



Sensors

Oxygen Sensor

[KX Model Only]

1. Disconnect the connector of the oxygen sensor.
2. Start the engine and warm up for 2 minutes at 3,000 min⁻¹(rpm) under no load. Raise the engine speed to 4,000min⁻¹(rpm) and release the throttle suddenly at least 5 times.
3. Within one minute after the engine has been warmed up, measure the voltage between the connector terminal and body ground as described in steps 4 and 5.

NOTE: If it takes more than one minute to complete the checks, warm up the engine as in step 2 before continuing.

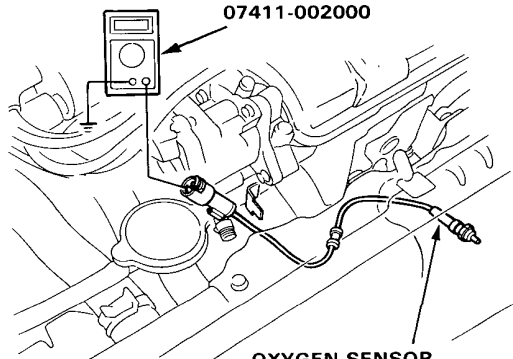
4. Raise the engine speed to 5,000 min⁻¹(rpm) then lower to 2,000min⁻¹(rpm) by operating the accelerator pedal.

Voltage should be below 0.4 V.

5. Disconnect the vacuum hose # 21 from the throttle body; plug the opening in the throttle body. Connect a vacuum pump to the open end of the vacuum hose and apply 300 mmHg, and raise the engine speed to 4,000min⁻¹(rpm).

Voltage should be above 0.6V.

DIGITAL CIRCUIT TESTER
07411-002000



OXYGEN SENSOR
45 N·m (4.5 kg·m, 33 lb·ft)

- Replace the oxygen sensor if the voltages are out of the above ranges.

6. Reconnect the connector.

NOTE:

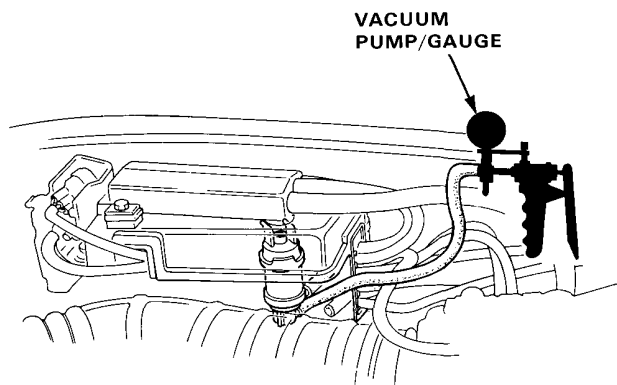
- Avoid damaging the wire harness.
- To prevent cross-threading, first tighten the sensor finger tight, then tighten to the specified torque with a torque wrench.
- Oxygen sensor does not operate when its intake is clogged.
- Be extremely careful not to spray anything over the oxygen sensor.

Air Control Solenoid Valve Inspection

1. Open the control box lid and disconnect the rectangular connector from the control box.
2. Disconnect the lower vacuum hose of the air valve control solenoid valve (between the solenoid valve and the three-way joint) from the joint.
3. Apply vacuum to the hose.

It should hold vacuum.

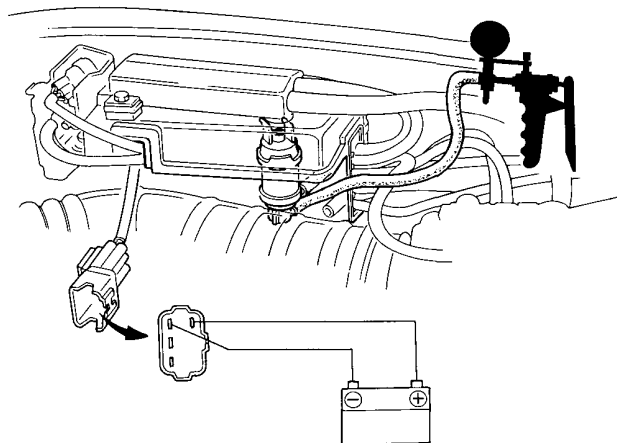
- If it does not hold vacuum, replace the valve.



