

2005 Toyota RAV4

2005 ENGINE Ignition - RAV4

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IGNITION SYSTEM

ON-VEHICLE INSPECTION

NOTE: "Cold" and "Hot" in these sentences express the temperature of the coils themselves. "Cold" is from -10°C (14°F) to 50°C (122°F) and "Hot" is from 50°C (122°F) to 100°C (212°F).

1. INSPECT IGNITION COIL (WITH IGNITER) AND SPARK TEST

Check that spark occurs.

1. Remove the ignition coils (see **IGNITION COIL**).
2. Remove the spark plugs.
3. Install the spark plugs to each ignition coil and connect the ignition coil connector.
4. Disconnect the 4 injector connectors.
5. Ground the spark plug.
6. Check if the spark occurs while the engine is being cranked.

NOTE: To prevent gasoline from being injected from injectors during this test, crank the engine for no more than 5 - 10 seconds at one time.

If the spark does not occur, do the test as follows:

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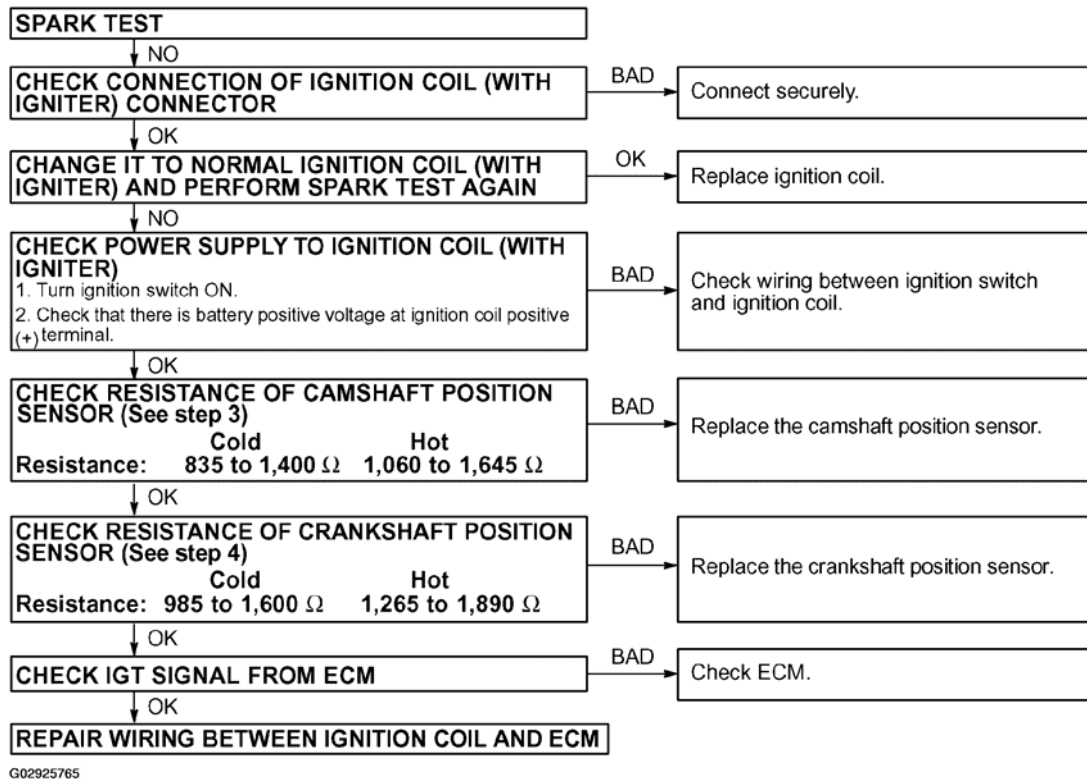


Fig. 1: Ignition System Testing Chart

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

7. Using a 16 mm plug wrench, reinstall the spark plugs.

Torque: 19 N.m (194 kgf.cm, 14 ft.lbf)

8. Reinstall the ignition coils (see **IGNITION COIL**).

2. INSPECT SPARK PLUGS

NOTE:

- Never use a wire brush for cleaning.
- Never attempt to adjust the electrode gap on used spark plug.

