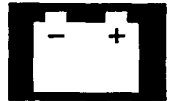


# Ignition System

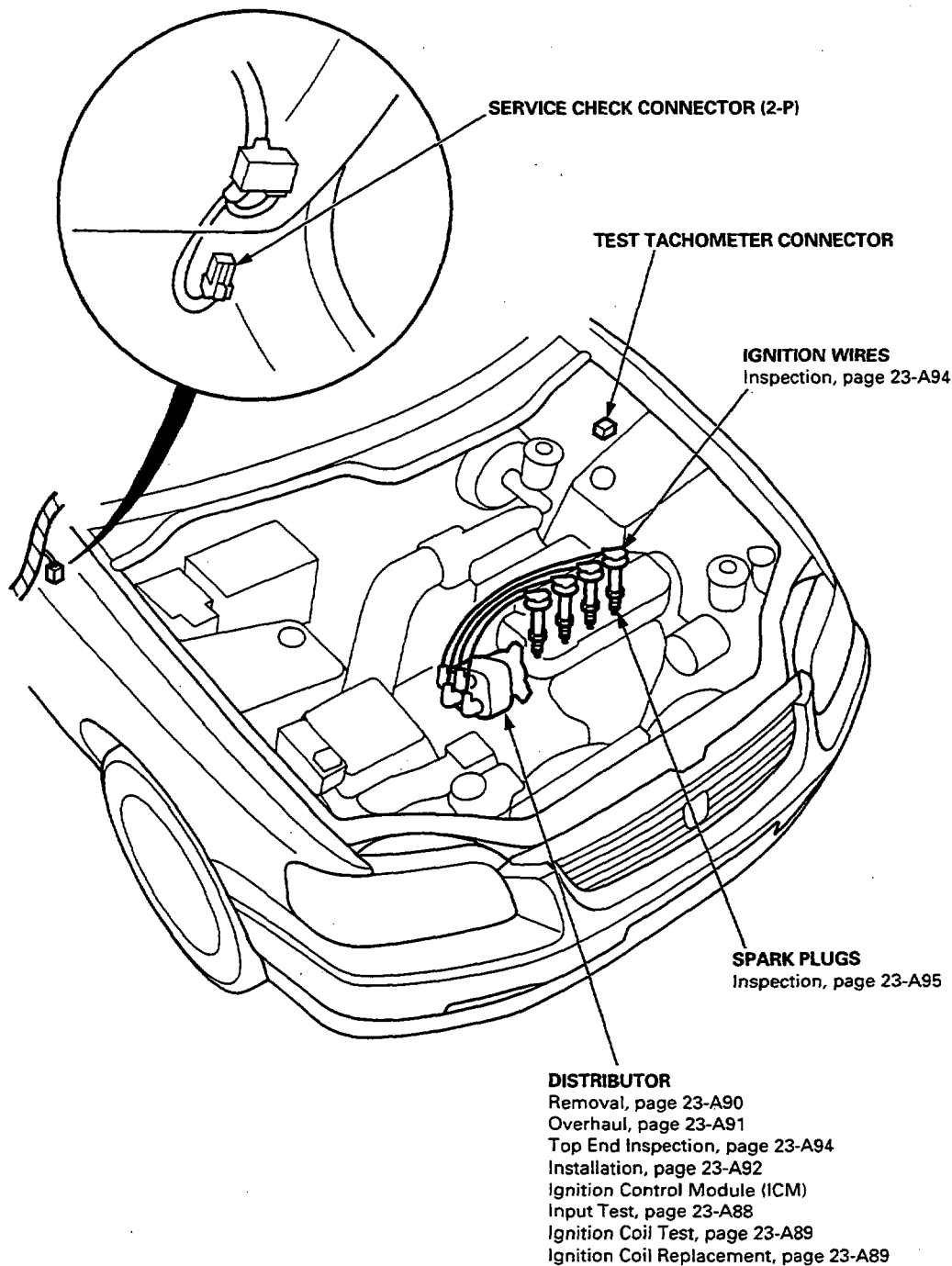


## Component Location Index

### IGNITION TIMING CONTROL SYSTEM

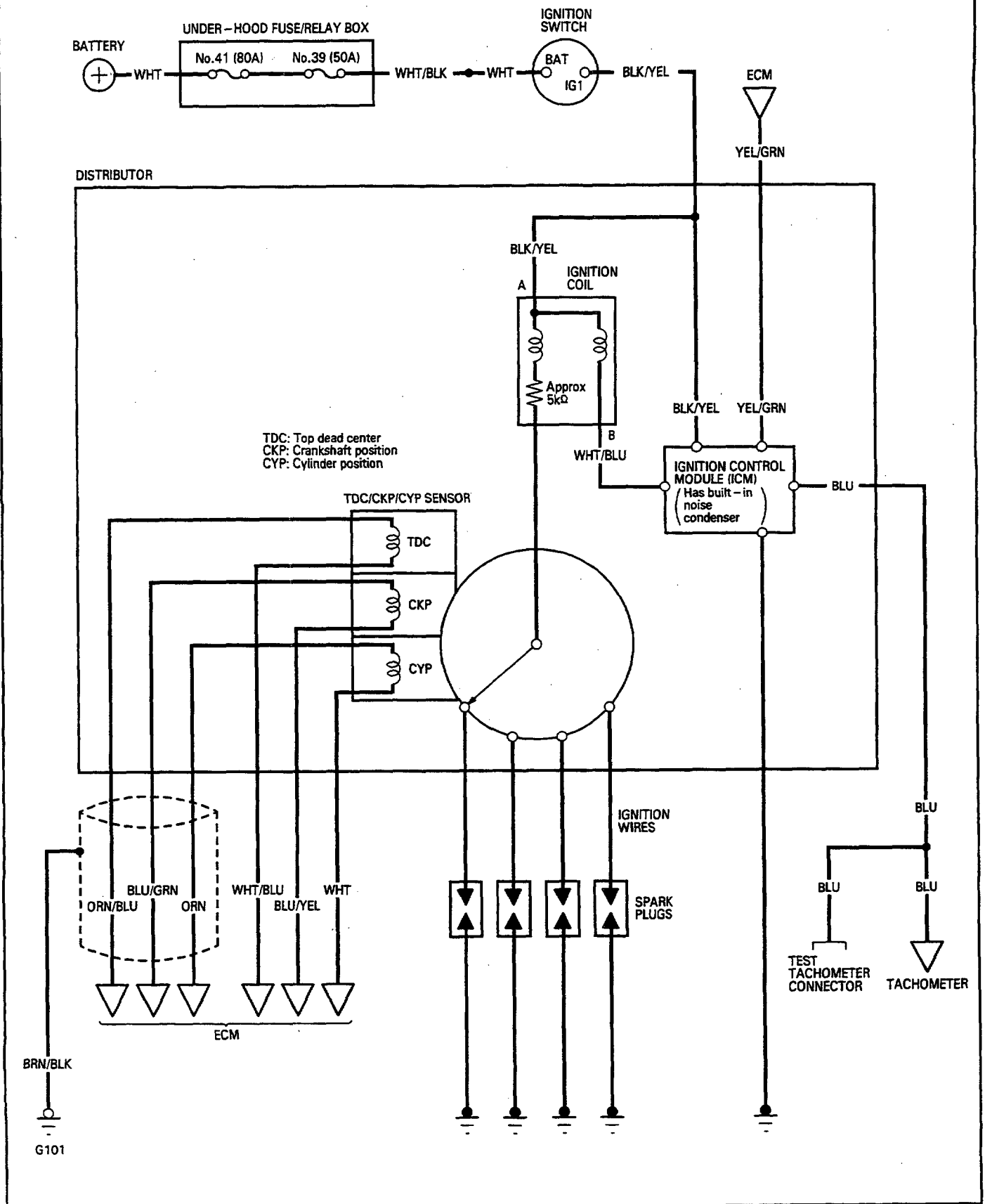
- Troubleshooting, section 11.