4. Connect the battery positive terminal to the Black/Yellow terminal of the control box coupler, and the negative terminal to the Orange terminal.
5. Apply vacuum to the hose.

It should not hold vacuum.

- If it holds vacuum, replace the valve.



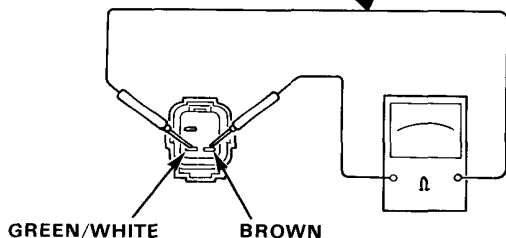
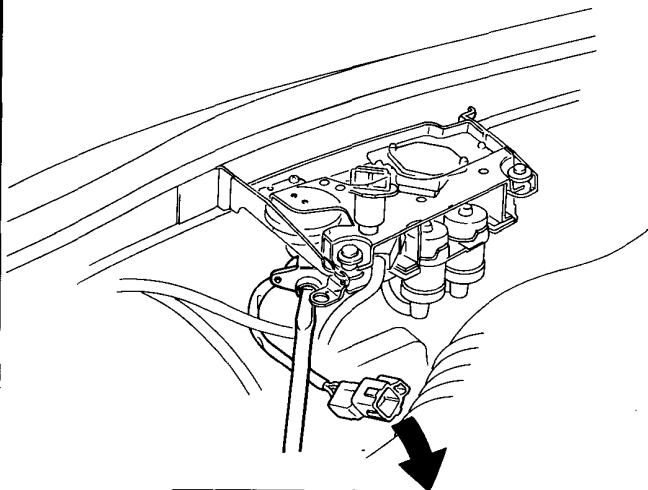
Sensors

Idle Mixture Adjuster (IMA) Sensor

[Except KX Model]

1. Open the control box lid and disconnect the connector of the IMA sensor at the control box.
2. Turning the adjusting screw on the sensor fully, measure resistance between the Brown terminal and the Green/White terminal at the sensor.

Resistance should be : 0.25—6.2 K Ω

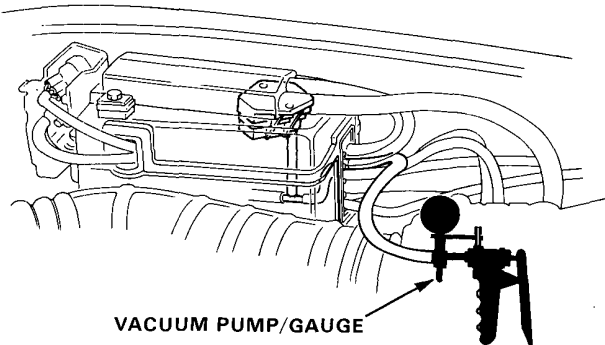


- If resistance is outside above ranges, replace IMA sensor.

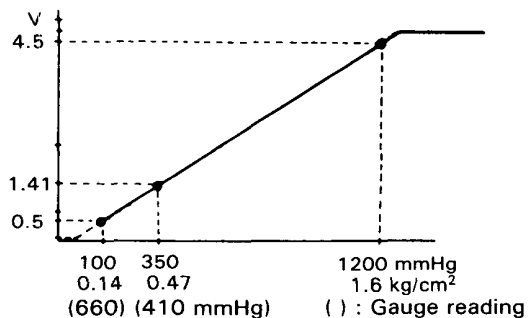
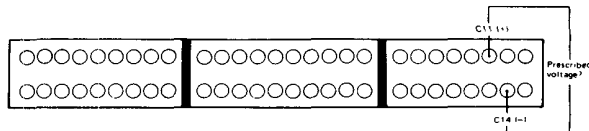
NOTE: Whenever the inspection or the replacement of IMA sensor is performed, check specification for CO. See page 11-35.

Manifold Absolute Pressure (MAP) Sensor

1. Disconnect the vacuum hose # 21 from the throttle body; plug the opening in the throttle body. Connect a vacuum pump to the open end of the vacuum hose.



2. Disconnect the connector from the control unit. Connect the system checker harness (No. 07999—PD6000A) between the control unit and wire harness connector.
3. Turn the ignition switch ON. Connect a digital voltmeter positive probe to the C11 terminal of the system checker harness and negative probe to the C14 terminal. Measure the voltage between the two terminals.