- a. Remove the air cleaner assembly.
- b. Remove the ignition coils (see **IGNITION COIL**).
- c. Check the electrode.

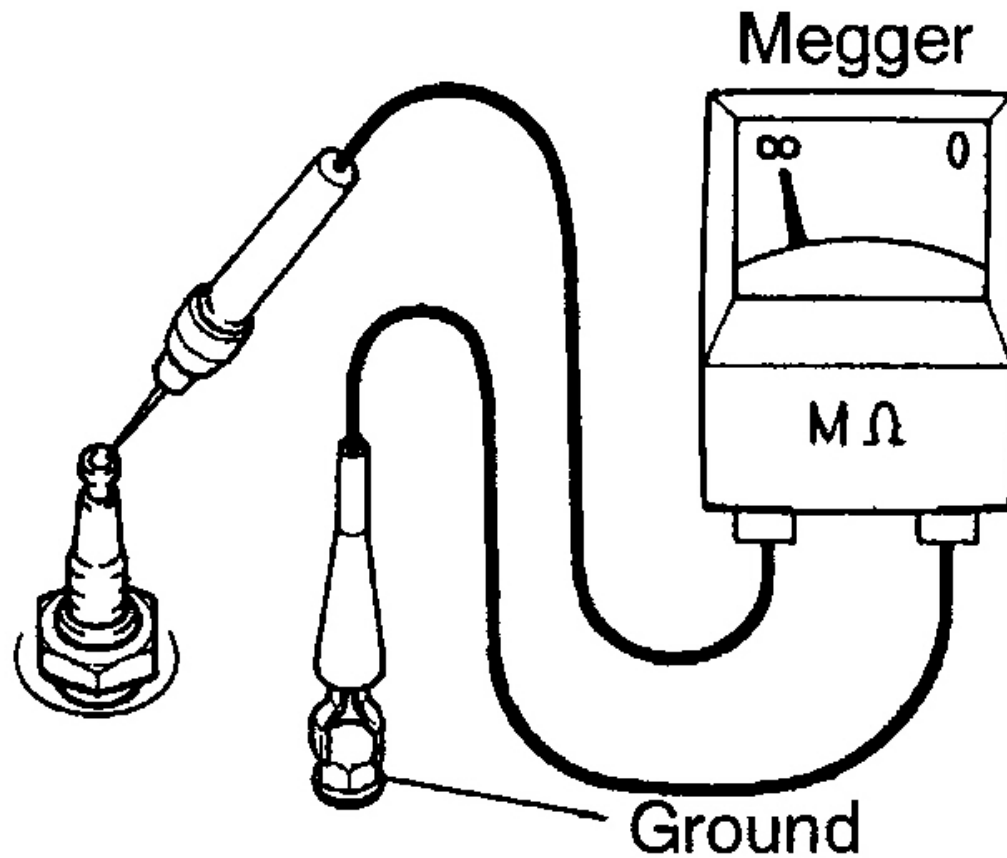
- Using a megger (insulation resistance meter), measure the insulation resistance.

Correct insulation resistance: 10 Mohm or more

If the resistance is less than the specified value, proceed to step (d).

HINT:

If a megger is not available, the following simple method of inspection provides fairly accurate results.



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Fig. 2: Measuring Insulation Resistance

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- Simple Method:
 - Quickly race the engine to 4,000 rpm 5 times.
 - Remove the spark plug (see step (d)).