- Inspection and setting, page 23-A87

NOTE: LHD type is shown, RHD type is similar.



# Ignition System

## Circuit Diagram



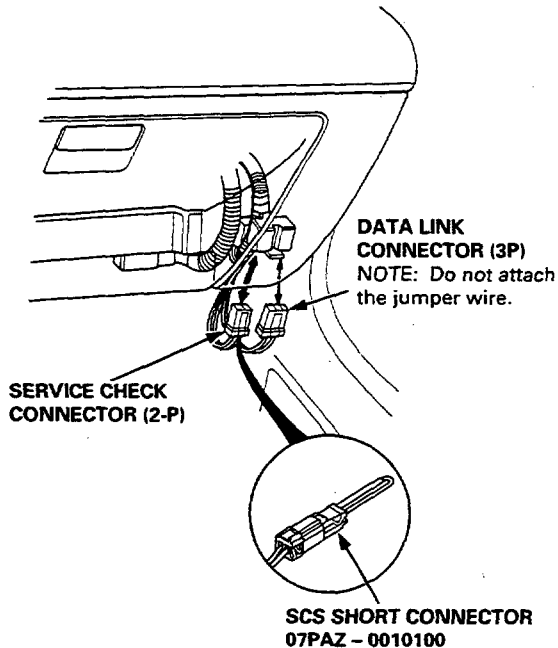
23-A86



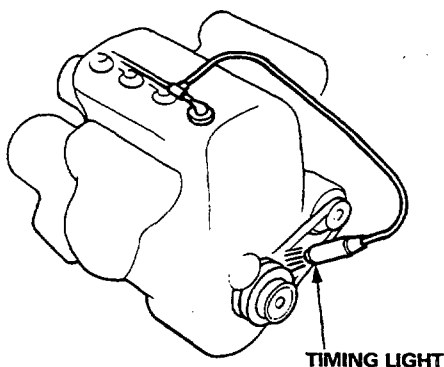
## Ignition Timing Inspection and Setting

