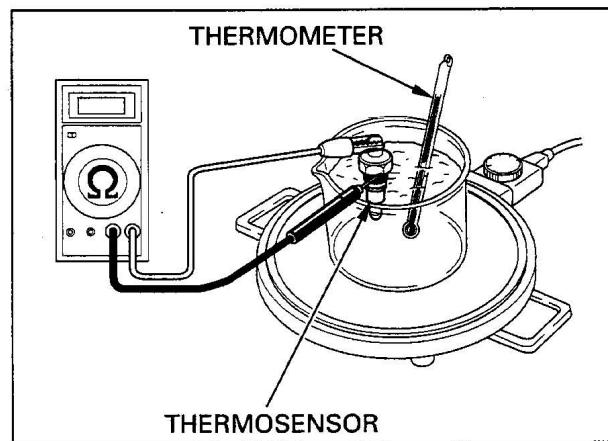
Disconnect the thermosensor connector and remove the thermosensor.



Suspend the thermosensor in a pan of coolant (50-50 mixture) on an electric heating element and measure the resistance through the sensor as the coolant heats up.

NOTE:

- Soak the thermosensor in coolant up to its threads with at least 40 mm (1.57 in) from the bottom of the pan to the bottom of the sensor.
- Keep the temperature constant for 3 minutes before testing. A sudden change of temperature will result in incorrect readings. Do not let the thermometer or thermosensor touch the pan.



Temperature	176 °F (80 °C)	248 °F (120 °C)
Resistance	47–57 Ω	14–18 Ω

Replace the thermosensor if it is out of specifications by more than 10 % at any temperature listed.

Apply sealant to the thermosensor threads. Do not apply sealant to the sensor head.
Install and tighten the thermosensor.

TORQUE: 12 N·m (1.2 kgf·m , 9 lbf·ft)

Connect the thermosensor connector.

Fill and bleed the cooling system (page 6-5).

COOLING FAN MOTOR SWITCH

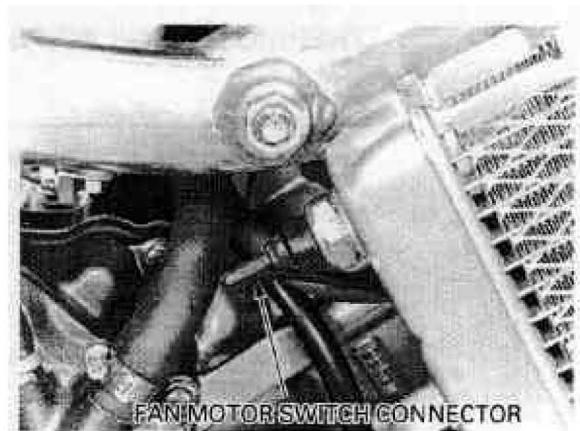
INSPECTION

Fan motor does not stop

Turn the ignition switch OFF, disconnect the connector from the fan motor switch and turn the ignition switch ON again.

If the fan motor does not stop, check for short circuit between the fan motor and switch.

If the fan motor stops, replace the fan motor switch.



Fan motor does not start

Before testing, check for a blown fan motor fuse.

Warm up the engine to operating temperature.

Disconnect the connector from the fan motor switch and ground the connector with a jumper wire.

Turn the ignition switch ON and check the fan motor.

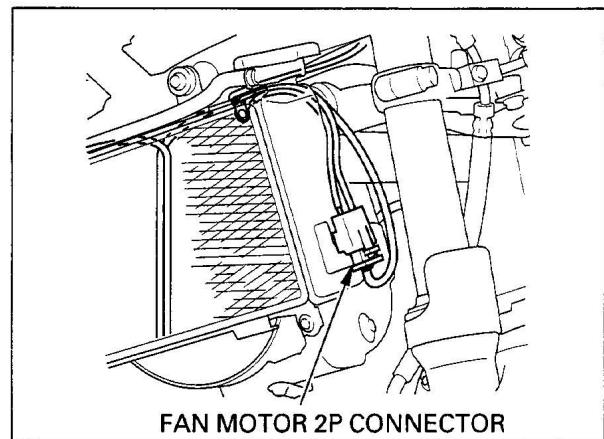
If the motor starts, check the connection at the fan motor switch terminal. If it is OK, replace the fan motor switch.

If the fan motor does not start, measure the voltage between the black/blue (+) and green (-) wire terminal at the fan motor 2P (black) connector.

There should be battery voltage.

If there is battery voltage, replace the fan motor.

If there is no voltage, check for open circuit in black/blue and green wires.



REMOVAL/INSTALLATION

Drain the coolant (page 6-5).

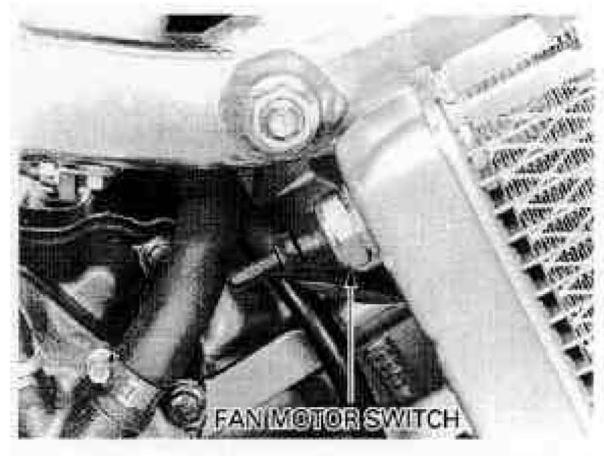
Disconnect the fan motor switch connector and remove the switch.

Install a new O-ring onto the fan motor switch.
Install and tighten the fan motor switch.

TORQUE: 18 N·m (1.8 kgf·m , 13 lbf·ft)

Connect the fan motor switch connector.

Fill and bleed the cooling system (page 6-5).

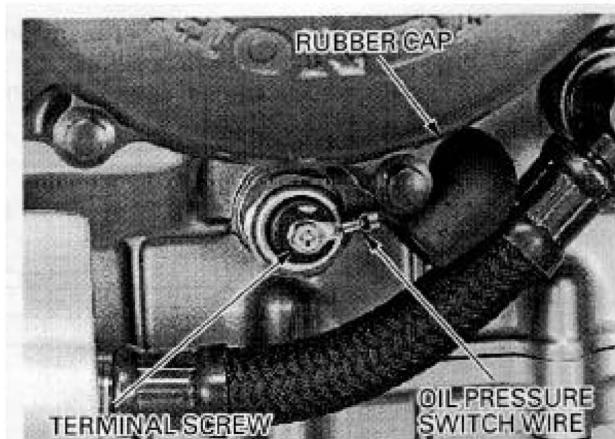


OIL PRESSURE INDICATOR

INSPECTION

Indicator does not come on with the ignition switch turned ON

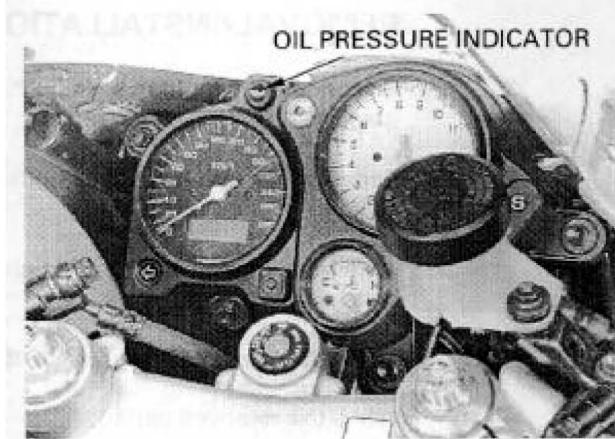
Remove the rubber cap, and disconnect the oil pressure switch wire by removing the terminal screw. Ground the wire terminal to the engine with a jumper wire.



Turn the ignition switch ON and check the oil pressure indicator.

If the indicator comes on, replace the oil pressure switch (page 4-4).

If the indicator does not come on, check for open circuit in blue/red wire.



Indicator stays on while the engine is running

Remove the rubber cap, and disconnect the oil pressure switch wire by removing the terminal screw.

Check for continuity between the wire terminal and ground.

If there is continuity, check for short circuit in blue/red wire.

If there is no continuity, check the oil pressure (page 4-4).

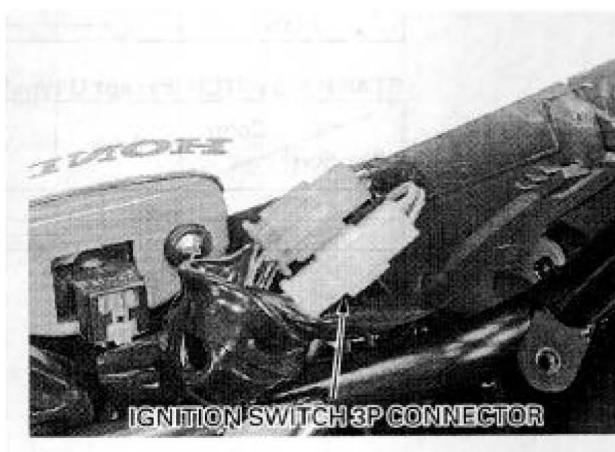
If the oil pressure is normal, replace the oil pressure switch (page 4-4).

IGNITION SWITCH

INSPECTION

Remove the three bolts and the instrument assembly from the stay (page 19-6).

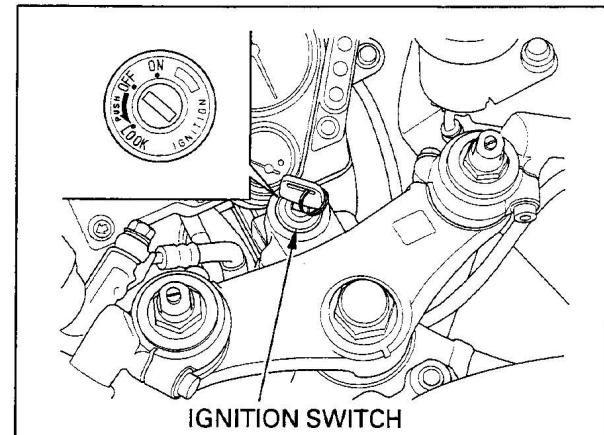
Disconnect the ignition switch 3P (white) connector.



Check for continuity between the connector terminals in each switch position.

Continuity should exist between the color coded wires as follows:

Color Position	R	R/Bl	Bu/O
ON	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
OFF			
LOCK			



REMOVAL/INSTALLATION

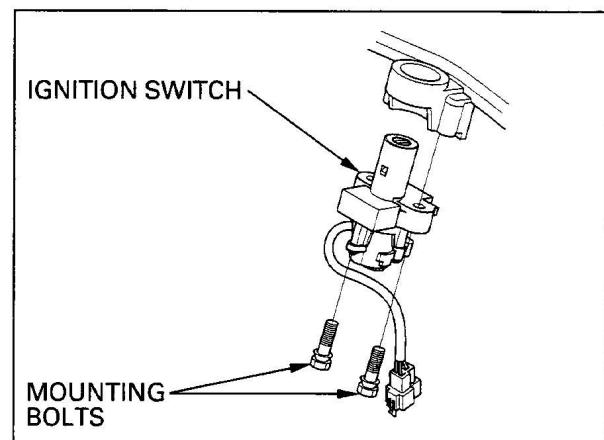
Disconnect the ignition switch 3P (white) connector (page 19-13).

Remove the two mounting bolts and the ignition switch.

Install the ignition switch and tighten the mounting bolts.

TORQUE: 25 N·m (2.5 kgf·m , 18 lbf·ft)

Install the removed parts.



HANDLEBAR SWITCHES

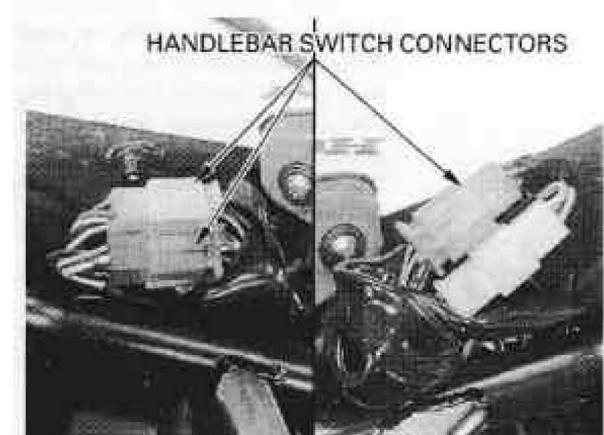
Remove the three bolts and the instrument assembly from the stay (page 19-6).

Disconnect the handlebar switch 6P connectors. Check for continuity between the connector terminals in each switch position.

Continuity should exist between the color coded wires as follows:

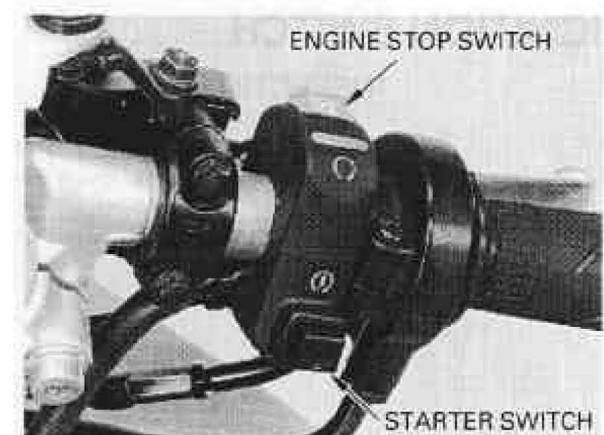
ENGINE STOP SWITCH

Color Position	Bl	Bl/W
OFF		
RUN	<input type="radio"/>	<input type="radio"/>



STARTER SWITCH (Except U type)

Color Position	Bl/W	Y/R
FREE		
PUSH	<input type="radio"/>	<input type="radio"/>



STARTER SWITCH (U type)

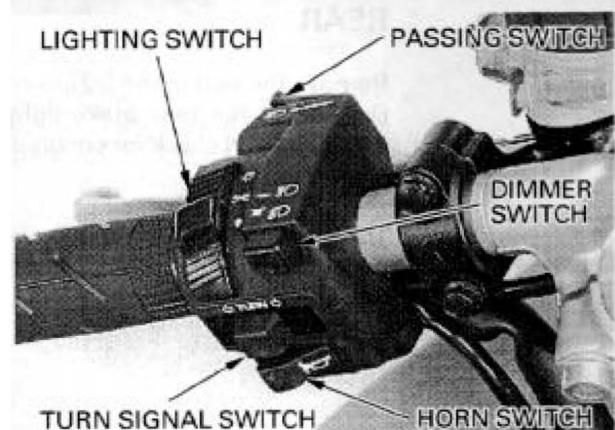
Color Position	Y/R	Bl/R	Bu/W
FREE		<input type="circle"/>	<input type="circle"/>
PUSH	<input type="circle"/>	<input type="circle"/>	

TURN SIGNAL SWITCH

Color Position	O	Gr	Lb
L	<input type="circle"/>	<input type="circle"/>	
(N)			
R		<input type="circle"/>	<input type="circle"/>

HORN SWITCH

Color Position	W/G	Lg
FREE		
PUSH	<input type="circle"/>	<input type="circle"/>

**PASSING SWITCH (Except U type)**

Color Position	Bl/R	Bu
FREE		
PUSH	<input type="circle"/>	<input type="circle"/>

LIGHTING SWITCH (Except U type)

Color Position	Bl/Br	Br	Bl/R	
O				<input type="circle"/>
P	<input type="circle"/>	<input type="circle"/>		
H	<input type="circle"/>	<input type="circle"/>	<input type="circle"/>	<input type="circle"/>

DIMMER SWITCH (Except U type)

Color Position	Bu		W
H	<input type="circle"/>	<input type="circle"/>	
(N)	<input type="circle"/>	<input type="circle"/>	<input type="circle"/>
L	<input type="circle"/>	<input type="circle"/>	<input type="circle"/>

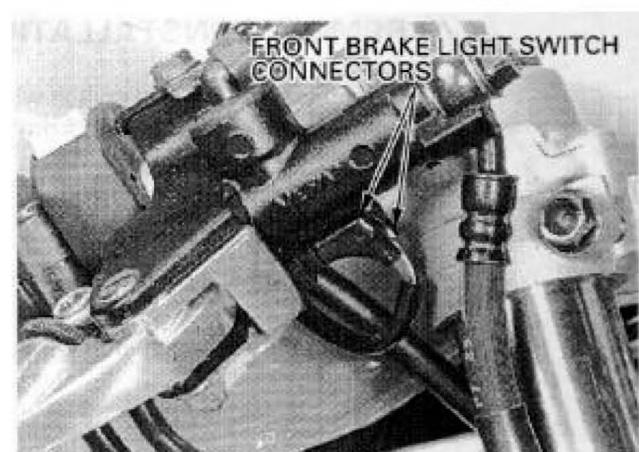
DIMMER SWITCH (U type)

Color Position	Bu	Bu/W	W
H	<input type="circle"/>	<input type="circle"/>	
(N)	<input type="circle"/>	<input type="circle"/>	<input type="circle"/>
L		<input type="circle"/>	<input type="circle"/>

BRAKE SWITCH
FRONT

Disconnect the front brake light switch wire connectors and check for continuity between the switch terminals.

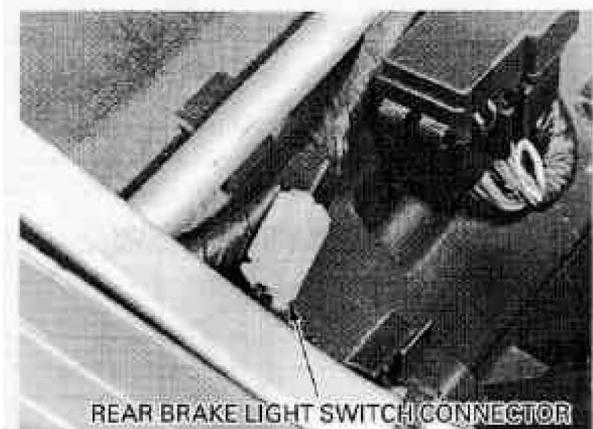
There should be continuity with the front brake lever squeezed and no continuity with the lever released.



REAR

Remove the seat (page 2-2).
Disconnect the rear brake light switch 2P (white) connector and check for continuity between the connector terminals.

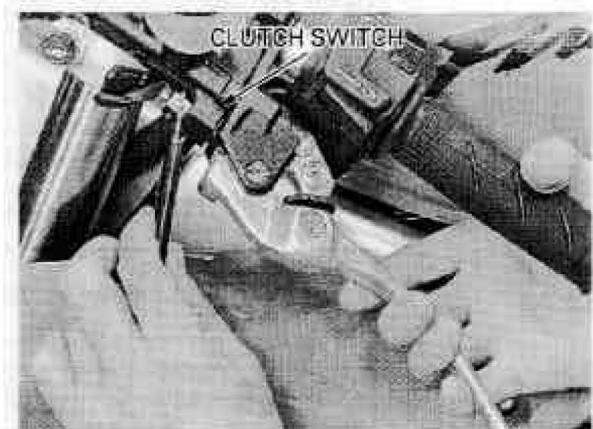
There should be continuity with the rear brake pedal depressed and no continuity with the pedal released.



CLUTCH SWITCH

Disconnect the clutch switch wire connector and check for continuity between the switch terminals.

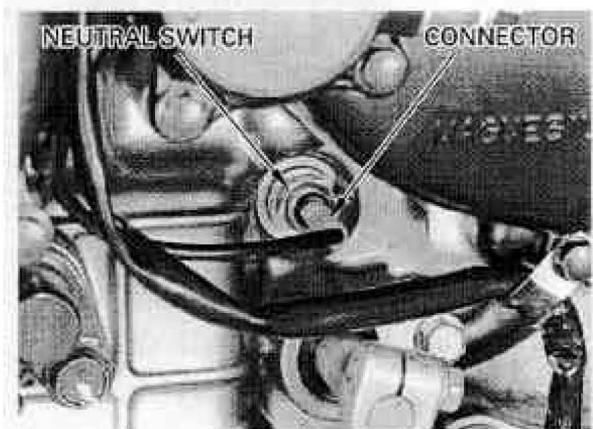
There should be continuity with the clutch lever squeezed and no continuity with the lever released.



NEUTRAL SWITCH

INSPECTION

Disconnect the neutral switch wire connector.
Check for continuity between the switch terminal and engine ground.
There should be continuity with the transmission in neutral, and no continuity with the transmission in gear except neutral.



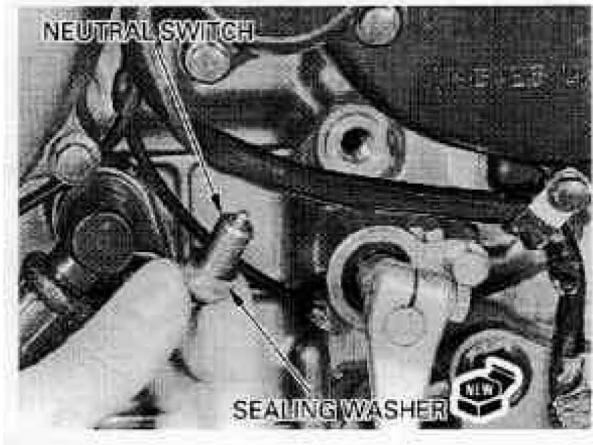
REMOVAL/INSTALLATION

Disconnect the neutral switch wire connector.
Remove the neutral switch from the crankcase.

Install the neutral switch with a new sealing washer and tighten it.

TORQUE: 12 N·m (1.2 kgf·m , 9 lbf·ft)

Connect the neutral switch wire connector.



SIDE STAND SWITCH

INSPECTION

Remove the seat (page 2-2).

Disconnect the side stand switch 3P (green) connector.

Check for continuity between the connector terminals in each side stand position.

Continuity should exist between the color coded wires as follows:

Color Position	G/W	Y/BI	G
Lowered		○	○
Retracted	○	○	

REMOVAL/INSTALLATION

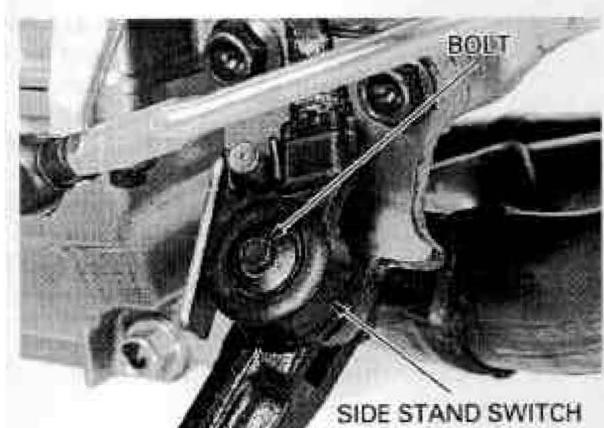
Remove the seat (page 2-2).

Disconnect the side stand switch 3P (green) connector.

Remove the side stand switch bolt and switch.

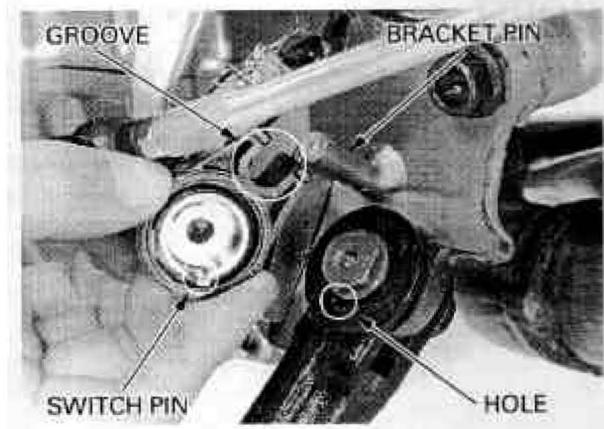


SIDE STAND SWITCH 3P CONNECTOR



BOLT

SIDE STAND SWITCH

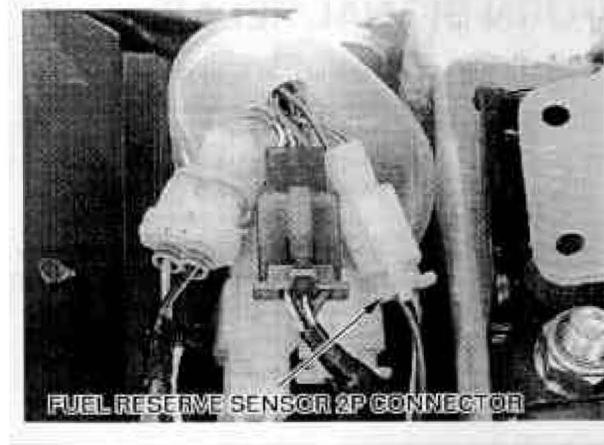


GROOVE

BRACKET PIN

SWITCH PIN

HOLE



FUEL RESERVE SENSOR 2P CONNECTOR

LOW FUEL INDICATOR/FUEL RESERVE SENSOR SYSTEM INSPECTION

Remove the seat (page 2-2).

Low fuel indicator does not go off

Disconnect the fuel reserve sensor 2P (white) connector.

Turn the ignition switch ON and check the low fuel indicator.

If the indicator does not come on, replace the fuel reserve sensor.

If the indicator comes on, check for short circuit in brown/black wire.

Low fuel indicator does not come on

Disconnect the fuel reserve sensor 2P (white) connector and short the connector terminals with a jumper wire.

Turn the ignition switch ON and check the low fuel indicator.

If the indicator comes on, replace the fuel reserve sensor.

If the indicator does not come on, check for open circuit in brown/black and green/black wires.



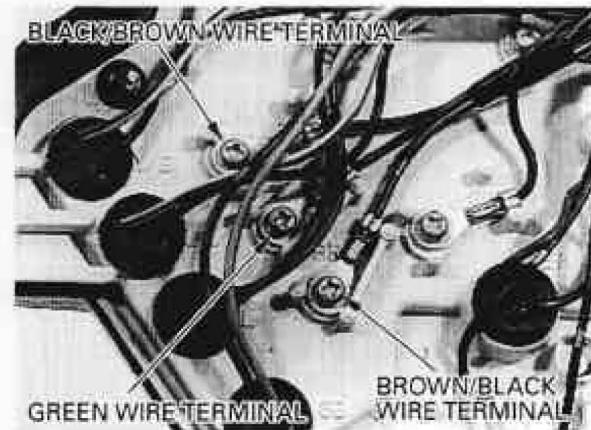
If the wires are OK, check as follows:

Remove the three bolts and the instrument assembly from the stay (page 19-6).

Turn the ignition switch ON and measure the voltage between the black/brown (+) and green (-) wire terminals at the low fuel indicator.

There should be battery voltage.

If there is no voltage, check for open circuit in black/brown and green wires.

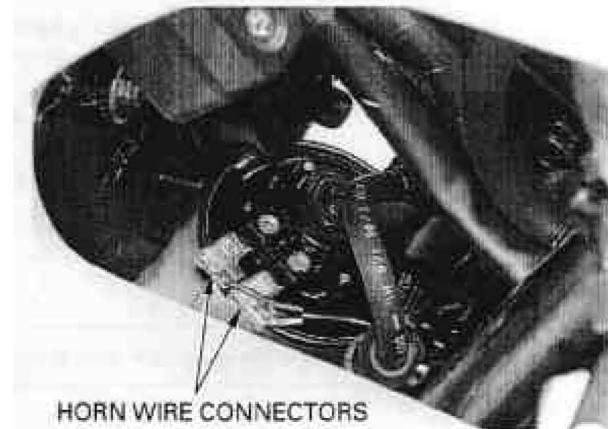


HORN

Disconnect the wire connectors from the horn.

Connect a 12 V battery to the horn terminals.

The horn is normal if it sounds when the 12 V battery is connected across the horn terminals.



TURN SIGNAL RELAY

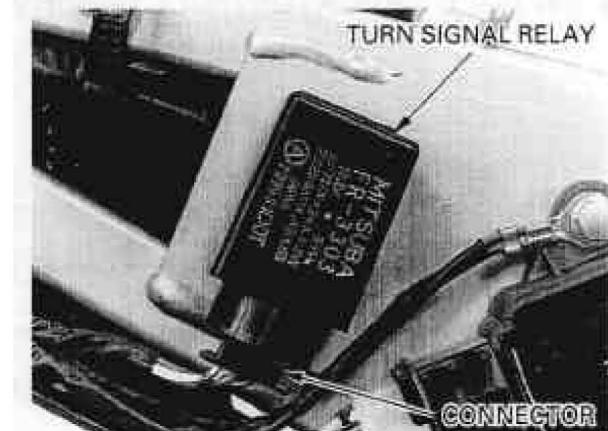
Turn signal light does not blink

Remove the seat cowl (page 2-2).

Remove the turn signal relay from the stay and disconnect the relay connector.

Short the white/green and gray wire terminals of the relay connector with a jumper wire.

Check the turn signal light with the ignition switch ON.



If the light does not come on, check for open circuit in white/green and gray wires.

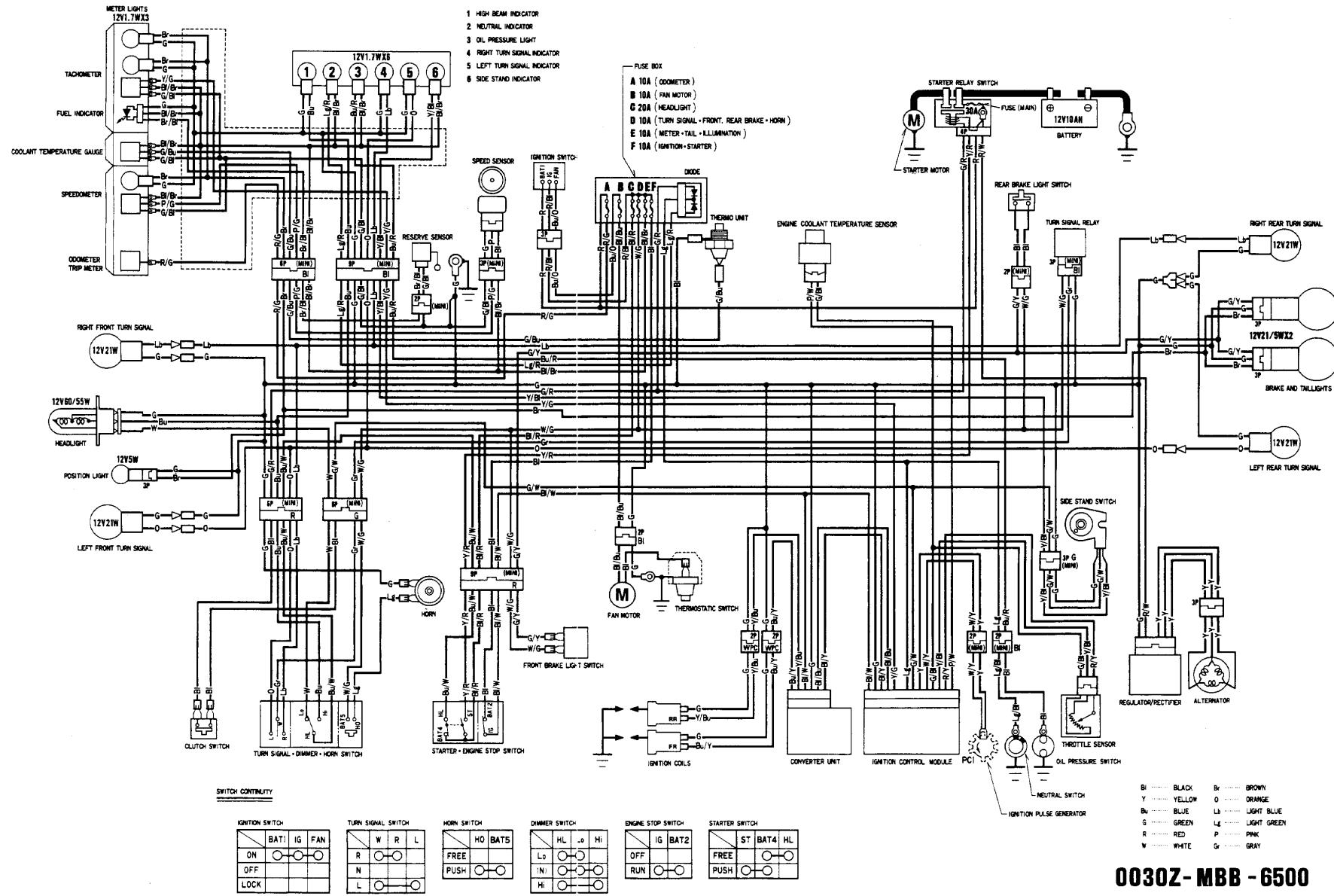
If the light comes on, check for continuity between the green wire terminal and body ground.

If there is no continuity, check for open circuit in green wire.

If there is continuity, check the connector terminals for loose or poor contact.

If the connector terminals are OK, replace the turn signal relay.