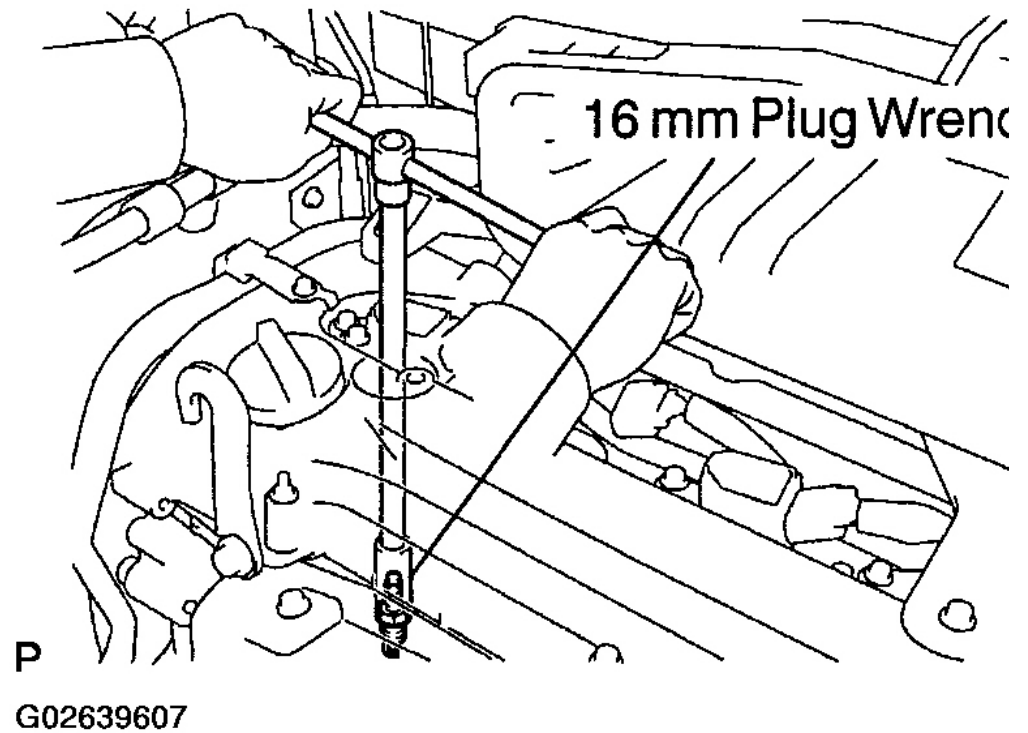


Fig. 3: Removing Spark Plugs

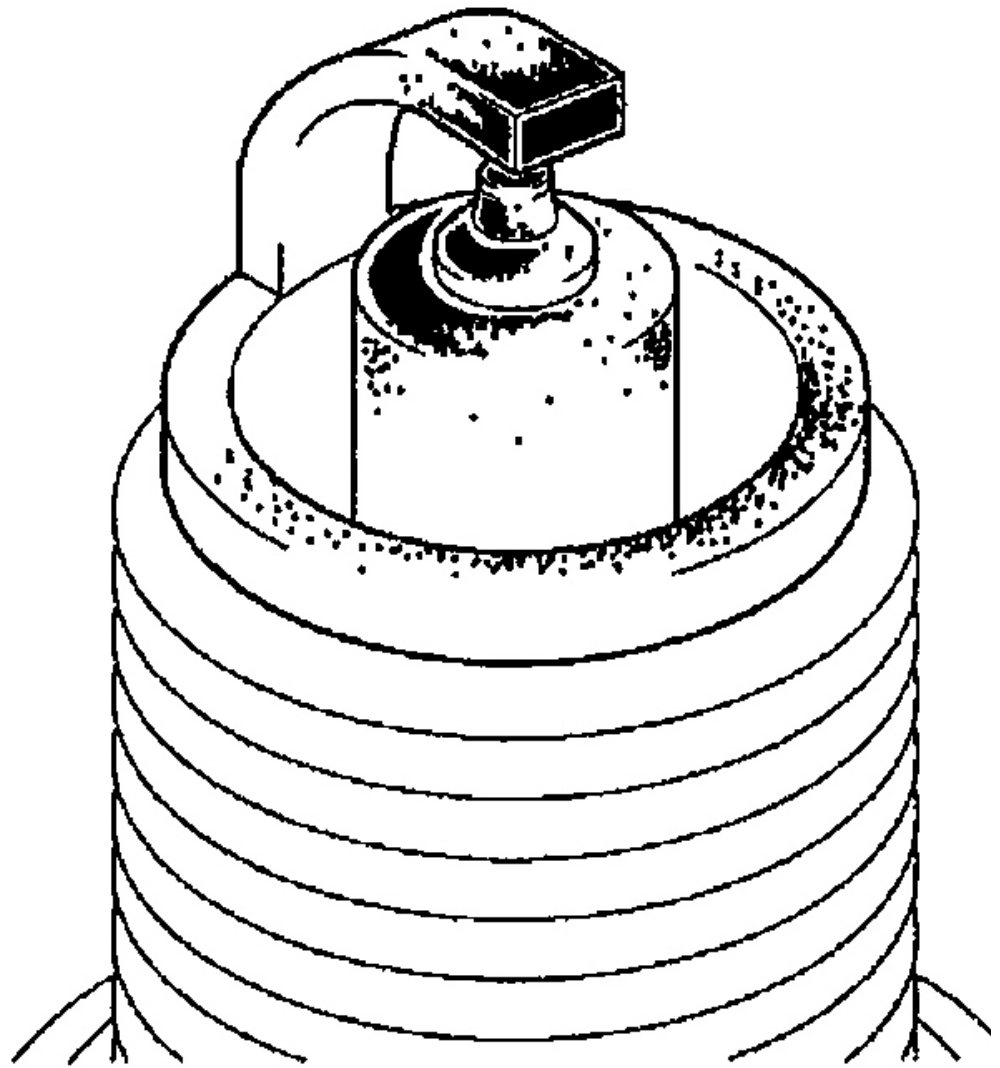
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- Visually check the spark plug.

If the electrode is dry ... OK.

If the electrode is wet ... Proceed to (step g).

- Reinstall the spark plug (see step h).



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Fig. 4: Checking Spark Plug

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- Using a 16 mm plug wrench, remove the spark plugs.
- Check the spark plug for thread damage and insulator damage.

If abnormal, replace the spark plug.