1. Start the engine. Hold the engine at 3,000 rpm ( $\text{min}^{-1}$ ) with no load (A/T in **N** or **P** position, M/T in neutral) until the radiator fan comes on, then let it idle.
2. Pull out the service check connector located behind the glove box. Connect the BRN and BLK terminals with the SCS short connector.

NOTE: LHD type is shown, RHD type is symmetrical.



3. Check the idle speed (see section 11).
  4. Connect a timing light to the No. 1 ignition wire.
- Point the light toward the pointer on the timing belt corner.



5. Adjust ignition timing, if necessary, to the following specifications:

### Ignition Timing:

#### D14A2 engine, D16Y3 engine

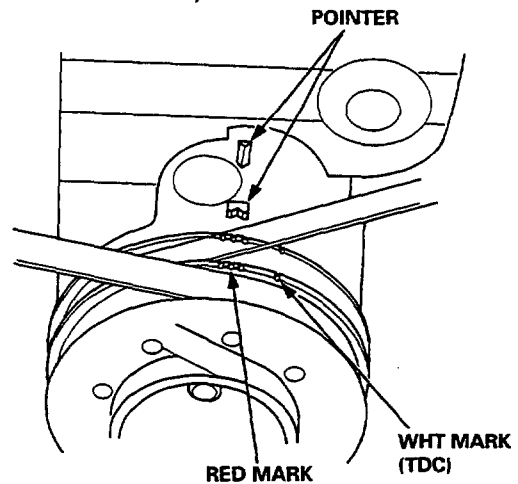
M/T	$16^\circ \pm 2^\circ$ BTDC (RED) at $750 \pm 50$ rpm ( $\text{min}^{-1}$ ) in neutral
A/T	$16^\circ \pm 2^\circ$ BTDC (RED) at $750 \pm 50$ rpm ( $\text{min}^{-1}$ ) in <b>N</b> or <b>P</b> position

#### D15Z3 engine, D16Y2 engine

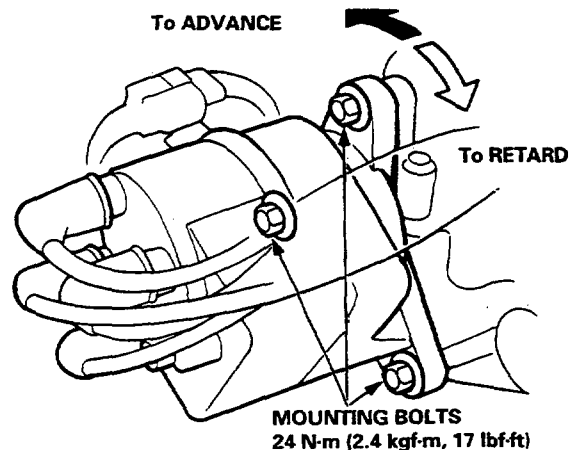
M/T	$16^\circ \pm 2^\circ$ BTDC (RED) at $750 \pm 50$ rpm ( $\text{min}^{-1}$ ) in neutral
-----	--

### NOTE:

- Shift lever must be in neutral.
- All electrical systems should be turned OFF.



6. To adjust ignition timing, loosen the distributor mounting bolts, and turn the distributor ignition housing counterclockwise to advance the timing, or clockwise to retard the timing.



7. Tighten the distributor mounting bolts, and recheck the timing.
8. Remove the SCS short connector from the service check connector.

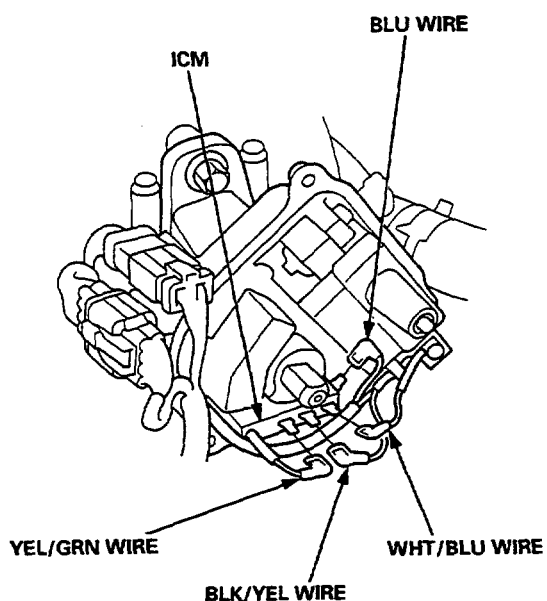
# Ignition System

## Ignition Control Module (ICM) Input Test

### NOTE:

- See section 11 when the malfunction indicator lamp (MIL) blinks.
- Perform an input test for the ignition control module (ICM) after finishing the fundamental tests for the ignition system and the fuel and emissions system.