Voltmeter should indicate voltage along with the chart above.

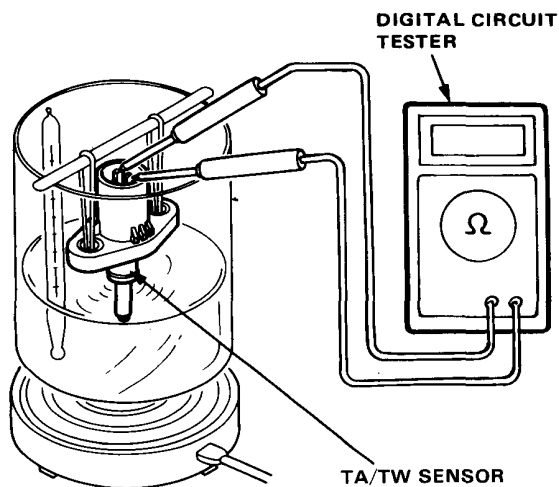
- If the voltage is incorrect, check the vacuum hose for leakage, and wires between the control unit and sensor for open or short circuit.
- Replace the sensor if the wires are normal.



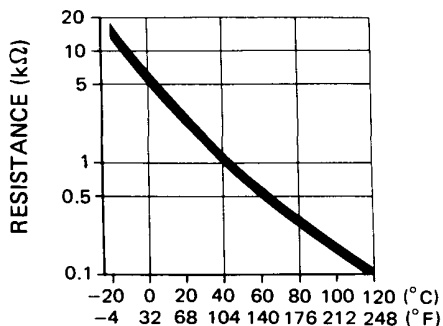
Intake Air Temperature (TA)/ Coolant Temperature (TW) Sensor

1. Disconnect the connector, then remove the TA/TW sensor from the intake manifold/cylinder head.
2. To test a sensor, suspend it in cold water and heat the water slowly. Make sure more than half of the connector is submerged. Measure the resistance between the terminals.

STANDARDS: 0.98–1.34 k Ω at 40°C (95°F)
0.22–0.35 k Ω at 80°C (176°F)



3. The chart below shows the change in resistance over a range of intake air/coolant temperature.



INTAKE AIR/COOLANT TEMPERATURE

- Replace the sensor if resistance is outside the range.
- When installing the TW sensor, torque to: 28 N·m (2.8 lg-m, 20 lb-ft)

NOTE:

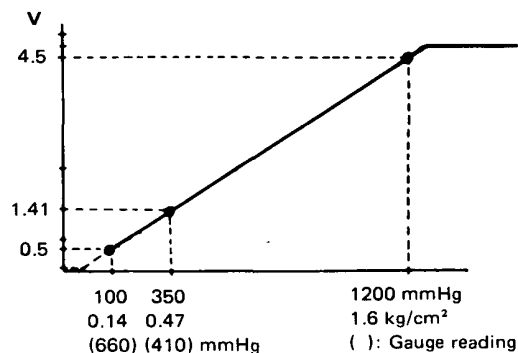
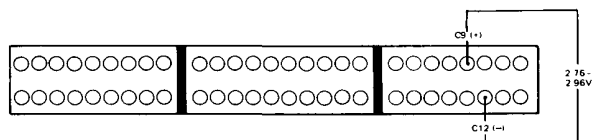
- Don't let the sensor touch the bottom of the container.
- During the test, stir the water in the container to ensure even temperature.

Atmospheric Pressure (PA) Sensor

NOTE: Check the sensor at the ECU connector.

1. Disconnect the wire harness connector from the control unit and connect the system checker harness (No. 07999-PD6000A) to the control unit and wire harness connector.
2. Turn the ignition switch ON. Connect a digital volt-meter positive probe to the C9 terminal of the system checker harness and negative probe to the C12 terminal.

There should be: 2.76–2.96 V



- If voltage is outside ranges, check for open or short circuit between the ECU and PA sensor. Replace the PA sensor with a new one if the wires are in good condition.

Sensors

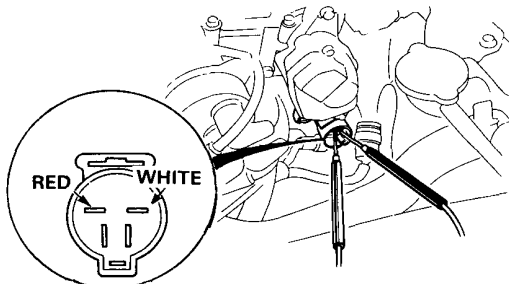
Crank Angle Sensor Inspection

NOTE: If either the CYL or TDC sensor tests bad, replace the crank angle sensor coil assembly.

