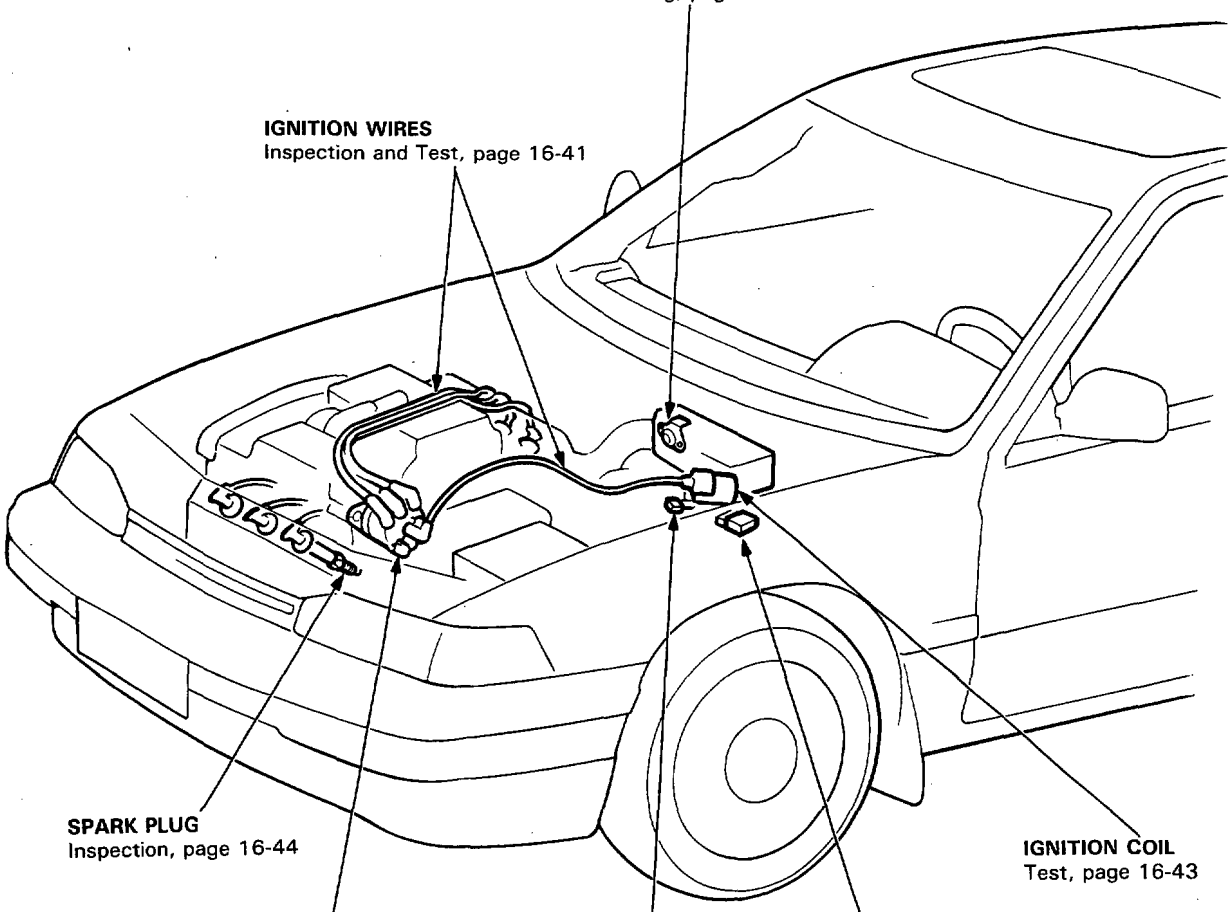
Ignition System

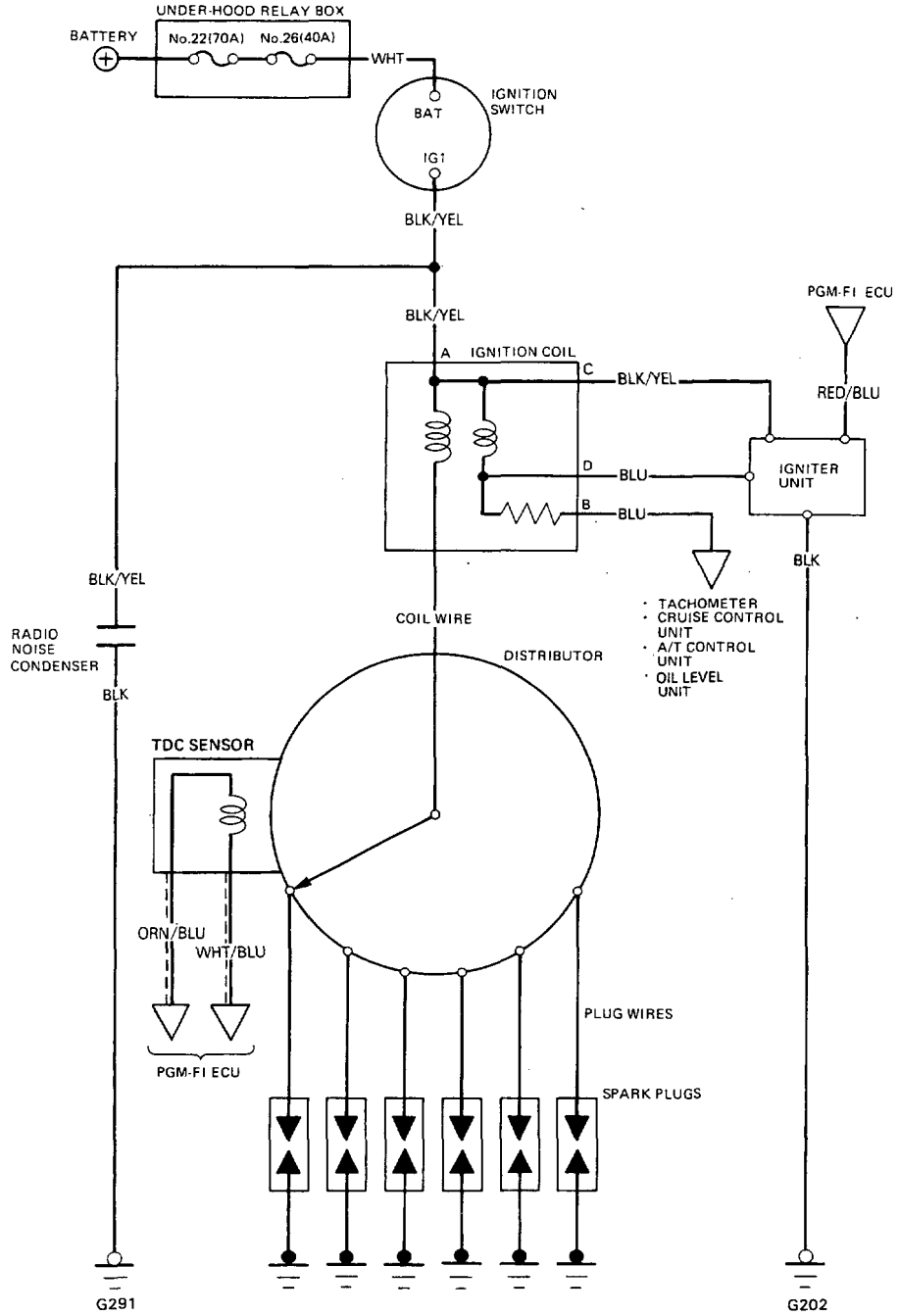
Component Location Index

- **IGNITION TIMING CONTROL SYSTEM**
  Inspection and Setting, page 16-37



Ignition System

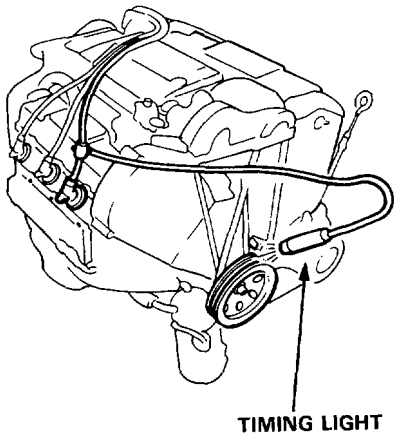
Circuit Diagram



Ignition Timing Inspection and Setting

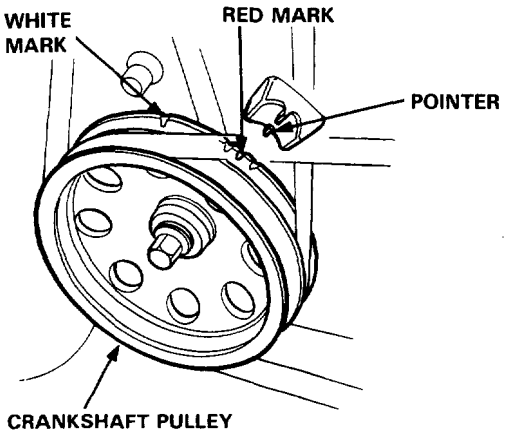
1. Start the engine and allow it to warm up (cooling fan comes on).

2. Connect a timing light to the engine; while the engine idles, point the light toward the pointer on the timing belt cover.