1. Remove the distributor ignition cap, the distributor ignition rotor, and the inner cover.
2. Disconnect the BLK/YEL, WHT/BLU, YEL/GRN, and BLU wires from the ignition control module (ICM).



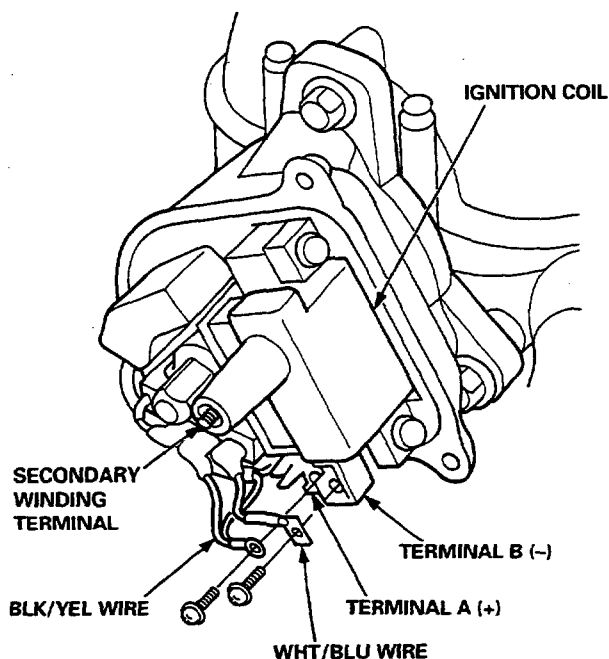
3. Turn the ignition switch "II" (ON). Check for voltage between the BLK/YEL wire and body ground. There should be battery voltage.
  - If there is no battery voltage, check the BLK/YEL wire between the ignition switch and the ICM.
  - If there is battery voltage, go to step 4.
4. Check for voltage between the WHT/BLU wire and body ground. There should be battery voltage.
  - If there is no battery voltage, check the:
    - Ignition coil.
    - WHT/BLU wire between the ignition coil and the ICM.
  - If there is battery voltage, go to step 5.

5. Check the YEL/GRN wire between the engine control module (ECM) and the ICM (see section 11).
6. Check the BLU wire between the tachometer and the ICM.
7. If all tests are normal, replace the ICM.



## Ignition Coil Test

1. With the ignition switch OFF, remove the distributor ignition cap.
2. Remove the two screws to disconnect the BLK/YEL and WHT/BLU wires from the terminals A (+) and B (-) respectively.

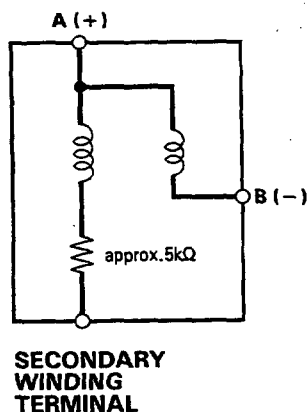


3. Using an ohmmeter, measure resistance between the terminals. If resistance is not within specifications, replace the coil.

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

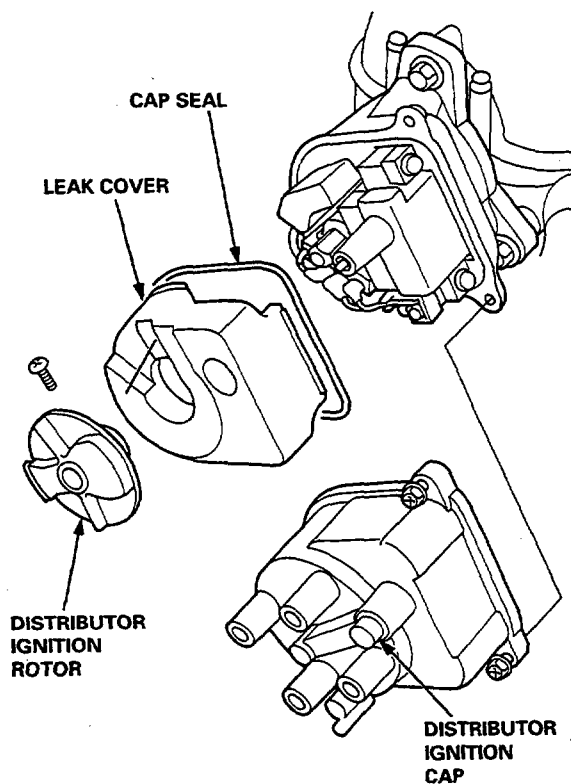
**Primary Winding Resistance**  
(between the A and B terminals):  
0.6 – 0.8  $\Omega$

