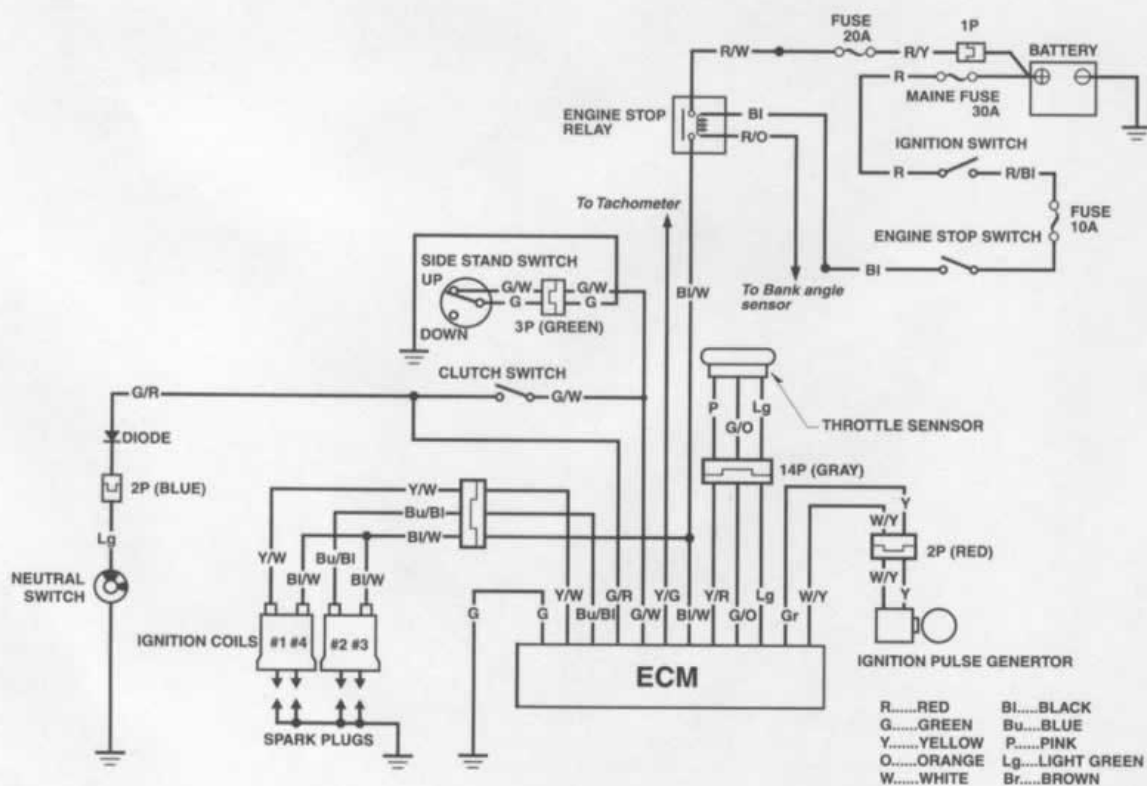
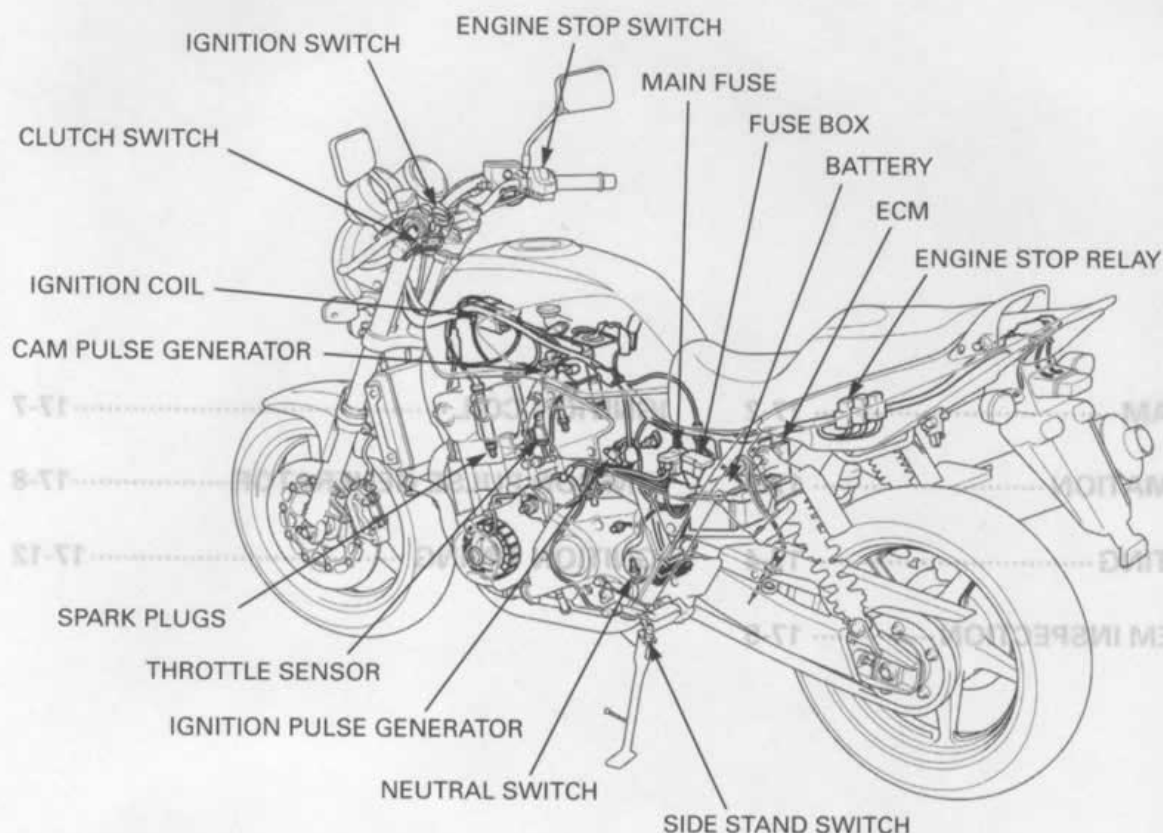