VTR1000F (U)

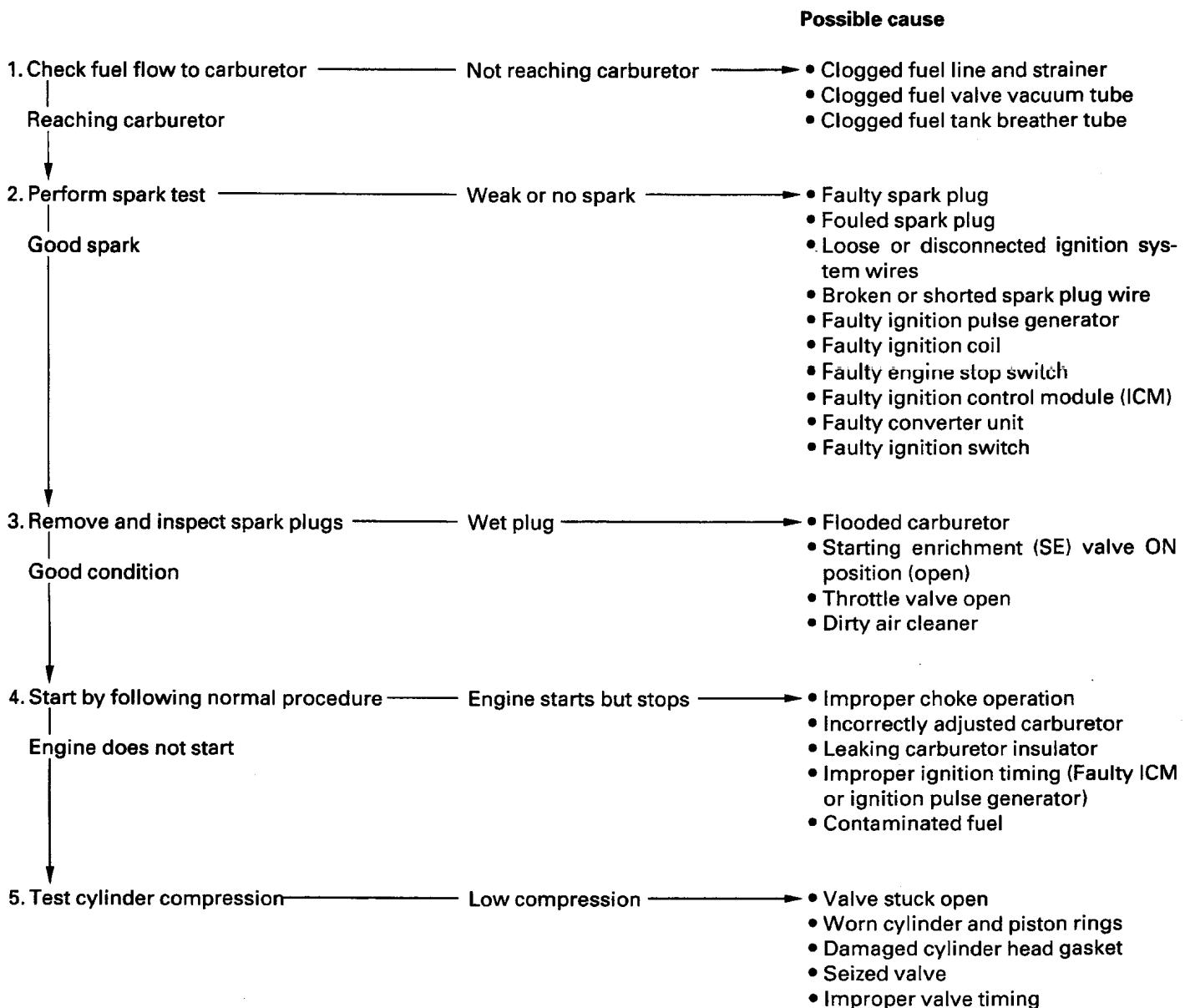


0030Z-MBB-6500

21. TROUBLESHOOTING

ENGINE DOES NOT START OR IS HARD TO START	21-1	POOR PERFORMANCE AT HIGH SPEED	21-4
ENGINE LACKS POWER	21-2	POOR HANDLING	21-4
POOR PERFORMANCE AT LOW AND IDLE SPEED	21-3		

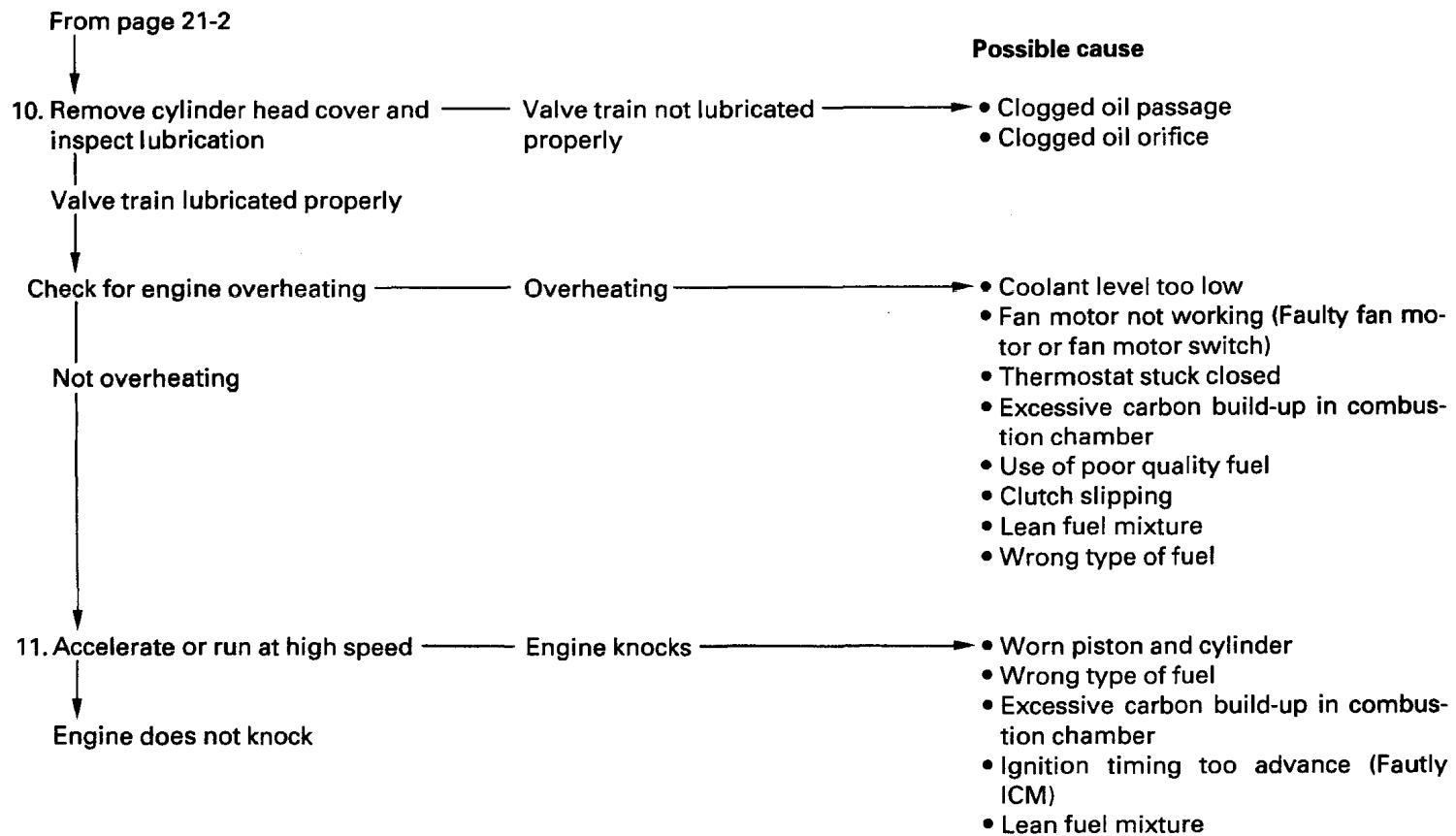
ENGINE DOES NOT START OR IS HARD TO START



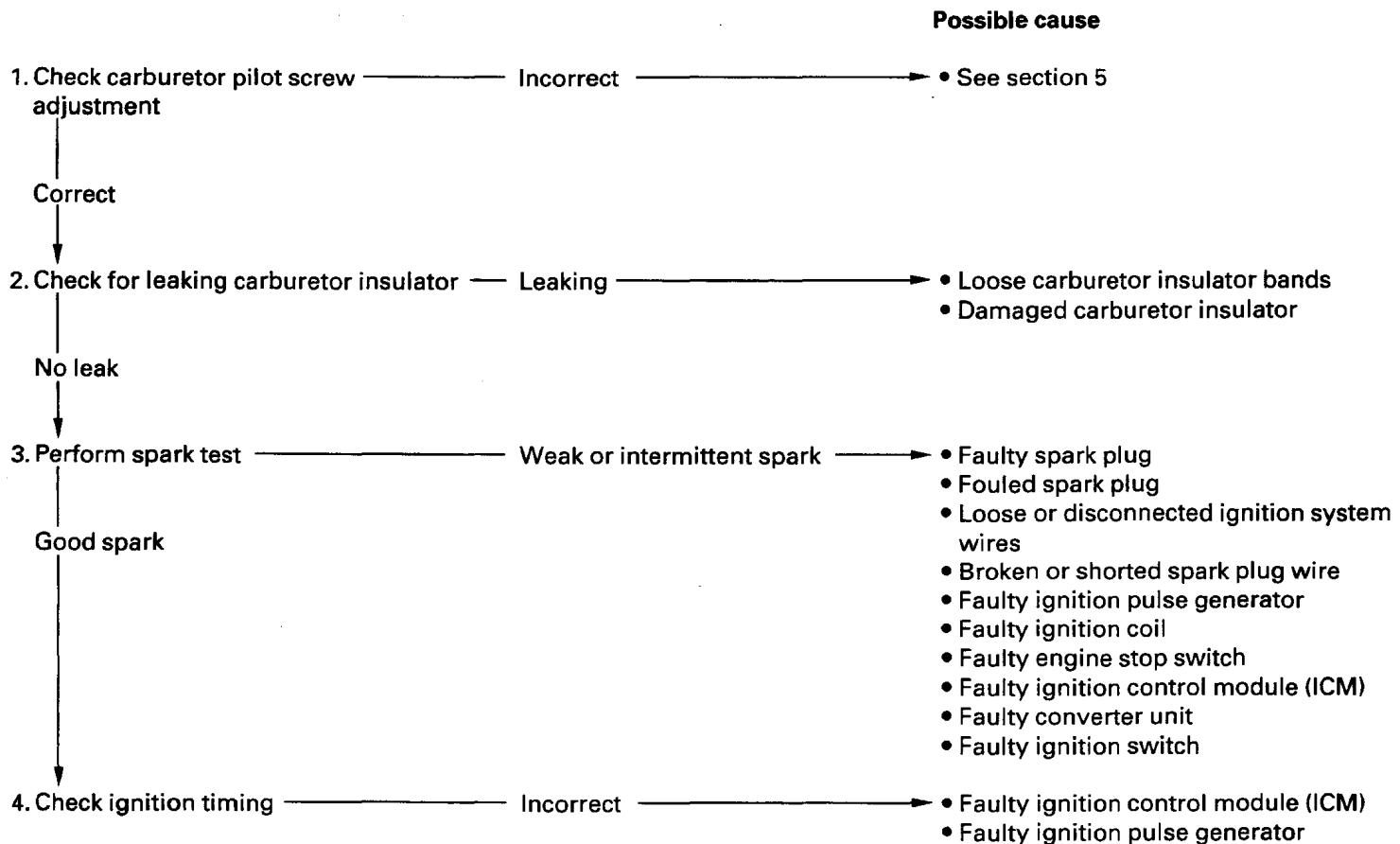
TROUBLESHOOTING

ENGINE LACKS POWER



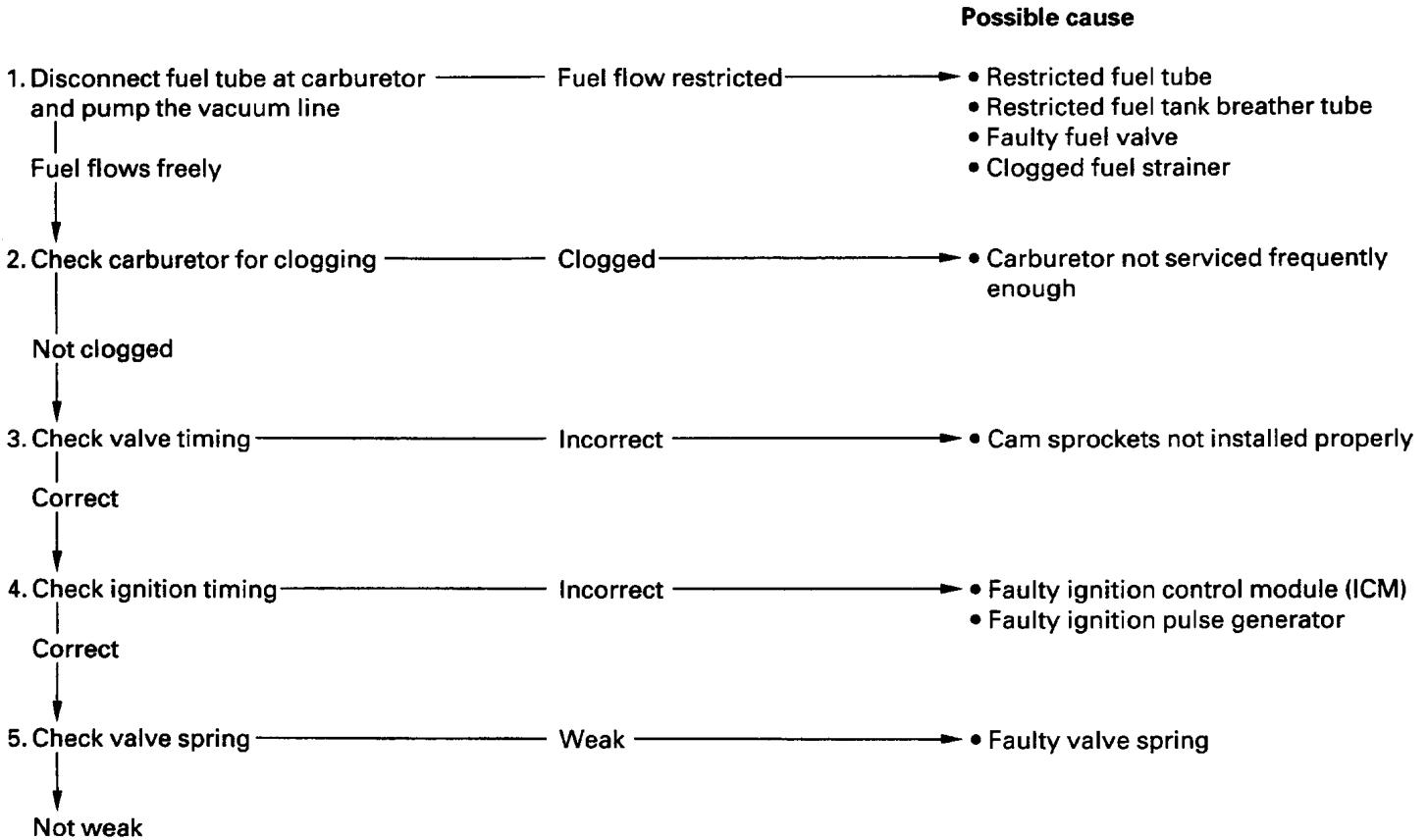


POOR PERFORMANCE AT LOW AND IDLE SPEED

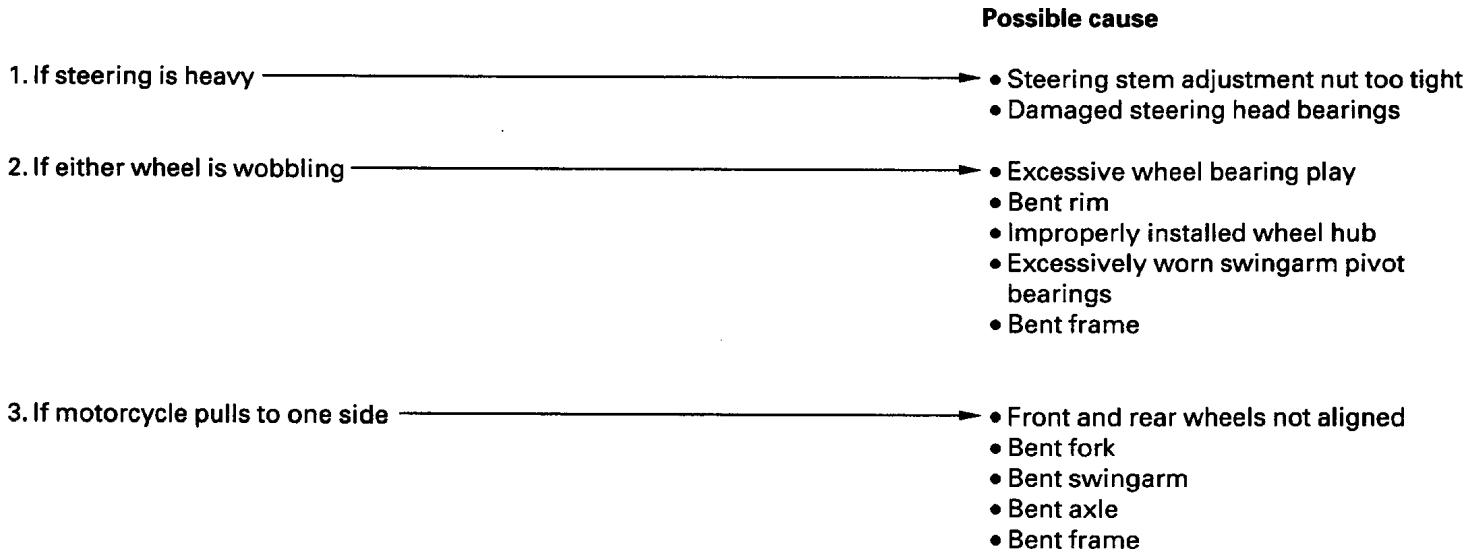


TROUBLESHOOTING

POOR PERFORMANCE AT HIGH SPEED



POOR HANDLING



22. INDEX

AIR CLEANER	3-5	ENGINE OIL FILTER	3-11
AIR CLEANER HOUSING (FUEL SYSTEM)	5-4	ENGINE REMOVAL	7-3
ALTERNATOR CHARGING COIL	16-8	ENGINE UNDER COVER	2-4
ALTERNATOR STATOR	10-2	EXHAUST SYSTEM	2-5
BATTERY	16-5	FLYWHEEL INSTALLATION	10-7
BRAKE FLUID	3-18	FLYWHEEL REMOVAL	10-3
BRAKE FLUID REPLACEMENT/AIR BLEEDING	15-3	FORK	13-12
BRAKE LIGHT SWITCH	3-20	FRONT BRAKE CALIPER	15-16
BRAKE LIGHT SWITCH	19-15	FRONT FAIRING	2-3
BRAKE PAD WEAR	3-19	FRONT MASTER CYLINDER	15-7
BRAKE PAD/DISC	15-5	FRONT WHEEL	13-6
BRAKE SYSTEM	3-20	FUEL LINE	3-4
BRAKE/TAILLIGHT	19-5	FUEL TANK	2-4
CABLE & HARNESS ROUTING	1-18	GEARSHIFT LINKAGE	9-20
CAMSHAFT INSTALLATION	8-19	GENERAL SAFETY	1-1
CAMSHAFT REMOVAL	8-4	HANDLEBAR	13-3
CARBURETOR ASSEMBLY	5-10	HANDLEBAR SWITCHES	19-14
CARBURETOR CHOKE	3-5	HEADLIGHT	19-3
CARBURETOR COMBINATION	5-13	HEADLIGHT AIM	3-21
CARBURETOR DISASSEMBLY/INSPECTION	5-7	HORN	19-18
CARBURETOR INSTALLATION	5-16	IGNITION COIL	17-6
CARBURETOR REMOVAL	5-5	IGNITION PULSE GENERATOR	17-7
CARBURETOR SEPARATION	5-6	IGNITION SWITCH	19-13
CARBURETOR SYNCHRONIZATION	3-12	IGNITION SYSTEM INSPECTION	17-4
CHARGING SYSTEM INSPECTION	16-6	IGNITION TIMING	17-7
CHOKE SYSTEM	5-17	INSTRUMENTS	19-6
CLUTCH	9-12	LOW FUEL INDICATOR/FUEL RESERVE SENSOR	19-17
CLUTCH DIODE	18-11	LUBRICATION & SEAL POINTS	1-16
CLUTCH FLUID	3-22	MAIN JOURNAL BEARING	12-4
CLUTCH FLUID REPLACEMENT/AIR BLEEDING	9-4	MAINTENANCE SCHEDULE	3-3
CLUTCH MASTER CYLINDER	9-5	MODEL IDENTIFICATION	1-3
CLUTCH SLAVE CYLINDER	9-10	NEUTRAL SWITCH	19-16
CLUTCH SWITCH	19-16	NUTS, BOLTS, FASTENERS	3-24
CLUTCH SYSTEM	3-21	OIL COOLER	4-11
COOLANT REPLACEMENT	6-4	OIL PRESSURE CHECK	4-4
COOLANT TEMPERATURE GAUGE/ THERMOSENSOR	19-10	OIL PRESSURE INDICATOR	19-13
COOLING FAN MOTOR SWITCH	19-12	OIL PUMP	4-7
COOLING SYSTEM	3-13	OIL STRAINER/PRESSURE RELIEF VALVE	4-5
CRANKCASE ASSEMBLY	11-10	PILOT SCREW ADJUSTMENT	5-18
CRANKCASE SEPARATION	11-3	PISTON/CYLINDER	12-8
CRANKPIN BEARING	12-6	POOR HANDLING	21-4
CRANKSHAFT	12-3	POOR PERFORMANCE AT HIGH SPEED	21-4
CYLINDER COMPRESSION	8-3	POOR PERFORMANCE AT LOW AND IDLE SPEED	21-3
CYLINDER HEAD ASSEMBLY	8-16	POSITION LIGHT (Except U type)	19-4
CYLINDER HEAD COVER INSTALLATION	8-23	PRIMARY DRIVE GEAR	9-22
CYLINDER HEAD COVER REMOVAL	8-3	RADIATOR COOLANT	3-13
CYLINDER HEAD DISASSEMBLY	8-8	RADIATOR RESERVE TANK	6-9
CYLINDER HEAD INSTALLATION	8-17	RADIATOR/COOLING FAN	6-6
CYLINDER HEAD REMOVAL	8-7	REAR BRAKE CALIPER	15-19
DRIVE CHAIN	3-14	REAR MASTER CYLINDER/BRAKE PEDAL	15-12
DRIVE CHAIN SLIDER	3-18	REAR WHEEL	14-3
EMISSION CONTROL SYSTEMS	1-25	REGULATOR/RECTIFIER	16-8
ENGINE COOLANT TEMPERATURE (ECT) SENSOR	17-10	SEAT	2-2
ENGINE DOES NOT START OR IS HARD TO START	21-1	SEAT COWL	2-2
ENGINE IDLE SPEED	3-13	SECONDARY AIR SUPPLY SYSTEM	3-14
ENGINE INSTALLATION	7-7	SECONDARY AIR SUPPLY SYSTEM (SW, AR, IIG type only)	5-19
ENGINE LACKS POWER	21-2	SERVICE INFORMATION	
ENGINE OIL	3-10	ALTERNATOR/STARTER CLUTCH	10-1
		BATTERY/CHARGING SYSTEM	16-1
		CLUTCH/GEARSHIFT LINKAGE	9-2

INDEX

SERVICE INFORMATION	
COOLING SYSTEM	6-1
CRANKCASE/TRANSMISSION.....	11-1
CRANKSHAFT/PISTON/CYLINDER	12-1
CYLINDER HEAD/VALVE.....	8-1
ELECTRIC STARTER	18-1
ENGINE REMOVAL/INSTALLATION	7-1
FRAME/BODY PANELS/EXHAUST SYSTEM.....	2-1
FRONT WHEEL/SUSPENSION/STEERING	13-1
FUEL SYSTEM.....	5-1
HYDRAULIC BRAKE	15-1
IGNITION SYSTEM.....	17-1
LIGHTS/METERS/SWITCHES	19-1
LUBRICATION SYSTEM.....	4-2
MAINTENANCE	3-1
REAR WHEEL/SUSPENSION	14-1
SERVICE RULES.....	1-2
SHIFT FORK/SHIFT DRUM.....	11-4
SHOCK ABSORBER	14-8
SIDE STAND	3-22
SIDE STAND SWITCH.....	19-17
SPARK PLUG.....	3-6
SPECIFICATIONS	1-4
SPEEDOMETER/SPEED SENSOR.....	19-8
STARTER CLUTCH.....	10-4
STARTER MOTOR.....	18-4
STARTER RELAY SWITCH.....	18-10
STEERING HEAD BEARINGS	3-25
STEERING STEM	13-21
SUSPENSION.....	3-23
SUSPENSION LINKAGE.....	14-11
SWINGARM	14-15
SYSTEM TESTING	6-3
TACHOMETER.....	19-9
THERMOSTAT.....	6-10
THROTTLE OPERATION	3-4
THROTTLE SENSOR	17-8
TOOLS	1-14
TORQUE VALUES	1-11
TRANSMISSION	11-6
TROUBLESHOOTING	
ALTERNATOR/STARTER CLUTCH	10-1
BATTERY/CHARGING SYSTEM	16-3
CLUTCH/GEARSHIFT LINKAGE.....	9-3
COOLING SYSTEM	6-2
CRANKCASE/TRANSMISSION.....	11-2
CRANKSHAFT/PISTON/CYLINDER	12-2
CYLINDER HEAD/VALVE	8-2
ELECTRIC STARTER	18-2
FUEL SYSTEM.....	5-3
FRAME/BODY PANELS/EXHAUST SYSTEM.....	2-1
FRONT WHEEL/SUSPENSION/STEERING	13-2
HYDRAULIC BRAKE	15-2
IGNITION SYSTEM.....	17-3
LUBRICATION SYSTEM.....	4-3
REAR WHEEL/SUSPENSION	14-2
TURN SIGNAL LIGHT	19-4
TURN SIGNAL RELAY	19-18
VALVE CLEARANCE	3-7
VALVE GUIDE REPLACEMENT	8-12
VALVE SEAT INSPECTION/REFACING	8-13
WATER PUMP.....	6-11
WHEELS/TIRES	3-25
WIRING DIAGRAM.....	20-1

23. VTR1000F (W) ADDENDUM

INTRODUCTION

This addendum contains information for the VTR1000F (W). Refer to the VTR1000F Shop Manual (No. 62MBB00) for service procedures and data not included in this addendum.

CONTENTS

MODEL IDENTIFICATION.....	23-1
SPECIFICATIONS.....	23-2
CABLE & HARNESS ROUTING.....	23-9
PILOT SCREW ADJUSTMENT.....	23-17

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IMPORTANT SAFETY NOTICE

WARNING *Indicates a strong possibility of severe personal injury or death if instructions are not followed.*

CAUTION: *Indicates a possibility of equipment damage if instructions are not followed.*

NOTE: Gives helpful information.

Detailed descriptions of standard workshop procedures, safety principles and service operations are not included. It is important to note that this manual contains some warnings and cautions against some specific service methods which could cause **PERSONAL INJURY** to service personnel or could damage a vehicle or render it unsafe. Please understand that those warnings could not cover all conceivable ways in which service, whether or not recommended by Honda, might be done or of the possibly hazardous consequences of each conceivable way, nor could Honda investigate all such ways. Anyone using service procedures or tools, whether or not recommended by Honda, *must satisfy himself thoroughly* that neither personal safety nor vehicle safety will be jeopardized by the service methods or tools selected.

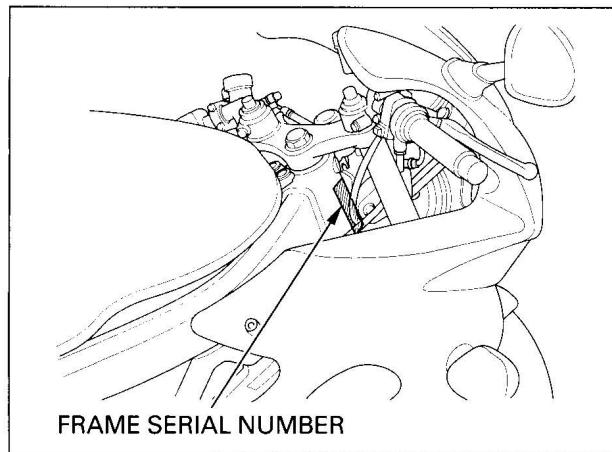
TYPE CODE

- Throughout this manual, the following abbreviations are used to identify individual type.

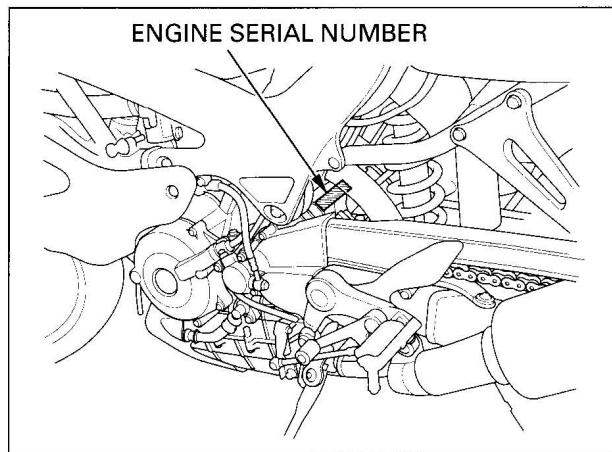
CODE	AREA TYPE
E	U.K.
G	Germany, Sweden
IIG	Germany (Type II)
F	France
ED	European direct sales (Belgium, Holland, Portugal)
FI	Finland

CODE	AREA TYPE
SW	Switzerland
AR	Austria
IT	Italy, Spain
ND	North Europe (Denmark, Norway)
U	Australia

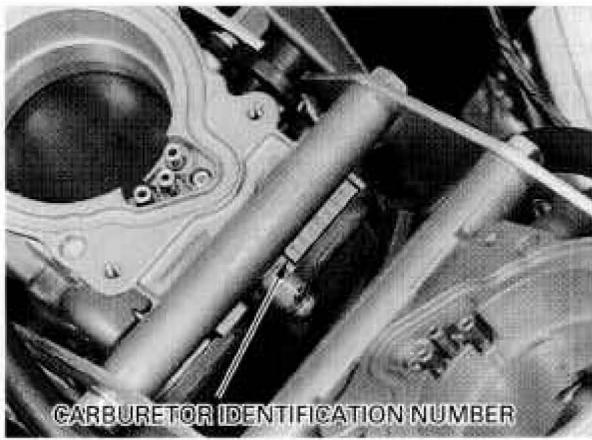
MODEL IDENTIFICATION



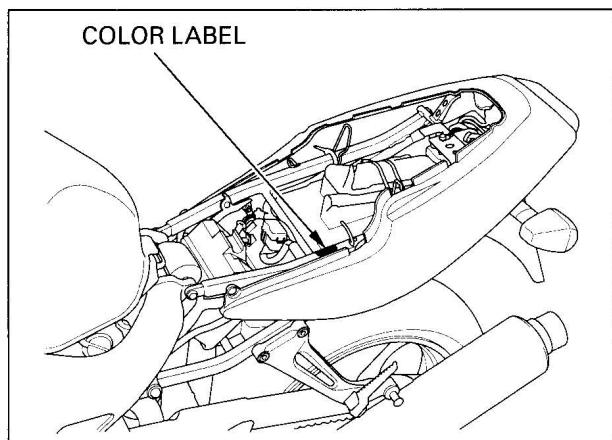
FRAME SERIAL NUMBER
The frame serial number is stamped on the right side of the steering head.



ENGINE SERIAL NUMBER
The engine serial number is stamped on the rear of the upper crankcase.



CARBURETOR IDENTIFICATION NUMBER
The carburetor identification number is stamped on the intake side of the carburetor body.



COLOR LABEL
The color label is attached on the seat rail under the seat. When ordering color-coded parts, always specify the designated color code.