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Recommended spark plug:

DENSO MADE SPECIFICATION

DENSO made	SK20R11
NGK made	IFR6A11

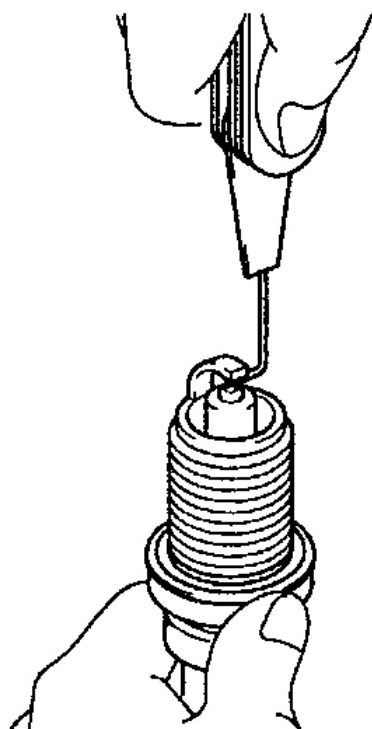
- Check the spark plug electrode gap.

Maximum electrode gap for used spark plug: 1.3 mm (0.047 in.)

If the gap is greater than maximum, replace the spark plug.

Correct electrode gap for new spark plug: 1.0 to 1.1 mm (0.039 to 0.043 in.)

NOTE: When adjusting the gap of a new spark plug, bend only the base of the ground electrode. Do not touch the tip. Never attempt to adjust the gap on a used plug.