AM.....	17-2	IGNITION COIL .....	17-7
MATION .....	17-3	IGNITION PULSE GENERATOR.....	17-8
TING .....	17-4	IGNITION TIMING .....	17-12
EM INSPECTION .....	17-5		



## SYSTEM DIAGRAM



# SERVICE INFORMATION

## GENERAL

- 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 (page 17-4).
- This motorcycle's Ignition Control Module (ICM) is built into the Engine Control Module (ECM).
- The ignition timing does not normally need to be adjusted since the ECM is factory preset.
- The ECM may be damaged if dropped. Also if the connector is disconnected when current is flowing, the excessive voltage may damage the module. 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 plug.
- Use spark plug of the correct heat range. Using spark plug with an incorrect heat range can damage the engine.
- Refer to the Throttle Position (TP) sensor inspection (page 6-79), cam pulse generator inspection (page 6-78) and ECM inspection (page 6-83).

## SPECIFICATIONS

ITEM	SPECIFICATIONS
Spark plug (option)	NGK DPR8EA-9 (DPR9EA-9) DENSO X24EPR-U9 (X27EPR-U9)
Spark plug gap	0.80 – 0.90 mm (0.031 – 0.035 in)
Ignition coil peak voltage	100 V minimum
Ignition pulse generator peak voltage	0.7 V minimum
Ignition timing ("F"mark)	5° BTDC at idle

## TOEQUE VALUES

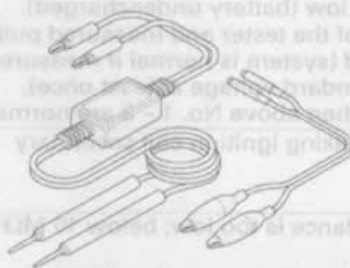
Spark plug	15 N·m (1.5 kgf·m, 11 lbf·ft)
Timing hole cap	10 N·m (1.0 kgf·m, 7 lbf·ft)
Ignition pulse generator rotor flange bolt	49 N·m (5.0 kgf·m, 36 lbf·ft)
Rear upper engine hanger plate bolt	59 N·m (6.0 kgf·m, 43 lbf·ft)
Rear upper engine hanger bolt	59 N·m (6.0 kgf·m, 43 lbf·ft)

Apply grease to the threads  
Apply oil to the threads and seating surface

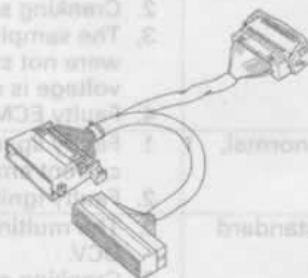
## TOOLS

Peak voltage adaptor  
07HGJ-0020100

ECU test harness 32P  
070MZ-0010201



with commercially available digital multimeter (impedance 10 MΩ/DCV minimum).



Two required

## TROUBLESHOOTING

- Inspect the following before diagnosing the system.
  - Faulty spark plug
  - Loose spark plug cap or spark plug wire connection
  - Water got into the ignition coil (leaking the ignition coil secondary voltage)
- If there is no spark at either 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.
- "Initial voltage" of the ignition primary coil is the battery voltage with the ignition switch ON and engine stop switch at RUN (The engine is not cranked by the starter motor).