SPECIFICATIONS**GENERAL**

ITEM		SPECIFICATIONS
DIMENSIONS	Overall length	G, IIG, SW, AR, ND, FI E, F, ED, U, IT
	Overall width	2,155 mm (84.8 in) 2,050 mm (80.7 in)
	Overall height	710 mm (28.0 in)
	Wheelbase	1,155 mm (45.5 in)
	Seat height	1,430 mm (56.3 in)
	Footpeg height	810 mm (31.9 in)
	Ground clearance	377 mm (14.8 in)
	Dry weight	135 mm (5.3 in) Except SW, AR, IIG SW, AR, IIG
	Curb weight	192 kg (423 lbs) Except SW, AR, IIG SW, AR, IIG
	Maximum weight capacity	193 kg (425 lbs) 214 kg (472 lbs) 215 kg (474 lbs) 188 kg (415 lbs)
FRAME	Frame type	Diamond
	Front suspension	Telescopic fork
	Front axle travel	109 mm (4.3 in)
	Front fork stroke	120 mm (4.7 in)
	Rear suspension	Swingarm
	Rear axle travel	124 mm (4.9 in)
	Front tire size	120/70ZR17 (58W)
	Rear tire size	180/55ZR17 (73W)
	Front tire brand	D204FK (DUNLOP), MACADAM 90X G (MICHELIN)
	Rear tire brand	D204K (DUNLOP), MACADAM 90X G (MICHELIN)
	Front brake	Hydraulic double disc
	Rear brake	Hydraulic single disc
	Caster angle	24°53'
	Trail length	97 mm (3.8 in)
	Fuel tank capacity	16.0 l (4.23 US gal, 3.52 Imp gal)
ENGINE	Cylinder arrangement	2 cylinders 90° V transverse
	Bore and stroke	98.0 × 66.0 mm (3.90 × 2.60 in)
	Displacement	995.7 cm³ (60.74 cu-in)
	Compression ratio	9.4 : 1
	Valve train	Chain driven, DOHC
	Intake valve	opens 20° BTDC (At 1 mm lift) closes 45° ABDC (At 1 mm lift)
	Exhaust valve	opens 50° BBDC (At 1 mm lift) closes 15° ATDC (At 1 mm lift)
	Lubrication system	Forced pressure and wet sump
	Oil pump type	Trochoid
	Cooling system	Liquid cooled
	Air filtration	Viscous paper element
	Engine dry weight	74.3 kg (163.8 lbs)
	Firing order	Front—270°—Rear—450°—Front

GENERAL (Cont'd)		ITEM	SPECIFICATIONS
CARBURETOR	Carburetor type Throttle bore		CV semi-downdraft 48 mm (1.9 in)
DRIVE TRAIN	Clutch system Clutch operation system Transmission Primary reduction Final reduction Gear ratio 1st 2nd 3rd 4th 5th 6th Gearshift pattern		Multi-plate, wet Hydraulic operating Constant mesh, 6-speeds 1.681 (74/44) 2.562 (41/16) 2.733 (41/15) 1.812 (29/16) 1.428 (30/21) 1.206 (35/29) 1.080 (27/25) 0.961 (25/26) Left foot operated return system, 1—N—2—3—4—5—6
ELECTRICAL	Ignition system Starting system Charging system Regulator/rectifier Lighting system		DC-CDI Electric starter motor Triple phase output alternator SCR shorted, triple phase full wave rectification Battery

Unit: mm (in)

LUBRICATION SYSTEM		STANDARD	SERVICE LIMIT
ITEM			
Engine oil capacity		3.7 ℥ (3.9 US qt, 3.3 Imp qt) After draining 3.9 ℥ (4.1 US qt, 3.4 Imp qt) After draining/filter change 4.5 ℥ (4.8 US qt, 4.0 Imp qt) After disassembly	_____
Recommended engine oil		Honda 4-stroke oil or equivalent motor oil API service classification SE, SF or SG Viscosity: SAE 10W-40	_____
Oil pressure (at oil pressure switch)		588 kPa (6.0 kgf/cm ² , 85 psi) at 5,000 min ⁻¹ (rpm) / 176 °F (80 °C)	_____
Oil pump	Tip clearance	0.15 (0.006)	0.20 (0.008)
	Body clearance	0.15 – 0.21 (0.006 – 0.008)	0.35 (0.014)
	Side clearance	0.02 – 0.09 (0.001 – 0.004)	0.12 (0.005)

FUEL SYSTEM

ITEM		SPECIFICATIONS
Carburetor identification number	Except G, SW, AR, IIG, FI	VPT0G
	G, FI	VPT0A
	SW	VPT2B
	AR, IIG	VPT2C
Main jet		Front: # 175, Rear: # 178
Slow jet	Except G, SW, AR, IIG, FI	# 48
	G, SW, AR, IIG, FI	# 45
Jet needle number	Except G, SW, AR, IIG, FI	Front: A1UD, Rear: A1UC
	G, SW, AR, IIG, FI	Front: A1UF, Rear: A1UE
Pilot screw opening		See page 5-18
Float level		16.6 ± 0.5 mm (0.65 ± 0.02 in)
Idle speed	Except SW	1,200 ± 100 min ⁻¹ (rpm)
	SW	1,200 ± 50 min ⁻¹ (rpm)

COOLING SYSTEM

ITEM		SPECIFICATIONS
Coolant capacity	Radiator and engine	2.86 ℥ (0.756 US gal, 0.629 Imp gal)
	Reserve tank	0.71 ℥ (0.188 US gal, 0.156 Imp gal)
Radiator cap relief pressure		108 – 137 kPa (1.1 – 1.4 kgf/cm ² , 16 – 20 psi)
Thermostat	Begin to open	73 – 77 °C (163 – 171 °F)
	Fully open	90 °C (194 °F)
	Valve lift	8 mm (0.3 in) minimum

Unit: mm (in)

CYLINDER HEAD/VALVE		ITEM	STANDARD	SERVICE LIMIT	
Cylinder compression at 350 min ⁻¹ (rpm)			1,128 kPa (11.5 kgf/cm ² , 164 psi)	—	
Valve clearance		IN	0.16 (0.006)	—	
		EX	0.31 (0.012)	—	
Camshaft	Cam lobe height	IN	40.080–40.240 (1.5779–1.5842)	39.780 (1.5661)	
		EX	40.230–40.390 (1.5839–1.5902)	39.930 (1.5720)	
Runout			—	0.05 (0.002)	
Oil clearance			0.020–0.062 (0.0008–0.0024)	0.088 (0.0035)	
Valve lifter	Valve lifter O.D.		33.978–33.993 (1.3377–1.3383)	33.97 (1.337)	
	Valve lifter bore I.D.		34.010–34.026 (1.3390–1.3396)	34.04 (1.340)	
Valve, valve guide	Valve stem O.D.	IN	5.975–5.990 (0.2352–0.2358)	5.965 (0.2348)	
		EX	5.965–5.980 (0.2348–0.2354)	5.955 (0.2344)	
	Valve guide I.D.	IN/EX	6.000–6.012 (0.2362–0.2367)	6.040 (0.2378)	
	Stem-to-guide clearance	IN	0.010–0.037 (0.0004–0.0015)	0.075 (0.0030)	
		EX	0.020–0.047 (0.0008–0.0019)	0.085 (0.0033)	
Valve guide projection above cylinder head			14.0–14.2 (0.55–0.56)	—	
	Valve seat width	IN	1.1–1.3 (0.04–0.05)	1.7 (0.07)	
		EX	1.3–1.5 (0.05–0.06)	1.9 (0.07)	
Valve spring	Free length		Inner 37.0 (1.46)	36.0 (1.42)	
	Outer 41.9 (1.65)			40.9 (1.61)	
Cylinder head warpage			—	0.10 (0.004)	

Unit: mm (in)

CLUTCH/GEARSHIFT LINKAGE		ITEM	STANDARD	SERVICE LIMIT
Specified clutch fluid			DOT 4 brake fluid	—
Clutch master cylinder	Cylinder I.D.		14.000–14.043 (0.5512–0.5529)	14.055 (0.5533)
	Piston O.D.		13.957–13.984 (0.5495–0.5506)	13.945 (0.5490)
Clutch	Spring free length		49.6 (1.95)	46.6 (1.83)
	Disc thickness		3.72–3.88 (0.146–0.153)	3.5 (0.14)
	Plate warpage		—	0.30 (0.012)
Clutch outer guide	I.D.		28.000–28.021 (1.1024–1.1032)	28.031 (1.1036)
	O.D.		34.975–34.991 (1.3770–1.3776)	34.965 (1.3766)
Mainshaft O.D. at clutch outer guide			27.980–27.993 (1.1016–1.1021)	27.970 (1.1012)

Unit: mm (in)

ALTERNATOR/STARTER CLUTCH		ITEM	STANDARD	SERVICE LIMIT
Starter driven gear boss O.D.			57.749–57.768 (2.2736–2.2743)	57.639 (2.2692)

Unit: mm (in)

CRANKCASE/TRANSMISSION		ITEM	STANDARD	SERVICE LIMIT
Shift fork	I.D.		12.000–12.021 (0.4724–0.4733)	12.03 (0.474)
	Claw thickness		5.93–6.00 (0.233–0.236)	5.9 (0.23)
Shift fork shaft	O.D.		11.957–11.968 (0.4707–0.4712)	11.95 (0.470)
Transmission	Gear I.D.	M5, M6	31.000–31.016 (1.2205–1.2211)	31.04 (1.222)
		C2, C3, C4	33.000–33.025 (1.2992–1.3002)	33.05 (1.301)
	Gear bushing O.D.	M5, M6	30.955–30.980 (1.2187–1.2197)	30.93 (1.218)
		C2, C3, C4	32.955–32.980 (1.2974–1.2984)	32.93 (1.296)
	Gear-to-bushing clearance	M5, M6	0.020–0.061 (0.0008–0.0024)	0.10 (0.004)
		C2, C3, C4	0.020–0.070 (0.0008–0.0028)	0.11 (0.004)
	Gear bushing I.D.	M5	27.985–28.006 (1.1018–1.1026)	28.02 (1.103)
		C2	29.985–30.006 (1.1805–1.1813)	30.02 (1.182)
	Mainshaft O.D.	at M5	27.967–27.980 (1.1011–1.1016)	27.94 (1.100)
	Countershaft O.D.	at C2	29.950–29.975 (1.1791–1.1801)	29.92 (1.178)
Bushing-to-shaft clearance	M5	0.005–0.039 (0.0002–0.0015)	0.06 (0.002)	
	C2	0.010–0.056 (0.0004–0.0022)	0.06 (0.002)	

Unit: mm (in)

CRANKSHAFT/PISTON/CYLINDER		ITEM	STANDARD	SERVICE LIMIT
Crankshaft	Connecting rod side clearance	0.10–0.30 (0.004–0.012)	0.40 (0.016)	
	Crankpin bearing oil clearance	0.032–0.050 (0.0013–0.0020)	0.060 (0.0024)	
	Main journal bearing oil clearance	0.020–0.038 (0.0008–0.0015)	0.048 (0.0019)	
	Runout	—	0.10 (0.004)	
Piston, piston pin, piston ring	Piston O.D. at 20 (0.8) from bottom	97.965–97.985 (3.8569–3.8577)	97.900 (3.8543)	
	Piston pin hole I.D.	24.002–24.008 (0.9450–0.9452)	24.03 (0.946)	
	Piston pin O.D.	23.994–24.000 (0.9446–0.9449)	23.984 (0.9443)	
	Piston-to-piston pin clearance	0.002–0.014 (0.0001–0.0006)	0.046 (0.0018)	
	Piston ring end gap	Top	0.25–0.40 (0.010–0.016)	
		Second	0.40–0.55 (0.016–0.022)	
		Oil (side rail)	0.20–0.70 (0.008–0.028)	
	Piston ring-to-ring groove clearance	Top	0.065–0.100 (0.0026–0.0039)	
		Second	0.035–0.070 (0.0014–0.0028)	
Cylinder	I.D.	98.005–98.025 (3.8585–3.8592)	98.100 (3.8622)	
	Out of round	—	0.10 (0.004)	
	Taper	—	0.10 (0.004)	
	Warpage	—	0.05 (0.002)	
Cylinder-to-piston clearance		0.020–0.060 (0.0008–0.0024)	0.200 (0.0079)	
Connecting rod small end I.D.		24.020–24.041 (0.9457–0.9465)	24.051 (0.9469)	
Connecting rod-to-piston pin clearance		0.020–0.047 (0.0008–0.0019)	0.067 (0.0026)	

Unit: mm (in)

FRONT WHEEL/SUSPENSION/STEERING

ITEM		STANDARD	SERVICE LIMIT
Minimum tire tread depth		—	1.5 (0.06)
Cold tire pressure	Driver only	250 kPa (2.50 kgf/cm ² , 36 psi)	—
	Driver and passenger	250 kPa (2.50 kgf/cm ² , 36 psi)	—
Axe runout		—	0.20 (0.008)
Wheel rim runout	Radial	—	2.0 (0.08)
	Axial	—	2.0 (0.08)
Wheel balance weight		—	60 g (2.1 oz) max.
Fork	Spring free length	309.9 (12.20)	303.7 (11.96)
	Tube runout	—	0.20 (0.008)
	Recommended fluid	Fork fluid	—
	Fluid level	130 (5.1)	—
	Fluid capacity	448 ± 2.5 cm ³ (15.2 ± 0.08 US oz, 15.8 ± 0.09 Imp oz)	—
Steering head bearing preload		1.0 – 1.6 kgf (2.2 – 3.3 lbf)	—

Unit: mm (in)

REAR WHEEL/SUSPENSION

ITEM		STANDARD	SERVICE LIMIT
Minimum tire tread depth		—	2.0 (0.08)
Cold tire pressure	Driver only	290 kPa (2.90 kgf/cm ² , 42 psi)	—
	Driver and passenger	290 kPa (2.90 kgf/cm ² , 42 psi)	—
Axe runout		—	0.20 (0.008)
Wheel rim runout	Radial	—	2.0 (0.08)
	Axial	—	2.0 (0.08)
Wheel balance weight		—	60 g (2.1 oz) max.

Unit: mm (in)

HYDRAULIC BRAKE

ITEM		STANDARD	SERVICE LIMIT
Front	Specified brake fluid	DOT 4	—
	Brake disc thickness	4.4 – 4.6 (0.17 – 0.18)	3.5 (0.14)
	Brake disc runout	—	0.30 (0.012)
	Master cylinder I. D.	14.000 – 14.043 (0.5512 – 0.5529)	14.055 (0.5533)
	Master piston O. D.	13.957 – 13.984 (0.5495 – 0.5506)	13.945 (0.5490)
	Caliper cylinder I. D.	A 30.23 – 30.28 (1.190 – 1.192)	30.29 (1.193)
		B 27.000 – 27.050 (1.0630 – 1.0650)	27.060 (1.0654)
	Caliper piston O. D.	A 30.148 – 30.198 (1.1869 – 1.1889)	30.14 (1.187)
		B 26.918 – 26.968 (1.0598 – 1.0617)	26.91 (1.059)
Rear	Specified brake fluid	DOT 4	—
	Brake disc thickness	4.8 – 5.2 (0.19 – 0.20)	4.0 (0.16)
	Brake disc runout	—	0.30 (0.012)
	Master cylinder I. D.	14.000 – 14.043 (0.5512 – 0.5529)	14.055 (0.5533)
	Master piston O. D.	13.957 – 13.984 (0.5495 – 0.5506)	13.945 (0.5490)
	Caliper cylinder I. D.	38.18 – 38.23 (1.503 – 1.505)	38.24 (1.506)
	Caliper piston O. D.	38.098 – 38.148 (1.4999 – 1.5019)	38.09 (1.500)

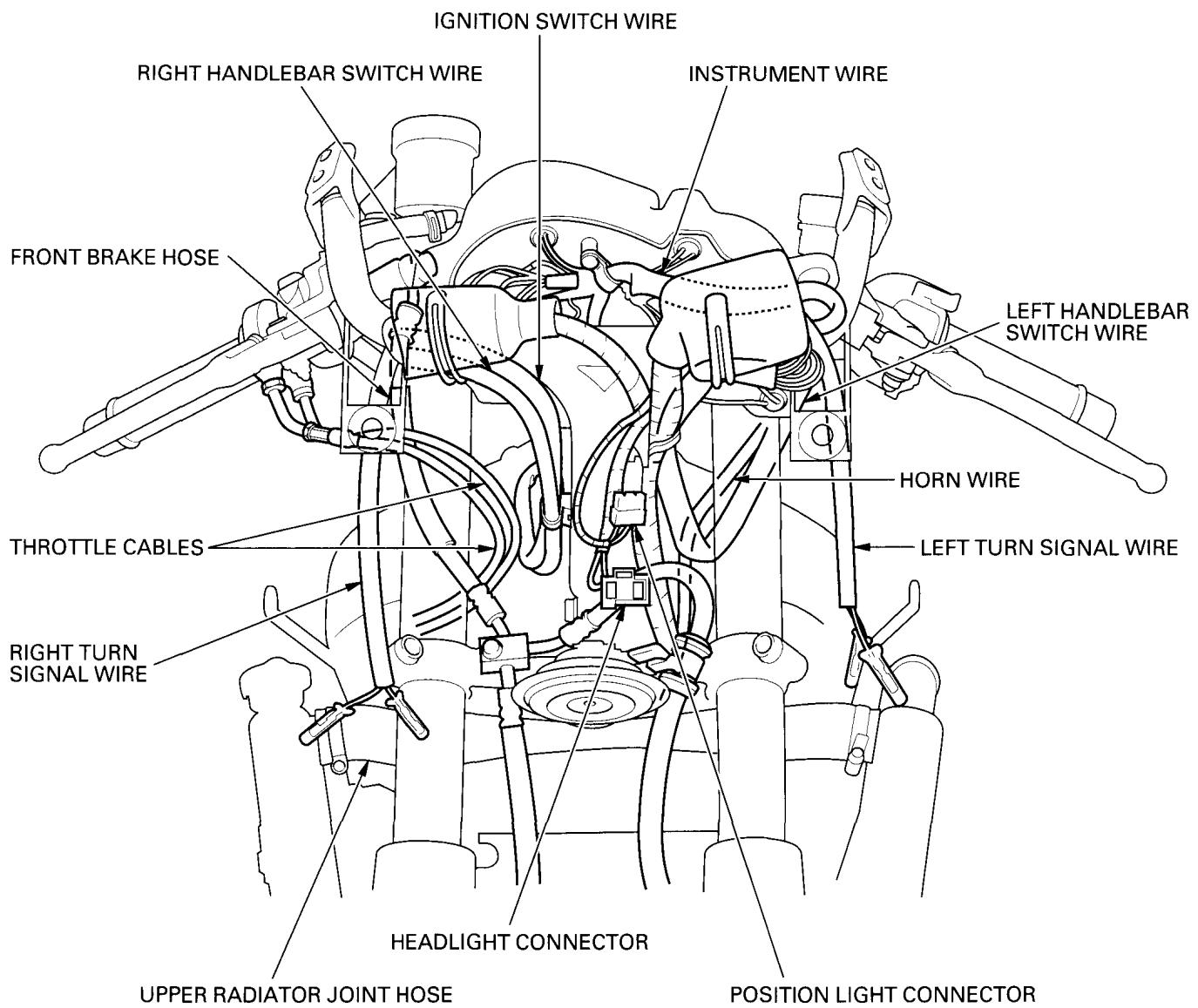
BATTERY/CHARGING SYSTEM		ITEM	SPECIFICATIONS
Battery	Capacity		12 V–10 AH
	Current leakage		0.1 mA max.
	Voltage (68 °F/20 °C)	Fully charged	13.0–13.2 V
		Needs charging	Below 12.3 V
	Charging current	Normal	1.2 A × 5–10 h
		Quick	5.0 A × 1.0 h
Alternator	Capacity		0.280 kW/5,000 min ⁻¹ (rpm)
	Charging coil resistance (68 °F/20 °C)		0.2–0.5 Ω
	Regulator/rectifier regulated voltage		13.5–15.5 V/5,000 min ⁻¹ (rpm)

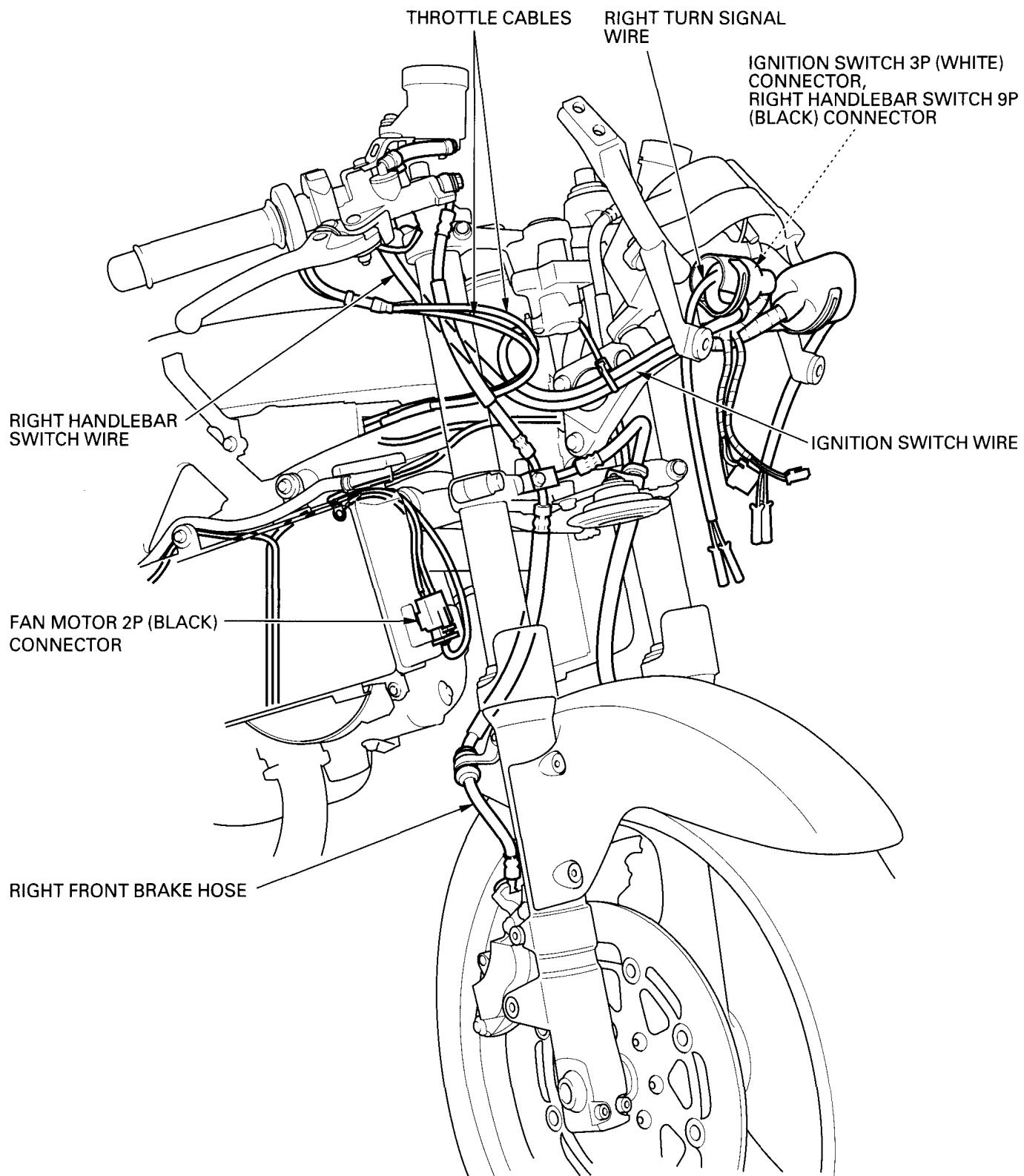
IGNITION SYSTEM		ITEM	SPECIFICATIONS
Spark plug			DPR9EVX-9 (NGK)
Spark plug gap			0.80–0.90 mm (0.031–0.035 in)
Ignition coil primary peak voltage			100 V minimum
Ignition pulse generator peak voltage			0.7 V minimum
Ignition timing ("F" mark)			15° BTDC at idle
Engine coolant temperature (ECT) sensor resistance	At 68 °F (20 °C)		2–3 kΩ
	At 176 °F (80 °C)		200–400 Ω
Throttle sensor	Resistance (68 °F/20 °C)		4–6 kΩ
	Input voltage		4.7–5.3 V

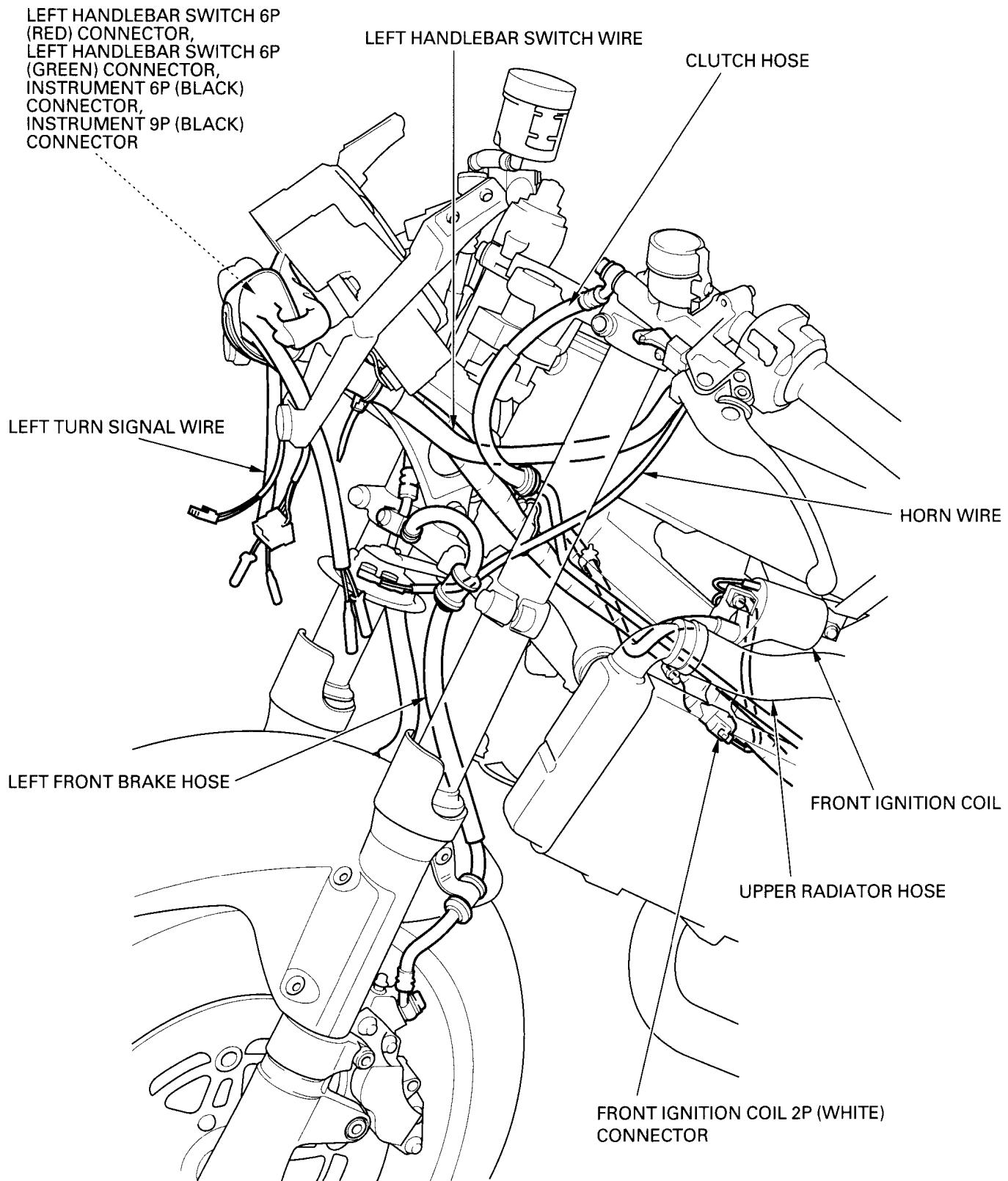
ELECTRIC STARTER		ITEM	STANDARD	SERVICE LIMIT
Starter motor brush length			12.0–13.0 (0.47–0.51)	6.5 (0.26)

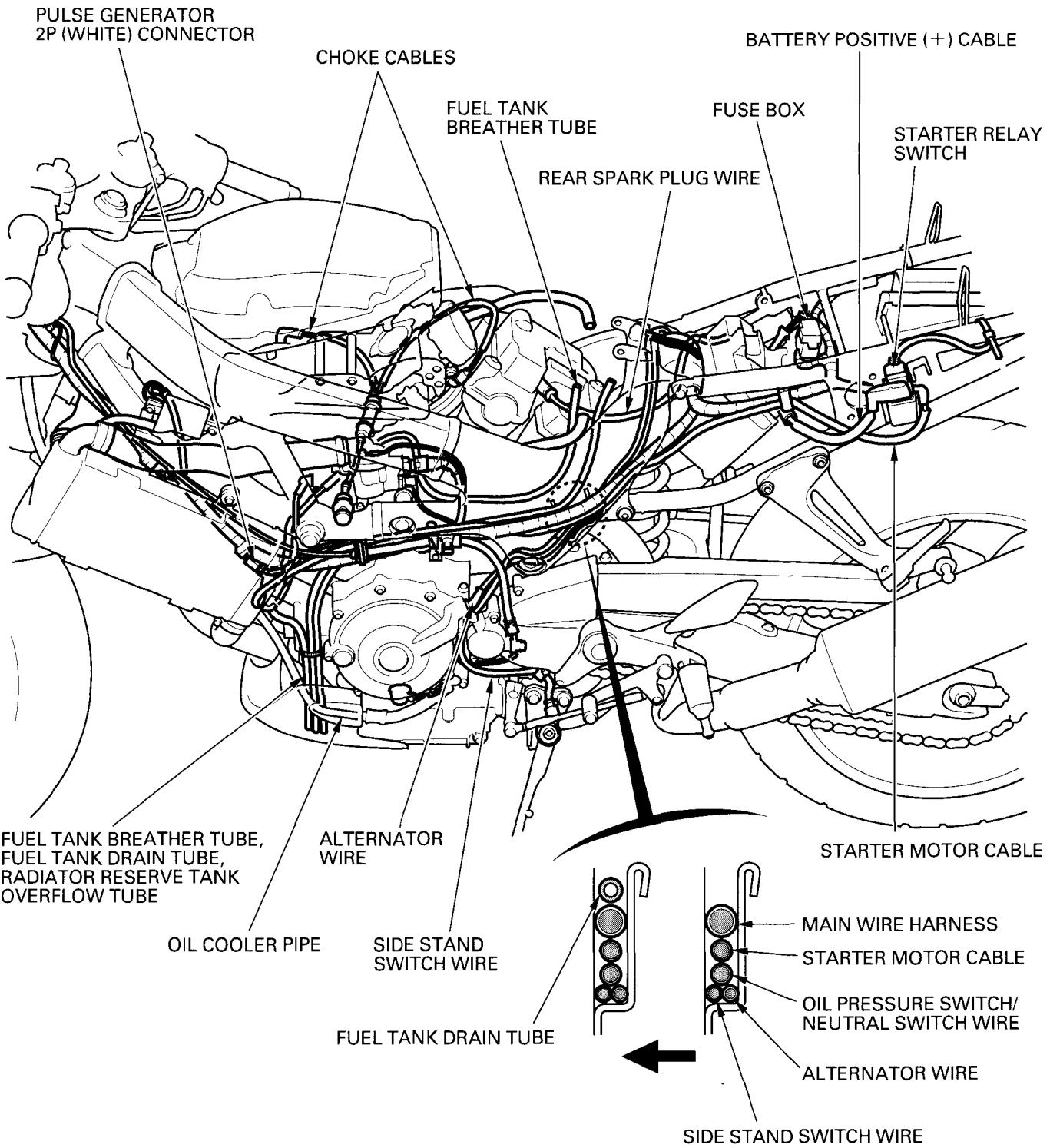
LIGHTS/METERS/SWITCHES		ITEM	SPECIFICATIONS
Bulbs	Headlight (High/low beam)		12 V–60/55 W
	Position light (Except U type)		12 V–5 W
	Brake/tailight		12 V–21/5 W×2
	Turn signal light		12 V–21 W×4
	Instrument light		12 V–1.7 W×3
	Turn signal indicator		12 V–1.7 W×2
	High beam indicator		12 V–1.7 W
	Neutral indicator		12 V–1.7 W
	Oil pressure indicator		12 V–1.7 W
	Side stand indicator		12 V–1.7 W
Fuse	Main fuse		30 A
	Sub-fuse		10 A, 20 A
Thermosensor resistance	At 176 °F (80 °C)		47–57 Ω
	At 248 °F (120 °C)		14–18 Ω
Fan motor switch	Starts to close (ON)		208–216 °F (98–102 °C)
	Stops to open (OFF)		199–207 °F (93–97 °C)