3. Inspect ignition timing at idle.

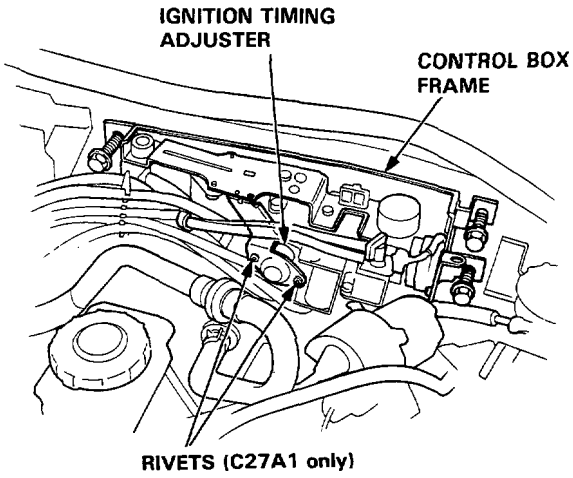
Ignition Timing:
15 ± 2° BTDC (RED)
KF, KB, KE, KQ: at 720 ± 50 min⁻¹ (rpm) in neutral
KG, KX: at 680 ± 50 min⁻¹ (rpm) in neutral



4. Adjust ignition timing, if necessary, by turning the adjusting screw on the ignition timing adjuster in the control box.

5. Remove the control box upper and lower covers.

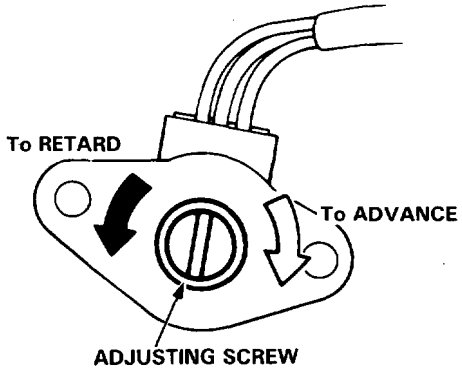
NOTE: LHD shown, RHD similar.