### No spark at all plugs

	Unusual condition	Probable cause (Check in numerical order)
Ignition coil primary voltage	No initial voltage with ignition and engine stop switches ON. (Other electrical components are normal)	1. Faulty engine stop switch. 2. An open circuit in Black/White wire between the ignition coil and engine stop switch. 3. Loose or poor connect of the ignition coil primary wire terminal, or an open circuit in primary coil (Check at the ECM connector). 4. Faulty ECM (in case when the initial voltage is normal while disconnecting ECM connector)
	Initial voltage is normal, but it drops down to 2 – 4 V while cranking the engine.	1. Incorrect peak voltage adaptor connections. 2. Undercharged battery. 3. No voltage between the Black/White (+) and Body ground (–) at the ECM multi-connector or loosen ECM connection. 4. An open circuit or loose connection in Green wire. 5. An open circuit or loose connection in Blue/Black and Yellow/White wires between the ignition coils and ECM. 6. Short circuit in ignition primary coil. 7. Faulty side stand switch or neutral switch. 8. An open circuit or loose connection in No.7 related circuit wires. – Side stand switch line: Green/White wire – Neutral switch line: Light Green wire 9. Faulty ignition pulse generator (measure the peak voltage). 10. Faulty ECM (in case when above No. 1 – 9 are normal).
	Initial voltage is normal, but no peak voltage while cranking the engine.	1. Faulty peak voltage adaptor connections. 2. Faulty peak voltage adaptor. 3. Faulty ECM (in case when above No.1, 2 are normal).
	Initial voltage is normal, but peak voltage is lower than standard value.	1. The multimeter impedance is too low; below 10 MΩ/DCV. 2. Cranking speed is too low (battery under-charged). 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 ECM (in case when above No. 1 – 3 are normal).
	Initial and peak voltage are normal, but does not spark.	1. Faulty spark plug or leaking ignition coil secondary current ampere. 2. Faulty ignition coil (s).
Ignition pulse generator	Peak voltage is lower than standard value.	1. The multimeter impedance is too low; below 10 MΩ/DCV. 2. Cranking speed is too low (battery under charged). 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 ECM (in case when above No. 1 – 3 are normal).
	No peak voltage.	1. Faulty peak voltage adaptor. 2. Faulty ignition pulse generator.

# IGNITION SYSTEM INSPECTION

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

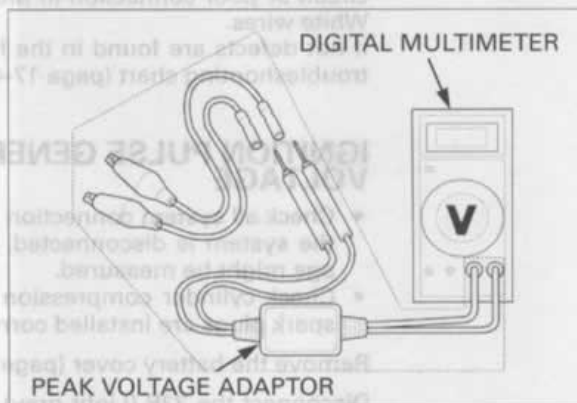
Connect the peak voltage tester or peak voltage adaptor to the digital multimeter.

## TOOLS:

Imrie diagnostic tester (model 625) or

Peak voltage adaptor 07HGJ-0020100

with commercially available digital multimeter (impedance 10 M $\Omega$ /DCV minimum)



## IGNITION COIL PRIMARY PEAK VOLTAGE

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

Disconnect the spark plug caps from the spark plugs (page 4-8).

Shift the transmission into neutral.

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



With the ignition coil ignition coil primary terminal connected, connect the peak voltage adaptor or Imrie tester to the ignition coil primary wire terminal and ground.

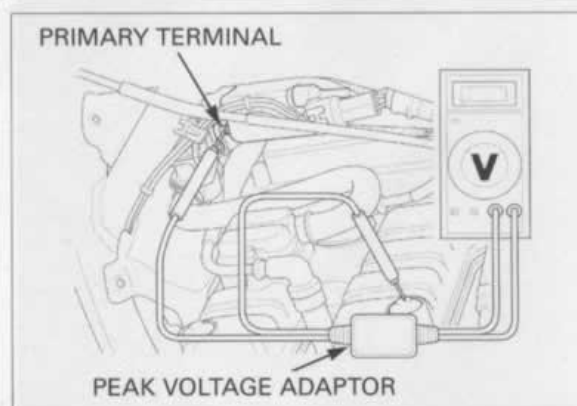
## CONNECTION:

No.1/4 coil:

Yellow/White terminal (+) - Body ground (-)

No.2/3 coil:

Blue/Black terminal (+) - Body ground (-)



## IGNITION SYSTEM

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

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

Check for initial voltage at this time.

The battery voltage should be measured. If the initial voltage cannot be measured, check the power supply circuit (page 17-4).

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

### PEAK VOLTAGE: 100V minimum

If the peak voltage is abnormal, check for an open circuit or poor connection in Blue/Black and Yellow/White wires.

If not defects are found in the harness, refer to the troubleshooting chart (page 17-4).

### IGNITION PULSE GENERATOR PEAK VOLTAGE

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

Remove the battery cover (page 16-5).

Disconnect the 32P (Light gray) connector from the ECM.

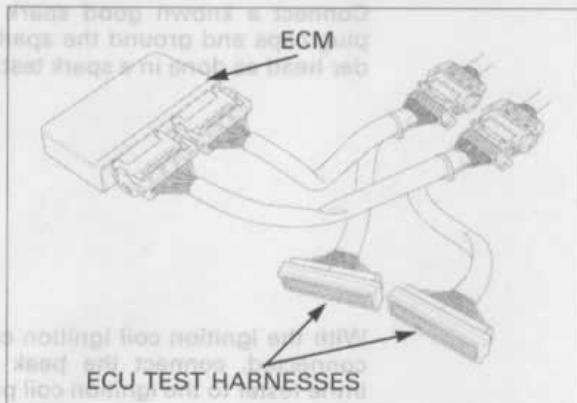
32P (LIGHT GRAY) CONNECTOR



Connect the ECU test harnesses between the main wire harness and the ECM.

#### TOOLS:

ECU test harness 070MZ-0010201  
(two required)





Connect the peak voltage tester or peak voltage adaptor probes to the connector terminal of the wire harness side and ground.