CYL Sensor Inspection

1. Disconnect the connector of the crank angle sensor.
2. Measure the resistance between the White terminal and Red terminal at the sensor.

Resistance should be: 0.65—0.85 K Ω

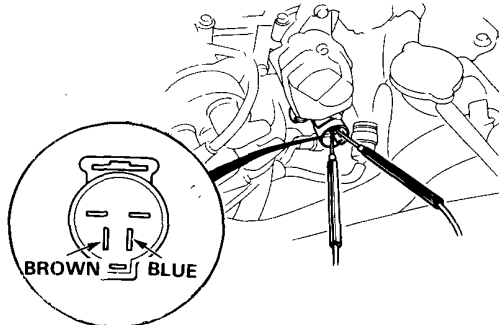


3. Measure the resistance between the White and Red terminals, and crank angle sensor housing. Resistance should be: 100 k Ω or more

TDC Sensor Inspection

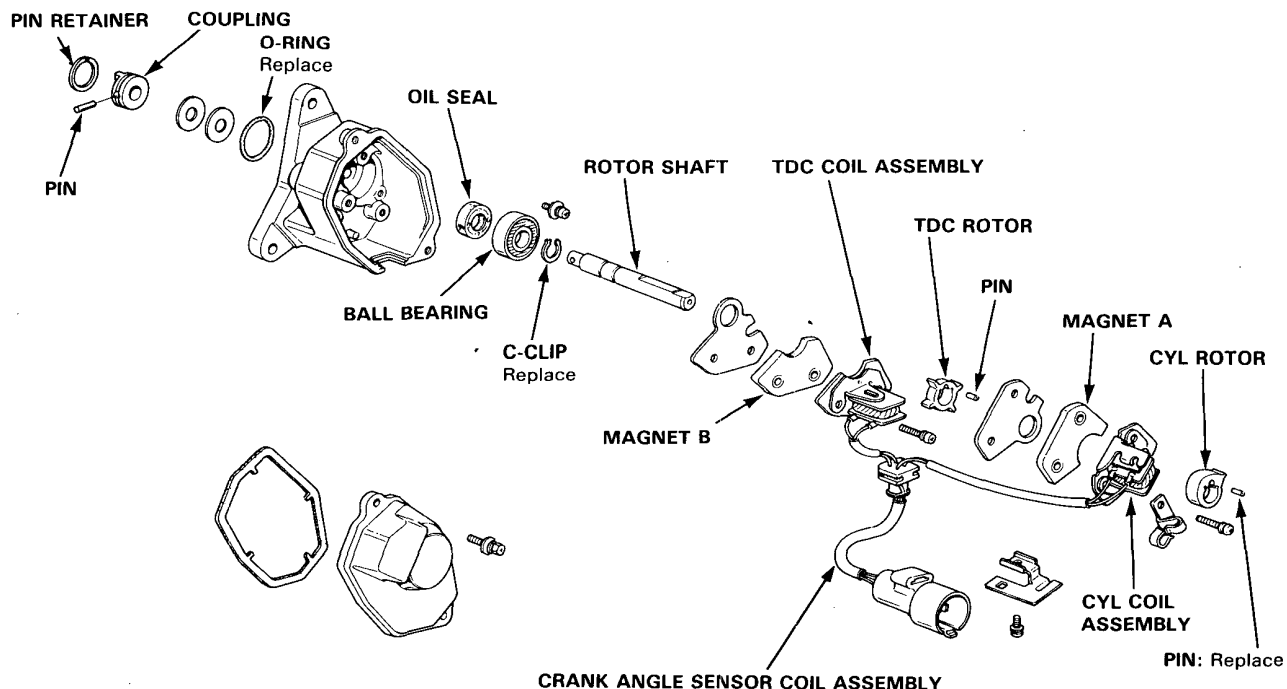
1. Disconnect the connector of the crank angle sensor.
2. Measure the resistance between the White terminal and Red terminal at the sensor.