6. For C27A1 engine only, drill the 2 rivets off with a 3/16 in. drill bit, then separate the stay cover from the adjuster.

CAUTION: Do not damage the adjuster when removing the rivets.

7. Adjust as necessary by turning the adjusting screw on the adjuster; turn the adjusting screw counterclockwise to retard the timing, or clockwise to advance the timing.

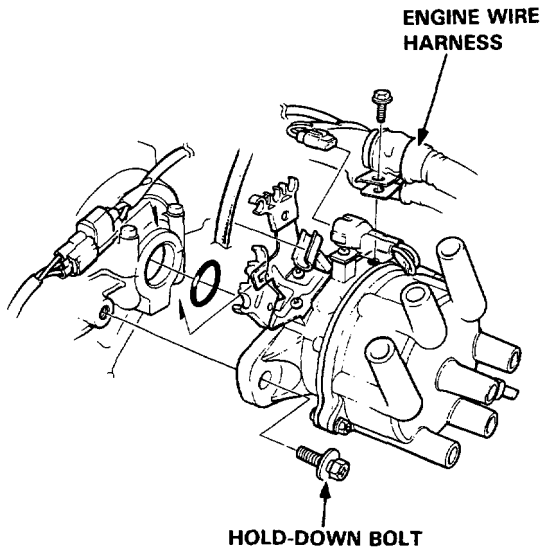


8. After adjusting, reinstall the stay cover to the ignition timing adjuster with new rivets, then reinstall the adjuster to the control box.