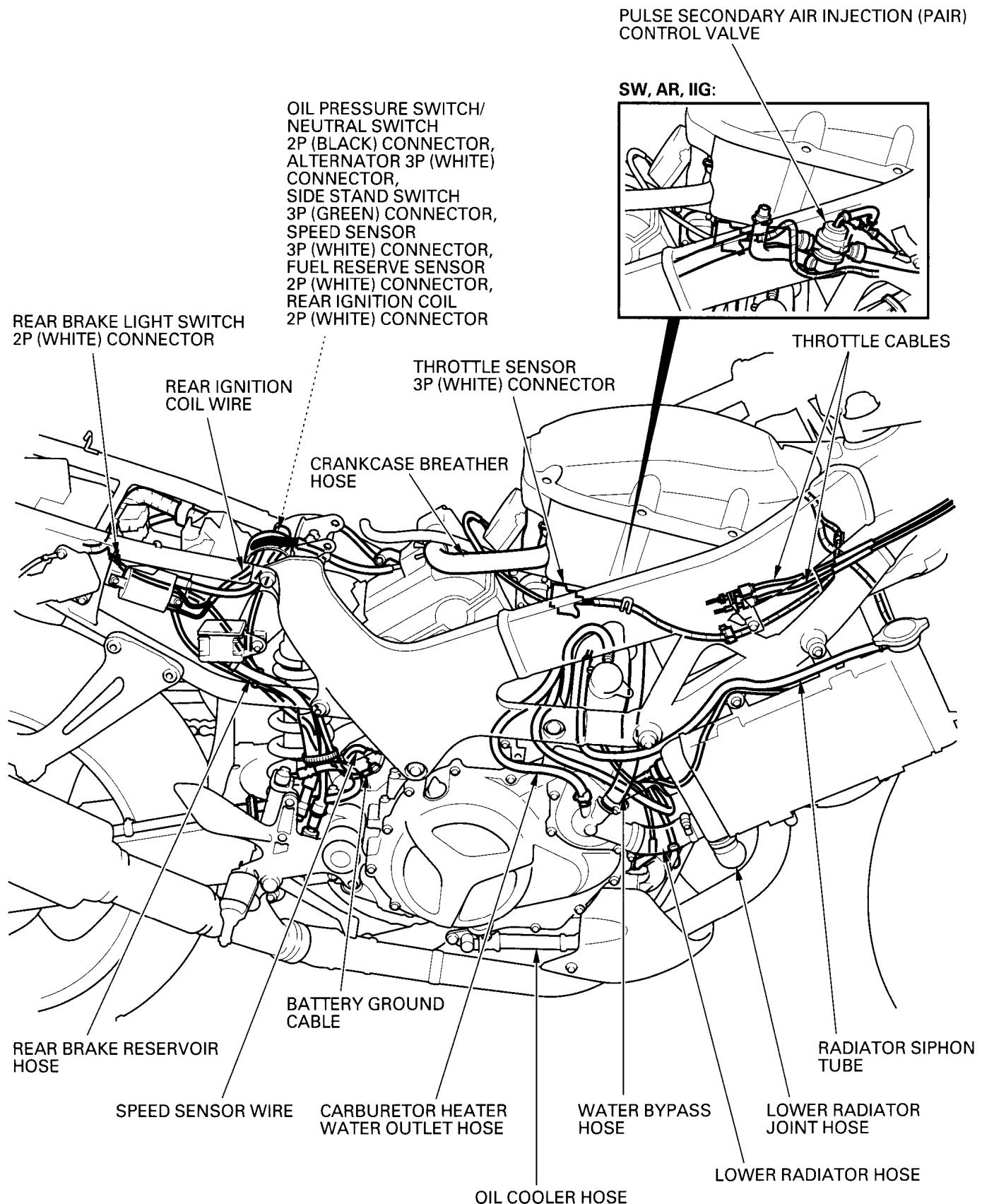
CABLE & HARNESS ROUTING



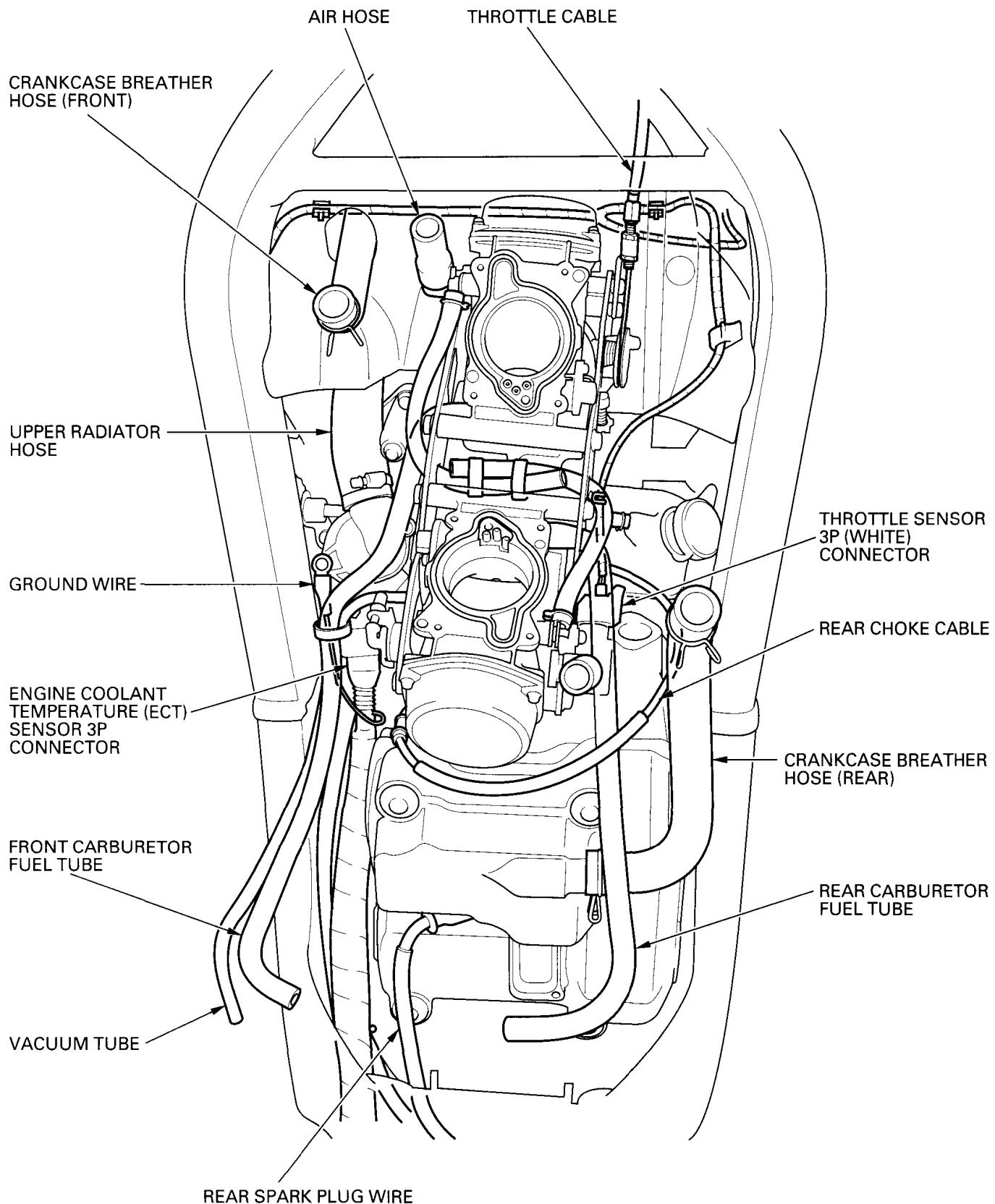




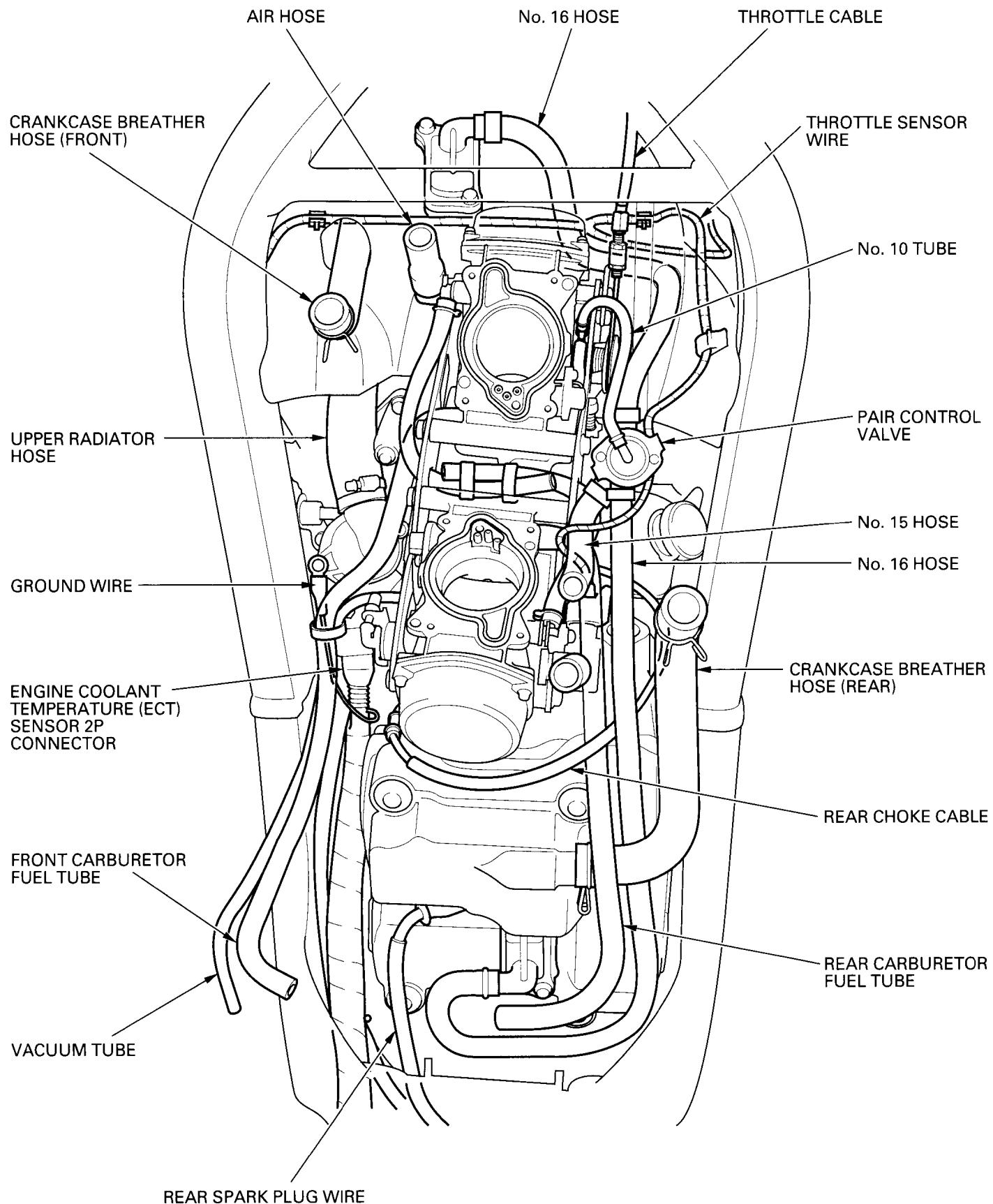


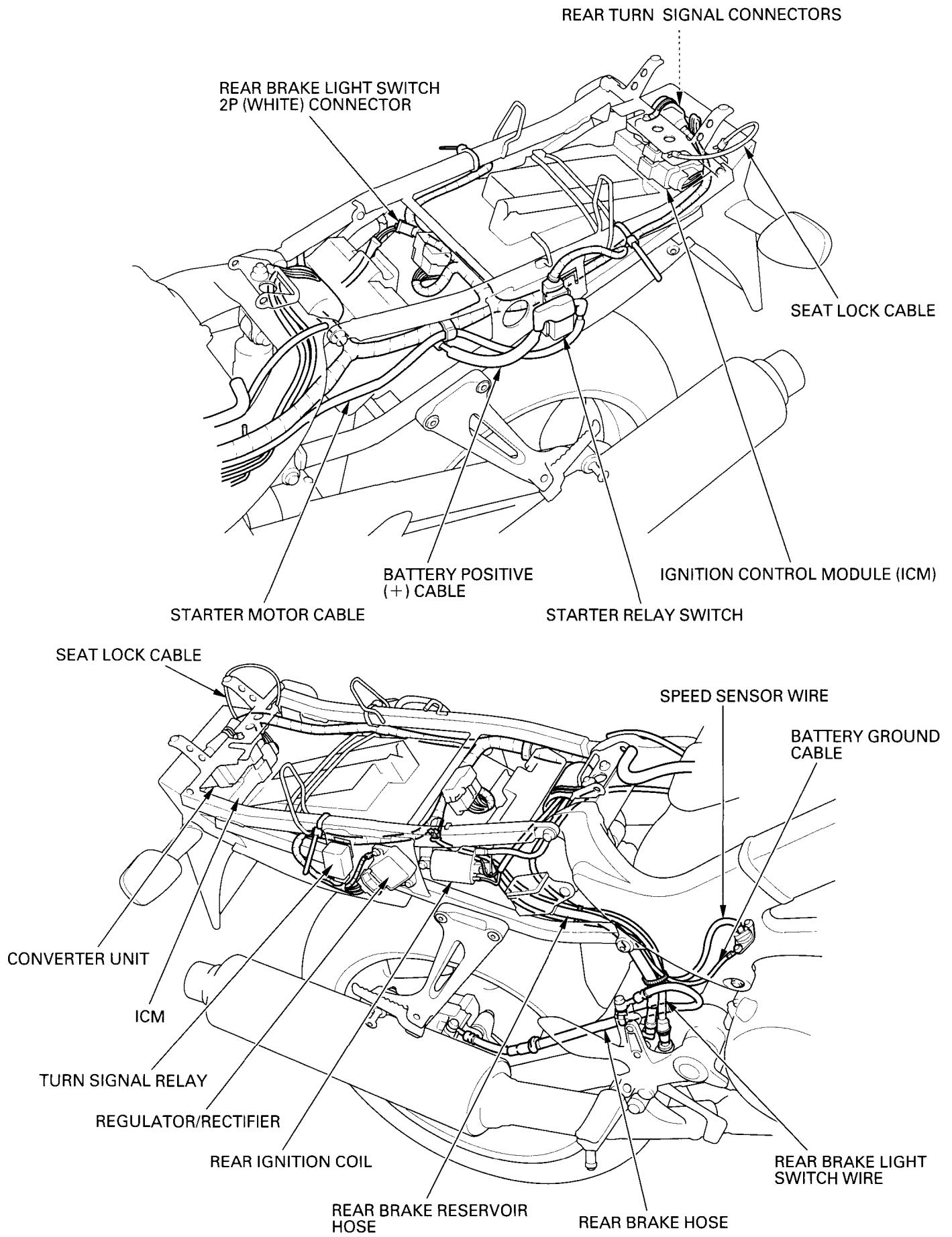


EXCEPT SW, AR, IIG:



SW, AR, IIG:





PILOT SCREW ADJUSTMENT

IDLE DROP PROCEDURE

NOTE:

- Make sure the carburetor synchronization is within specification before pilot screw adjustment.
- The pilot screws are factory pre-set and no adjustment is necessary unless the pilot screws are replaced.
- Use a tachometer with graduations of 50 rpm or smaller that will accurately indicate a 50 rpm change.

1. Turn each pilot screw clockwise until it seats lightly, then back it out to the specification given. This is an initial setting prior to the final pilot screw adjustment.

CAUTION:

Damage to the pilot screw seat will occur if the pilot screw is tightened against the seat.

TOOL:

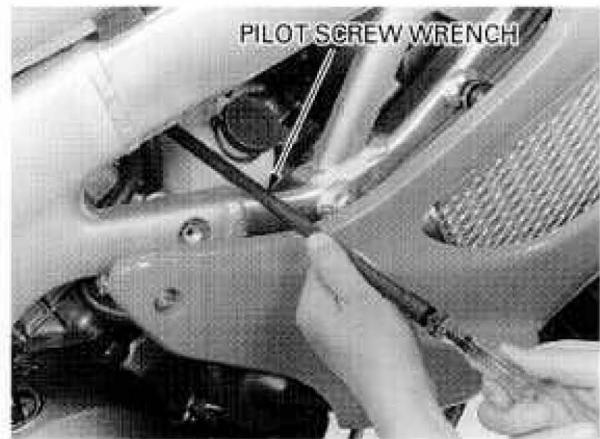
Pilot screw wrench	07908-4220201 (except SW) 07KMA-MN90100 (SW)
--------------------	---

INITIAL OPENING:

Except SW, AR, IIG type: 1-5/8 turns out

SW, AR, IIG type: 2-3/4 turns out

2. Warm up the engine to operating temperature.
Stop and go driving for 10 minutes is sufficient.
3. Stop the engine and connect a tachometer according to the tachometer manufacturer's instructions.
4. Start the engine and adjust the idle speed with the throttle stop screw.



IDLE SPEED:

Except SW type: $1,200 \pm 100 \text{ min}^{-1}$ (rpm)

SW type: $1,200 \pm 50 \text{ min}^{-1}$ (rpm)

5. Turn the front carburetor pilot screw in or out slowly to obtain the highest engine speed.
6. Perform step 5 for rear carburetor pilot screw.
7. Lightly open the throttle 2 or 3 times, then adjust the idle speed with the throttle stop screw.
8. Turn the front carburetor pilot screw in until the engine speed drops by 50 min^{-1} (rpm).
9. Turn the front carburetor pilot screw out to the final opening from the position obtained in step 8.



FINAL OPENING:

Front: 1 turn out

Rear: 1-1/4 turns out

10. Adjust the idle speed with the throttle stop screw.
11. Perform steps 8, 9 and 10 for the rear carburetor pilot screw.

24. VTR1000F (1) ADDENDUM

INTRODUCTION

This addendum contains information for the VTR1000F (1). Refer to the VTR1000F Shop Manual (No. 62MBB00 and 62MBB00Z) for service procedures and data not included in this addendum.

ALL INFORMATION, ILLUSTRATIONS, DIRECTIONS AND SPECIFICATIONS INCLUDED IN THIS PUBLICATION ARE BASED ON THE LATEST PRODUCT INFORMATION AVAILABLE AT THE TIME OF APPROVAL FOR PRINTING. HONDA MOTOR CO., LTD. RESERVES THE RIGHT TO MAKE CHANGES AT ANY TIME WITHOUT NOTICE AND WITHOUT INCURRING ANY OBLIGATION WHATEVER. NO PART OF THIS PUBLICATION MAY BE REPRODUCED WITHOUT WRITTEN PERMISSION. THIS MANUAL IS WRITTEN FOR PERSONS WHO HAVE ACQUIRED BASIC KNOWLEDGE OF MAINTENANCE ON HONDA MOTORCYCLES, MOTOR SCOOTERS OR ATVS.

CONTENTS

MODEL IDENTIFICATION.....	24-1
SPECIFICATIONS.....	24-2
TORQUE VALUES.....	24-9
CABLE & HARNESS ROUTING.....	24-12
FUEL TANK.....	24-20
MAINTENANCE SCHEDULE	24-21
AIR CLEANER HOUSING	24-22
CARBURETOR	24-23
PILOT SCREW ADJUSTMENT.....	24-25
COMBINATION METER	24-26
SPEEDOMETER	24-27
TACHOMETER.....	24-28
COOLANT TEMPERATURE GAUGE.....	24-29
FUEL GAUGE/FUEL LEVEL SENSOR	24-30
IMMOBILIZER SYSTEM	24-31
WIRING DIAGRAM.....	24-43

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IMPORTANT SAFETY NOTICE

A WARNING *Indicates a strong possibility of severe personal injury or death if instructions are not followed.*

CAUTION: *Indicates a possibility of equipment damage if instructions are not followed.*

NOTE: Gives helpful information.

Detailed descriptions of standard workshop procedures, safety principles and service operations are not included. It is important to note that this manual contains some warnings and cautions against some specific service methods which could cause **PERSONAL INJURY** to service personnel or could damage a vehicle or render it unsafe. Please understand that those warnings could not cover all conceivable ways in which service, whether or not recommended by Honda, might be done or of the possibly hazardous consequences of each conceivable way, nor could Honda investigate all such ways. Anyone using service procedures or tools, whether or not recommended by Honda, *must satisfy himself thoroughly* that neither personal safety nor vehicle safety will be jeopardized by the service methods or tools selected.

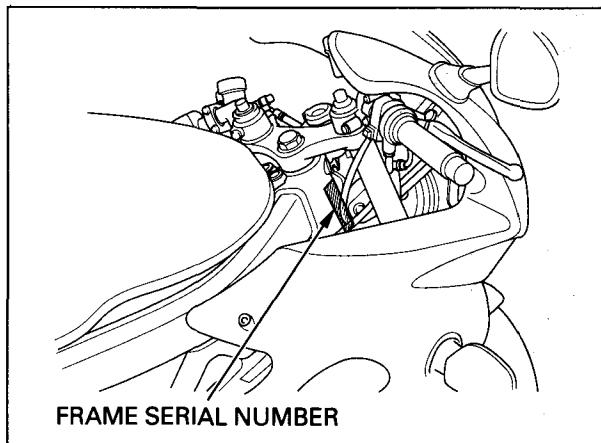
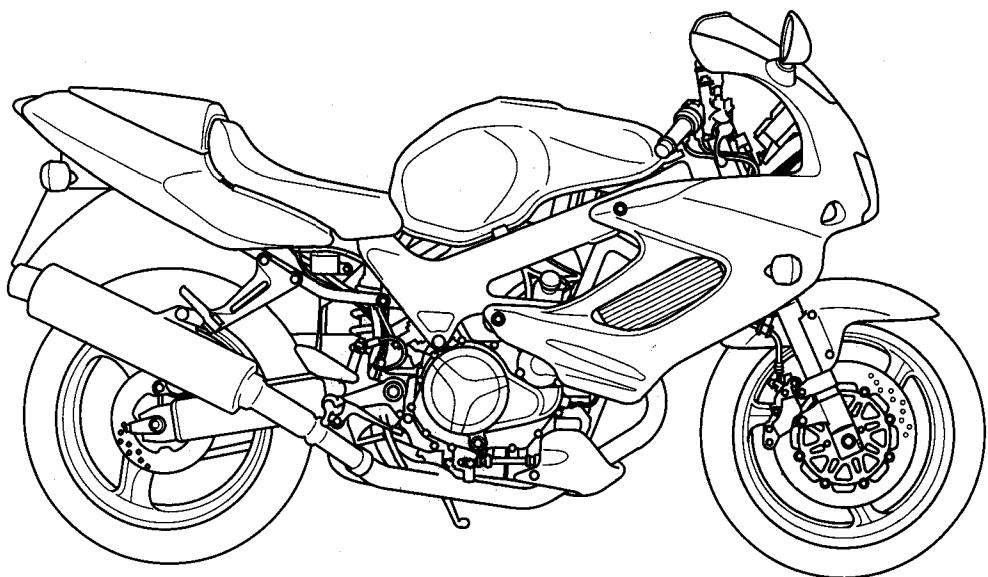
TYPE CODE

- Throughout this manual, the following abbreviations are used to identify individual type.

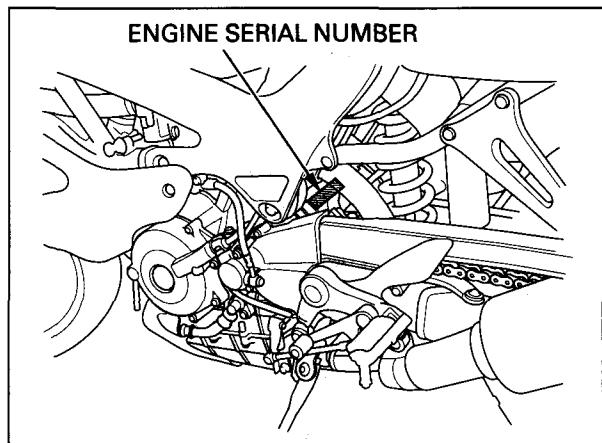
CODE	AREA TYPE
E	U.K.
IIG	Germany (Type II)
F	France
ED	European direct sales (Belgium, Holland, Portugal)

CODE	AREA TYPE
U	Australia

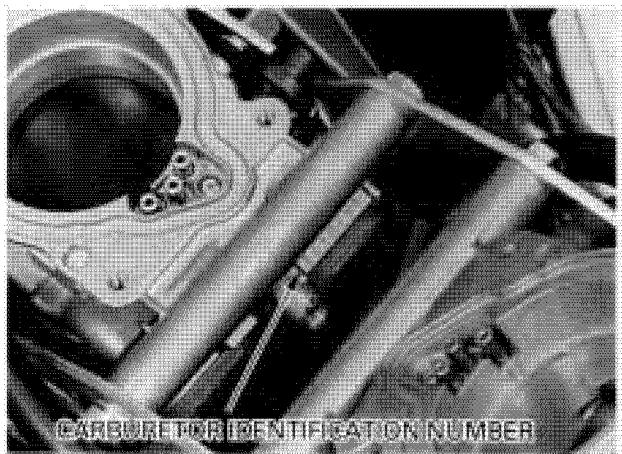
MODEL IDENTIFICATION



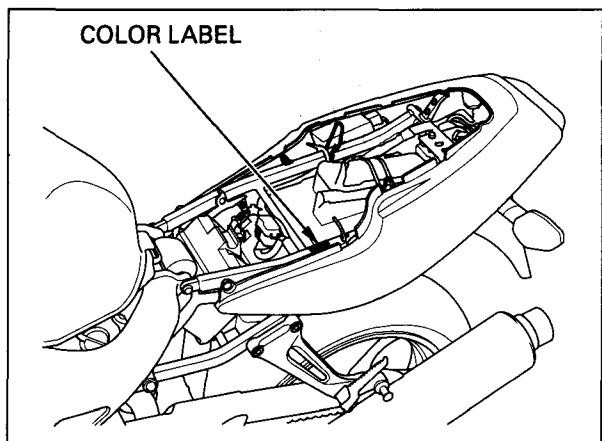
The frame serial number is stamped on the right side of the steering head.



The engine serial number is stamped on the rear of the upper crankcase.



The carburetor identification number is stamped on the intake side of the carburetor body.



The color label is attached on the seat rail under the seat. When ordering color-coded parts, always specify the designated color code.

SPECIFICATIONS

GENERAL		ITEM	SPECIFICATIONS
DIMENSIONS	Overall length Overall width Overall height Wheelbase Seat height Footpeg height Ground clearance Dry weight Curb weight	IIG E, F, ED, U Except IIG IIG Except IIG IIG	2,155 mm (84.8 in) 2,050 mm (80.7 in) 720 mm (28.3 in) 1,155 mm (45.5 in) 1,430 mm (56.3 in) 810 mm (31.9 in) 377 mm (14.8 in) 135 mm (5.3 in) 193 kg (425 lbs) 194 kg (428 lbs) 218 kg (481 lbs) 219 kg (483 lbs)
	Maximum weight capacity		188 kg (415 lbs)
FRAME	Frame type Front suspension Front axle travel Front fork stroke Rear suspension Rear axle travel Front tire size Rear tire size Front tire brand Rear tire brand Front brake Rear brake Caster angle Trail length Fuel tank capacity		Diamond Telescopic fork 109 mm (4.3 in) 120 mm (4.7 in) Swingarm 124 mm (4.9 in) 120/70ZR17 (58W) 180/55ZR17 (73W) D204FK (DUNLOP), MACADAM 90X G (MICHELIN) D204K (DUNLOP), MACADAM 90X G (MICHELIN) Hydraulic double disc Hydraulic single disc 24°50' 97 mm (3.8 in) 19.0 l (5.02 US gal, 4.18 Imp gal)
ENGINE	Cylinder arrangement Bore and stroke Displacement Compression ratio Valve train Intake valve opens closes Exhaust valve opens closes Lubrication system Oil pump type Cooling system Air filtration Engine dry weight Firing order		2 cylinders 90° V transverse 98.0 × 66.0 mm (3.90 × 2.60 in) 996 cm ³ (60.8 cu-in) 9.4 : 1 Chain driven, DOHC 20° BTDC (At 1 mm lift) 45° ABDC (At 1 mm lift) 50° BBDC (At 1 mm lift) 15° ATDC (At 1 mm lift) Forced pressure and wet sump Trochoid Liquid cooled Viscous paper element 74.3 kg (163.8 lbs) Front—270°—Rear—450°—Front

GENERAL (Cont'd)		ITEM	SPECIFICATIONS
CARBURETOR	Carburetor type Throttle bore		CV semi-downdraft 48 mm (1.9 in)
DRIVE TRAIN	Clutch system Clutch operation system Transmission Primary reduction Final reduction Gear ratio 1st 2nd 3rd 4th 5th 6th Gearshift pattern		Multi-plate, wet Hydraulic operating Constant mesh, 6-speeds 1.681 (74/44) 2.562 (41/16) 2.733 (41/15) 1.812 (29/16) 1.428 (30/21) 1.206 (35/29) 1.080 (27/25) 0.961 (25/26) Left foot operated return system, 1-N-2-3-4-5-6
ELECTRICAL	Ignition system Starting system Charging system Regulator/rectifier Lighting system		DC-CDI Electric starter motor Triple phase output alternator SCR shorted, triple phase full wave rectification Battery

VTR1000F (1) ADDENDUM

LUBRICATION SYSTEM		Unit: mm (in)	
ITEM		STANDARD	SERVICE LIMIT
Engine oil capacity	After draining	3.7 ℥ (3.9 US qt, 3.3 Imp qt)	_____
	After draining/filter change	3.9 ℥ (4.1 US qt, 3.4 Imp qt)	_____
	After disassembly	4.5 ℥ (4.8 US qt, 4.0 Imp qt)	_____
Recommended engine oil		Honda 4-stroke oil or equivalent motor oil API service classification SE, SF or SG Viscosity: SAE 10W-40	_____
Oil pressure (at oil pressure switch)		588 kPa (6.0 kgf/cm ² , 85 psi) at 5,000 min ⁻¹ (rpm) / 176 °F (80 °C)	_____
Oil pump	Tip clearance	0.15 (0.006)	0.20 (0.008)
	Body clearance	0.15 – 0.21 (0.006 – 0.008)	0.35 (0.014)
	Side clearance	0.02 – 0.09 (0.001 – 0.004)	0.12 (0.005)

FUEL SYSTEM		SPECIFICATIONS
ITEM		
Carburetor identification number		Except IIG: VPT3A, IIG: VPT3E
Main jet		Front: # 175, Rear: # 178
Slow jet		# 45
Jet needle number		Front: A1UF, Rear: A1UE
Pilot screw opening		See page 24-25
Float level		16.6 ± 0.5 mm (0.65 ± 0.02 in)
Idle speed		1,200 ± 100 min ⁻¹ (rpm)

COOLING SYSTEM		SPECIFICATIONS
ITEM		
Coolant capacity	Radiator and engine	2.9 ℥ (3.1 US qt, 2.6 Imp qt)
	Reserve tank	0.71 ℥ (0.188 US gal, 0.156 Imp gal)
Radiator cap relief pressure		108 – 137 kPa (1.1 – 1.4 kgf/cm ² , 16 – 20 psi)
Thermostat	Begin to open	73 – 77 °C (163 – 171 °F)
	Fully open	90 °C (194 °F)
	Valve lift	8 mm (0.3 in) minimum
Recommended antifreeze		Pro Honda HP coolant or an equivalent high quality ethylene glycol antifreeze containing silicate-free corrosion inhibitors

Unit: mm (in)

CYLINDER HEAD/VALVE		ITEM	STANDARD	SERVICE LIMIT	
Cylinder compression at 350 min ⁻¹ (rpm)			1,128 kPa (11.5 kgf/cm ² , 164 psi)	_____	
Valve clearance		IN	0.16 (0.006)	_____	
		EX	0.31 (0.012)	_____	
Camshaft	Cam lobe height	IN	40.080–40.240 (1.5779–1.5842)	39.780 (1.5661)	
		EX	40.230–40.390 (1.5839–1.5902)	39.930 (1.5720)	
Runout			_____	0.05 (0.002)	
Oil clearance			0.020–0.062 (0.0008–0.0024)	0.088 (0.0035)	
Valve lifter	Valve lifter O.D.		33.978–33.993 (1.3377–1.3383)	33.97 (1.337)	
	Valve lifter bore I.D.		34.010–34.026 (1.3390–1.3396)	34.04 (1.340)	
Valve, valve guide	Valve stem O.D.	IN	5.975–5.990 (0.2352–0.2358)	5.965 (0.2348)	
		EX	5.965–5.980 (0.2348–0.2354)	5.955 (0.2344)	
	Valve guide I.D.	IN/EX	6.000–6.012 (0.2362–0.2367)	6.040 (0.2378)	
	Stem-to-guide clearance	IN	0.010–0.037 (0.0004–0.0015)	0.075 (0.0030)	
		EX	0.020–0.047 (0.0008–0.0019)	0.085 (0.0033)	
	Valve guide projection above cylinder head		14.0–14.2 (0.55–0.56)	_____	
Valve spring	Free length	IN	1.1–1.3 (0.04–0.05)	1.7 (0.07)	
		EX	1.3–1.5 (0.05–0.06)	1.9 (0.07)	
Cylinder head warpage		Inner	37.0 (1.46)	36.0 (1.42)	
		Outer	41.9 (1.65)	40.9 (1.61)	
Cylinder head warpage			_____	0.10 (0.004)	

Unit: mm (in)

CLUTCH/GEARSHIFT LINKAGE		ITEM	STANDARD	SERVICE LIMIT
Specified clutch fluid			DOT 4 brake fluid	_____
Clutch master cylinder		Cylinder I.D.	14.000–14.043 (0.5512–0.5529)	14.055 (0.5533)
		Piston O.D.	13.957–13.984 (0.5495–0.5506)	13.945 (0.5490)
Clutch		Spring free length	49.6 (1.95)	46.6 (1.83)
		Disc thickness	3.72–3.88 (0.146–0.153)	3.5 (0.14)
Plate warpage			_____	0.30 (0.012)
Clutch outer guide		I.D.	28.000–28.021 (1.1024–1.1032)	28.031 (1.1036)
		O.D.	34.975–34.991 (1.3770–1.3776)	34.965 (1.3766)
Mainshaft O.D. at clutch outer guide			27.980–27.993 (1.1016–1.1021)	27.970 (1.1012)

Unit: mm (in)

ALTERNATOR/STARTER CLUTCH		ITEM	STANDARD	SERVICE LIMIT
Starter driven gear boss O.D.			57.749–57.768 (2.2736–2.2743)	57.639 (2.2692)

VTR1000F (1) ADDENDUM

CRANKCASE/TRANSMISSION		Unit: mm (in)	
ITEM		STANDARD	SERVICE LIMIT
Shift fork	I.D.	12.000 – 12.021 (0.4724 – 0.4733)	12.03 (0.474)
	Claw thickness	5.93 – 6.00 (0.233 – 0.236)	5.9 (0.23)
Shift fork shaft	O.D.	11.957 – 11.968 (0.4707 – 0.4712)	11.95 (0.470)
Transmission	Gear I.D.	M5, M6 31.000 – 31.016 (1.2205 – 1.2211) C2, C3, C4 33.000 – 33.025 (1.2992 – 1.3002)	31.04 (1.222) 33.05 (1.301)
	Gear bushing O.D.	M5, M6 30.955 – 30.980 (1.2187 – 1.2197) C2, C3, C4 32.955 – 32.980 (1.2974 – 1.2984)	30.93 (1.218) 32.93 (1.296)
	Gear-to-bushing clearance	M5, M6 0.020 – 0.061 (0.0008 – 0.0024) C2, C3, C4 0.020 – 0.070 (0.0008 – 0.0028)	0.10 (0.004) 0.11 (0.004)
	Gear bushing I.D.	M5 27.985 – 28.006 (1.1018 – 1.1026) C2 29.985 – 30.006 (1.1805 – 1.1813)	28.02 (1.103) 30.02 (1.182)
	Mainshaft O.D.	at M5 27.967 – 27.980 (1.1011 – 1.1016)	27.94 (1.100)
	Countershaft O.D.	at C2 29.950 – 29.975 (1.1791 – 1.1801)	29.92 (1.178)
	Bushing-to-shaft clearance	M5 0.005 – 0.039 (0.0002 – 0.0015) C2 0.010 – 0.056 (0.0004 – 0.0022)	0.06 (0.002) 0.06 (0.002)

CRANKSHAFT/PISTON/CYLINDER		Unit: mm (in)	
ITEM		STANDARD	SERVICE LIMIT
Crankshaft	Connecting rod side clearance	0.10 – 0.30 (0.004 – 0.012)	0.40 (0.016)
	Crankpin bearing oil clearance	0.032 – 0.050 (0.0013 – 0.0020)	0.060 (0.0024)
	Main journal bearing oil clearance	0.020 – 0.038 (0.0008 – 0.0015)	0.048 (0.0019)
	Runout	—	0.10 (0.004)
Piston, piston pin, piston ring	Piston O.D. at 20 (0.8) from bottom	97.965 – 97.985 (3.8569 – 3.8577)	97.900 (3.8543)
	Piston pin hole I.D.	24.002 – 24.008 (0.9450 – 0.9452)	24.03 (0.946)
	Piston pin O.D.	23.994 – 24.000 (0.9446 – 0.9449)	23.984 (0.9443)
	Piston-to-piston pin clearance	0.002 – 0.014 (0.0001 – 0.0006)	0.046 (0.0018)
	Piston ring end gap	Top 0.25 – 0.40 (0.010 – 0.016)	0.55 (0.022)
		Second 0.40 – 0.55 (0.016 – 0.022)	0.70 (0.028)
		Oil (side rail) 0.20 – 0.70 (0.008 – 0.028)	0.90 (0.035)
	Piston ring-to-ring groove clearance	Top 0.065 – 0.100 (0.0026 – 0.0039)	0.115 (0.0045)
		Second 0.035 – 0.070 (0.0014 – 0.0028)	0.085 (0.0033)
Cylinder	I.D.	98.005 – 98.025 (3.8585 – 3.8592)	98.100 (3.8622)
	Out of round	—	0.10 (0.004)
	Taper	—	0.10 (0.004)
	Warpage	—	0.05 (0.002)
Cylinder-to-piston clearance		0.020 – 0.060 (0.0008 – 0.0024)	0.200 (0.0079)
Connecting rod small end I.D.		24.020 – 24.041 (0.9457 – 0.9465)	24.051 (0.9469)
Connecting rod-to-piston pin clearance		0.020 – 0.047 (0.0008 – 0.0019)	0.067 (0.0026)

FRONT WHEEL/SUSPENSION/STEERING		Unit: mm (in)	
ITEM		STANDARD	SERVICE LIMIT
Minimum tire tread depth		—	1.5 (0.06)
Cold tire pressure	Driver only	250 kPa (2.50 kgf/cm ² , 36 psi)	—
	Driver and passenger	250 kPa (2.50 kgf/cm ² , 36 psi)	—
Axle runout	—	—	0.20 (0.008)
Wheel rim runout	Radial	—	2.0 (0.08)
	Axial	—	2.0 (0.08)
Wheel balance weight	—	—	60 g (2.1 oz) max.
Fork	Spring free length	309.9 (12.20)	303.7 (11.96)
	Tube runout	—	0.20 (0.008)
	Recommended fluid	Fork fluid	—
	Fluid level	130 (5.1)	—
	Fluid capacity	448 ± 2.5 cm ³ (15.2 ± 0.08 US oz, 15.8 ± 0.09 Imp oz)	—
Steering head bearing preload	1.0 – 1.6 kgf (2.2 – 3.3 lbf)	—	—

REAR WHEEL/SUSPENSION		Unit: mm (in)	
ITEM		STANDARD	SERVICE LIMIT
Minimum tire tread depth		—	2.0 (0.08)
Cold tire pressure	Driver only	290 kPa (2.90 kgf/cm ² , 42 psi)	—
	Driver and passenger	290 kPa (2.90 kgf/cm ² , 42 psi)	—
Axle runout	—	—	0.20 (0.008)
Wheel rim runout	Radial	—	2.0 (0.08)
	Axial	—	2.0 (0.08)
Wheel balance weight	—	—	60 g (2.1 oz) max.