## TOOLS:

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

## CONNECTION:

B9 (+) – A31 (–)

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

Crank the engine with the starter motor and read the peak voltage.

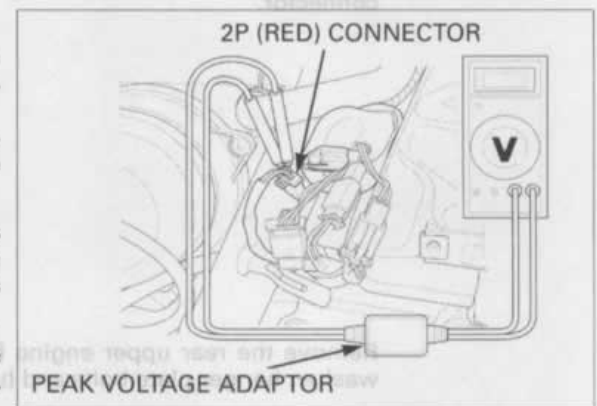
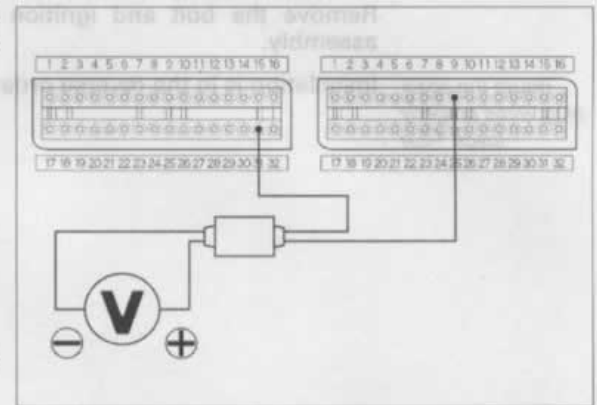
**PEAK VOLTAGE: 0.7 V minimum**

If the peak voltage measured at ECM multi-connector is abnormal, measure the peak voltage at the ignition pulse generator connector.

Remove the right side cover (page 3-4).

Disconnect the ignition pulse generator 2P (Red) connector and connect the tester probes to the terminal (Yellow and White/Yellow). In the same manner as at the ECM connector, measure the peak voltage and compare it to the voltage measured at the ECM connector.

- If the peak voltage measured at the ECM is abnormal and the one measured at the ignition pulse generator is normal, the wire harness has an open circuit or loose connection.
- If both peak voltages measure are abnormal, check each item in the troubleshooting chart. If all items are normal, the ignition pulse generator is faulty. See following steps for ignition pulse generator replacement.



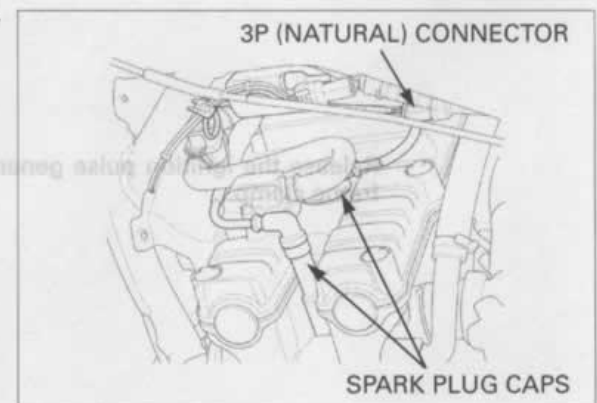
## IGNITION COIL

### REMOVAL/INSTALLTION

Open and support the front end of fuel tank (page 4-5).

Remove the spark plug caps.  
Release the spark plug wires from the clamps.

Disconnect the ignition coil 3P (Natural) connector.

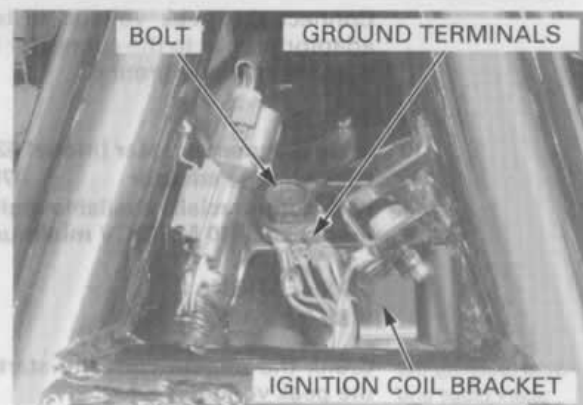


## IGNITION SYSTEM

Remove the bolt and ignition coil/bracket as an assembly.

Route the spark plug wires properly (page 1-23)

Installation is in the reverse order of removal.