Resistance should be: 0.65—0.85 K Ω



3. Measure the resistance between the Brown and Blue terminals, and crank angle sensor housing. Resistance should be: 100 k Ω or more

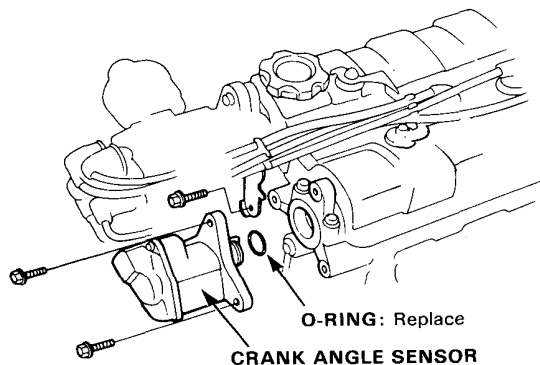
Crank Angle Sensor Disassembly



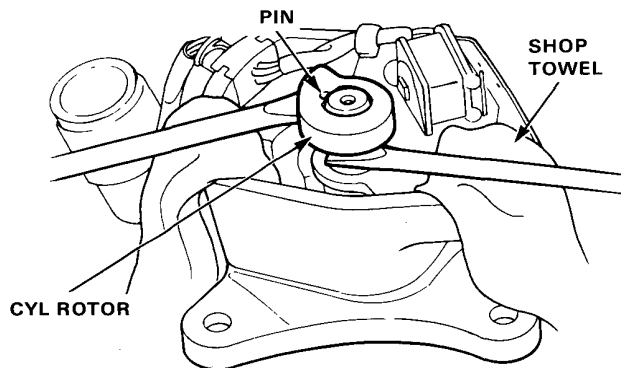


Crank Angle Sensor Disassembly

1. Remove the crank angle sensor from the engine.



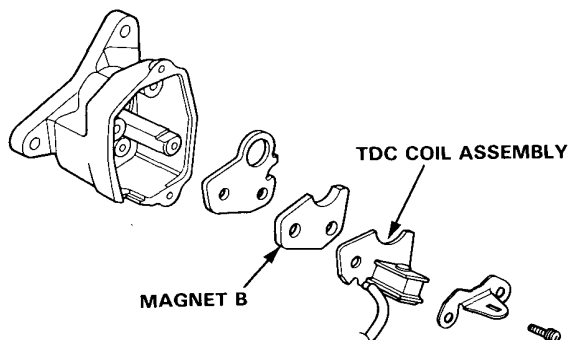
2. Carefully pry up the CYL rotor by using two screwdrivers as shown. Do not damage the CYL rotor.



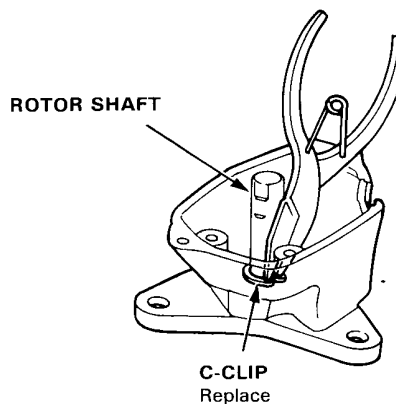
3. Pull the CYL coil assembly and magnet A out from the rotor shaft by removing the screws.