**Secondary Winding Resistance**  
(between the A and secondary winding terminals):  
13 – 19 k $\Omega$

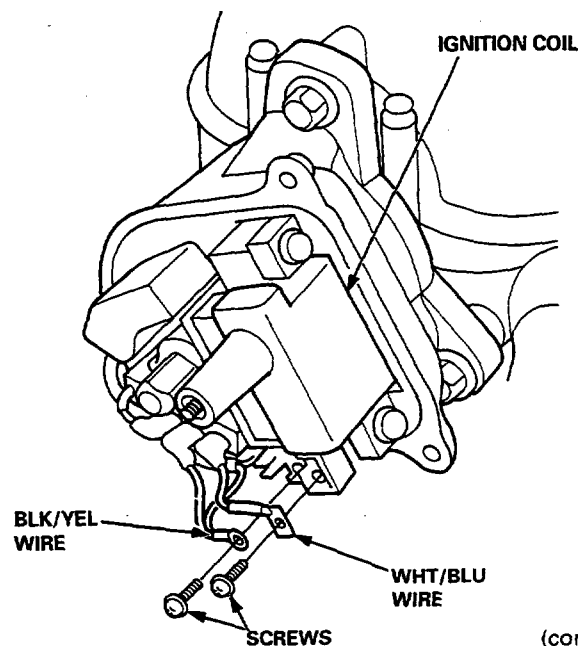


## Ignition Coil Replacement

1. With the ignition switch OFF, remove the distributor ignition cap, distributor ignition rotor and cap seal, then remove the leak cover.



2. Disconnect the BLK/YEL and WHT/BLU wires from the terminals by removing the two screws.

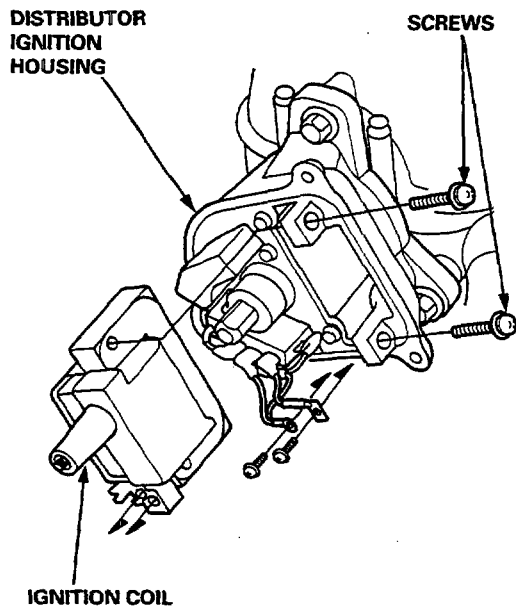


(cont'd)

# Ignition System

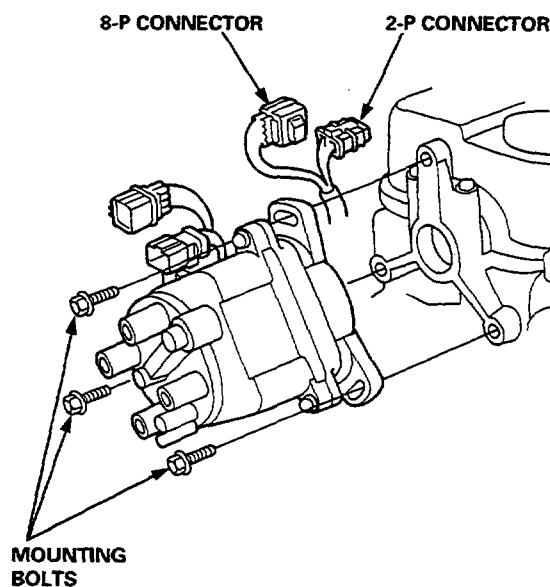
## Ignition Coil Replacement (cont'd)