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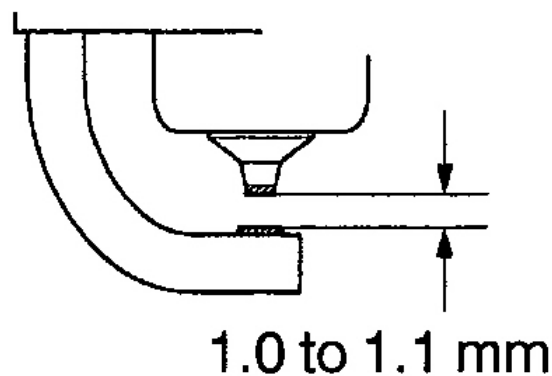


Fig. 5: Checking Spark Plug Electrode Gap

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- Clean the spark plugs.

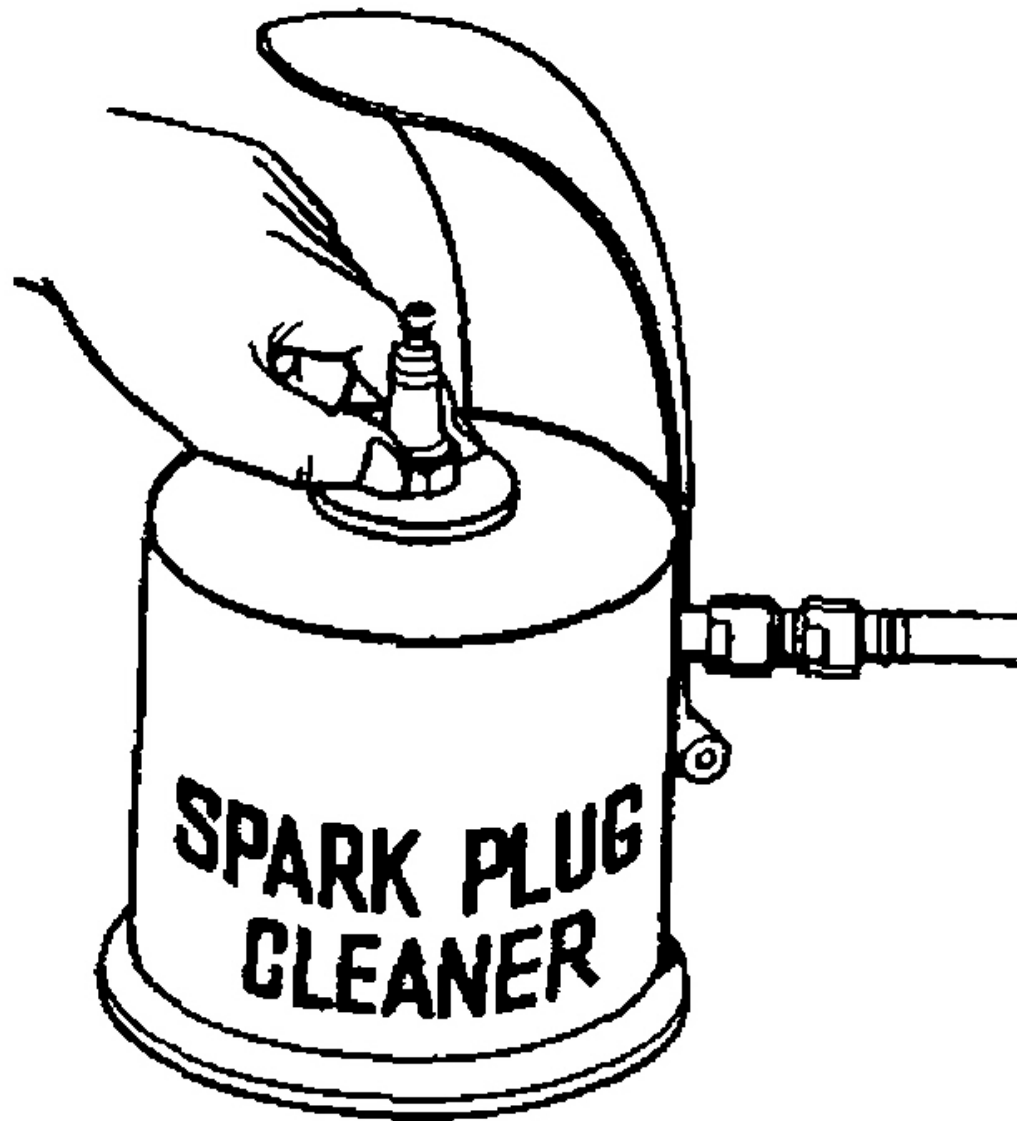
If the electrode has traces of wet carbon, make it dry and then clean it with a spark plug cleaner.