4. Pry up the TDC rotor in the same order of prying up the CYL rotor.

5. Pull the TDC coil assembly and magnet B out from the rotor shaft by removing the screws.

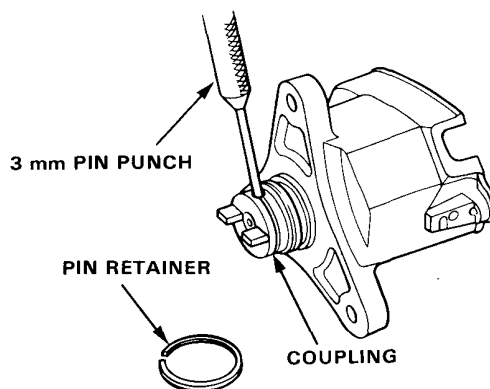


6. Remove the C-Clip.

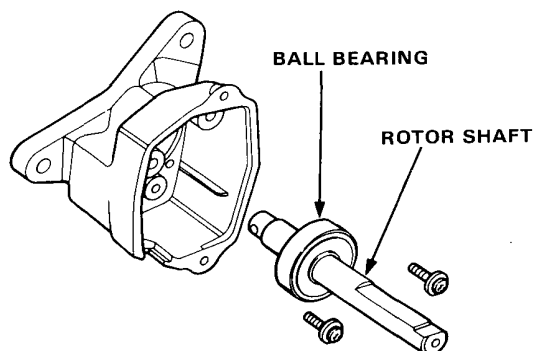


7. Slide off the pin retainer being careful not to stretch it.

8. Separate the coupling from the shaft by removing the roll pin as shown.



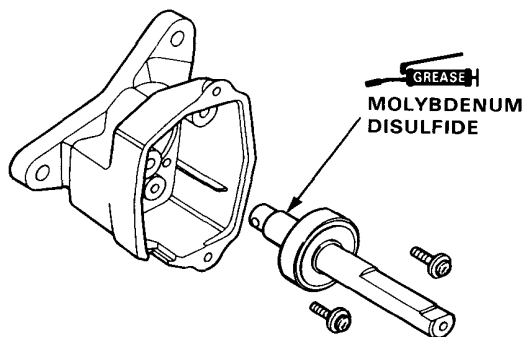
9. Remove the ball bearing and rotor shaft as an assembly by removing the screws.



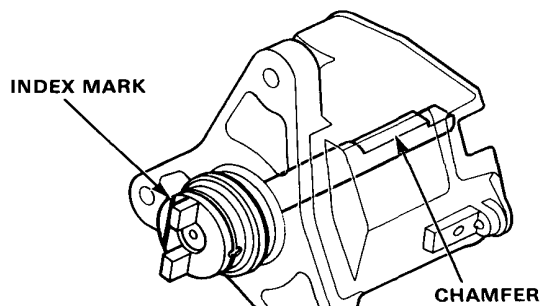
Sensors

Crank Angle Sensor Reassembly

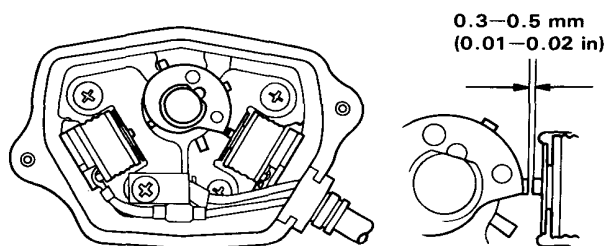
1. Apply a molybdenum disulfide grease to the tip of the rotor shaft, then install it on the sensor housing with 4 mm screws.



2. Install the coupling with its index mark facing in the direction shown, install the pin, and install the pin retainer.

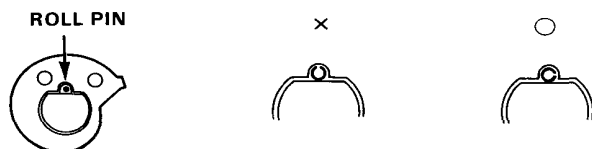


3. Install a new C-clip on the rotor shaft.
4. Install the TDC coil assembly and TDC rotor so that the air gap is 0.3—0.5 mm (0.01—0.02 in.), then install the CYL coil assembly and CYL rotor in the same way.



NOTE:

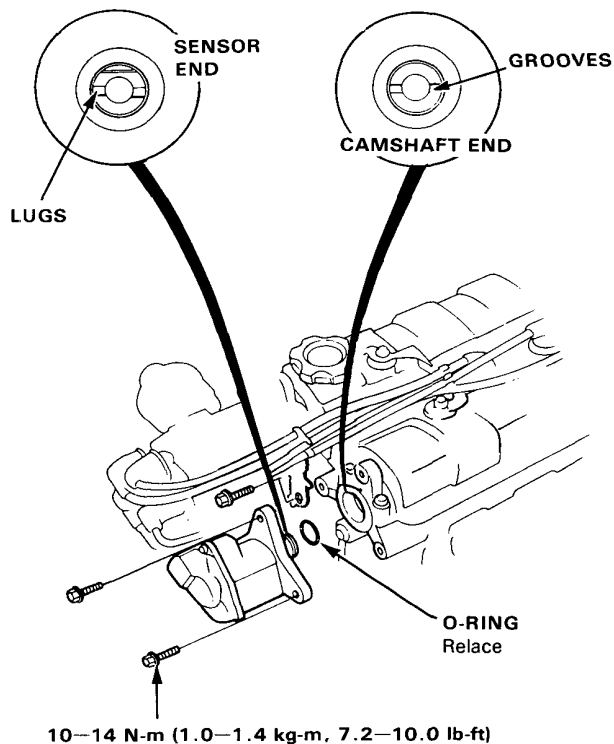
- Install the rotors with the part number facing up.
- Install the roll pin so that it faces as shown below.