## IGNITION PULSE GENERATOR

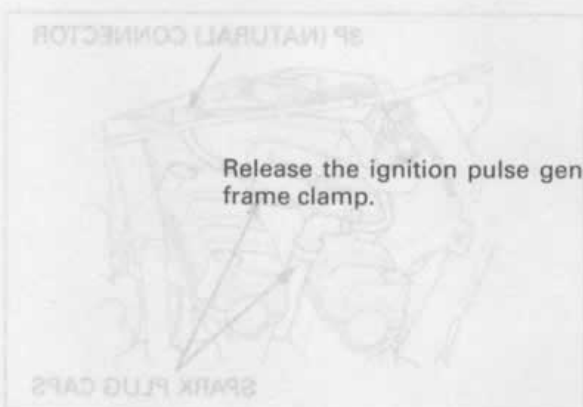
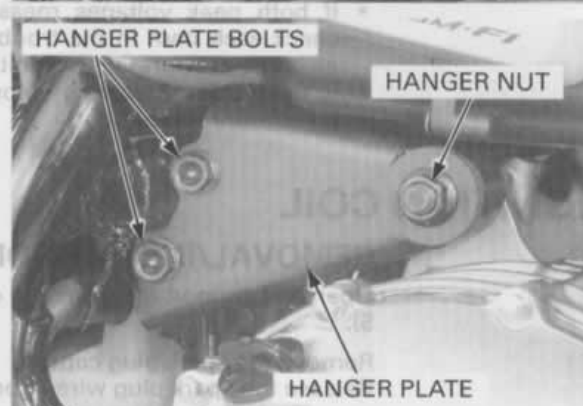
### REMOVAL

Remove the right side cover (page 3-4).

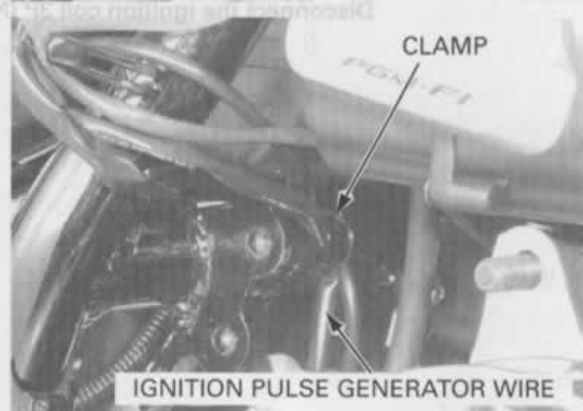
Disconnect the ignition pulse generator 2P (Red) connector.



Remove the rear upper engine hanger nut, special washer, hanger plate bolts and hanger plate.

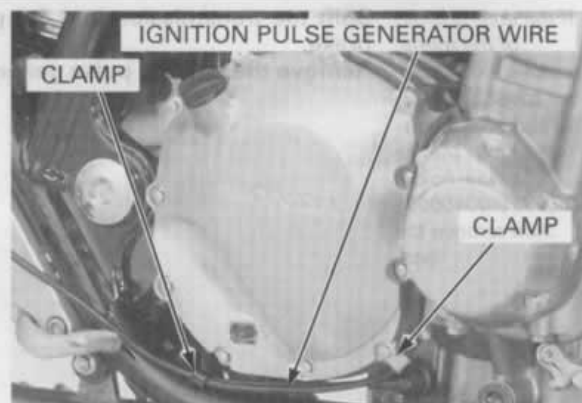


Release the ignition pulse generator wire from the frame clamp.

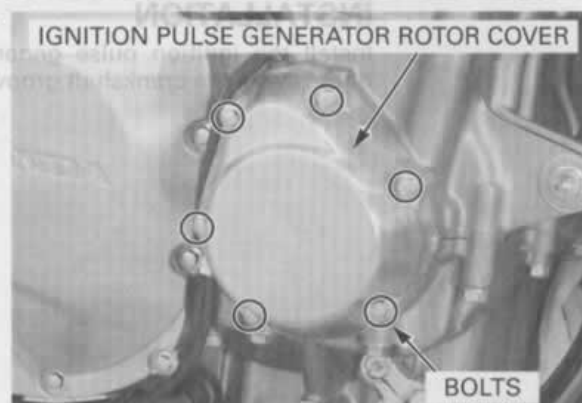




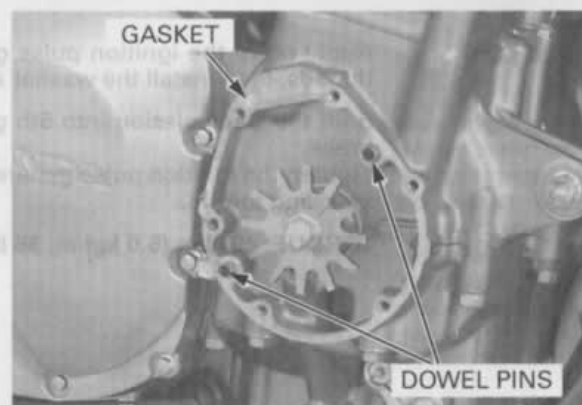
Remove the ignition pulse generator wire from the engine and frame clamps.



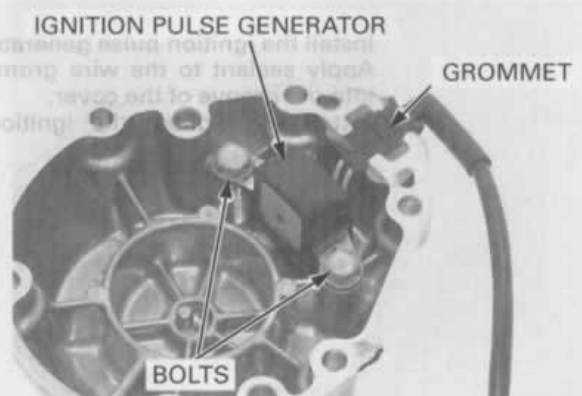
Remove the mounting bolts and ignition pulse generator cover.