HYDRAULIC BRAKE		Unit: mm (in)	
ITEM		STANDARD	SERVICE LIMIT
Front	Specified brake fluid	DOT 4	—
	Brake disc thickness	4.4 – 4.6 (0.17 – 0.18)	3.5 (0.14)
	Brake disc runout	—	0.30 (0.012)
	Master cylinder I. D.	14.000 – 14.043 (0.5512 – 0.5529)	14.055 (0.5533)
	Master piston O. D.	13.957 – 13.984 (0.5495 – 0.5506)	13.945 (0.5490)
	Caliper cylinder I. D.	A	30.23 – 30.28 (1.190 – 1.192)
		B	27.000 – 27.050 (1.0630 – 1.0650)
	Caliper piston O. D.	A	30.148 – 30.198 (1.1869 – 1.1889)
		B	26.918 – 26.968 (1.0598 – 1.0617)
Rear	Specified brake fluid	DOT 4	—
	Brake disc thickness	4.8 – 5.2 (0.19 – 0.20)	4.0 (0.16)
	Brake disc runout	—	0.30 (0.012)
	Master cylinder I. D.	14.000 – 14.043 (0.5512 – 0.5529)	14.055 (0.5533)
	Master piston O. D.	13.957 – 13.984 (0.5495 – 0.5506)	13.945 (0.5490)
	Caliper cylinder I. D.	38.18 – 38.23 (1.503 – 1.505)	38.24 (1.506)
	Caliper piston O. D.	38.098 – 38.148 (1.4999 – 1.5019)	38.09 (1.500)

VTR1000F (1) ADDENDUM

BATTERY/CHARGING SYSTEM		SPECIFICATIONS
ITEM		SPECIFICATIONS
Battery	Capacity	12 V – 10 Ah
	Current leakage	0.1 mA max.
	Voltage (68 °F/20 °C)	13.0 – 13.2 V
	Fully charged	Below 12.3 V
	Needs charging	1.2 A × 5 – 10 h
Alternator	Charging current Normal	5.0 A × 1.0 h
	Quick	0.280 kW/5,000 min ⁻¹ (rpm)
Alternator	Capacity	0.2 – 0.5 Ω
	Charging coil resistance (68 °F/20 °C)	13.5 – 15.5 V/5,000 min ⁻¹ (rpm)
Regulator/rectifier regulated voltage		

IGNITION SYSTEM		SPECIFICATIONS
ITEM		SPECIFICATIONS
Spark plug		DPR9EVX-9 (NGK)
Spark plug gap		0.80 – 0.90 mm (0.031 – 0.035 in)
Ignition coil primary peak voltage		100 V minimum
Ignition pulse generator peak voltage		0.7 V minimum
Ignition timing ("F" mark)		15° BTDC at idle
Engine coolant temperature (ECT) sensor resistance	At 68 °F (20 °C)	2 – 3 kΩ
	At 176 °F (80 °C)	200 – 400 Ω
Throttle sensor	Resistance (68 °F/20 °C)	4 – 6 kΩ
	Input voltage	4.7 – 5.3 V

ELECTRIC STARTER		Unit: mm (in)	
ITEM		STANDARD	SERVICE LIMIT
Starter motor brush length		12.0 – 13.0 (0.47 – 0.51)	6.5 (0.26)

LIGHTS/METERS/SWITCHES		SPECIFICATIONS
ITEM		SPECIFICATIONS
Bulbs	Headlight (High/low beam)	12 V – 60/55 W
	Position light (Except U type)	12 V – 5 W
	Brake/tailight	12 V – 21/5 W × 2
	Turn signal light	12 V – 21 W × 4
	Instrument light	14 V – 1.4 W × 3
	Turn signal indicator	14 V – 1.4 W × 2
	High beam indicator	14 V – 1.4 W
	Neutral indicator	14 V – 1.4 W
	Oil pressure indicator	14 V – 1.4 W
Fuse	Main fuse	30 A
	Sub-fuse	10 A, 20 A
Thermosensor resistance	At 176 °F (80 °C)	47 – 57 Ω
	At 248 °F (120 °C)	14 – 18 Ω
Fan motor switch	Starts to close (ON)	208 – 216 °F (98 – 102 °C)
	Stops to open (OFF)	199 – 207 °F (93 – 97 °C)

TORQUE VALUES

STANDARD

FASTENER TYPE	TORQUE N·m (kgf·m, lbf·ft)	FASTENER TYPE	TORQUE N·m (kgf·m, lbf·ft)
5 mm bolt and nut	5 (0.5, 3.6)	5 mm screw	4 (0.4, 2.9)
6 mm bolt and nut	10 (1.0, 7)	6 mm screw	9 (0.9, 6.5)
8 mm bolt and nut	22 (2.2, 16)	6 mm flange bolt (8 mm head, small flange)	10 (1.0, 7)
10 mm bolt and nut	34 (3.5, 25)	6 mm flange bolt (8 mm head, large flange)	12 (1.2, 9)
12 mm bolt and nut	54 (5.5, 40)	6 mm flange bolt (10 mm head) and nut	12 (1.2, 9)
		8 mm flange bolt and nut	23 (2.3, 17)
		Engine Frame	26 (2.7, 20)
		10 mm flange bolt and nut	39 (4.0, 29)

- Torque specifications listed below are for important fasteners.
- Others should be tightened to standard torque values listed above.

NOTES: 1. Apply sealant to the threads.
 2. Apply locking agent to the threads.
 3. Replace with a new one.
 4. Stake.
 5. Apply oil to the threads and seating surface.
 6. Apply engine oil to the O-ring.
 7. U-nut.
 8. ALOC bolt/screw: replace with a new one.
 9. Apply grease to the threads.

ENGINE

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
MAINTENANCE:				
Spark plug	2	12	14 (1.4, 10)	
Crankshaft hole cap	1	30	15 (1.5, 11)	NOTE 9
Timing hole cap	1	14	9.8 (1.0, 7)	NOTE 9
Engine oil filter cartridge	1	20	9.8 (1.0, 7)	NOTE 5, 6
Engine oil drain bolt	1	12	29 (3.0, 22)	
LUBRICATION SYSTEM:				
Oil pressure switch	1	PT 1/8	12 (1.2, 9)	NOTE 1
Oil pressure switch terminal screw	1	4	2.0 (0.2, 1.4)	
Oil pump bolt	2	6	13 (1.3, 9)	
Oil filter boss	1	20	18 (1.8, 13)	NOTE 2
FUEL SYSTEM:				
Carburetor insulator band bolt	4	5	1.0 (0.1, 0.7)	
Vacuum joint	1	5	2.5 (0.25, 1.8)	
Reed valve cover bolt	4	5	5.1 (0.52, 3.8)	NOTE 2
ENGINE MOUNTING:				
Drive sprocket bolt	1	10	54 (5.5, 40)	
CYLINDER HEAD/VALVE:				
Cylinder head cover bolt	8	6	9.8 (1.0, 7)	
Breather plate bolt	4	6	12 (1.2, 9)	NOTE 2
Cam sprocket bolt	4	7	20 (2.0, 14)	NOTE 2
Camshaft holder bolt	16	7	21 (2.1, 15)	NOTE 5
Cylinder head bolt	12	10	53 (5.4, 39)	NOTE 5
Cylinder head sealing bolt	2	12	32 (3.3, 24)	NOTE 2
Intake manifold vacuum port socket bolt	1	5	3.3 (0.34, 2.5)	

VTR1000F (1) ADDENDUM

ENGINE (Cont'd)

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
CLUTCH/GEARSHIFT LINKAGE:				
Clutch slave cylinder bleed valve	1	8	8.8 (0.9 , 6.5)	
Clutch bolt	5	6	12 (1.2 , 9)	
Clutch center lock nut	1	25	127 (13.0 , 94)	NOTE 4, 5
Oil pump driven sprocket bolt	1	6	15 (1.5 , 11)	NOTE 2
Gearshift cam bolt	1	8	23 (2.3 , 17)	NOTE 2
Gearshift spindle return spring pin	1	8	23 (2.3 , 17)	
Primary drive gear bolt	1	12	88 (9.0 , 65)	NOTE 5
ALTERNATOR/STARTER CLUTCH:				
Flywheel bolt	1	12	157 (16.0 , 116)	NOTE 5
Starter clutch bolt	6	8	23 (2.3 , 17)	NOTE 2
Alternator stator bolt	3	6	12 (1.2 , 9)	
CRANKCASE/TRANSMISSION:				
Cam chain tensioner bolt	2	8	23 (2.3 , 17)	NOTE 2
Cam chain guide bolt	2	8	23 (2.3 , 17)	NOTE 2
Crankcase flange bolt	1	10	39 (4.0 , 29)	
Crankcase special bolt	8	10	42 (4.3 , 31)	NOTE 5
Crankcase sealing bolt	1	15	29 (3.0 , 22)	NOTE 2
Crankcase sealing bolt	1	18	29 (3.0 , 22)	NOTE 2
Crankcase sealing bolt	1	22	29 (3.0 , 22)	
Crankcase sealing bolt	1	24	49 (5.0 , 36)	NOTE 2
CRANKSHAFT/PISTON/CYLINDER:				
Connecting rod bolt (standard) (checking the oil clearance)	4	9	29 (3.0 , 22) + 120°	NOTE 3, 5
	4	9	20 (2.0 , 14) + 120°	NOTE 3, 5
IGNITION SYSTEM:				
Ignition pulse generator bolt	2	6	12 (1.2 , 9)	
Engine coolant temperature (ECT) sensor	1	12	23 (2.3 , 17)	
ELECTRIC STARTER:				
Starter motor terminal nut	1	6	9.8 (1.0 , 7)	
LIGHTS/METERS/SWITCHES:				
Thermosensor	1	PT 1/8	9.8 (1.0 , 7)	NOTE 1
Neutral switch	1	10	12 (1.2 , 9)	

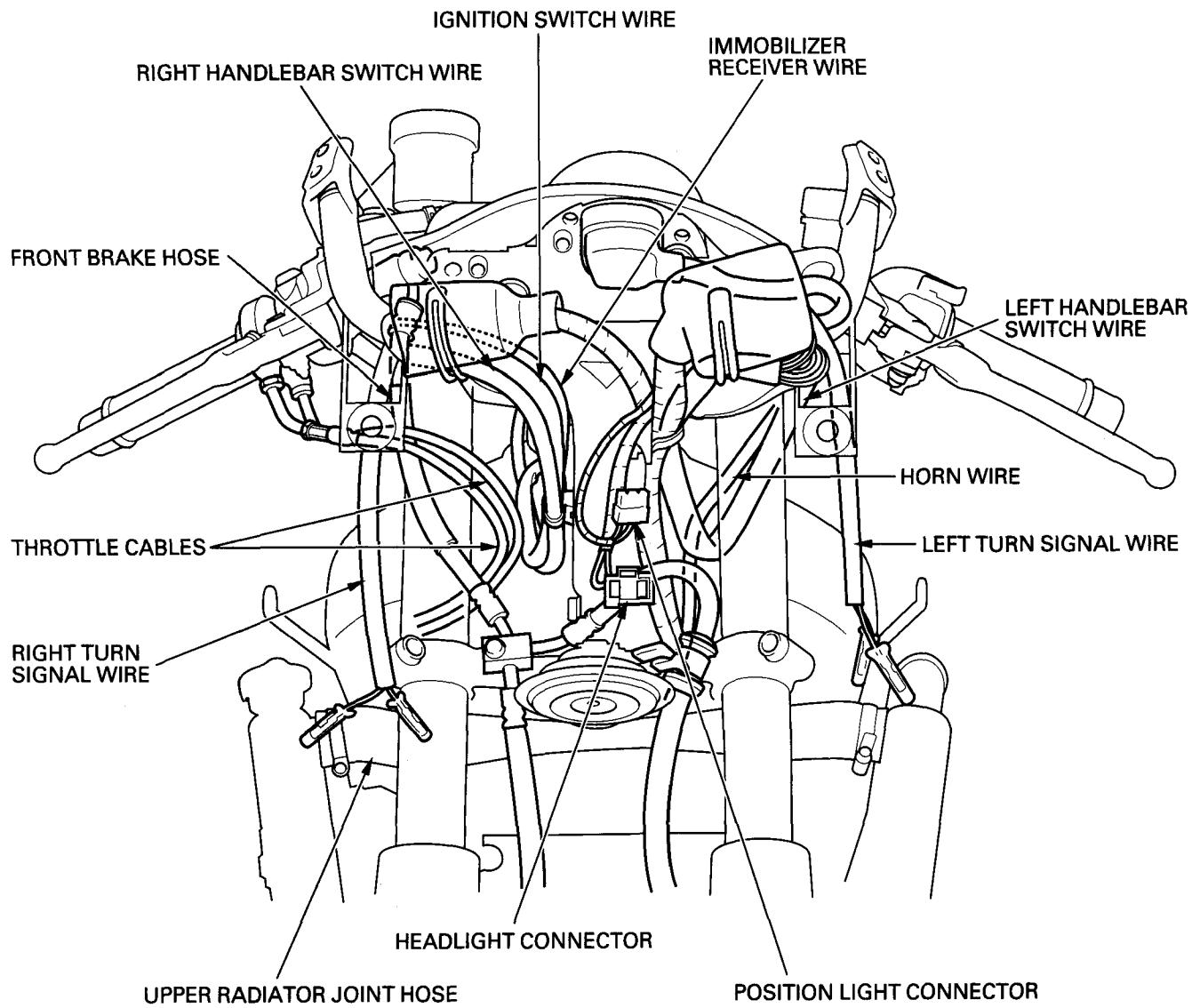
FRAME

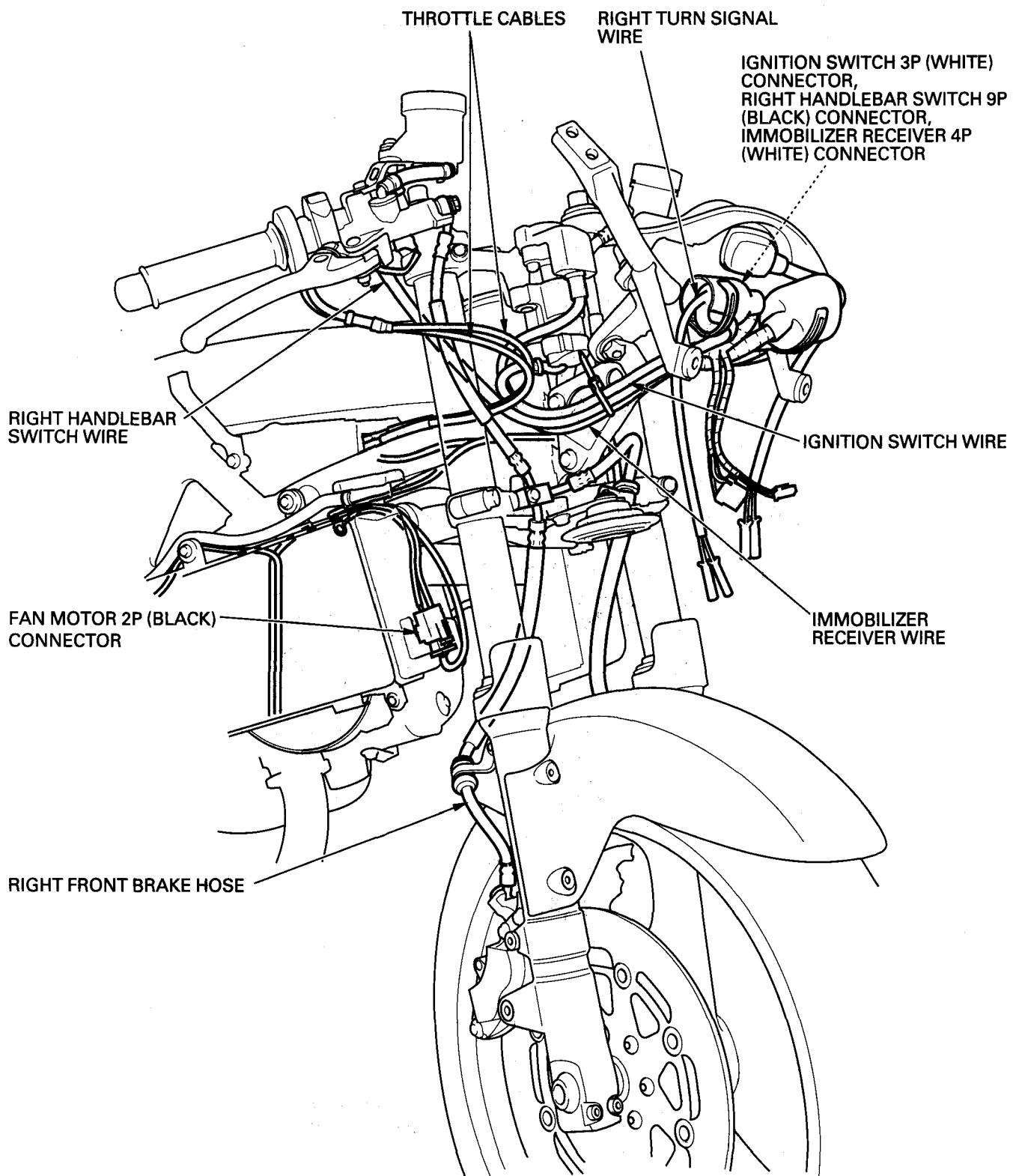
ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
FRAME/BODY PANELS/EXHAUST SYSTEM:				
Front fairing setting bolt	4	6	6.9 (0.7 , 5.1)	
Exhaust pipe joint nut	4	7	12 (1.2 , 9)	
Muffler band bolt	2	8	26 (2.7 , 20)	
ENGINE MOUNTING:				
Front engine hanger nut	1	12	64 (6.5 , 47)	Page 7-7
Front engine hanger adjusting bolt	1	20	2.9 (0.3 , 2.2)	
Front engine hanger lock nut	1	20	54 (5.5 , 40)	
Center engine hanger bolt	2	10	39 (4.0 , 29)	
Left center engine hanger adjusting bolt	1	20	2.9 (0.3 , 2.2)	
Left center engine hanger lock nut	1	20	54 (5.5 , 40)	
Rear engine hanger nut	1	12	64 (6.5 , 47)	
Rear engine hanger adjusting bolt	1	22	2.9 (0.3 , 2.2)	
Rear engine hanger lock nut	1	22	54 (5.5 , 40)	
Shock link bracket nut	2	10	44 (4.5 , 33)	
CLUTCH/GEARSHIFT LINKAGE:				
Clutch reservoir mounting screw	1	4	1.5 (0.15 , 1.1)	NOTE 2
Clutch reservoir cap stopper plate screw	1	4	1.2 (0.12 , 0.9)	
Clutch lever pivot nut	1	6	5.9 (0.6 , 4.3)	
Clutch hose oil bolt	2	10	34 (3.5 , 25)	

FRAME

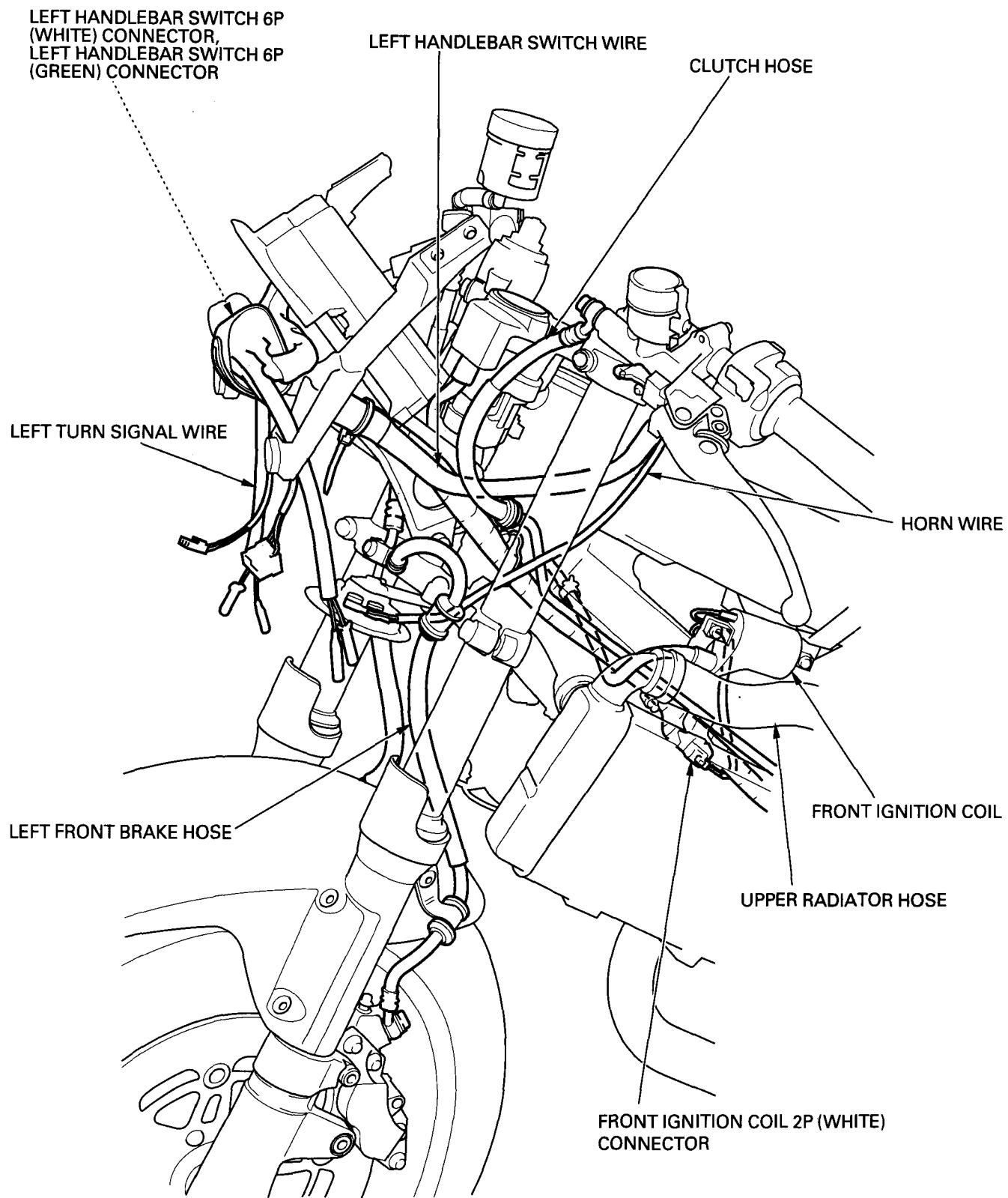
ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
FRONT WHEEL/SUSPENSION/STEERING:				
Handlebar weight mounting screw	2	6	9.8 (1.0 , 7)	NOTE 8
Front master cylinder holder bolt	2	6	12 (1.2 , 9)	
Front axle bolt	1	14	59 (6.0 , 43)	
Front axle holder bolt	4	8	22 (2.2 , 16)	
Front brake disc bolt	12	6	20 (2.0 , 14)	NOTE 8
Fork cap	2	37	23 (2.3 , 17)	
Fork socket bolt	2	8	20 (2.0 , 14)	NOTE 2
Fork top bridge pinch bolt	2	8	23 (2.3 , 17)	
Fork bottom bridge pinch bolt	2	10	49 (5.0 , 36)	
Front brake hose clamp bolt (fork side)	2	6	9.8 (1.0 , 7)	
Steering stem nut	1	24	103 (10.5 , 76)	Page 13-27
Steering bearing adjustment nut	1	26	25 (2.5 , 18)	
Steering bearing adjustment nut lock nut	1	26		
Front brake hose clamp bolt (stem side)	1	6	10 (1.0 , 7)	
Front brake hose 3-way joint bolt	1	6	9.8 (1.0 , 7)	
REAR WHEEL/SUSPENSION:				
Rear axle nut	1	18	93 (9.5 , 69)	
Rear brake disc bolt	4	8	42 (4.3 , 31)	NOTE 8
Final driven sprocket nut	5	12	108 (11.0 , 80)	
Shock absorber upper mounting bolt	1	10	44 (4.5 , 33)	NOTE 8
Shock absorber lower mounting nut	1	10	44 (4.5 , 33)	NOTE 7
Shock arm-to-swingarm nut	1	10	44 (4.5 , 33)	NOTE 7
Shock arm-to-shock link nut	1	10	44 (4.5 , 33)	NOTE 7
Shock link-to-bracket nut	1	10	44 (4.5 , 33)	NOTE 7
Swingarm pivot nut	1	18	93 (9.5 , 69)	NOTE 7
Drive chain slider bolt	2	6	8.8 (0.9 , 6.5)	NOTE 8
Rear brake hose clamp screw	2	5	4.2 (0.43 , 3.1)	NOTE 8
HYDRAULIC BRAKE:				
Brake caliper bleed valve	3	8	5.9 (0.6 , 4.3)	
Pad pin plug	3	10	2.5 (0.25 , 1.8)	
Pad pin	3	10	18 (1.8 , 13)	
Brake hose oil bolt	5	10	34 (3.5 , 25)	
Front brake lever pivot nut	1	6	5.9 (0.6 , 4.3)	
Front brake fluid reservoir mounting nut	1	6	5.9 (0.6 , 4.3)	NOTE 7
Rear brake fluid reservoir mounting bolt	1	6	8.8 (0.9 , 6.5)	
Rear master cylinder mounting bolt	2	6	9.8 (1.0 , 7)	
Rear master cylinder joint nut	1	8	18 (1.8 , 13)	
Front brake caliper mounting bolt	4	8	30 (3.1 , 22)	NOTE 8
Front brake caliper assembly bolt	8	8	32 (3.3 , 24)	NOTE 2
Rear brake caliper bolt	1	8	23 (2.3 , 17)	
Rear brake caliper pin bolt	1	12	27 (2.8 , 20)	NOTE 2
LIGHTS/METERS/SWITCHES:				
Side stand switch bolt	1	6	9.8 (1.0 , 7)	
Ignition switch mounting bolt	2	8	25 (2.5 , 18)	
Fan motor switch	1	16	18 (1.8 , 13)	
OTHERS:				
Side stand pivot bolt	1	10	9.8 (1.0 , 7)	
Side stand pivot lock nut	1	10	29 (3.0 , 22)	
Side stand bracket bolt	1	10	44 (4.5 , 33)	NOTE 8
Passenger footpeg bracket bolt	4	8	26 (2.7 , 20)	
Bank sensor bolt	2	8	22 (2.2 , 16)	
Seat rail upper mounting bolt	2	10	39 (4.0 , 29)	
Seat rail lower mounting bolt	2	10	44 (4.5 , 33)	
Gearshift pedal pivot bolt	1	8	26 (2.7 , 20)	
Fuel valve	1	22	34 (3.5 , 25)	