3. Remove the two screws, and slide the ignition coil out of the distributor ignition housing.



## Distributor Removal

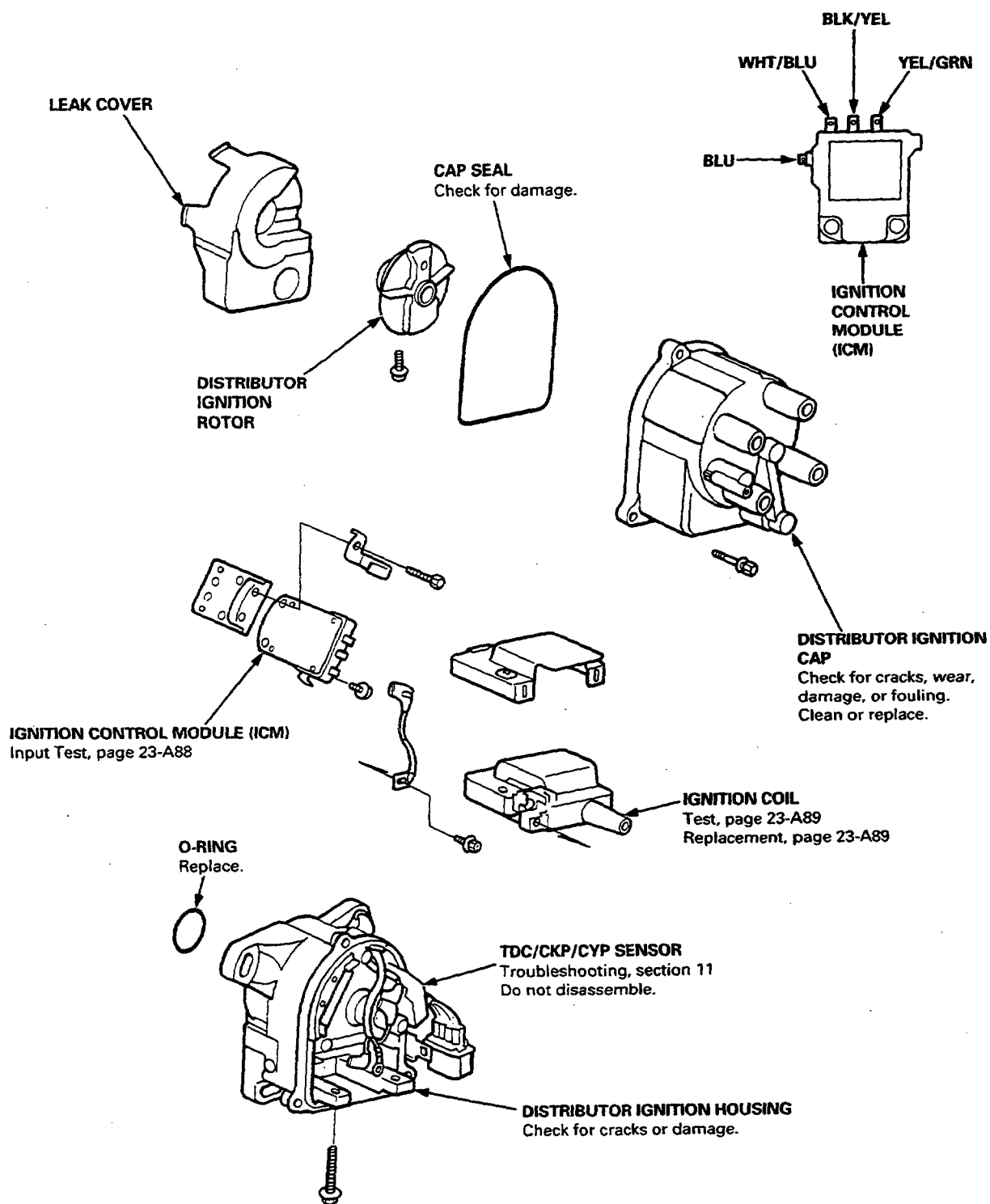
1. Remove the 2-P and 8-P connectors from their brackets, and disconnect them.
2. Disconnect the ignition wires from the distributor ignition cap.



3. Remove the distributor mounting bolts, then remove the distributor from the cylinder head.



## Distributor Overhaul



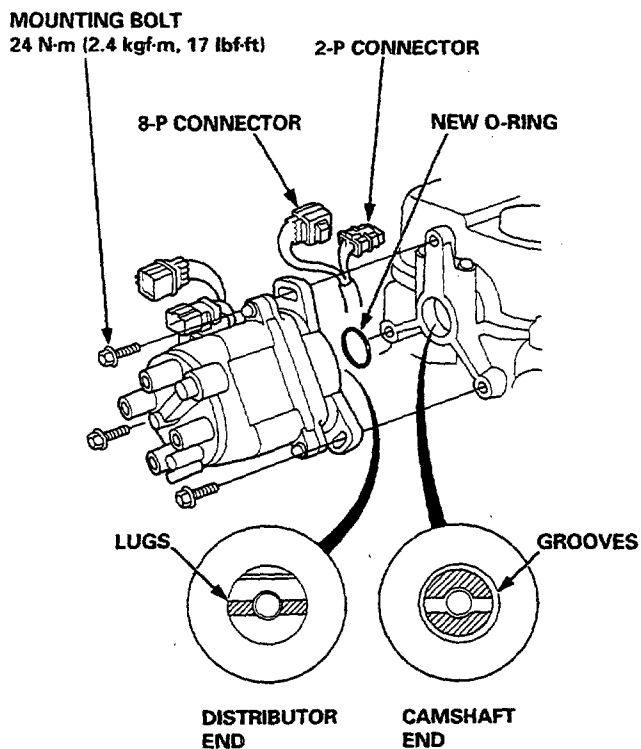
# Ignition System

## Distributor Installation

NOTE: Before you install the distributor, bring the No. 1 piston to compression stroke TDC.