Remove the gasket and dowel pins.



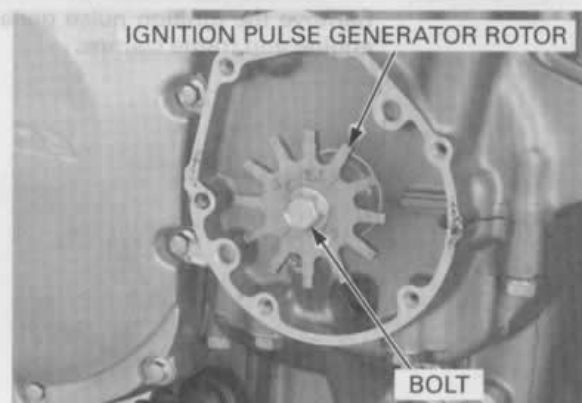
Remove the wire grommet from the cover.  
Remove the bolts and ignition pulse generator.



## IGNITION SYSTEM

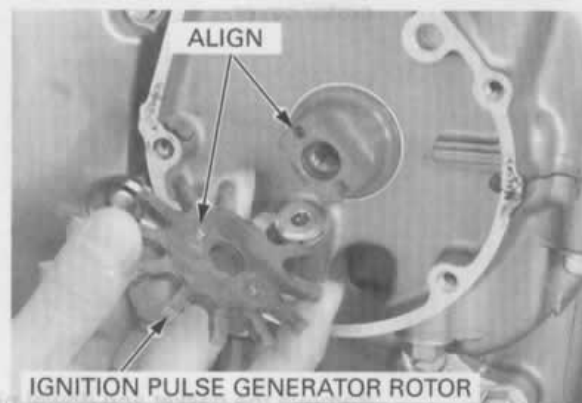
If the engine is out of the frame, remove the alternator cover (page 11-4) and hold the flywheel with the flywheel holder (07725-0040000), then remove the bolt.

Shift the transmission into 5th gear and apply rear brake.  
Remove the ignition pulse generator rotor bolt.

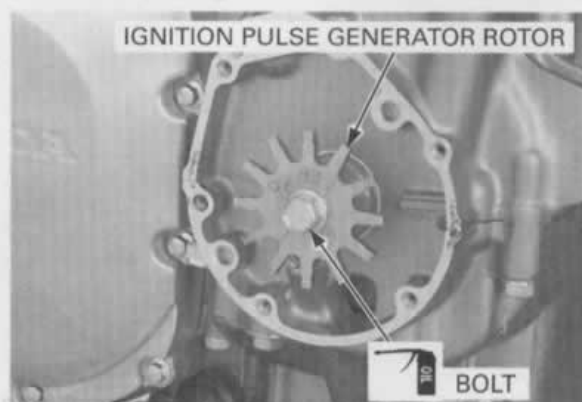


### INSTALLATION

Install the ignition pulse generator rotor with its bosses with the crankshaft grooves.



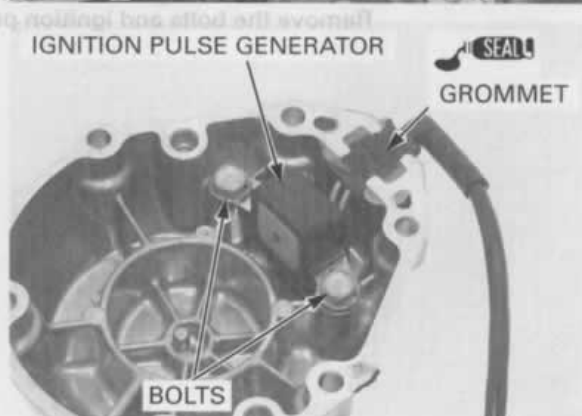
Apply oil to the ignition pulse generator rotor bolt threads, then install the washer and rotor bolt.



If the engine is out of frame, remove the alternator cover (page 11-4) and hold the flywheel with the flywheel holder (07725-0040000), then tighten the bolt.

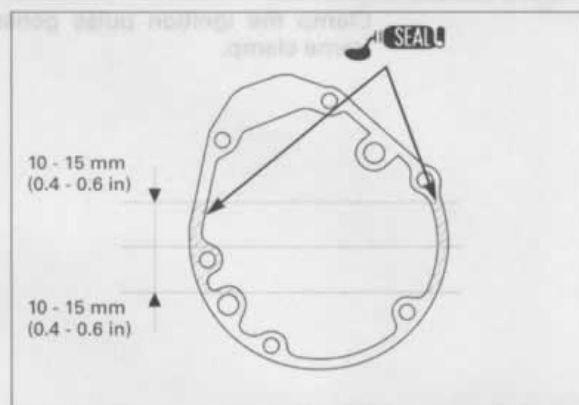
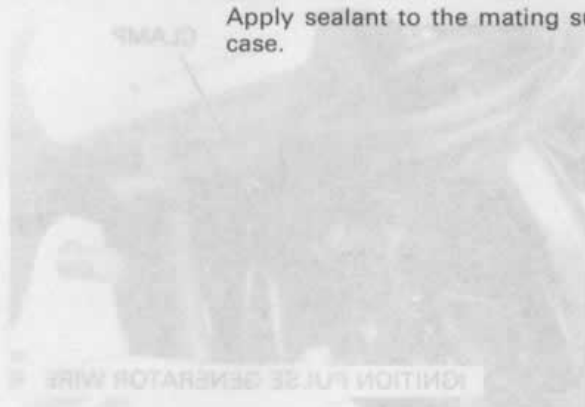
Shift the transmission into 5th gear and apply rear brake.  
Tighten the ignition pulse generator rotor bolt to the specified torque.