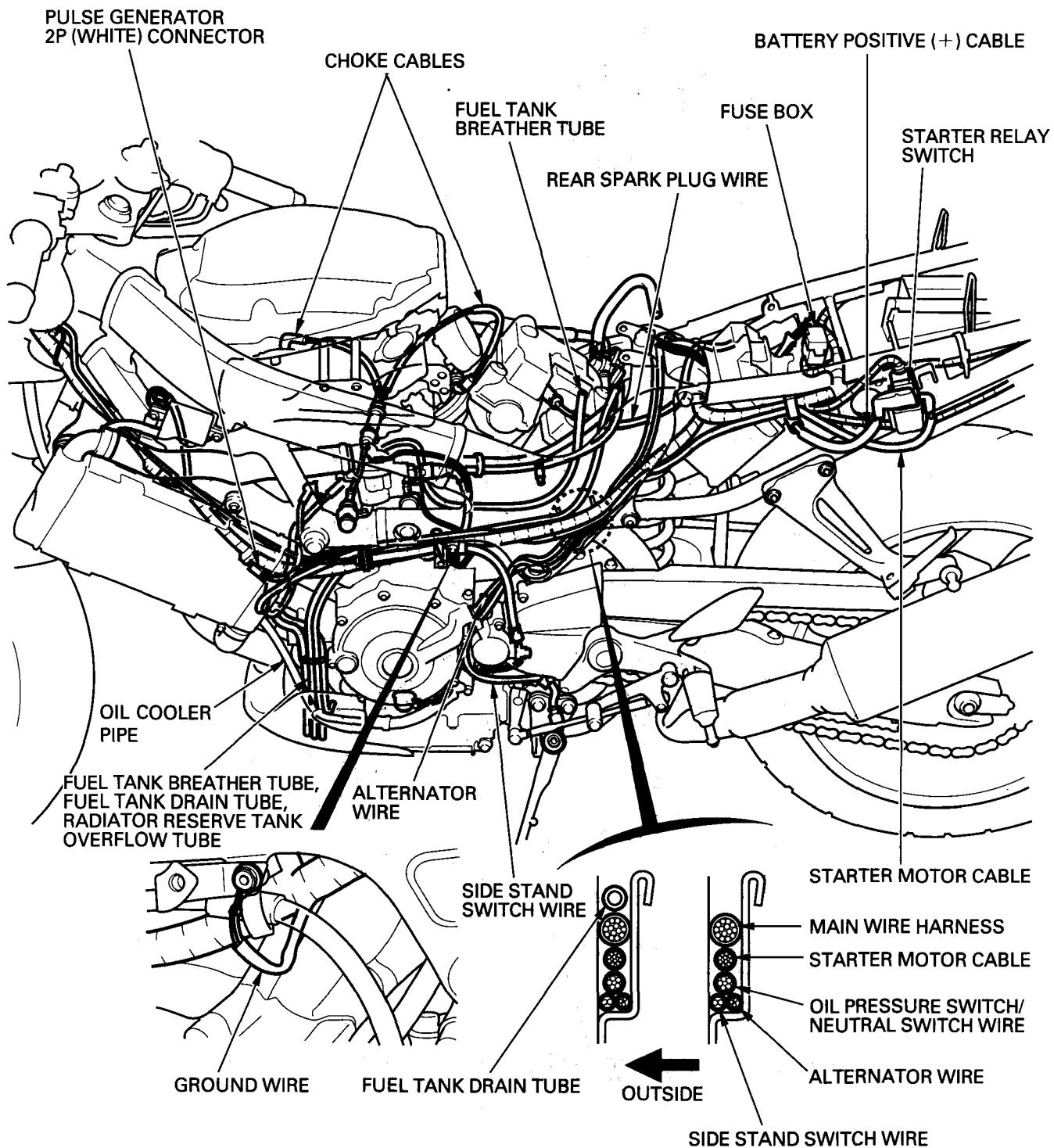
CABLE & HARNESS ROUTING

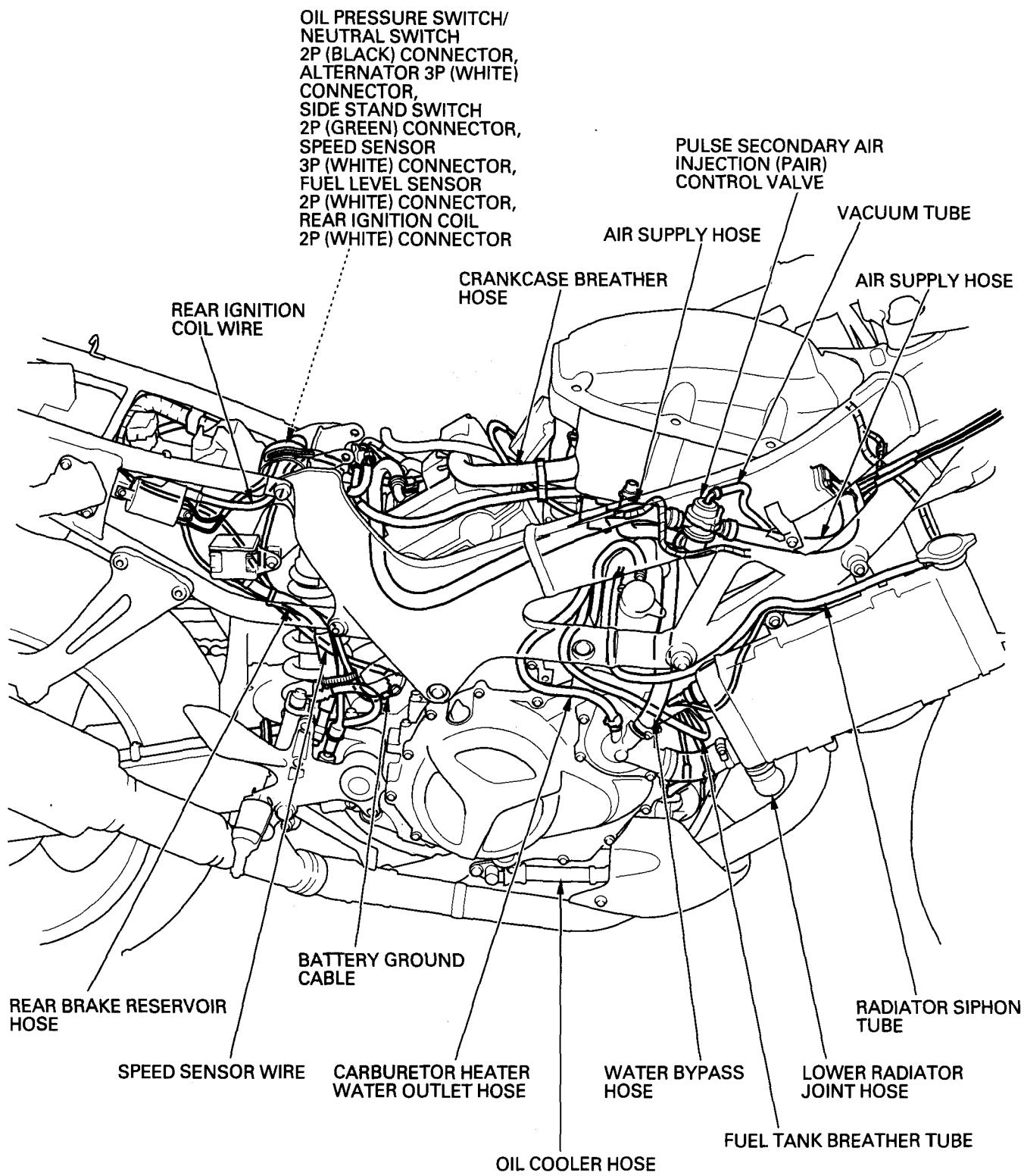


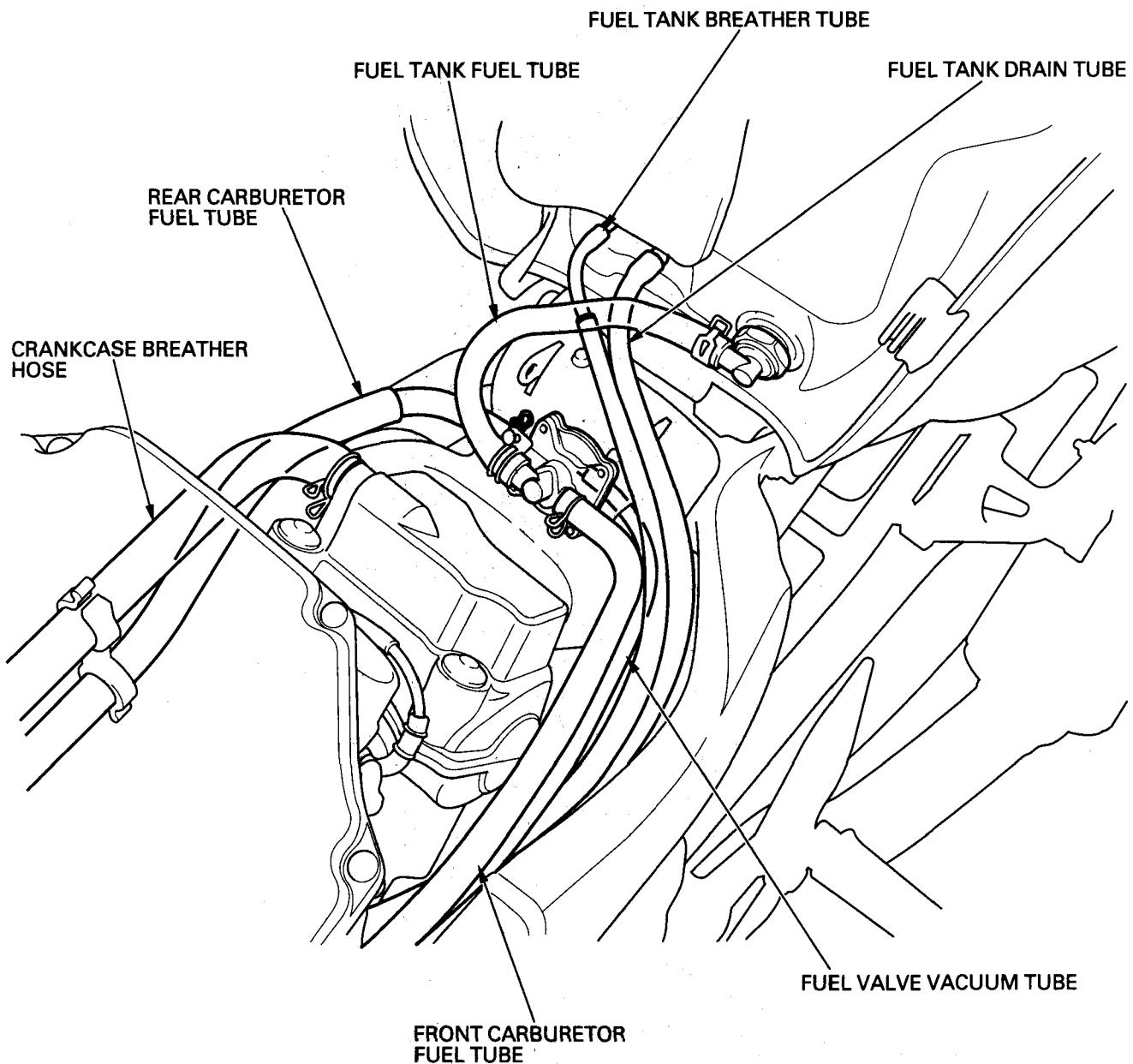


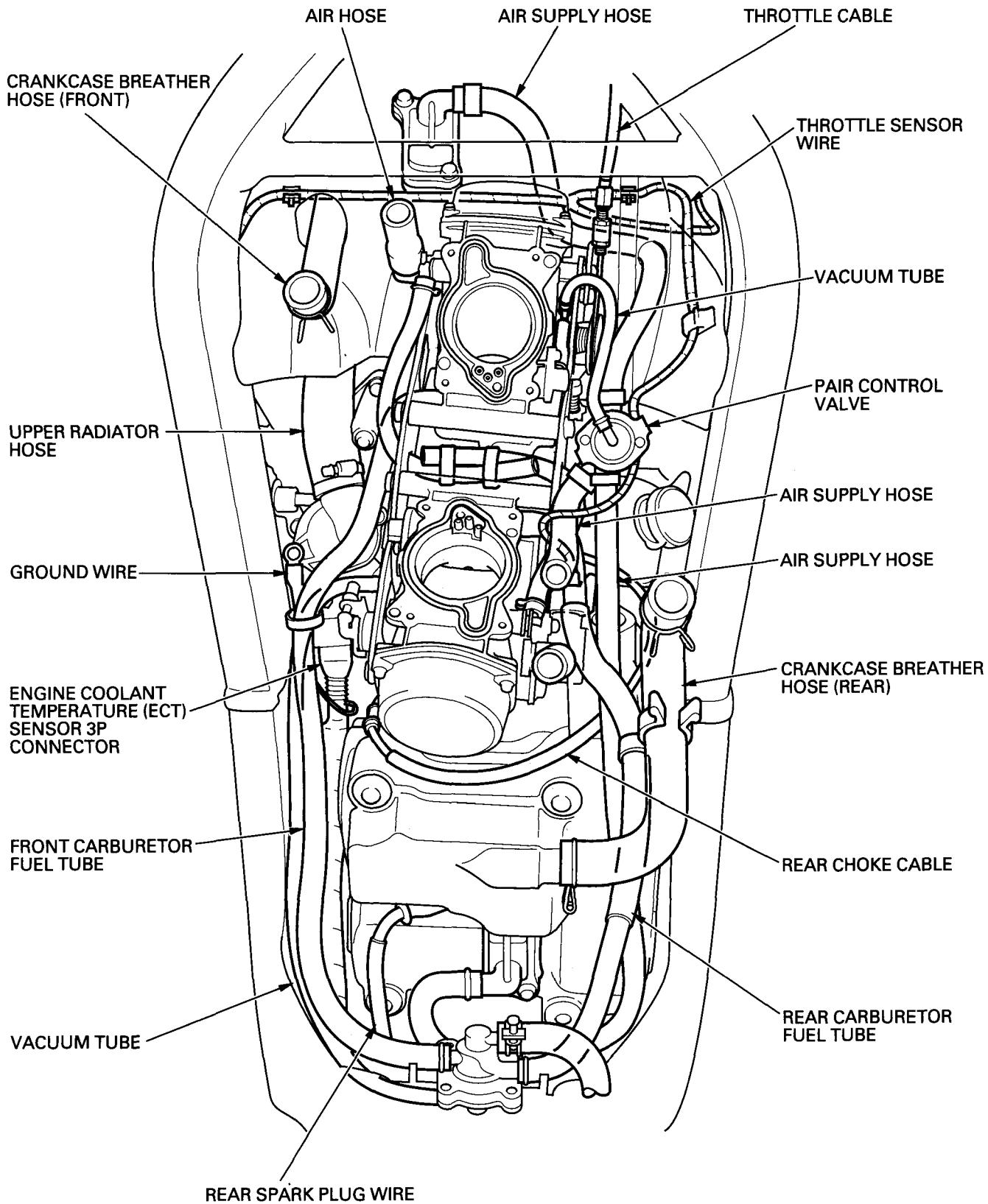
VTR1000F (1) ADDENDUM

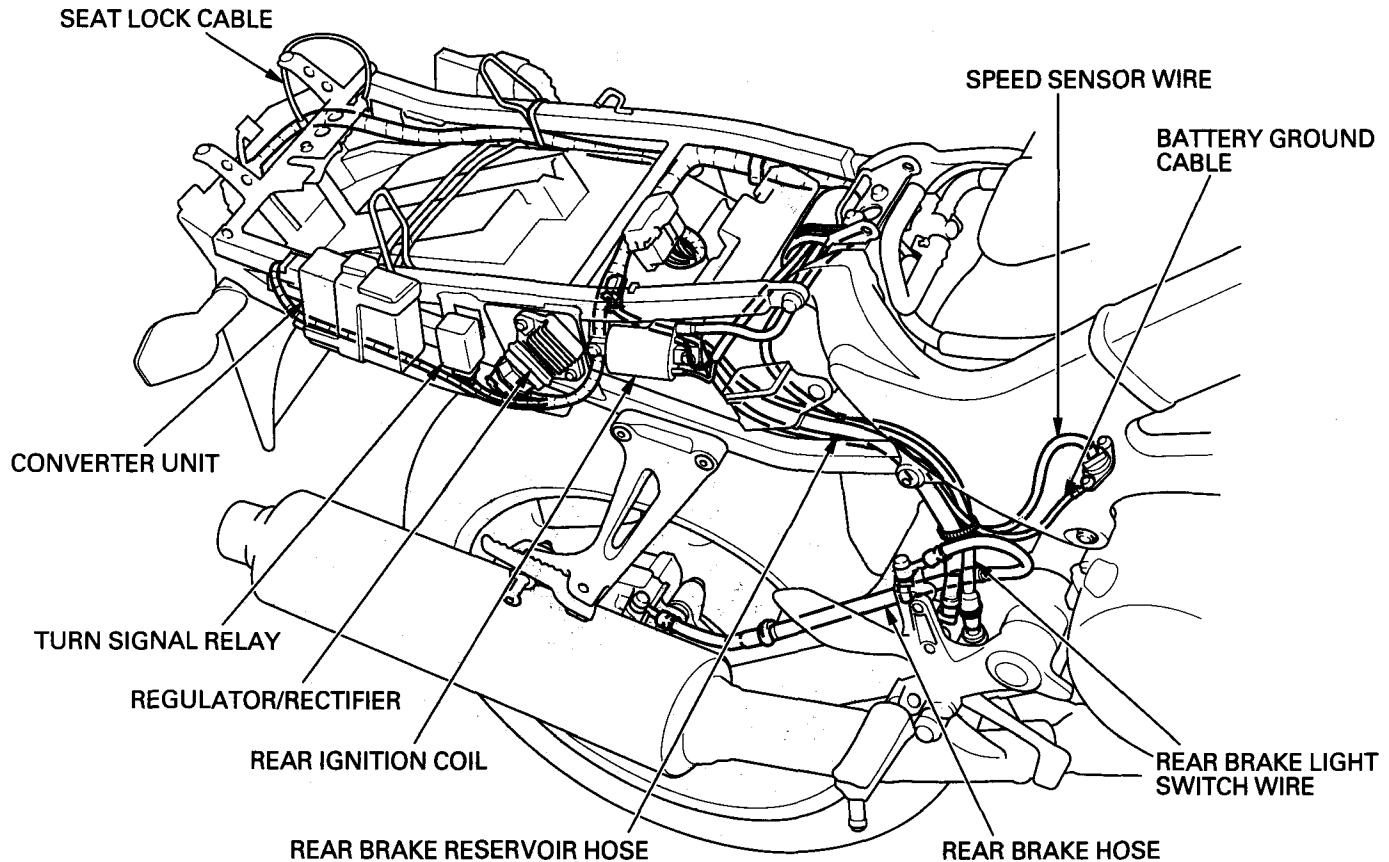
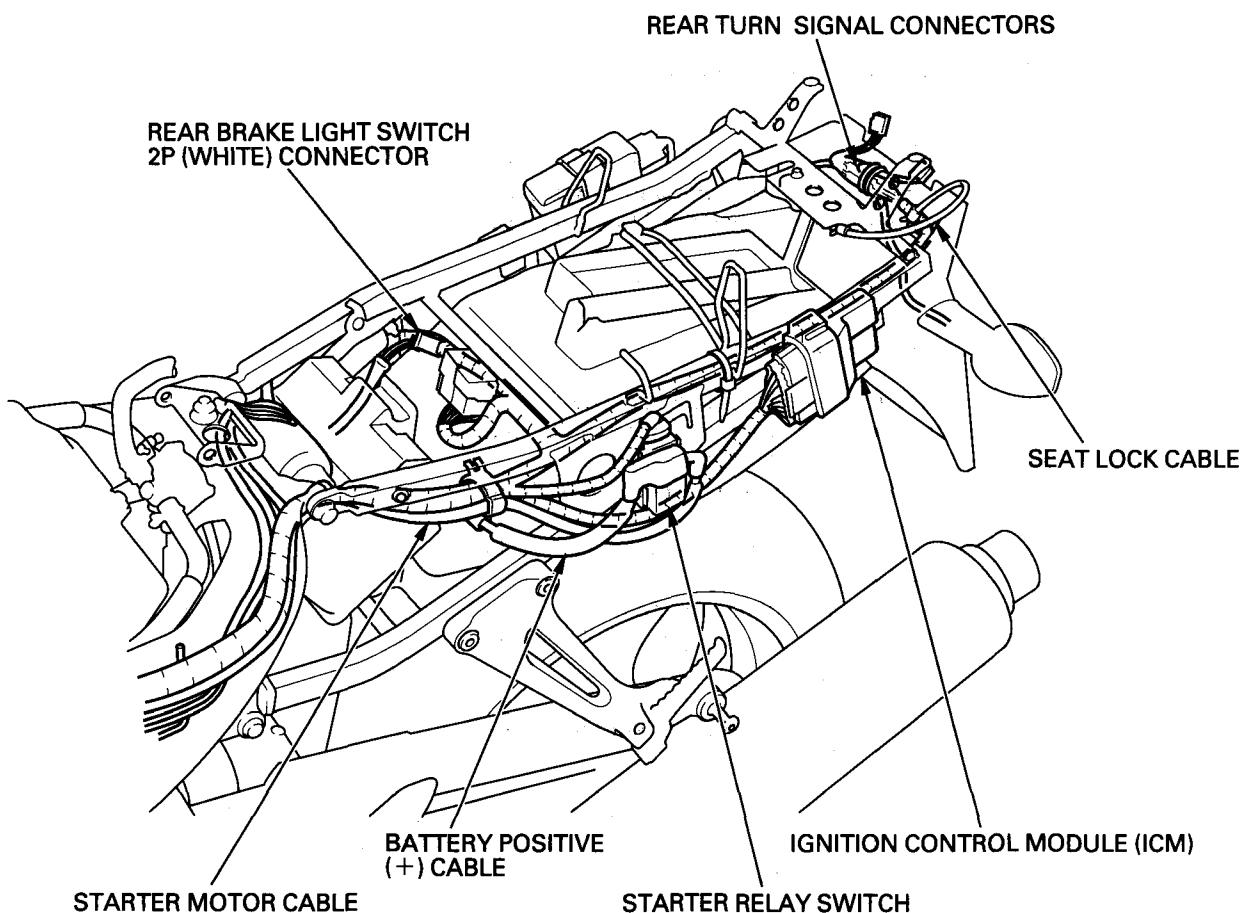












FUEL TANK

REMOVAL/INSTALLATION

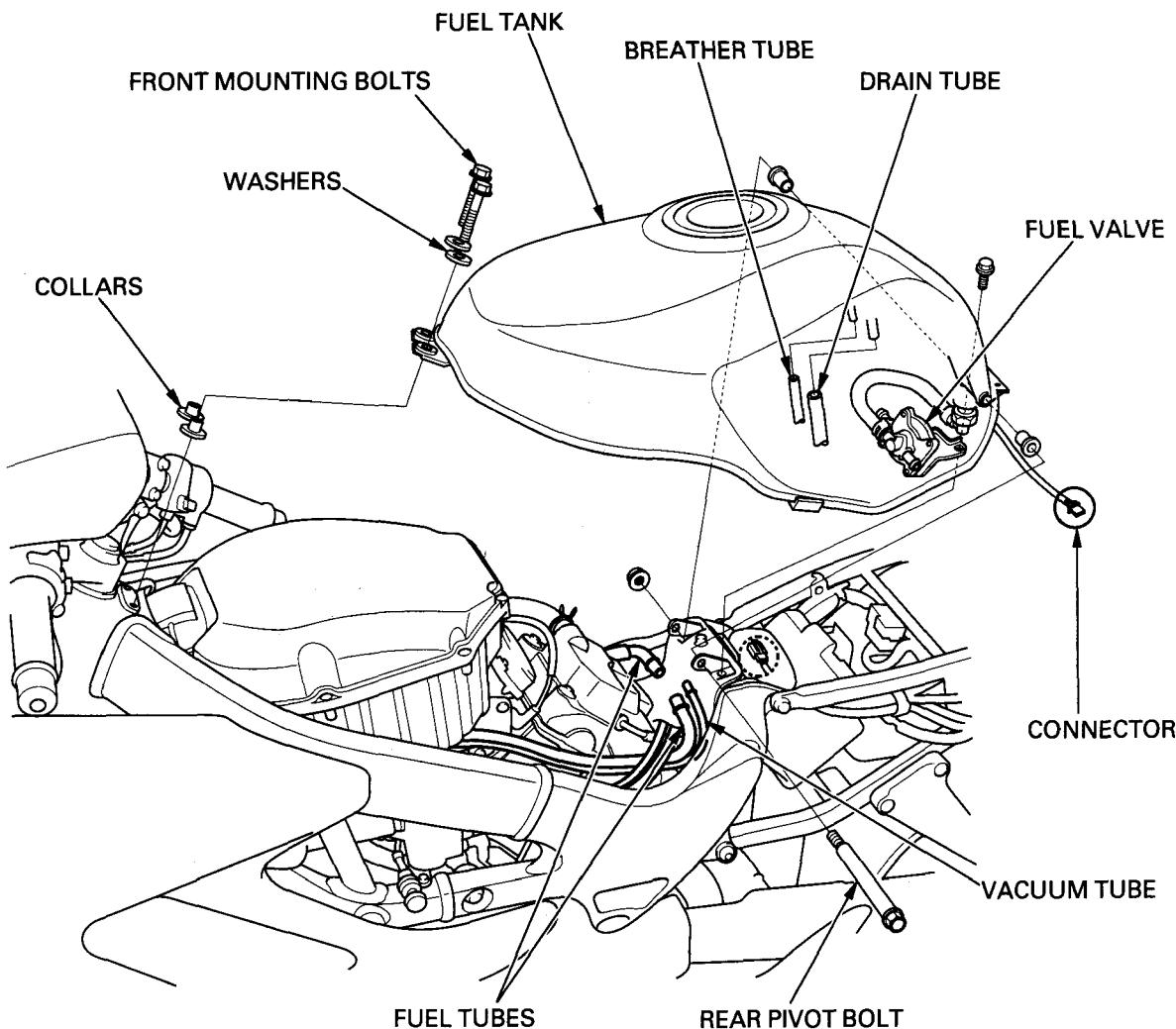
WARNING

Gasoline is extremely flammable and is explosive under certain conditions. KEEP OUT OF REACH OF CHILDREN.

Remove the seat (page 2-2).

- Disconnect the fuel level sensor 2P connector.
- Remove the fuel tank front mounting bolts and washers, and raise the front of the fuel tank.
- Disconnect the fuel tubes and vacuum tube from the fuel valve.
- Disconnect the fuel tank breather tube and drain tube from the fuel tank.
- Remove the fuel tank pivot nut and bolt.
- Remove the fuel valve mounting bolt and remove the fuel tank.

Install the fuel tank in the reverse order of removal.



MAINTENANCE SCHEDULE

Perform the PRE-RIDE INSPECTION in the Owner's Manual at each scheduled maintenance period.

I: Inspect and clean, adjust, lubricate or replace if necessary.

C: Clean

R: Replace

A: Adjust

L: Lubricate

The following Maintenance Schedule specifies all maintenance required to keep your motorcycle in peak operating condition. Maintenance work should be performed in accordance with standards and specifications of Honda by properly trained and equipped technicians. Your authorized Honda dealer meets all of these requirements.

ITEM	FREQUENCY ↓ NOTE	WHICHEVER COMES FIRST → MONTHS	ODOMETER READING (NOTE 1)								REFER TO PAGE
			× 1,000 km	1	6	12	18	24	30	36	
			× 1,000 mi	0.6	4	8	12	16	20	24	
				6	12	18	24	30	36		
* FUEL LINE					I		I		I		3-4
* THROTTLE OPERATION					I		I		I		3-4
* CARBURETOR CHÖKE					I		I		I		3-5
* AIR CLEANER	NOTE 2					R			R		3-5
SPARK PLUG					I	R		I			3-6
* VALVE CLEARANCE							I				3-7
ENGINE OIL			R		R	R		R			3-10
ENGINE OIL FILTER			R		R	R		R			3-11
* CARBURETOR SYNCHRONIZATION			I	I		I		I			3-12
* ENGINE IDLE SPEED			I	I	I	I	I	I	I		3-13
RADIATOR COOLANT	NOTE 3			I		I		I	R		3-13
* COOLING SYSTEM				I		I		I			3-13
* SECONDARY AIR SUPPLY SYSTEM				I		I		I			3-14
DRIVE CHAIN			Every 1,000 km (600 mi) I, L								3-14
DRIVE CHAIN SLIDER					I		I		I		3-18
BRAKE FLUID	NOTE 3		I	I	R	I	I	R			3-18
BRAKE PAD WEAR			I	I	I	I	I	I			3-19
BRAKE SYSTEM			I		I		I		I		3-20
* BRAKE LIGHT SWITCH				I		I		I			3-20
* HEADLIGHT AIM				I		I		I			3-21
CLUTCH SYSTEM				I		I		I			3-21
CLUTCH FLUID	NOTE 3		I	I	R	I	I	R			3-22
SIDE STAND				I		I		I			3-22
* SUSPENSION				I		I		I			3-23
* NUTS, BOLTS, FASTENERS			I	I		I		I			3-24
** WHEELS/TIRES				I		I		I			3-25
** STEERING HEAD BEARINGS			I	I		I		I			3-25

* Should be serviced by your authorized Honda dealer, unless the owner has proper tools and service data and is mechanically qualified.

* * In the interest of safety, we recommend these items be serviced only by your authorized Honda dealer.

Honda recommends that your authorized Honda dealer should road test your motorcycle after each periodic maintenance is carried out.

NOTES: 1. At higher odometer readings, repeat at the frequency interval established here.

2. Service more frequently when riding in unusually wet or dusty areas.

3. Replace every 2 years, or at indicated odometer interval, whichever comes first. Replacement requires mechanical skill.

AIR CLEANER HOUSING

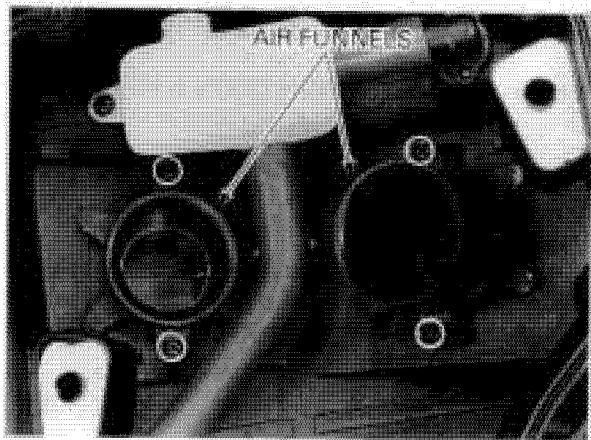
REMOVAL/INSTALLATION

NOTE:

Do not remove the air cleaner housing from the carburetors unless the carburetor overhaul is required.

Remove the air cleaner element (page 3-5).

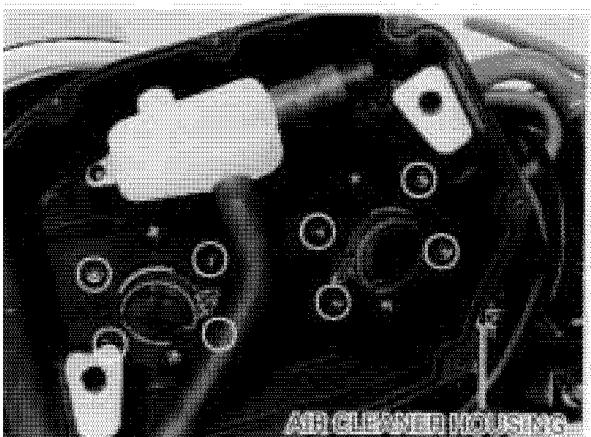
Remove the screws and air funnels.



Remove the eight air cleaner housing mounting screws.

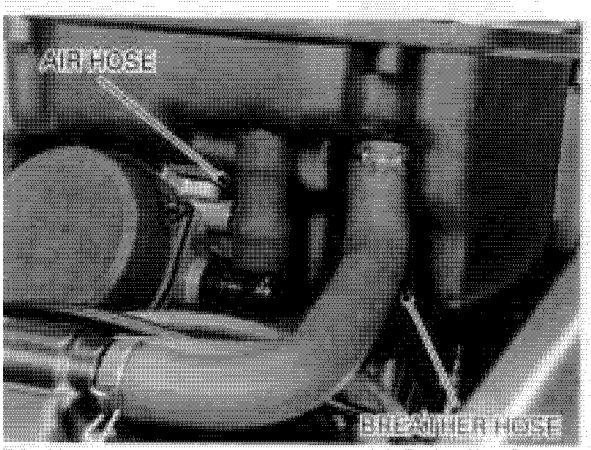
CAUTION:

Do not overtighten the screws when installing, as the threaded holes in the carburetors will be stripped.

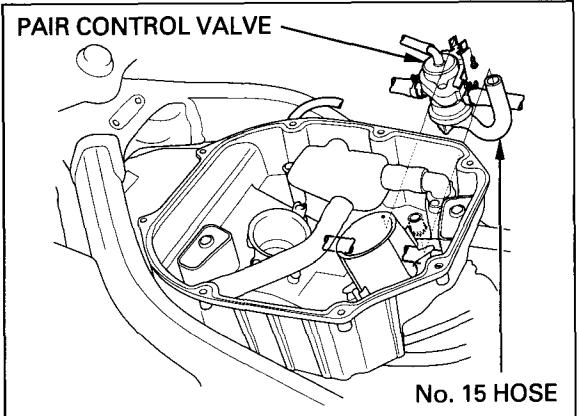


Disconnect the front and rear crankcase breather hoses and air hoses from the air cleaner housing.

Remove the air cleaner housing.

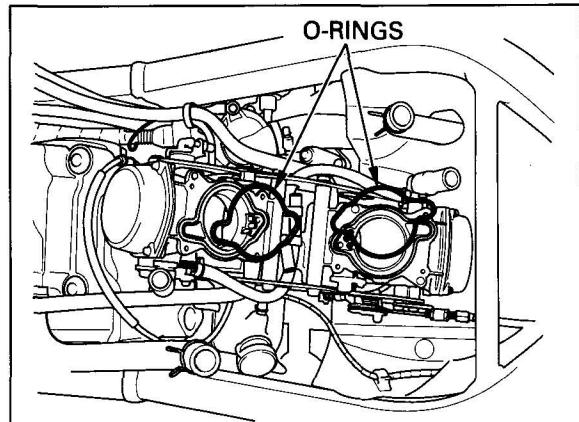


Remove the screw and the pulse secondary air injection (PAIR) control valve with the stay, and disconnect the air supply (No. 15) hose from the air cleaner housing.



Remove the O-rings.

Install new O-rings into the carburetor grooves.
Install the removed parts in the reverse order of removal.



NOTE:

- Note that the rear air funnel is longer than the front air funnel.
- Install the air funnels by aligning the "▲" marks on the air funnel and air cleaner housing.



CARBURETOR

REMOVAL/INSTALLATION

Drain the coolant (page 6-5).

Remove the air cleaner housing (page 24-21).

NOTE:

When the carburetors will not be serviced, remove the carburetor assembly with the air cleaner housing attached to prevent the threaded holes in the carburetor from damaging.

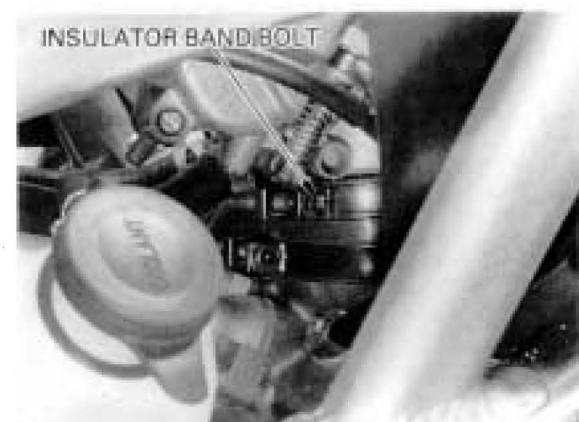
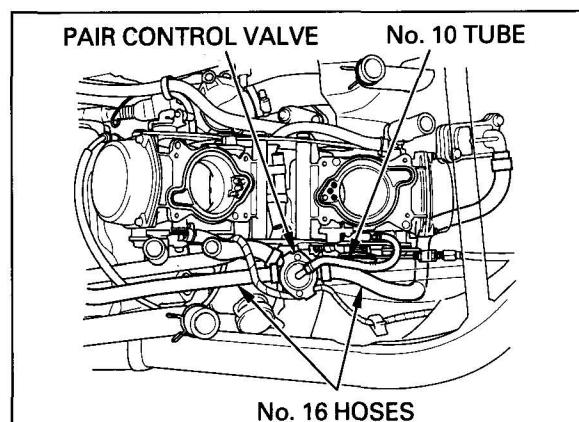
Remove the pulse secondary air injection (PAIR) control valve by disconnecting the No. 10 vacuum tube and No. 16 air supply hoses.

Loosen the carburetor insulator band bolts from the right side.

NOTE:

Insert the screwdriver through the hole in the heat guard to loosen the front carburetor insulator band bolt.

Remove the carburetor assembly from the insulators.



VTR1000F (1) ADDENDUM

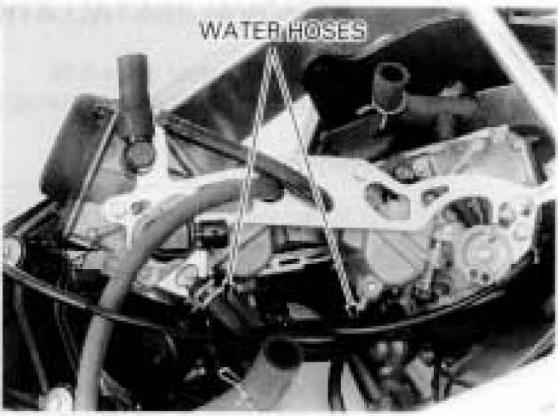
Disconnect the throttle sensor 3P (white) connector.
Remove the throttle sensor wire from the clamp on the carburetor set plate.



Remove the throttle cables from the cable stay and disconnect them from the throttle drum.

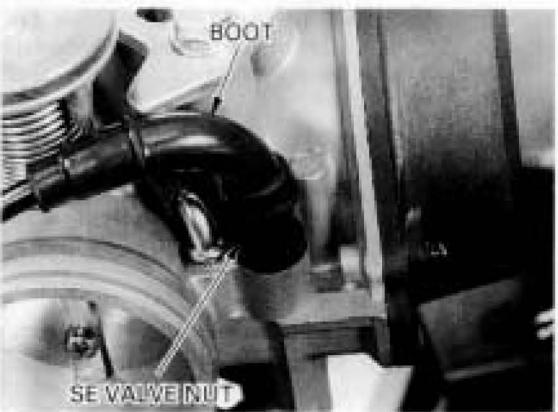


Disconnect the water inlet and outlet hoses from the carburetor heaters.



Slide off the boots from the starting enrichment (SE) valve nuts.
Loosen the SE valve nuts and disconnect the choke cables from the front and rear carburetors.

Install the carburetor in the reverse order of removal.



PILOT SCREW ADJUSTMENT

IDLE DROP PROCEDURE

NOTE:

- Make sure the carburetor synchronization is within specification before pilot screw adjustment.
- The pilot screws are factory pre-set and no adjustment is necessary unless the pilot screws are replaced.
- Use a tachometer with graduations of 50 rpm or smaller that will accurately indicate a 50 rpm change.

1. Turn each pilot screw clockwise until it seats lightly, then back it out to the specification given. This is an initial setting prior to the final pilot screw adjustment.

CAUTION:

Damage to the pilot screw seat will occur if the pilot screw is tightened against the seat.

TOOL:

Pilot screw wrench 07908-4220201

INITIAL OPENING: 2 turns out

2. Warm up the engine to operating temperature.
Stop and go driving for 10 minutes is sufficient.
3. Stop the engine and connect a tachometer according to the tachometer manufacturer's instructions.
4. Start the engine and adjust the idle speed with the throttle stop screw.