Distributor Removal/Installation

Removal

1. Remove the engine wire harness and connectors from the distributor.
2. Disconnect the spark plug wires and coil wire from the distributor cap.

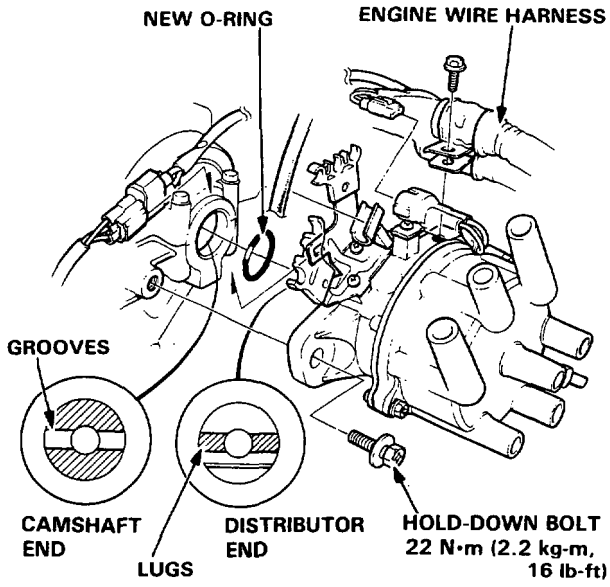


3. Remove the distributor hold-down bolt, then remove the distributor from the cylinder head.

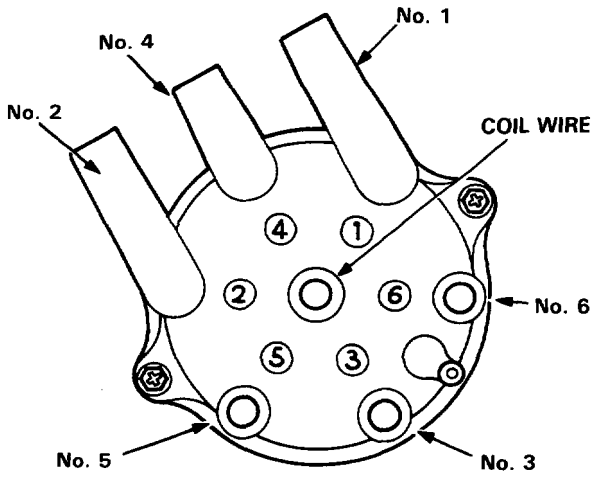
Installation

1. Coat a new O-ring with engine oil then install it.
2. Slip the distributor into position.

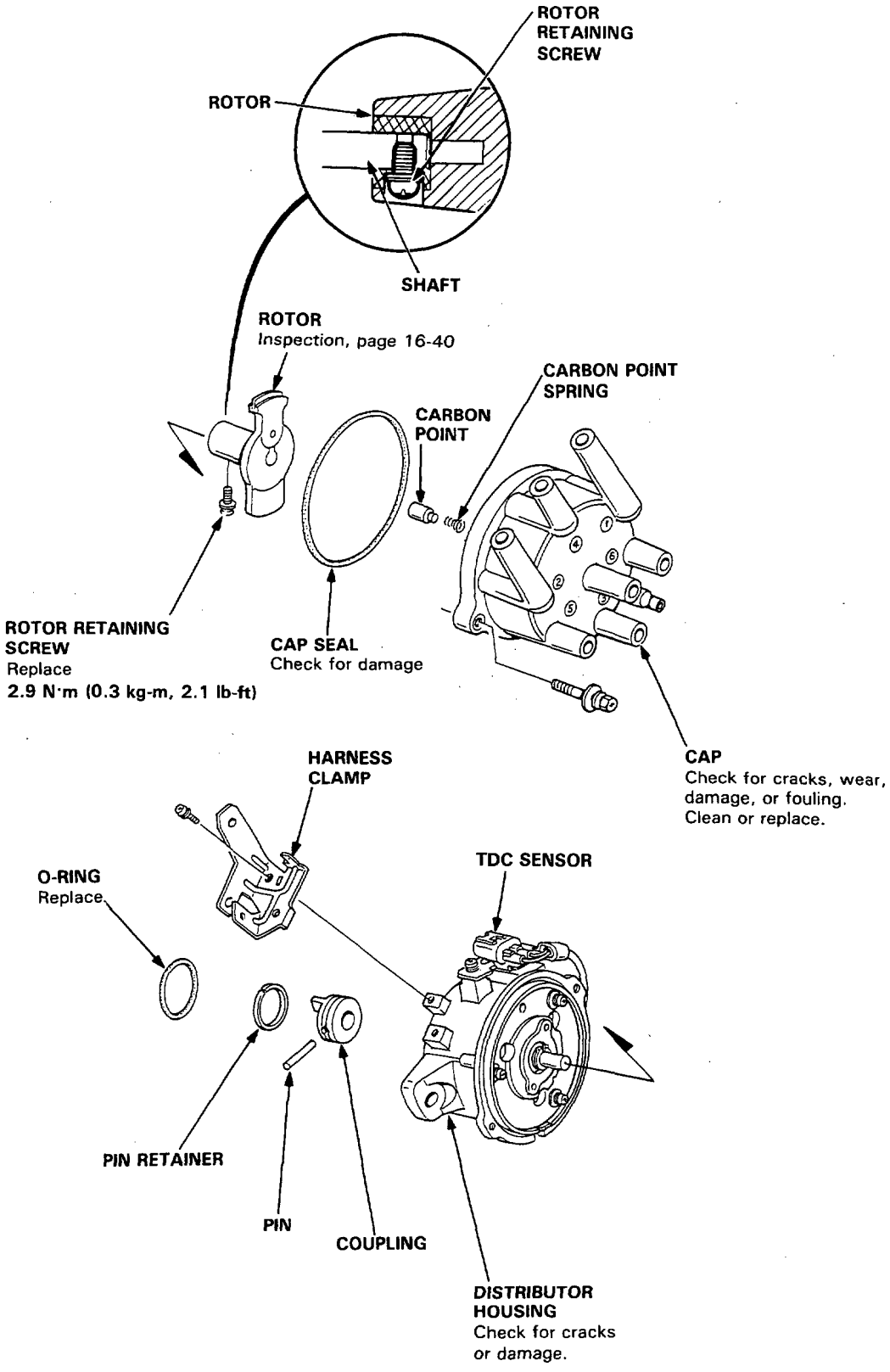
   NOTE: The lugs on the end of the distributor and its mating grooves in the camshaft end are both offset to eliminate the possibility of installing the distributor 180° out of time.