**TORQUE: 49 N·m (5.0 kgf·m, 36 lbf·ft)**

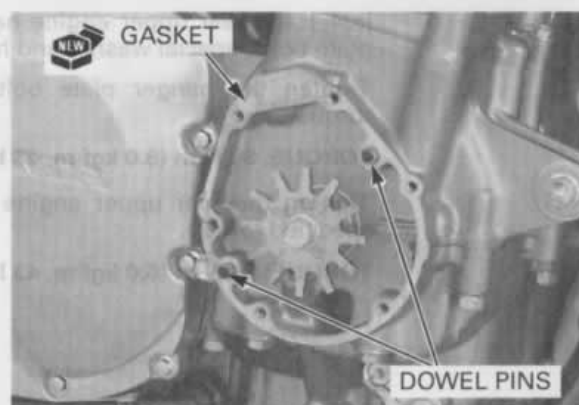


Install the ignition pulse generator into the cover.  
Apply sealant to the wire grommet, then install it into the groove of the cover.  
Install and tighten the ignition pulse generator bolts.

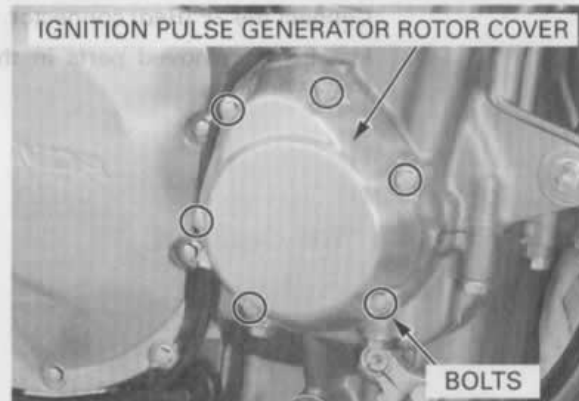
Apply sealant to the mating surfaces of the crankcase.



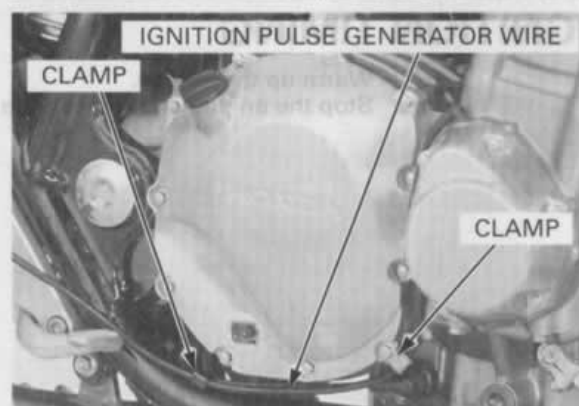
Install the dowel pins and new gasket.



Install the ignition pulse generator cover and tighten the bolts.

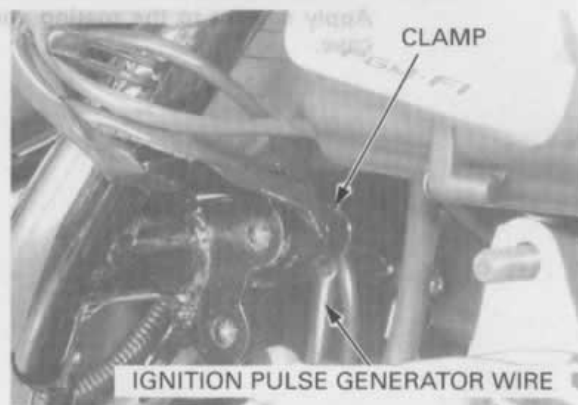


Route the ignition pulse generator wire properly and clamp the wire with the engine and frame clamps.



## IGNITION SYSTEM

Clamp the ignition pulse generator wire with the frame clamp.



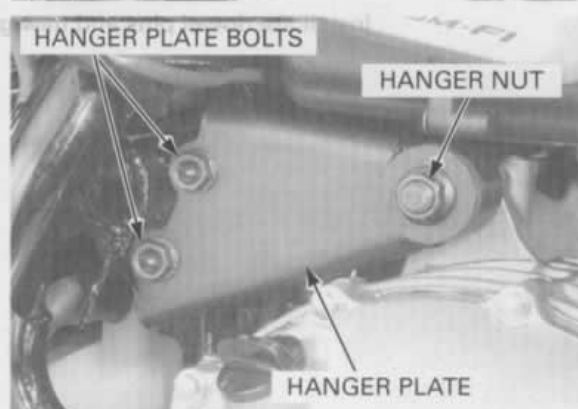
Install the rear upper engine hanger plate, hanger plate bolts, special washer and hanger nut.