IDLE SPEED: $1,200 \pm 100 \text{ min}^{-1}$ (rpm)

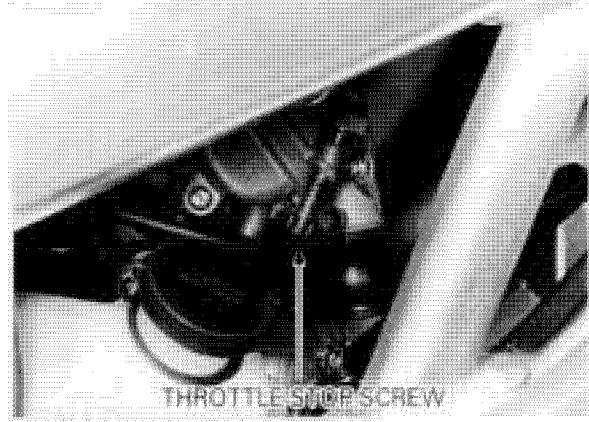
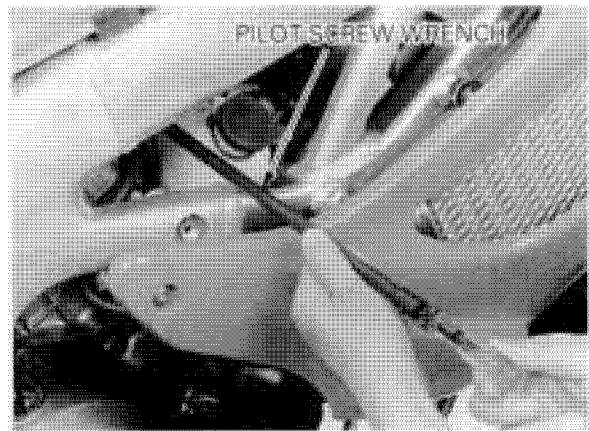
5. Turn the front carburetor pilot screw in or out slowly to obtain the highest engine speed.
6. Perform step 5 for rear carburetor pilot screw.
7. Lightly open the throttle 2 or 3 times, then adjust the idle speed with the throttle stop screw.
8. Turn the front carburetor pilot screw in until the engine speed drops by 50 min^{-1} (rpm).
9. Turn the front carburetor pilot screw out to the final opening from the position obtained in step 8.

FINAL OPENING:

Front: 1 turn out

Rear: 1-1/4 turns out

10. Adjust the idle speed with the throttle stop screw.
11. Perform steps 8, 9 and 10 for the rear carburetor pilot screw.

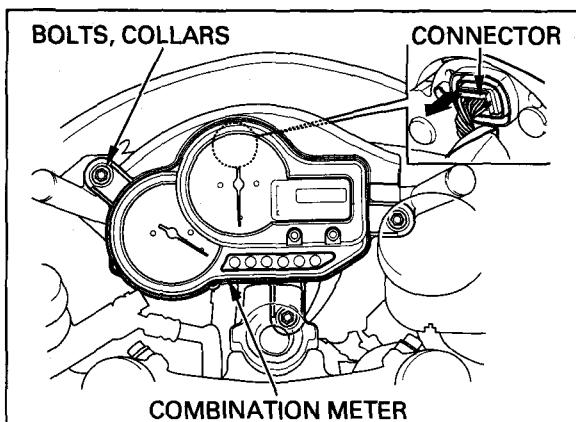


COMBINATION METER

REMOVAL/INSTALLATION

Remove the three bolts, collars and combination meter assembly from the stay. Disconnect the combination meter 16P connector and remove the combination meter assembly.

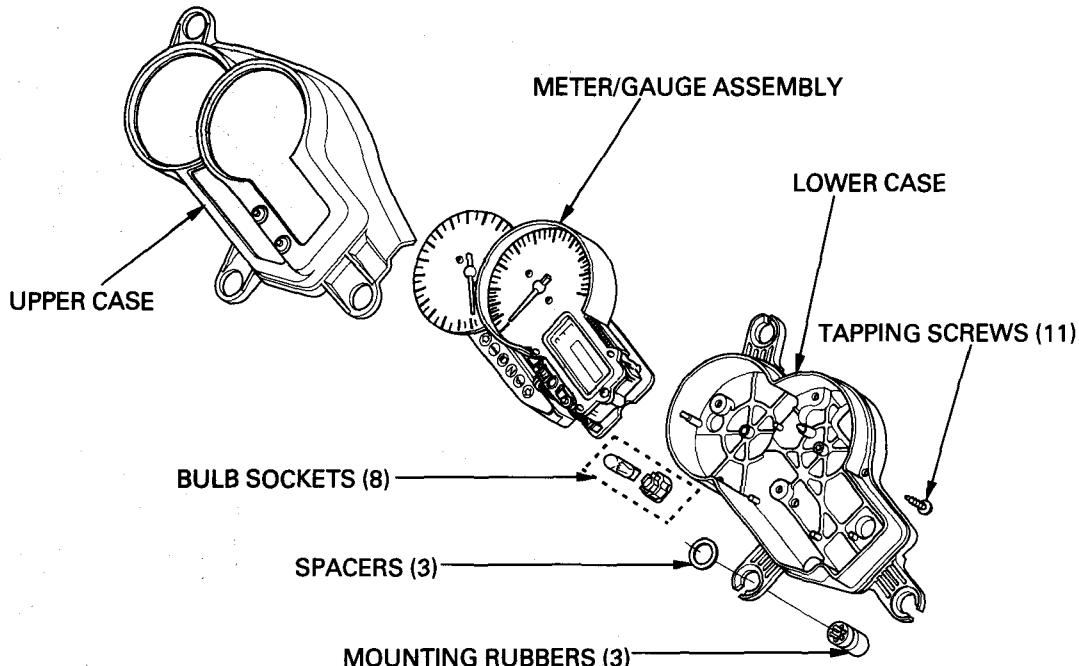
Install the combination meter assembly in the reverse order of removal.



DISASSEMBLY/ASSEMBLY

Remove the eleven screws and disassemble the combination meter assembly.

Assembly is in the reverse order of disassembly.



POWER/GROUND LINE INSPECTION

Remove the combination meter assembly. Check the following at the combination meter connector terminals:

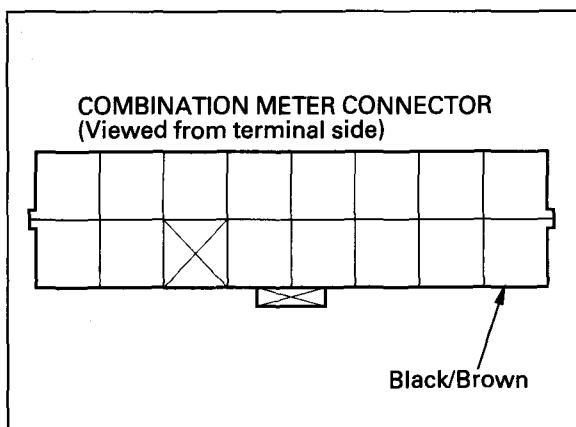
POWER SOURCE LINE

Measure the voltage between the Black/Brown wire terminal (+) and ground (-).

There should be battery voltage with the ignition switch ON.

If there is no voltage, check the following:

- open circuit in the Black/Brown wire
- blown sub-fuse (10 A) (Meter/tail/illumination)

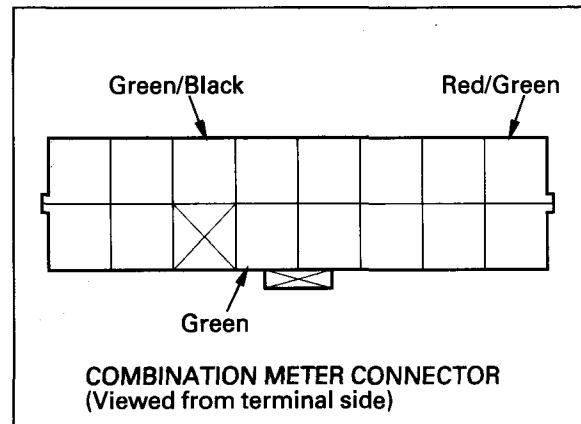


SENSOR GROUND LINE

Check for continuity between the Green/Black wire terminal and ground.

There should be continuity at all times.

If there is no continuity, check for open circuit in the Green/Black wire.

**GROUND LINE**

Check for continuity between the Green wire terminal and ground.

There should be continuity at all times.

If there is no continuity, check for open circuit in the Green wire.

BACK-UP VOLTAGE LINE

Measure the voltage between the Red/Green wire terminal (+) and ground (-).

There should be battery voltage at all times.

If there is no voltage, check the following:

- open circuit in the Red/Green wire
- blown sub-fuse (10 A) (Odometer)
- open circuit in the Red wire

SPEEDOMETER**INSPECTION****Speedometer does not operate**

1. Check that the tachometer, coolant temperature gauge and fuel gauge function properly.

- If they do not function, check the power source line and sensor ground line.
- If they function properly, go to step 2.

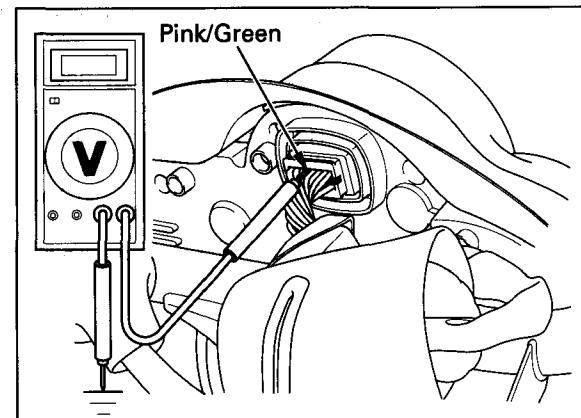
2. Remove the combination meter assembly from the stay (page 24-26), but do not disconnect the connector.

Shift the transmission into neutral and turn the ignition switch ON.

Measure the voltage between the Pink/Green (+) wire terminal of the combination meter connector and ground (-) with the connector connected.

There should be 0 V to 5 V pulse voltage while slowly turning the rear wheel by hand.

- If the pulse voltage appears, replace the meter/gauge assembly (page 24-26).
- If the pulse voltage does not appear, check for open or short circuit in the Pink/Green wire. If the wire is OK, check the speed sensor (page 19-9).



TACHOMETER

INSPECTION

Tachometer does not operate

1. Check that the speedometer, coolant temperature gauge and fuel gauge function properly.

- If they do not function, check the power source line and sensor ground line (page 24-27).
- If they function properly, go to step 2.

2. Remove the combination meter assembly (page 24-26).

Connect the peak voltage adaptor or Imrie diagnostic tester probes to the Yellow/Green (+) wire terminal of the combination meter connector and ground (-).

TOOLS:

Imrie diagnostic tester (model 625) or

Peak voltage adaptor 07HGJ-0020100

with commercially available digital multimeter

(impedance 10 MΩ/DCV minimum)

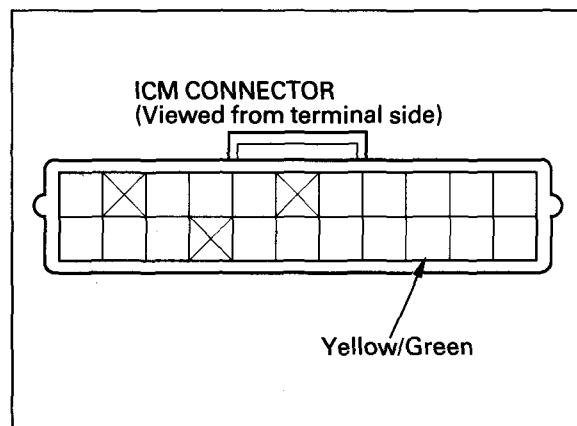
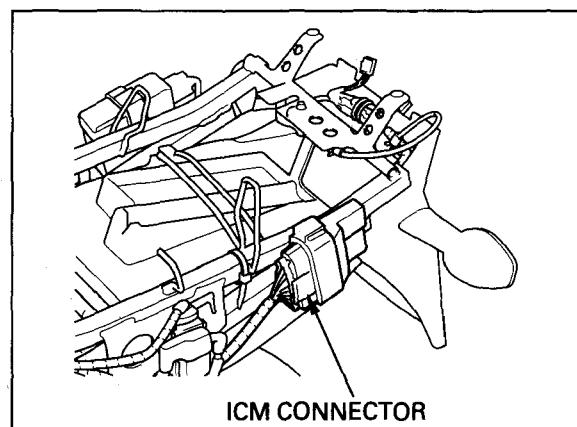
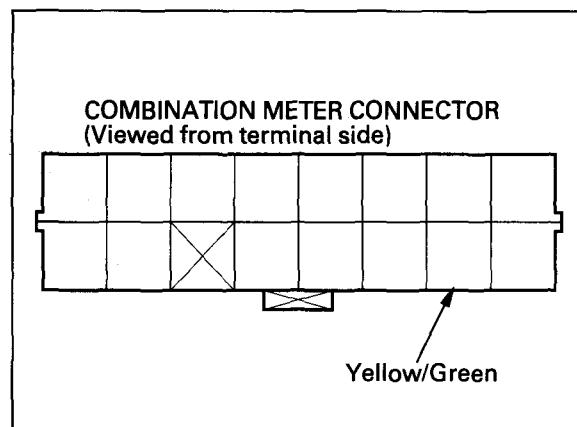
Start the engine and measure the tachometer signal peak voltage.

PEAK VOLTAGE: 10.5 V minimum

- If the measured value is more than 10.5 V, replace the meter/gauge assembly (page 24-27).
- If the measured value is less than 10.5 V, replace the ignition control module (ICM).
- If there is no voltage, go to step 3.

3. Remove the seat cowl (page 2-2).

Disconnect the ICM connector.



4. Check the Yellow/Green wire for open or short circuit as follows:

- Check for continuity between the combination meter and ICM connectors.
There should be continuity.
- Check for continuity to ground.
There should be no continuity.

- If the Yellow/Green wire is OK, replace the ICM.

COOLANT TEMPERATURE GAUGE

NOTE:

The coolant temperature gauge displays "35°C" to "132°C". It displays "— °C" when the coolant temperature is below 34°C and the displayed figures blink when the coolant temperature is above 122°C.

INSPECTION

Gauge does not operate properly

1. Check that the tachometer, speedometer and fuel gauge function properly.

- If they do not function, check the power source line and sensor ground line (page 24-27).
- If they function properly, go to step 2.

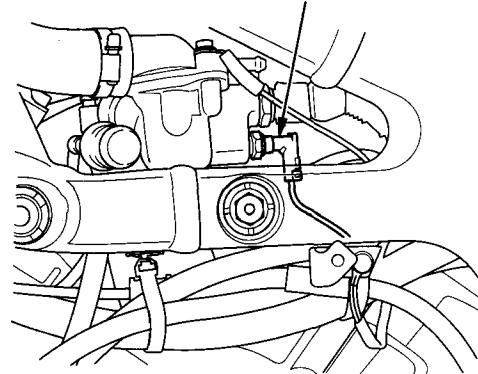
2. Turn the ignition switch OFF and disconnect the thermosensor connector.

Turn the ignition switch ON and check the coolant temperature gauge.



COOLANT TEMPERATURE GAUGE

THERMOSENSOR CONNECTOR



- If the gauge displays "— °C", go to step 3.
- If the gauge displays "132°C" and the figures blink, check for short circuit in the Green/Blue wire between the thermosensor and combination meter.
- If the gauge displays any figures other than "— °C", replace the meter/gauge assembly.

3. Turn the ignition switch OFF and ground the connector terminal with a jumper wire.

Turn the ignition switch ON and check the coolant temperature gauge.

- If the gauge displays "132°C" and the figures blink, check the thermosensor (page 19-11).
- If the gauge displays "— °C", check for open circuit in Green/Blue wire between the thermosensor and combination meter.
- If the gauge displays any figures other than "132°C", replace the meter/gauge assembly.



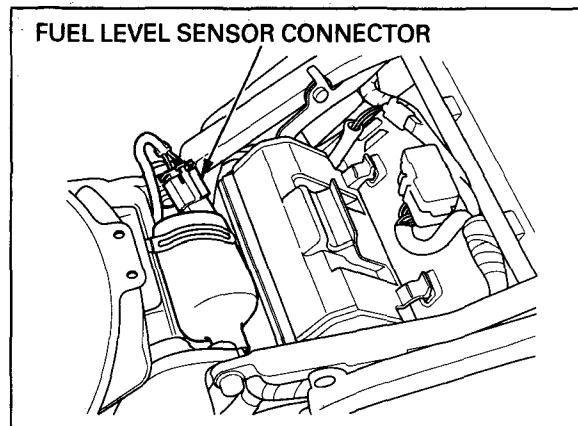
FUEL GAUGE/FUEL LEVEL SENSOR

Remove the seat (page 2-2).

SYSTEM INSPECTION

Gauge does not operate properly

1. Check that the tachometer, speedometer and coolant temperature gauge function properly.
 - If they do not function, check the power source line and sensor ground line (page 24-27).
 - If they function properly, go to step 2.

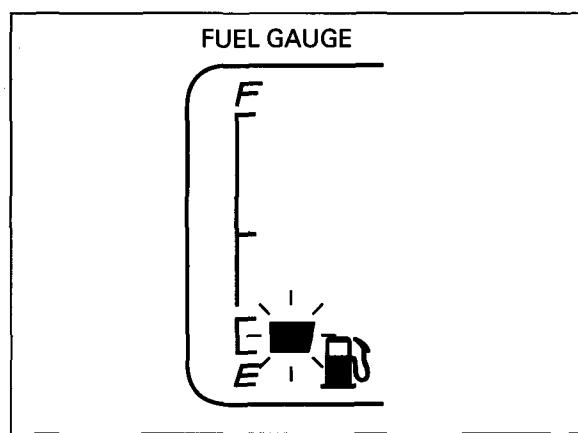


2. Turn the ignition switch OFF and disconnect the fuel level sensor connector.

Turn the ignition switch ON and check the fuel gauge.

The segment E should be blinking.

- If the segment E is blinking, go to step 3.
- If all segments up to segment F appear, check for short circuit in the Gray/Black wire.
- If some segments appear, replace the meter/gauge assembly (page 24-26).

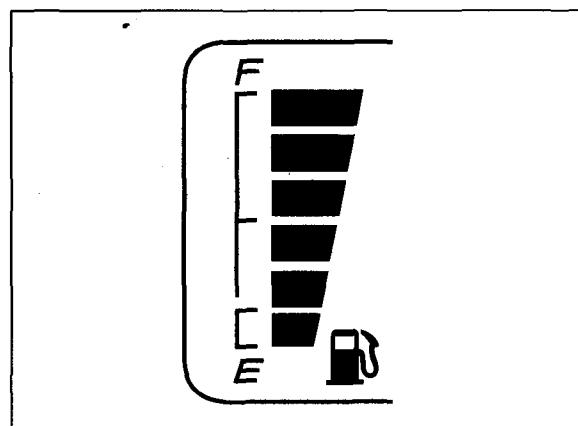


3. Turn the ignition switch OFF and short the wire harness side sensor connector terminals with a jumper wire.

Turn the ignition switch ON and check the fuel gauge display.

All segments up to segment F should appear.

- If all segments up to segment F appear, check the fuel level sensor.
- If the segment E is blinking, check for open circuit in the Gray/Black and Green/Black wires.
- If some segments appear, replace the meter/gauge assembly (page 24-26).



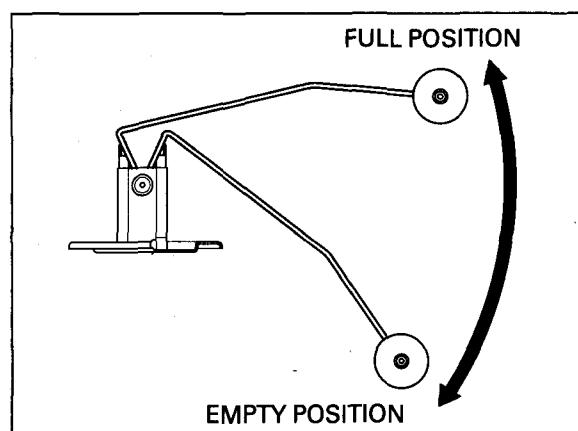
FUEL LEVEL SENSOR INSPECTION

Remove the fuel level sensor from the fuel tank.

Measure the resistance between the fuel level sensor connector terminals with the float at top (FULL) and bottom (EMPTY) positions.

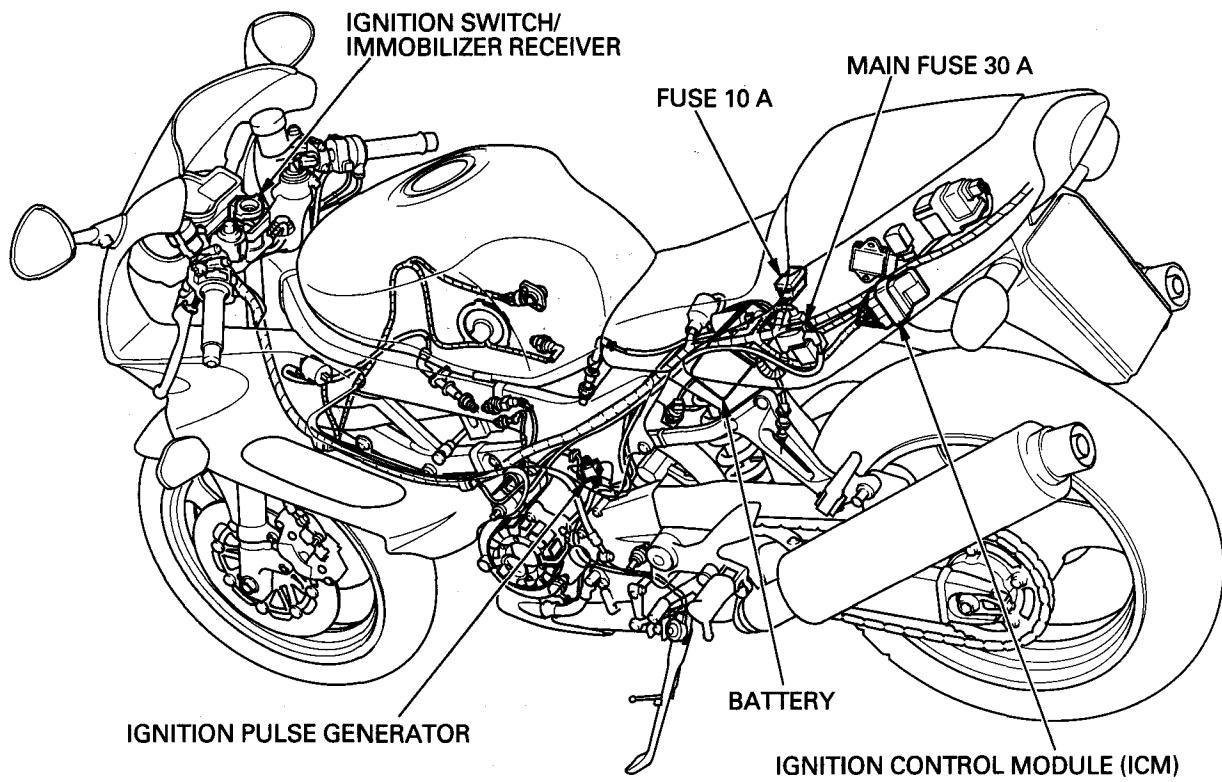
RESISTANCE (20°C/68°F):

- 4 – 10 Ω with the float at FULL position
81 – 91 Ω with the float at EMPTY position

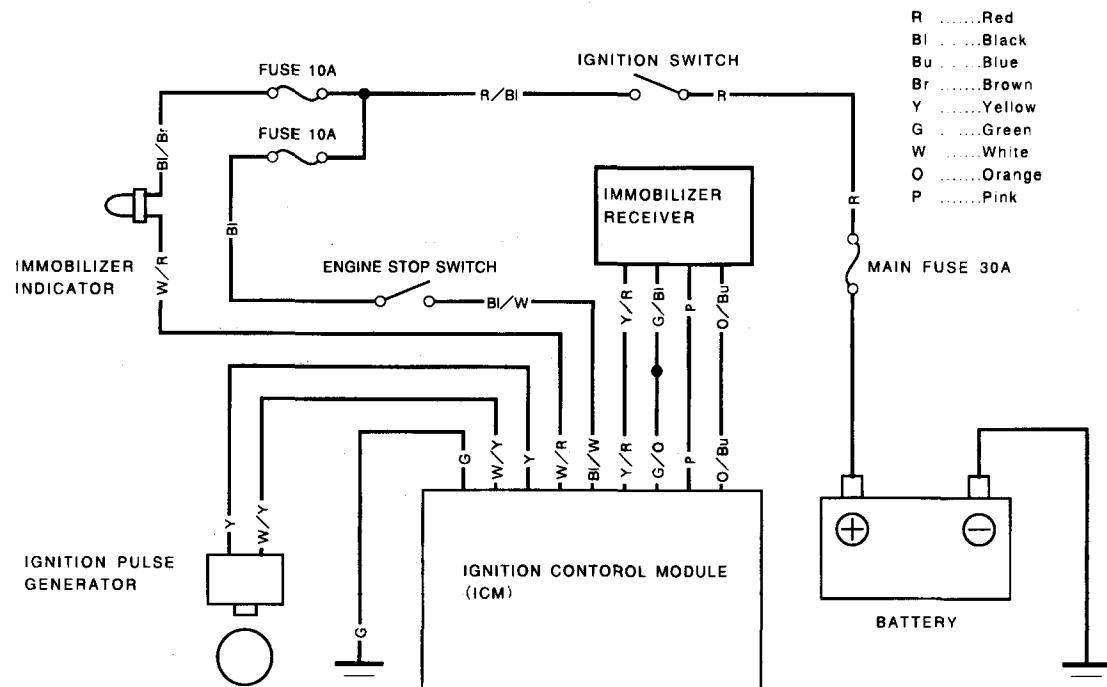


IMMOBILIZER SYSTEM

SYSTEM LOCATION



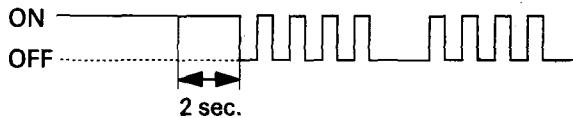
SYSTEM DIAGRAM



KEY REGISTRATION PROCEDURES

When the key has been lost, or additional spare key is required:

1. Obtain a new transponder key.
2. Grind the key in accordance with the shape of the original key.
3. Apply 12 V battery voltage to the ignition pulse generator lines of the ignition control module (ICM) using the special tool (page 24-35).
4. Turn the ignition switch ON with the original key. The immobilizer indicator comes on and it remains on.
 - The code of the original key is recognized by the ICM.
 - If there is any problem in the immobilizer system, the system will enter the diagnostic mode and the indicator will remain on for approx. ten seconds, then it will indicate the diagnostic code (page 24-35).
5. Disconnect the red clip of the inspection adaptor from the battery positive (+) terminal for two seconds or more, then connect it again. The indicator remains on for approx. two seconds, then it blinks four times repeatedly.



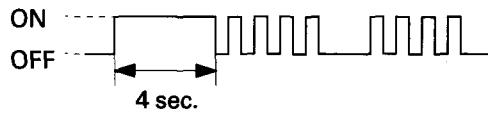
- The immobilizer system enters the registration mode. Registrations of all key except the original key inserted in the ignition switch are cancelled. (Registration of the lost key or spare key is cancelled.)

NOTE:

The spare key must be registered again.

6. Turn the ignition switch OFF and remove the key.

7. Turn the ignition switch ON with a new key or the spare key. (Never use the key registered in previous step.) The indicator comes on for four seconds then it blinks four times repeatedly.



- The new key or spare key is registered in the ICM.
- If there is any problem in the registration, the system will enter the diagnostic mode and the indicator will remain on for approx. ten seconds, then it will indicate the diagnostic code (page 24-36).

CAUTION:

Keep the other transponder key away from the immobilizer receiver more than 50 mm (2.0 in).

8. Repeat the steps 6 and 7 when you continuously register the other new key.

NOTE:

The ICM can store up to four key codes. (The four keys can be registered.)

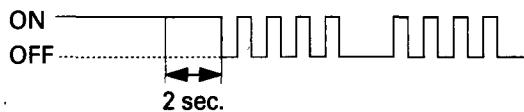
9. Turn the ignition switch OFF, remove the inspection adaptor and connect the ignition pulse generator connector.

10. Turn the ignition switch ON with the registered key.
 - The immobilizer system returns to the normal mode.

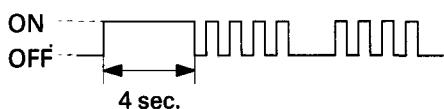
11. Check that the engine can be started using all registered key.

When the ignition switch is faulty:

1. Obtain a new ignition switch and two new transponder keys.
2. Remove the ignition switch (page 19-14).
3. Apply 12 V battery voltage to the ignition pulse generator lines of the ignition control module (ICM) using the special tool (page 24-35).
4. Set the original (registered) key near the immobilizer receiver so that the transponder in the key can communicate with the receiver.
5. Connect a new ignition switch to the wire harness and turn it ON with a new transponder key. (keep the ignition switch away from the receiver.) The immobilizer indicator comes on and it remains on.
 - The code of the original key is recognized by the ICM.
 - If there is any problem in the immobilizer system, the system will enter the diagnostic mode and the indicator will remain on for approx. ten seconds, then it will indicate the diagnostic code (page 24-35).
6. Disconnect the red clip of the inspection adaptor from the battery positive (+) terminal for two seconds or more, then connect it again. The indicator remains on for approx. two seconds then it blinks four times repeatedly.



- The immobilizer system enters the registration mode. Registrations of all key except the original key set near the receiver are cancelled.
7. Turn the ignition switch OFF and remove the key.
 8. Install the ignition switch onto the top bridge (page 19-14).
 9. Turn the ignition switch ON with a first new key. The indicator comes on for four seconds then it blinks four times repeatedly.



- The first key is registered in the ICM.
 - If there is any problem in the registration, the system will enter the diagnostic mode and the indicator will remain on for approx. ten seconds, then it will indicate the diagnostic code (page 24-36).
10. Turn the ignition switch OFF and disconnect the red clip of the inspection adaptor from the battery positive (+) terminal.
 11. Turn the ignition switch ON (with the first key registered in step 9). The immobilizer indicator comes on for two seconds then it goes off.
 - The immobilizer system returns to the normal mode.
 12. Turn the ignition switch OFF and connect the red clip of the inspection adaptor to the battery positive (+) terminal.
 13. Turn the ignition switch ON (with the first key registered in step 9). The immobilizer indicator comes on and it remains on.
 - The code of the first key is recognized by the ICM.
 - If there is any problem in the immobilizer system, the system will enter the diagnostic mode and the indicator will remain on for approx. ten seconds, then it will indicate the diagnostic code (page 24-35).
 14. Disconnect the red clip of the inspection adaptor from the battery positive (+) terminal for two seconds or more, then connect it again. The indicator remains on for approx. two seconds then it blinks four times repeatedly.
 - The immobilizer system enters the registration mode. Registration of the original key used in step 4 is cancelled.

VTR1000F (1) ADDENDUM

15. Turn the ignition switch OFF and remove the key.
16. Turn the ignition switch ON with a second new key. (Never use the key registered in previous step.) The indicator comes on for four seconds then it blinks four times repeatedly.
 - The second key is registered in the ICM.
 - If there is any problem in the registration, the system will enter the diagnostic mode and the indicator will remain on for approx. ten seconds, then it will indicate the diagnostic code (page 24-36).

CAUTION:

Keep the other transponder key away from the immobilizer receiver more than 50 mm (2.0 in).

17. Repeat the steps 15 and 16 when you continuously register the other new key.

NOTE:

The ICM can store up to four key codes. (The four keys can be registered.)

18. Turn the ignition switch OFF, remove the inspection adaptor and connect the ignition pulse generator connector.
19. Turn the ignition switch ON with the registered key.
 - The immobilizer system returns to the normal mode.
20. Check that the engine can be started using all registered key.

When all keys have been lost, or the ignition control module (ICM) is faulty:

1. Obtain a new ICM and two new transponder keys.
2. Grind the keys in accordance with the shape of the original key (or use the key number plate when all key have been lost).
3. Replace the ICM with new one.
4. Turn the ignition switch ON with a first new key. The immobilizer indicator comes on for two seconds, then it blinks four times repeatedly.
 - The first key is registered in the ICM.
 - If there is any problem in the registration, the system will enter the diagnostic mode and the indicator will remain on for approx. ten seconds, then it will indicate the diagnostic code (page 24-36).
5. Turn the ignition switch OFF and remove the first key.
6. Turn the ignition switch ON with a second new key. The immobilizer indicator comes on for two seconds, then it blinks four times repeatedly.
 - The second key is registered in the ICM.
 - If there is any problem in the registration, the system will enter the diagnostic mode and the indicator will remain on for approx. ten seconds, then it will indicate the diagnostic code (page 24-36).
7. Turn the ignition switch OFF and remove the second key.

NOTE:

- The system (ICM) will not enter the normal mode unless the two keys are registered in ICM.
 - The third new key cannot be continuously registered. When it is necessary to register the third key, follow the procedures "When the key has been lost, or additional key is required" (page 24-32).
-

8. Check that the engine can be started using all registered keys.

DIAGNOSTIC CODE INDICATION

Remove the front fairing (page 2-3).

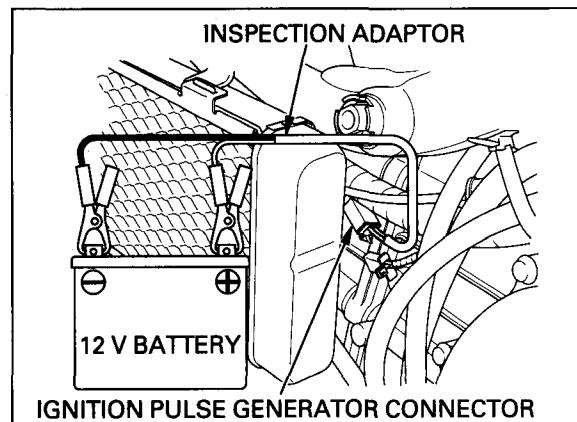
Disconnect the ignition pulse generator 2P (white) connector.

Connect the inspection adaptor to the wire harness side connector.

Connect the red clip of the adaptor to the 12 V battery positive (+) terminal and green clip to the negative (-) terminal.

TOOL:

Inspection adaptor 07XMZ-MBW0100



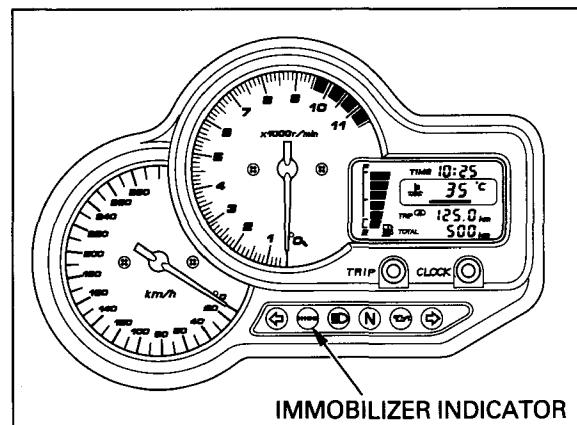
Turn the ignition switch ON with the properly registered key.