3. Install the hold-down bolt and tighten.
4. Connect the engine wire harness and connector to the distributor.
5. Connect the coil wire and the spark plug wires as shown.

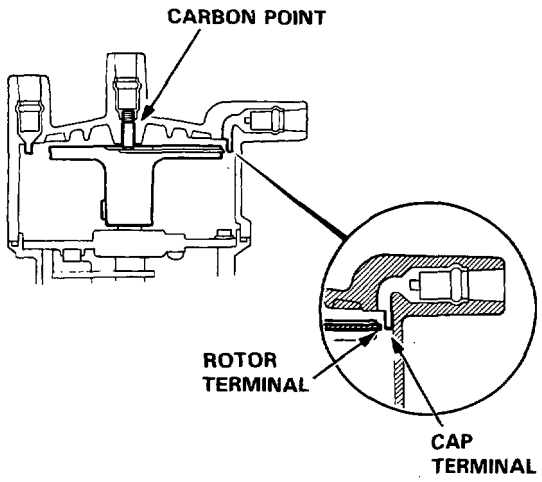


Distributor Overhaul



Distributor Top End Inspection

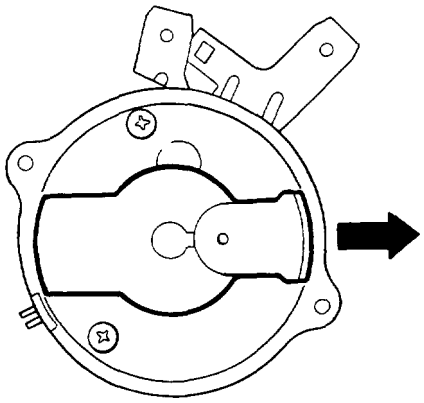
1. Check for rough or pitted rotor and cap terminals.
2. Scrape or file off the carbon deposits.
   Smooth the rotor terminal with an oil stone or #600 sandpaper if rough.
3. Check the distributor cap for cracks, wear and damages. If necessary, clean or replace it.