Tighten the hanger plate bolts to the specified torque.

**TORQUE: 59 N·m (6.0 kgf·m, 43 lbf·ft)**

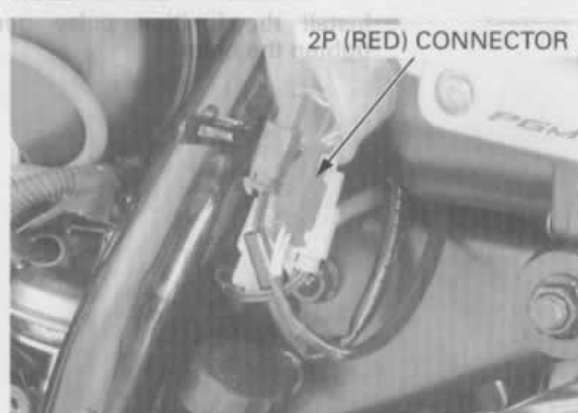
Tighten the rear upper engine hanger nut to the specified torque.

**TORQUE: 59 N·m (6.0 kgf·m, 43 lbf·ft)**



Connect the 2P (Red) connector.

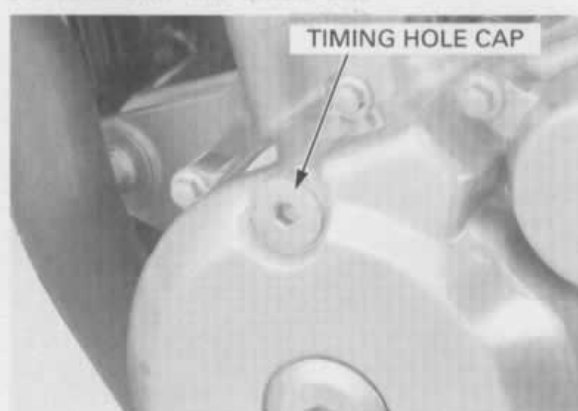
Install the removed parts in the reverse order of removal.



## IGNITION TIMING

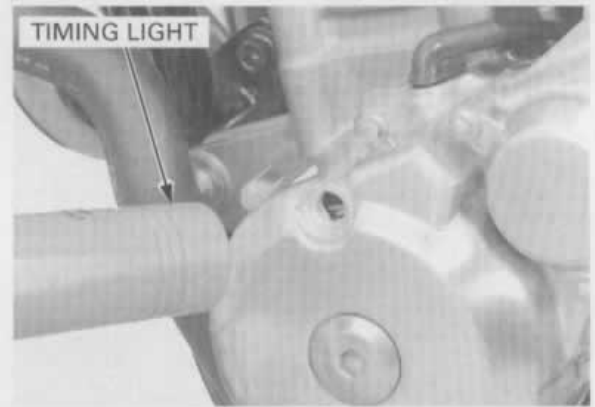
Warm up the engine.

Stop the engine and remove the timing hole cap.



Read the instructions for timing light operation.

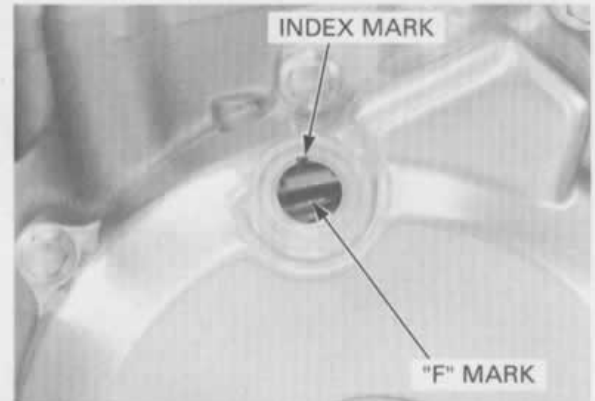
Connect the timing light to the No.1 spark plug wire.



Start the engine and let it idle.

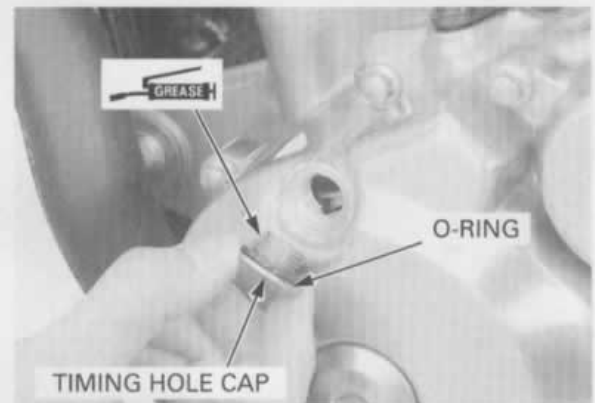
**IDLE SPEED:  $1,000 \pm 100 \text{ min}^{-1}$  (rpm)**

The ignition timing is correct if the index mark on the alternator cover aligns with the "F" mark on the flywheel rotor as shown.



Check the O-ring is in good condition, replace if necessary.

Apply grease to the timing hole cap threads and install the O-ring and timing hole cap.



Tighten the timing hole cap to the specified torque.

**TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)**