Crank Angle Sensor Installation

1. Install a new O-ring on the sensor housing.
2. Slip the sensor into the position.

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





Throttle Angle Sensor

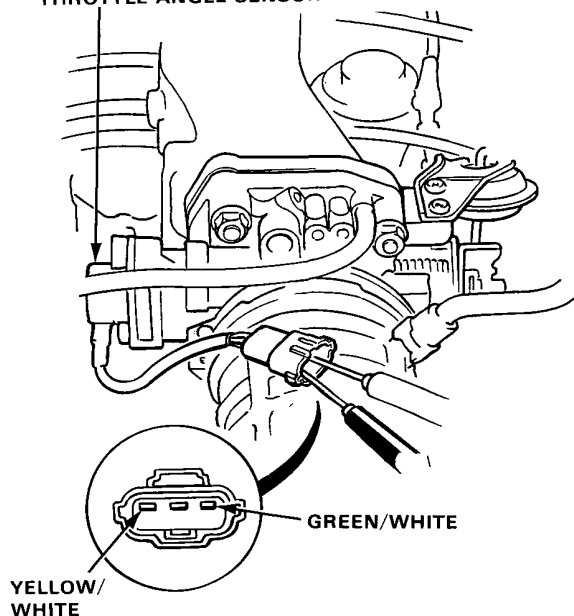
Testing/Removal:

CAUTION: The throttle stop screw is nonadjustable.

1. Disconnect the connector of the throttle angle sensor.
2. Measure full resistance between the Yellow/White terminal and Green/White terminal at the sensor.

Resistance should be: 4–6k Ω

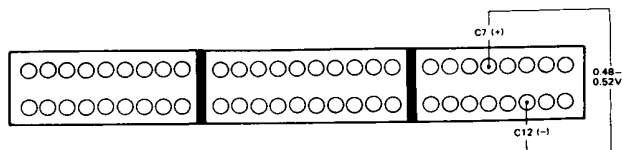
THROTTLE ANGLE SENSOR



- If the resistance is outside the above range, adjust the installation position of the sensor and re-test. Replace if necessary.

Installation:

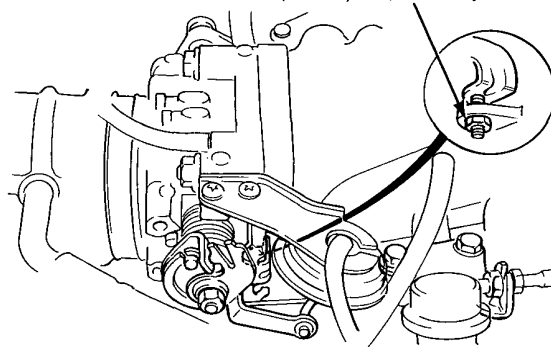
1. Align the pin of the sensor with the throttle valve shaft groove and tighten temporarily.
2. Disconnect the control unit connectors and connect the System Checker Harness (NO. 07999—PD6000A) between the control unit and wire harness connector.
3. Connect a digital voltmeter positive probe to C7 terminal of the system checker harness and negative probe to C12 terminal.



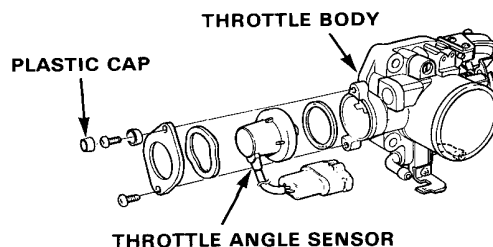
4. With the ignition switch turned ON, adjust the sensor to a position where the throttle stop lever just touches the stop screw. Then measure the voltage between the two terminals.