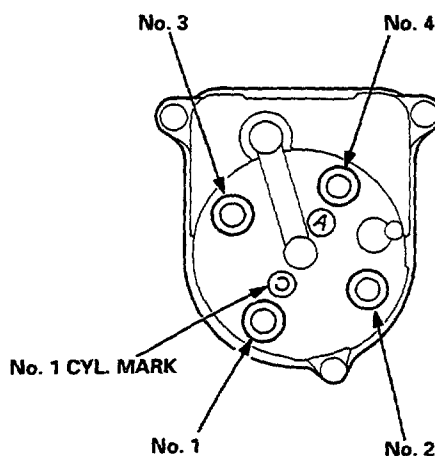
1. Coat a new O-ring with engine oil, then install it.
2. Slip the distributor into position.

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



3. Install the mounting bolts and tighten them temporarily.
4. Connect the 2-P and 8-P connectors to the distributor.

5. Connect the ignition wires as shown.



6. Set the ignition timing with a timing light (see page 23-A87).
7. After setting the ignition timing, tighten the mounting bolts.

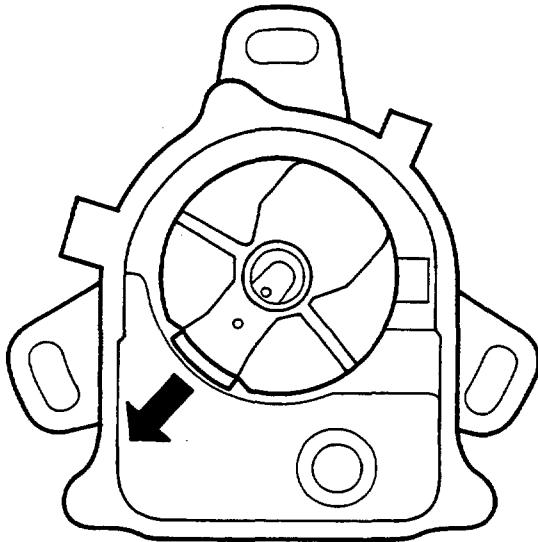




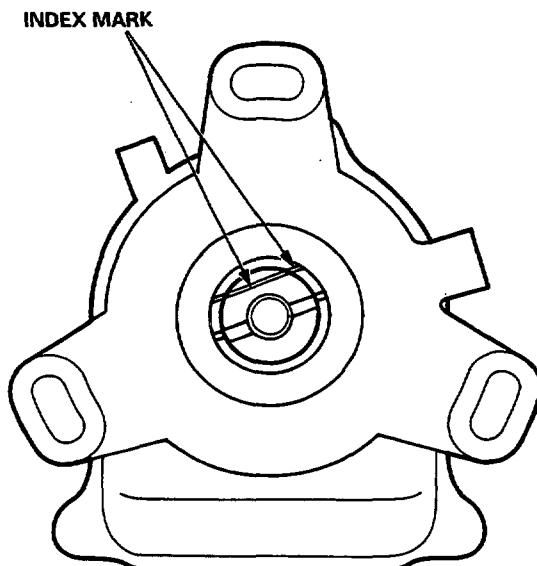
## Distributor Reassembly

Reassemble the distributor in the reverse order of disassembly.

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



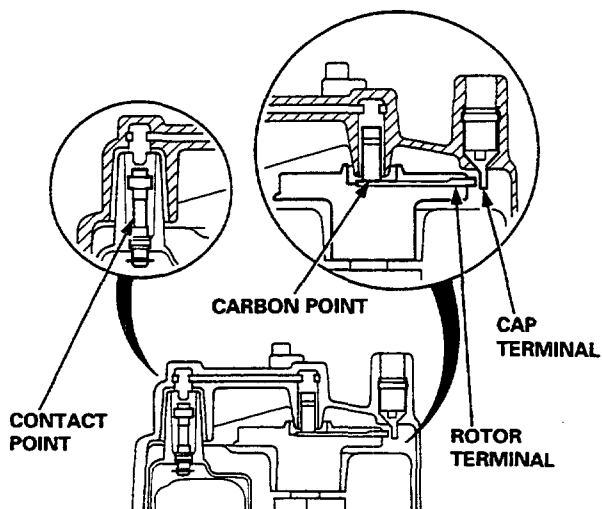
2. Align the index mark on the distributor ignition housing with the index mark on the coupling.