The immobilizer indicator will come on for approx. ten seconds then it will start blinking to indicate the diagnostic code if the system is abnormal.

The blinking frequency is repeated.

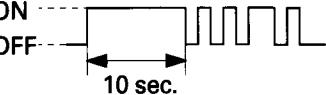
NOTE:

The immobilizer indicator remains on when the system is normal. (The system is in the normal mode and the diagnostic code does not appear.)



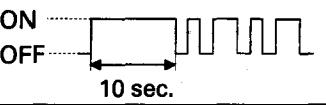
DIAGNOSTIC CODE

When the system (ICM) enters the diagnostic mode from the normal mode:

BLINKING PATTERN	SYMPTOM	PROBLEM	PROCEDURE
ON OFF 	Ignition control module (ICM) data is abnormal.	Faulty ICM	Replace the ICM
	Code signals cannot send or receive.	Faulty receiver or wire harness	Follow the troubleshooting (page 24-39).
	Identification code is disagree	Jamming by the other transponder	Keep the other vehicle's transponder key away from the immobilizer receiver more than 50 mm (2.0 in).
	Secret code is disagree		

VTR1000F (1) ADDENDUM

When the system (ICM) enters the diagnostic mode from the registration mode:

BLINKING PATTERN	SYMPTOM	PROBLEM	PROCEDURE
ON OFF 10 sec. 	Registration is overlapped.	The key is already registered properly.	Use a new key or cancelled key.
	Code signals cannot send or receive.	Communication fails.	Follow the troubleshooting (page 24-39).
	Registration is impossible	The key is already registered on the other system.	Use a new key.

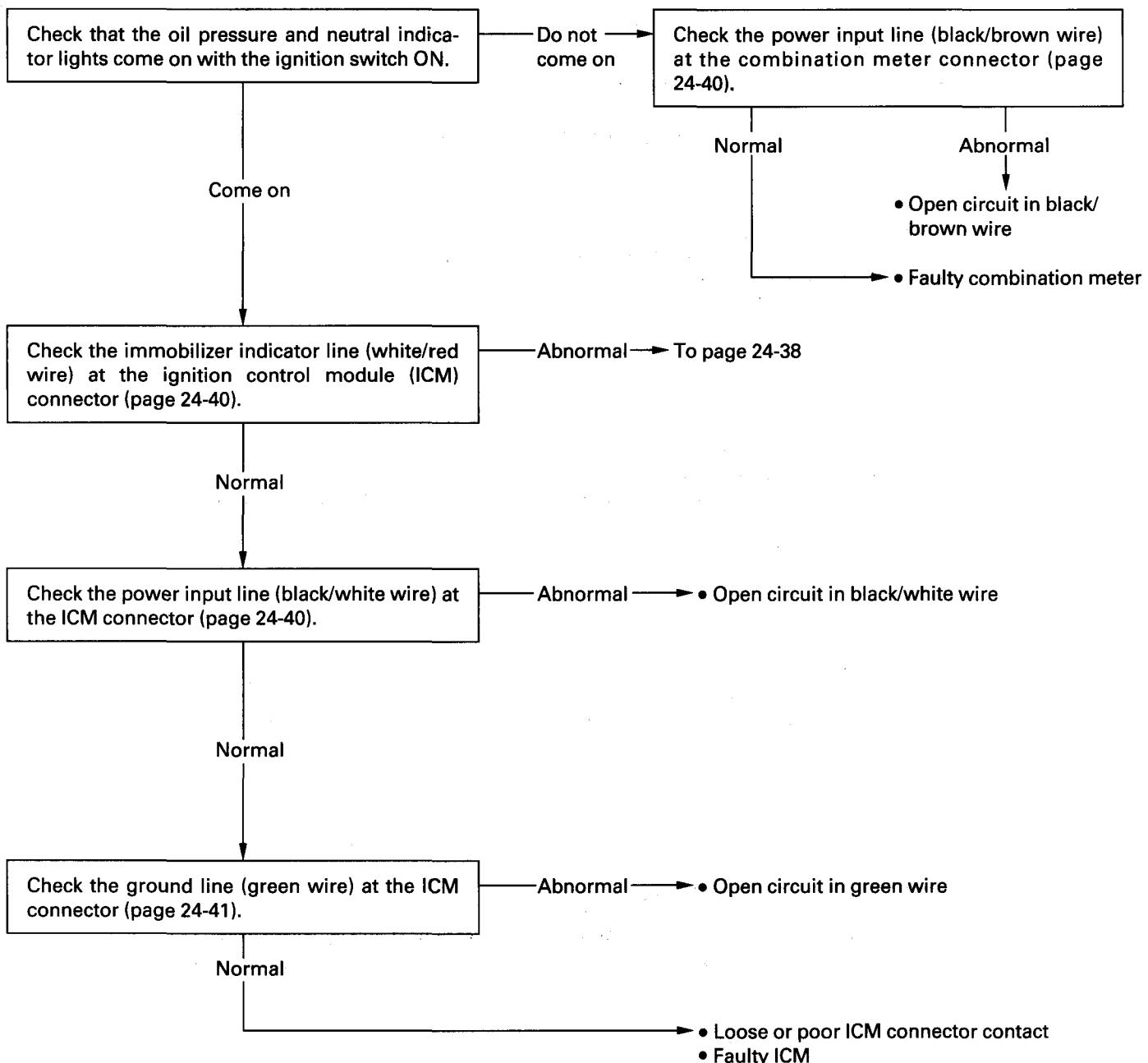
TROUBLESHOOTING

NOTE:

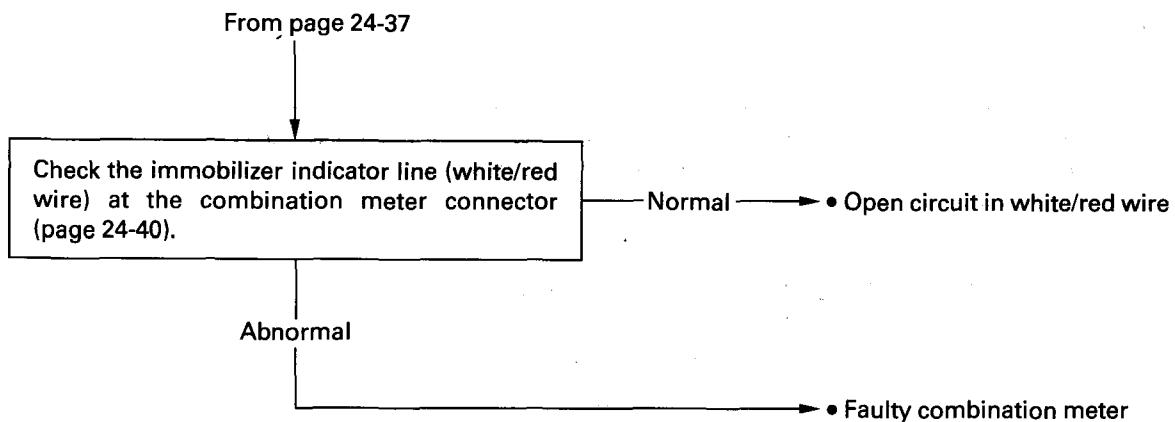
The immobilizer indicator comes on for approx. two seconds then it goes off, when the ignition switch is turned ON with the properly registered key and the immobilizer system functions normally. If there is any problem or the properly registered key is not used, the indicator will remain on.

Immobilizer indicator does not come on when the ignition switch is turned ON

- Check for a blown fuses (10 A).

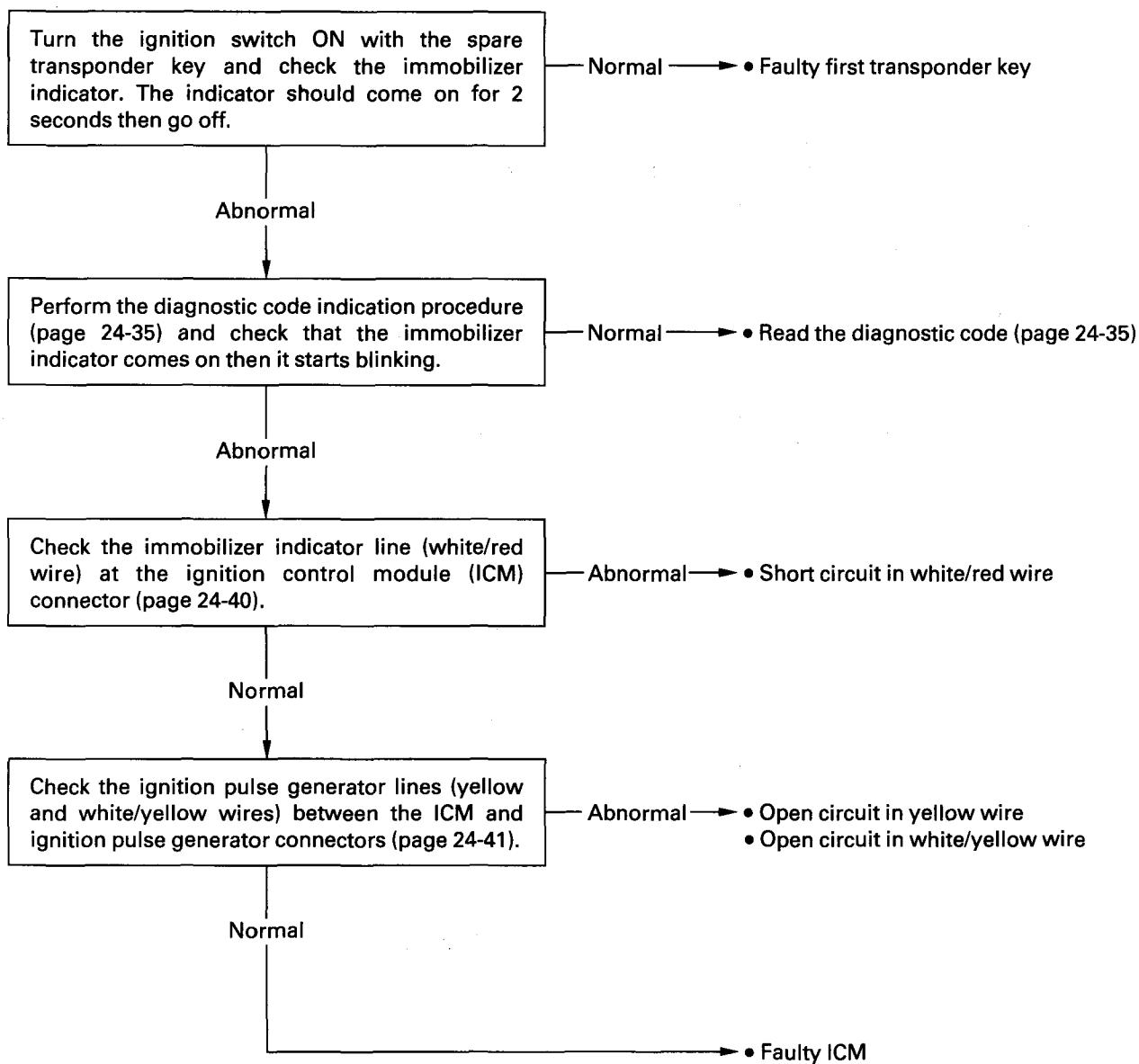


VTR1000F (1) ADDENDUM

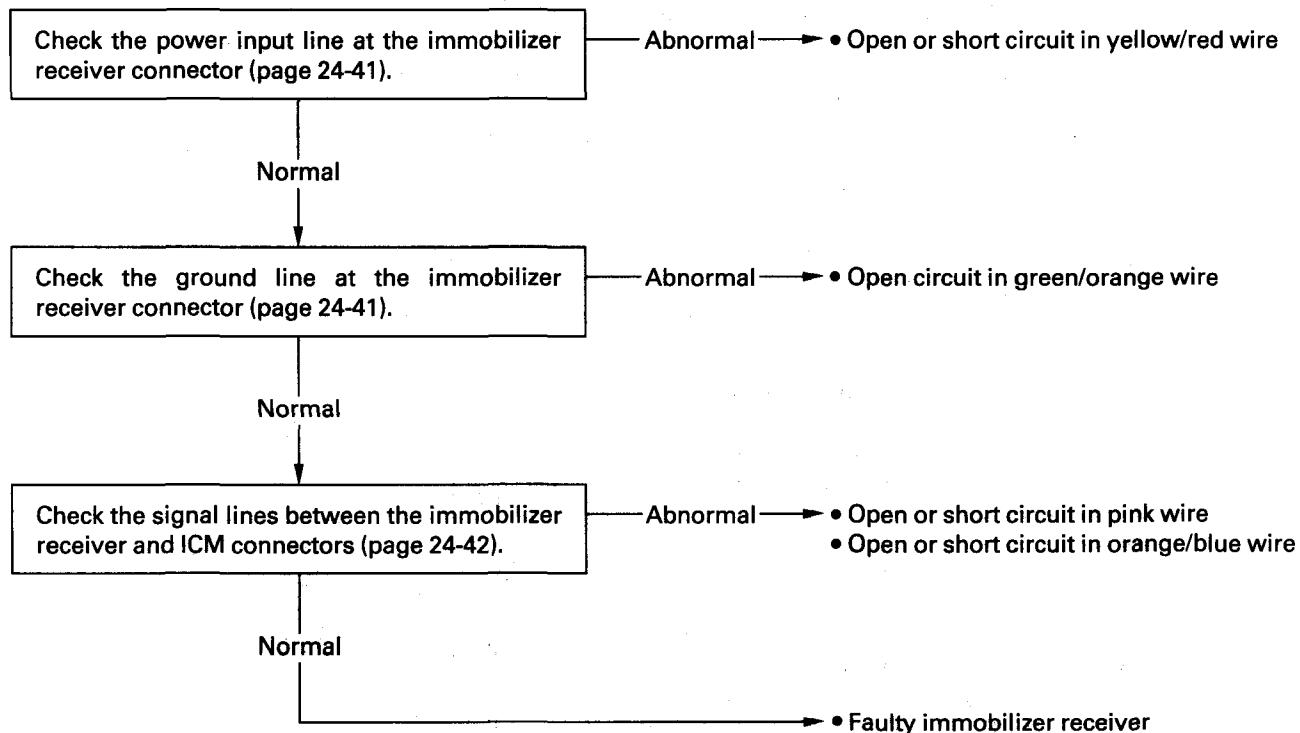


Immobilizer indicator remains on with the ignition switch ON

- Check that there is any metal obstruction or the other vehicle's transponder key near the immobilizer receiver and key. If so, remove it and recheck.



Diagnostic code  is indicated (Code signals cannot send or receive)



IMMOBILIZER INDICATOR

Remove the combination meter from the stay (page 2-26).

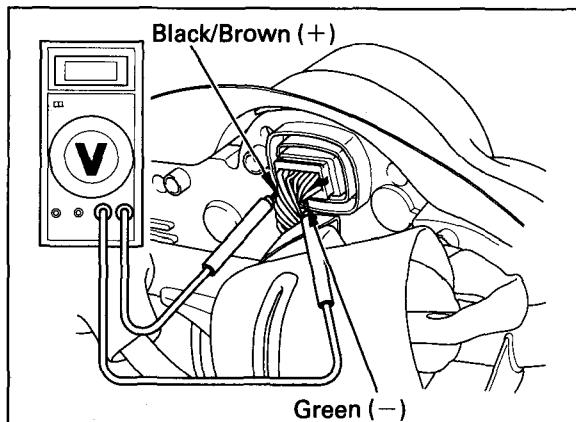
Perform the following inspections with the combination meter connector connected.

POWER INPUT LINE INSPECTION

Measure the voltage between the black/brown (+) and green (-) wire terminals.

Turn the ignition switch ON.

There should be battery voltage.

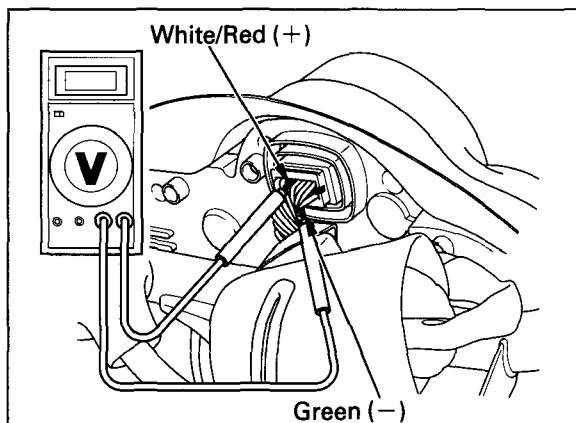


IMMOBILIZER INDICATOR LINE INSPECTION

Measure the voltage between the white/red (+) and green (-) wire terminals.

Turn the ignition switch ON.

There should be battery voltage.

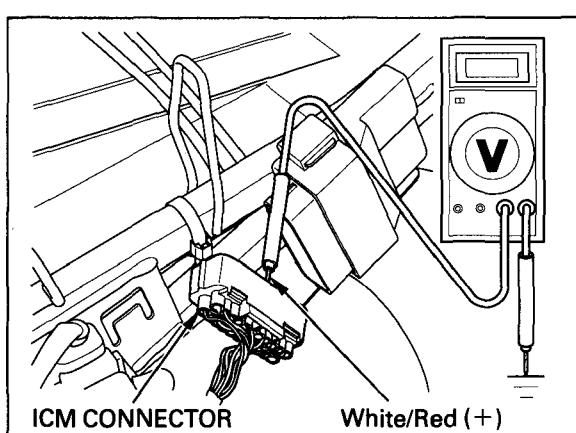


IGNITION CONTROL MODULE (ICM)

Remove the seat cowl (page 2-2).

Disconnect the ICM connector.

Perform the following inspections at the wire harness side connector of the ICM.



IMMOBILIZER INDICATOR LINE INSPECTION

Measure the voltage between the white/red wire terminal (+) and ground (-).

Turn the ignition switch ON.

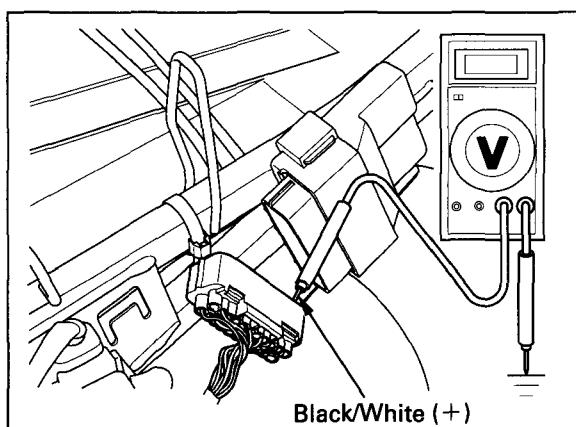
There should be battery voltage.

POWER INPUT LINE INSPECTION

Measure the voltage between the black/white wire terminal (+) and ground (-).

Turn the ignition switch ON.

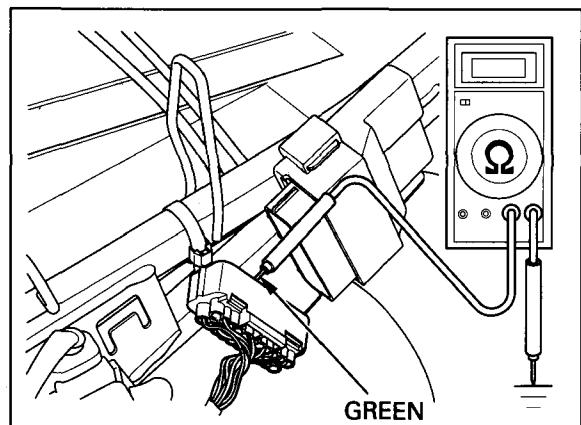
There should be battery voltage.



GROUND LINE INSPECTION

Check for continuity between the green wire terminal and ground.

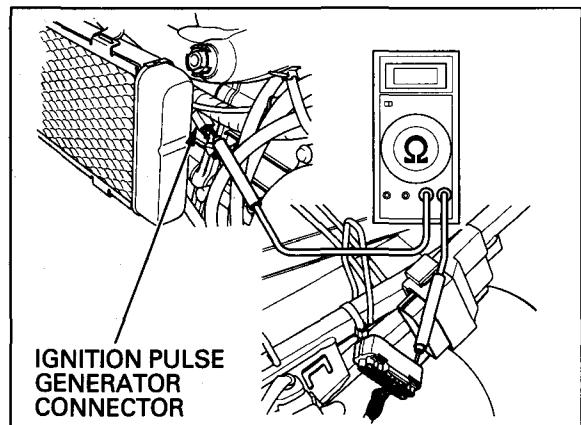
There should be continuity at all times.

**IGNITION PULSE GENERATOR LINE INSPECTION**

Disconnect the ignition pulse generator 2P (white) connector (page 24-35).

Check the yellow and white/yellow wires for continuity between the ICM and ignition pulse generator connectors.

There should be continuity between the same color wire terminals.

**IMMobilIZER RECEIVER**

Remove the front fairing (page 2-3).

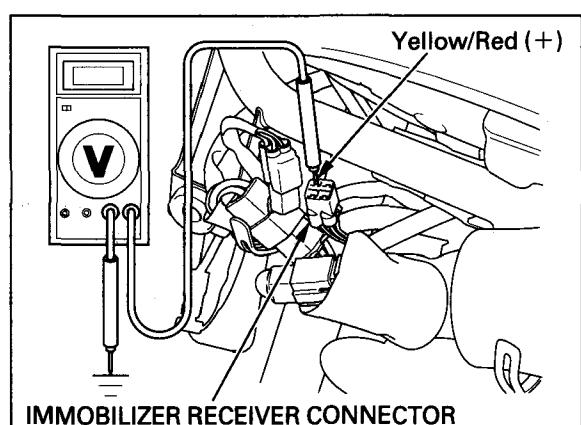
Disconnect the immobilizer receiver 4P connector.

POWER INPUT LINE INSPECTION

Measure the voltage between the yellow/red wire terminal (+) of the wire harness side connector and ground (-).

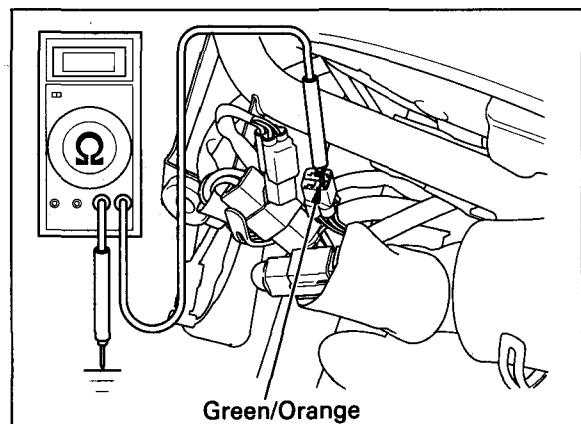
Turn the ignition switch ON.

There should be approx. 5 V.

**GROUND LINE INSPECTION**

Check for continuity between the green/orange wire terminal of the wire harness side connector and ground.

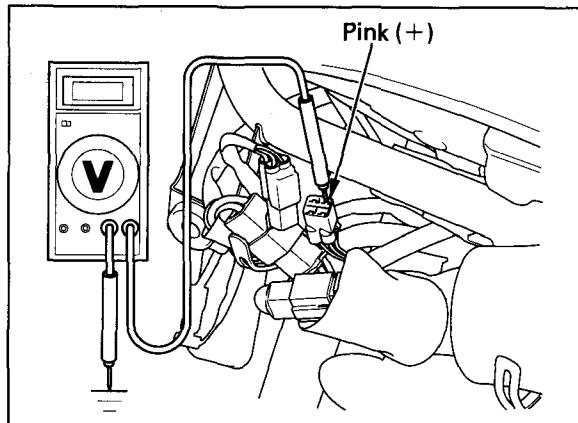
There should be continuity at all times.



SIGNAL LINE INSPECTION

Measure the voltage between the pink wire terminal (+) of the wire harness side connector and ground (-).

Turn the ignition switch ON.
There should be approx. 5 V.



Remove the seat cowl (page 2-2).

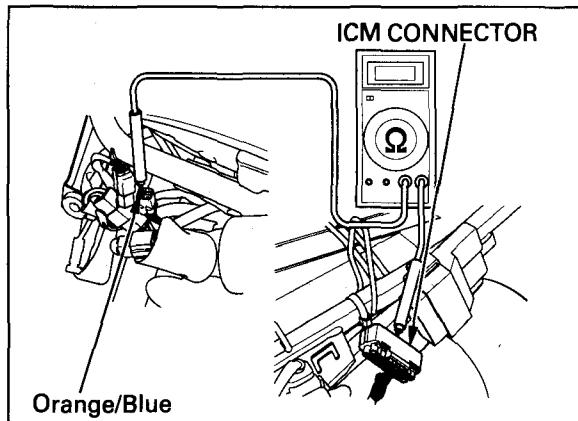
Disconnect the ignition control module (ICM) connector.

Check the orange/blue wire for continuity between the immobilizer receiver and ICM connectors.

There should be continuity.

Check for continuity between the orange/blue wire terminal and ground.

There should be no continuity.



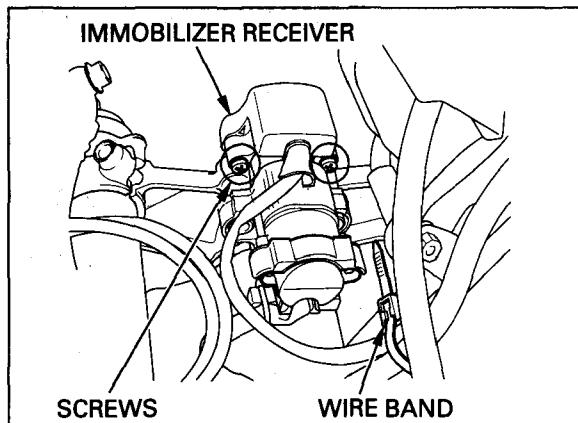
REPLACEMENT

Remove the wire band.

Remove the two screws and the immobilizer receiver.

Install a new receiver and tighten the two screws.
Route the receiver wire properly (page 24-12).

Install the removed part in the reverse order of removal.

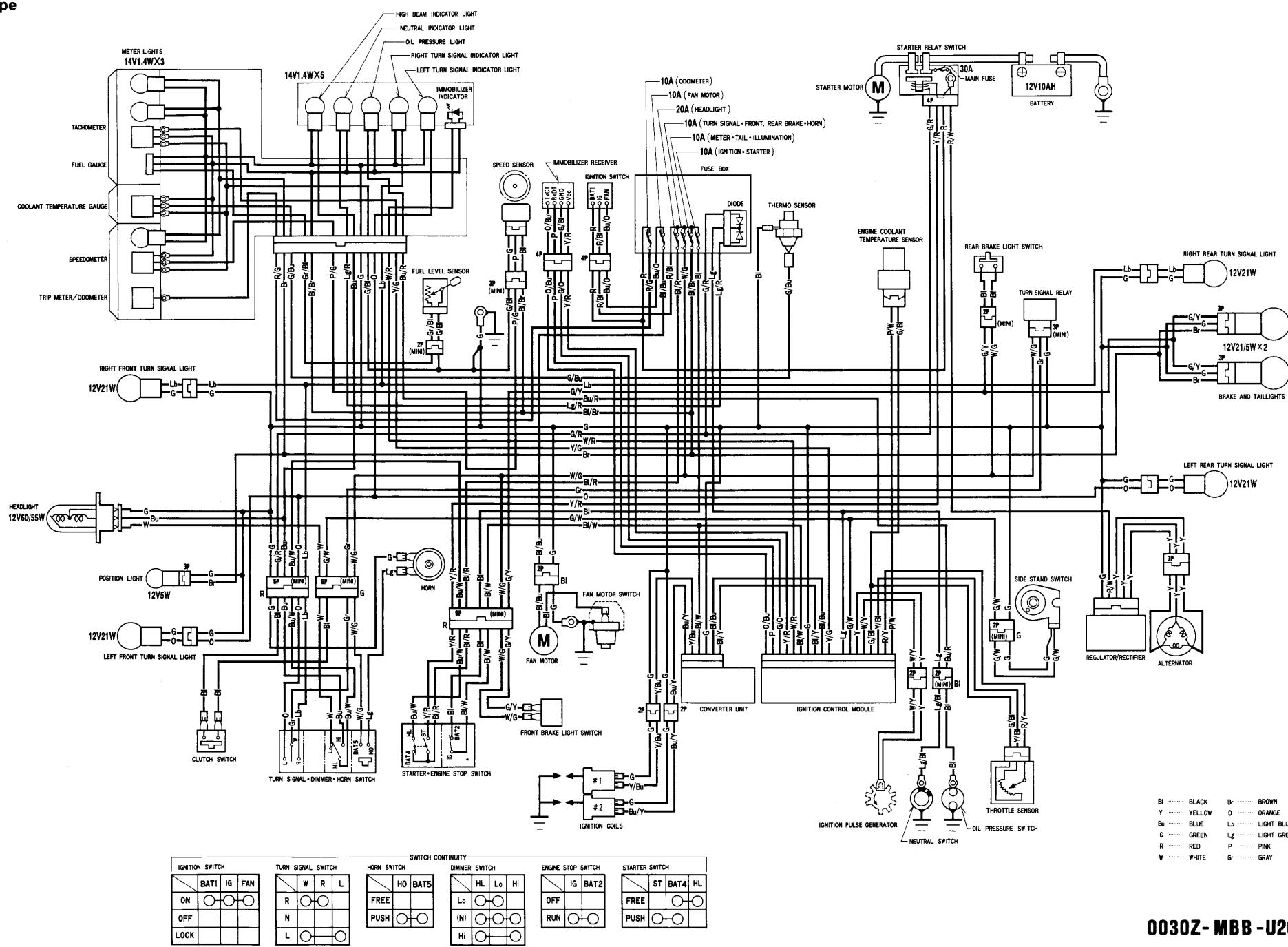


REQUIRED PARTS FOR PROBLEM

Problem	Replacement parts				
	Transponder key	Immobilizer receiver	ICM	Ignition switch	*Accessory lock and key
One key has been lost, or additional spare key is required	<input type="radio"/>				
All keys have been lost, or ignition control module (ICM) is faulty	<input type="radio"/>		<input type="radio"/>		
Immobilizer receiver is faulty		<input type="radio"/>			
Ignition switch is faulty	<input type="radio"/>			<input type="radio"/>	
*Accessory lock is faulty					<input type="radio"/>

*Accessory lock means the seat lock, fuel fill cap or helmet holder.

U Type

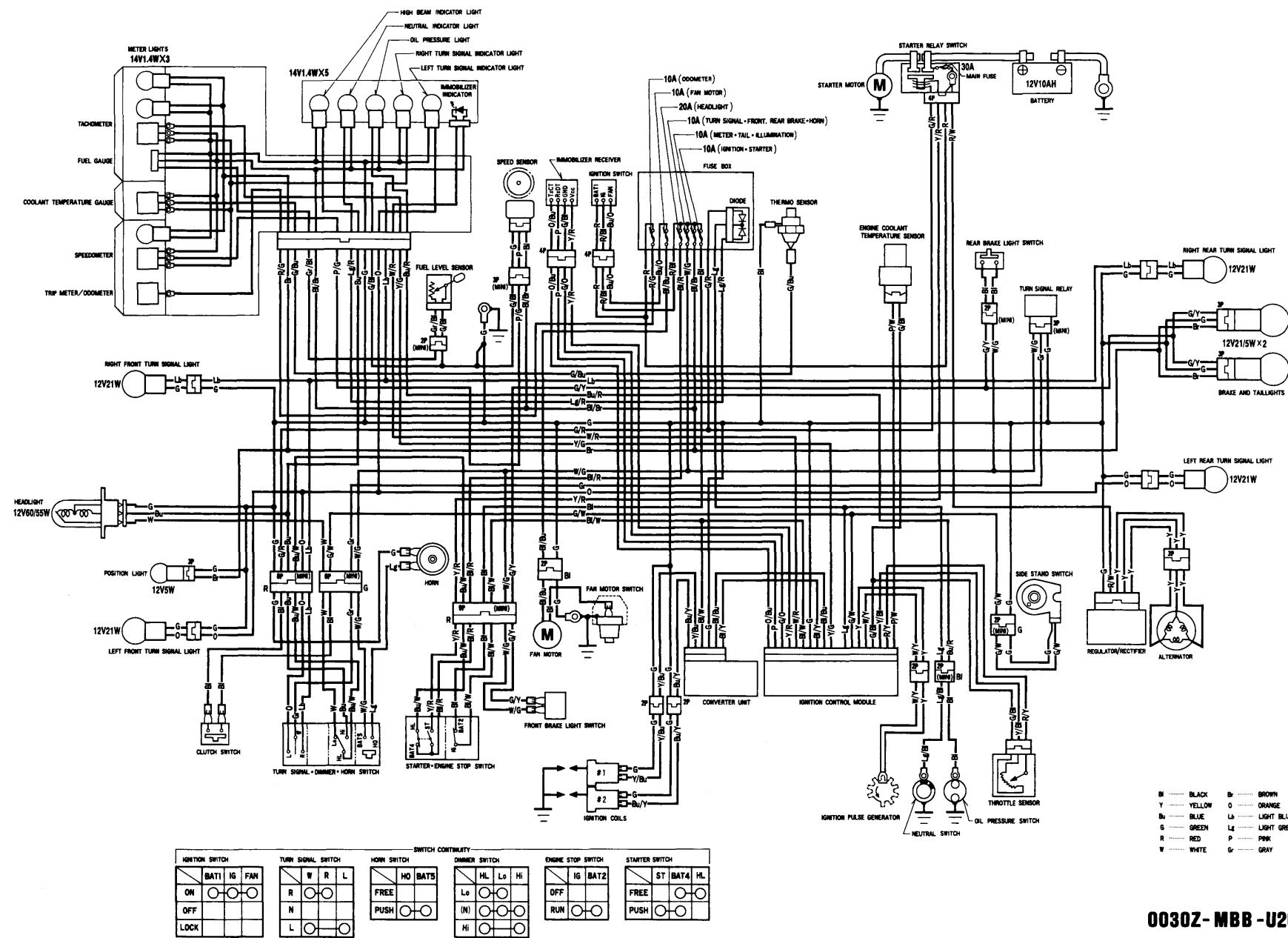


0030Z-MBB-U200

Additional Information For VTR1000F-3 Page 2/5

FUEL SYSTEM		SPECIFICATIONS
ITEM		
Carburetor identification number		VPT3E

U TYPE



0030Z-MBB-U200