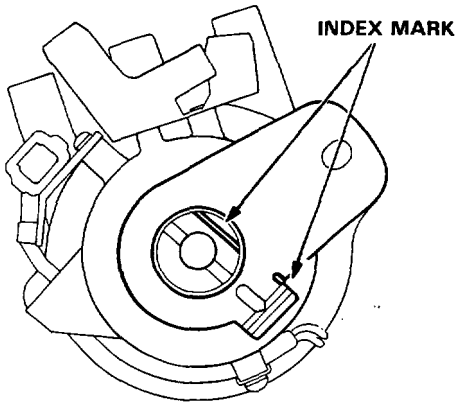
Distributor Reassembly

Reassembly the distributor in the reverse order of disassembly.

1. Install the rotor, then turn it so that it faces in the direction shown (toward the No.1 cylinder).



2. Set the thrust washer and coupling on the shaft.
3. Check that the rotor is still pointing toward the No.1 cylinder, then align the index mark on the housing with the index mark on the coupling.

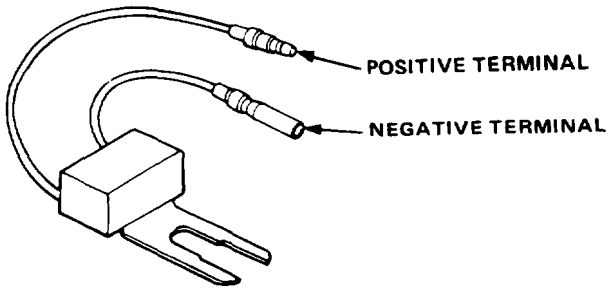


4. Drive in the pin and secure it with the pin retainer.

Radio Condenser Capacity Test

1. Use a commercially available condenser tester. Connect the tester probes and measure the condenser capacity.

   Condenser Capacity: 0.47 ± 0.09 microfarads (μF)



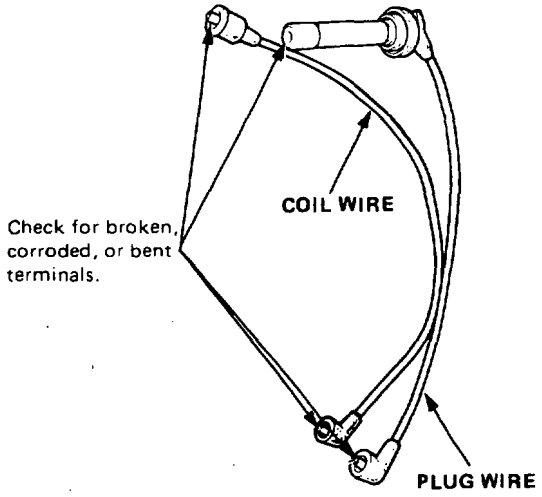
   NOTE: The radio condenser is intended to reduce ignition noise; however, condenser failure may cause the engine to stop running.

2. If not within the specifications, replace the radio condenser.

Ignition Wire Inspection and Test

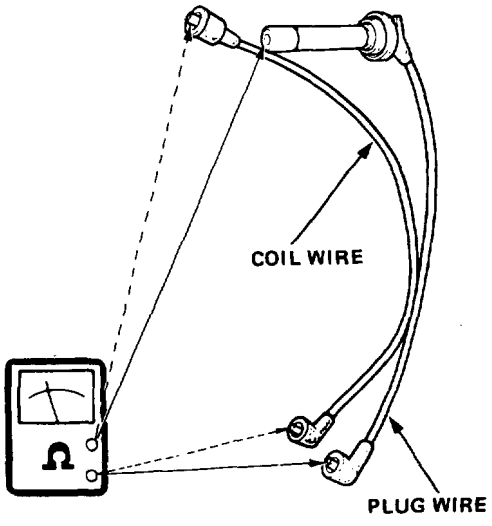
CAUTION: Carefully remove the ignition wires by pulling on the rubber boots. Do not bend the wire or the conductor may be broken.

1. Check the condition of the wire terminals. If any terminal is corroded, clean it, and if it is broken or distorted, replace the wire.