# Ignition System

## 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.

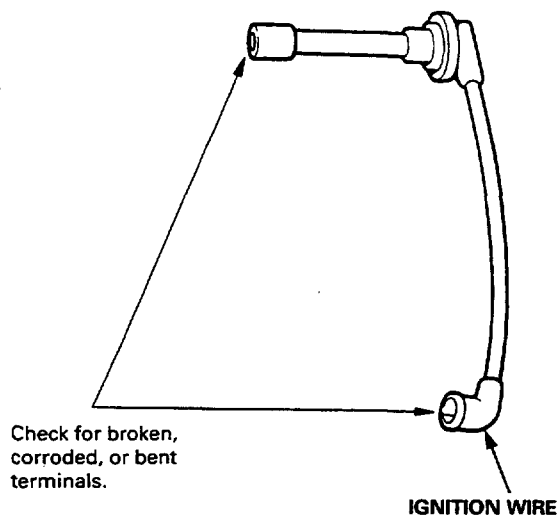


3. Check the distributor ignition cap for cracks, wear and damage. If necessary, clean or replace it.

## Ignition Wire Inspection and Test

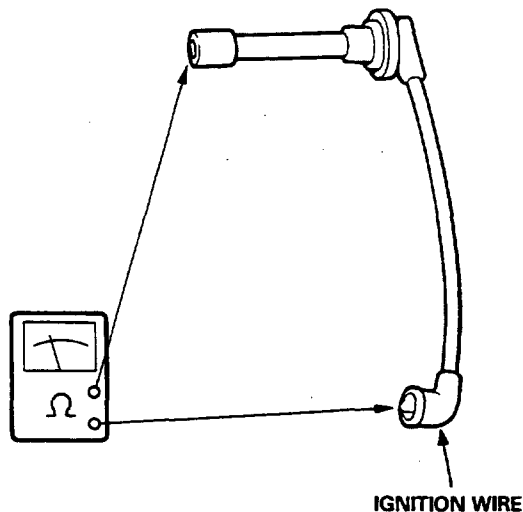
**CAUTION:** Carefully remove the ignition wires by pulling on the rubber boots. Do not bend the wires; you might break them inside.

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 k $\Omega$  max. at 20°C (68°F)

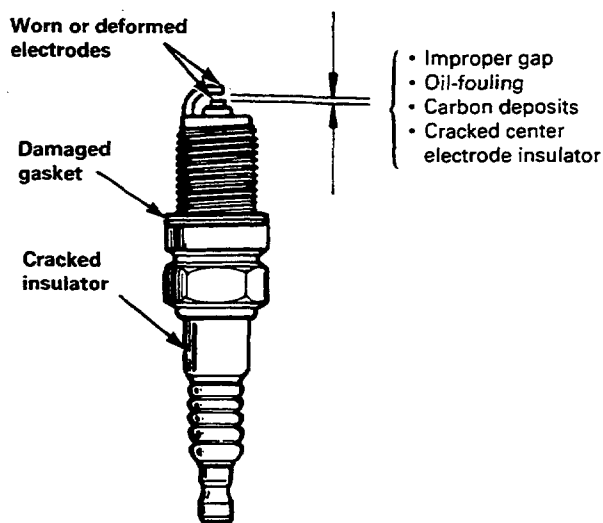


3. If resistance exceeds 25 k $\Omega$ , replace the ignition wire.



## 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 low
- Insufficient cooling

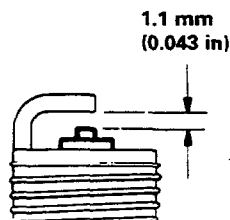
**Fouled plug may be caused by:**

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

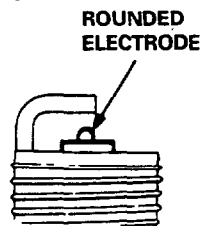
2. Adjust the gap with a suitable gapping tool.

**Electrode Gap:**

Standard	1.1 $\pm$ 0.1 mm (0.043 $\pm$ 0.004 in)
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3. Replace the plug if the center electrode is rounded as shown below:



**NOTE:** Do not use spark plugs other than those listed below, because these plugs are a new type (ISO standard).



These marks are sealed on the timing belt cover.

### Spark Plug

**D15Z3 engine:**

ZFR5F-11 (NGK)	For all normal driving.
ZFR6F-11 (NGK)	For hot climates or continuous high speed driving.

**D14A2 engine, D16Y2 engine, D16Y3 engine:**

BKR6E-11 (NGK)	For all normal driving.
BKR7E-11 (NGK)	For hot climates or continuous high speed driving.

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

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