There should be: 0.48–0.52V

THROTTLE STOP SCREW (Factory set; Non Adjustable)



5. If the voltage is within specification, tighten the screws provisionally.



6. After reassembling the sensor, test the deceleration fuel cut-off system (page 11-45).
 - If the deceleration fuel cut-off system is OK, tighten the screws.
 - If the deceleration fuel cut-off system does not work, repeat steps 1 through 5 and check the voltage.

Solenoid Valves

Idle Control Solenoid Valve

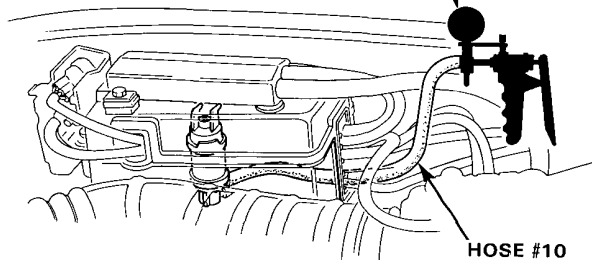
The idle control solenoid valve is activated by commands from the ECU. When the solenoid valve opens, this causes vacuum in the vacuum hose (between the air chamber and the solenoid valve) and increase idle speed approximately $150\text{min}^{-1}(\text{rpm})$ under the following conditions:

- For a short period after starting the engine.
- Altitude higher than 800 m.
- Coolant temperature lower than 70°C (158°F).
- For 0.5 seconds when quick deceleration is detected at $1,000\text{min}^{-1}(\text{rpm})$

While the solenoid valve is energized, 9V or higher should be available between the Black/Yellow terminal (+) and Yellow/Black terminal (-) of the main harness at the control box.

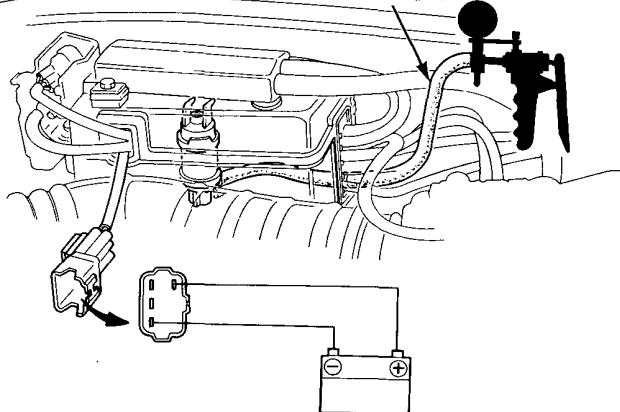
1. Disconnect the 6 cavity rectangular connector from the control box.
2. Disconnect the vacuum hose #10 from the throttle body.
3. Apply vacuum to the hose #10.
It should hold vacuum.

VACUUM PUMP/GAUGE



- If it does not hold vacuum, replace the valve.
4. Connect the battery positive terminal and negative terminal to the terminals of the control box connector.
 5. Apply vacuum to hose #10.
It should not hold vacuum.

HOSE #10



- If it holds vacuum, replace the valve.

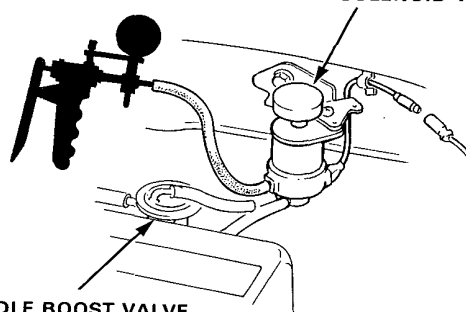
A/C Idle Boost Solenoid Valve

The A/C idle boost solenoid valve is activated when the A/C switch is turned ON. When the solenoid valve is activated vacuum is generated in the vacuum hose between the solenoid valve and A/C idle boost valve.

9V or higher should be detected between the Red terminal (+) and the ground (-) of the left side harness at the solenoid valve.

1. Disconnect the connector of the A/C idle boost solenoid valve.
2. Disconnect the lower vacuum hose of the valve (between the A/C idle boost valve and the solenoid valve) from the A/C idle boost valve.
3. Apply vacuum to the hose.
It should hold vacuum.
If it does not hold vacuum, replace the valve.

A/C IDLE BOOST SOLENOID VALVE



4. Connect the battery positive terminal to the terminal of the connector of the valve and the negative terminal to the ground.
5. Apply vacuum to the hose.
It should not hold vacuum.
If it holds vacuum, replace the valve.