2. Connect ohmmeter probes and measure resistance.

   Ignition Wire Resistance:
   25,000 ohms max. at 20°C (70°F)

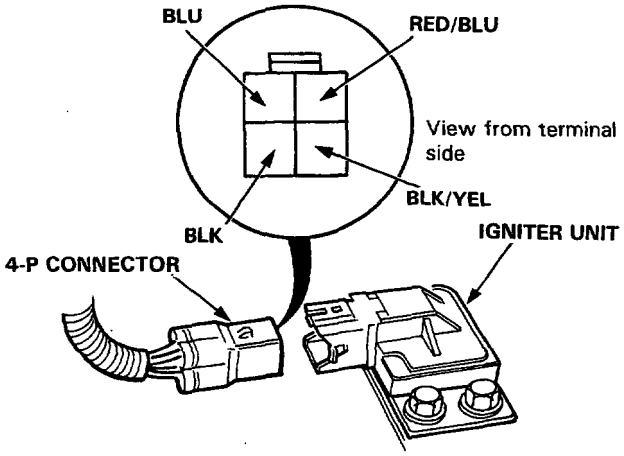


3. If resistance exceeds 25,000 ohms, replace the ignition wire.

Igniter Unit Input Test

NOTE:
- See section 6 when the self-diagnostic indicator blinks.
- Perform an input test for the igniter unit after finishing the fundamental tests for the ignition system and fuel emission system.
- The tachometer should operate normally.

1. Disconnect the 4-P connector from the igniter unit.



2. Turn the ignition switch ON. Check for voltage between the BLK/YEL wire and body ground. There should be battery voltage.
   - If there is no voltage, check the BLK/YEL wire between the ignition switch, ignition coil and igniter unit.
   - If there is voltage, go to step 3.

3. Turn the ignition switch ON. Check for voltage between the BLU wire and body ground. There should be battery voltage.
   - If there is no voltage, check for:
     - BLU wire between the ignition switch, ignition coil and igniter unit.
     - Ignition coil
   - If there is voltage, go to step 4.

4. Check the RED/BLU wire between the PGM-FI ECU and igniter unit.

5. If all tests are normal, replace the igniter unit.

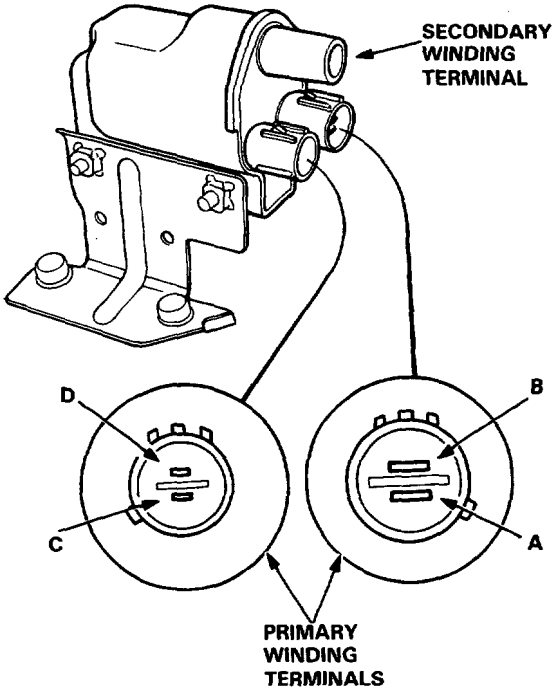
Ignition Coil Test

1. With the ignition switch OFF, disconnect the primary connector(s) and the coil wire.
2. Using an ohmmeter, measure resistance between the terminals. Replace the coil if the resistance is not within specifications.

   NOTE: Resistance will vary with the coil temperature; specifications are at 20°C (68°F).

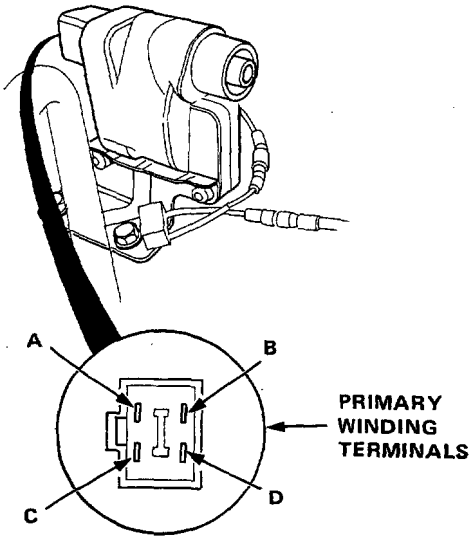
M/T:

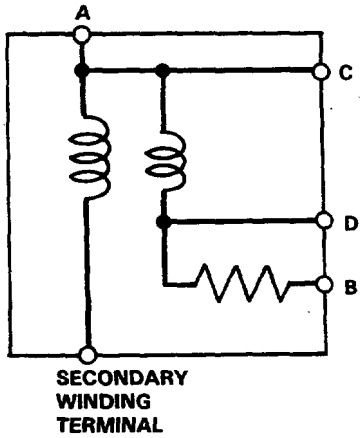
Primary Winding Resistance
(between the A and D terminals):
0.3–0.4 ohms
Secondary Winding Resistance
(between the A and secondary winding terminals):
9,040–13,560 ohms
Resistance between the B and D terminals:
2,090–2,310 ohms



A/T:

Primary Winding Resistance
(between the A and D terminals):
0.3–0.4 ohms
Secondary Winding Resistance
(between the A and secondary winding terminals):
14,400–21,600 ohms
Resistance between the B and D terminals:
2,090–2,310 ohms

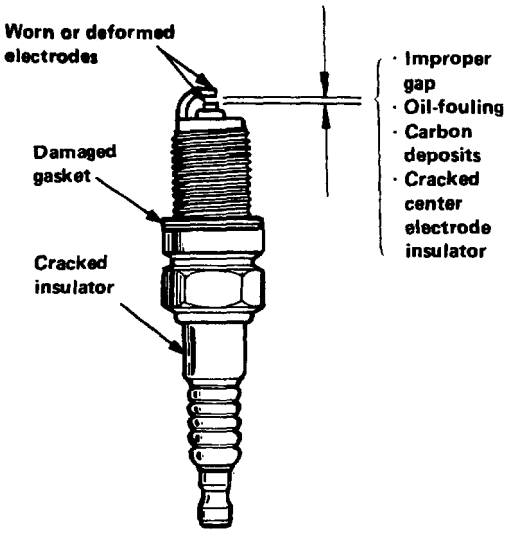




3. Check for continuity between the A and C terminals.
   Replace the coil if there is no continuity.

Spark Plug Inspection

1. Inspect the electrodes and ceramic insulator for:



Burned or worn electrodes may be caused by:
- Advanced ignition timing
- Loose spark plug
- Plug heat range too high
- Insufficient cooling

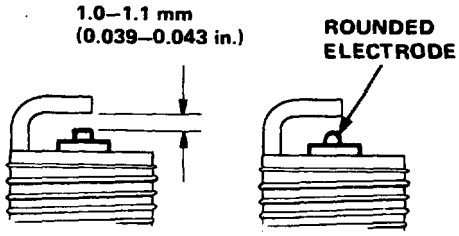
Fouled plug may be caused by:
- Retarded ignition timing
- Oil in combustion chamber
- Incorrect spark plug gap
- Plug heat range too low
- Excessive idling/low speed running
- Clogged air cleaner element
- Deteriorated ignition coil or ignition wires

2. Replace the plug if the center electrode is rounded as shown below:

Spark Plug:

		Standard	Optional
KQ model	NGK	BCPR6E-11	BCPR5E-11 BCPR5EY-N11 BCPR6EY-N11 BCPR7E-11 BCPR7EY-N11
	ND	Q20PR-U11	Q16PR-U11 Q22PR-U11
Except KQ model	NGK	BCPR6E-11	BCPR6EY-N11* BCPR7E-11 BCPR7EY-N11*
	ND	Q20PR-U11	Q22PR-U11

*: Except KE and KY models



3. Adjust the gap with a suitable gapping tool.

Electrode Gap: 1.0–1.1 mm (0.039–0.043 in.)

4. Screw the plugs into the cylinder head finger tight, then torque them to 18 N·m (1.8 kg-m, 13 lb-ft).

NOTE: Apply a small quantity of anti-seize compound to the plug threads before installing.