Air pressure: Below 588 kPa (6 kgf/cm² , 85 psi)

Duration: 20 seconds or less

HINT:

If there are traces of oil, wipe them off with gasoline before using the spark plug cleaner.



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Fig. 6: Identifying Spark Plug Cleaner
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- Using a 16 mm plug wrench, install the spark plugs.

Torque: 19 N.m (194 kgf.cm, 14 ft.lbf)

- Reinstall the ignition coils (see **IGNITION COIL**).
 - Reinstall the air cleaner assembly.
- d. **INSPECT CAMSHAFT POSITION SENSOR**
- a. Remove the sensor connector (see **CAMSHAFT POSITION SENSOR**).
 - b. Using an ohmmeter, measure the resistance between terminals.

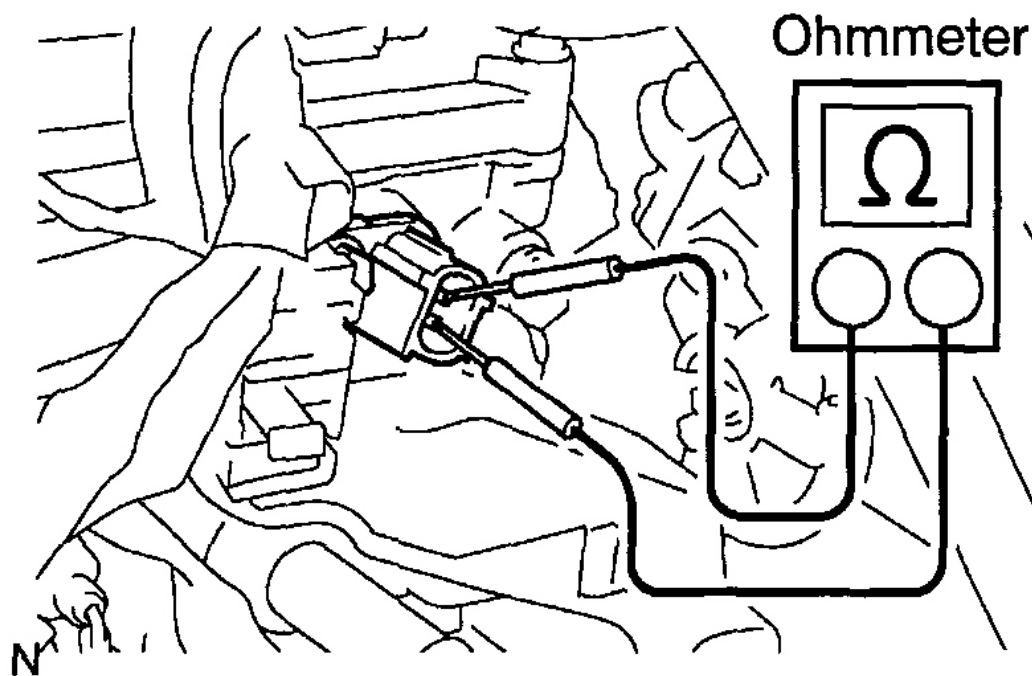
Resistance:

RESISTANCE SPECIFICATION

Cold	835 to 1,400 ohm
Hot	1,060 to 1,645 ohm

If the result is not as specified, replace the sensor (see **CAMSHAFT POSITION SENSOR**).

- c. Reconnect the sensor connector.



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Fig. 7: Measuring Resistance Between Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

e. INSPECT CRANKSHAFT POSITION SENSOR

- a. Disconnect the sensor connector.
- b. Using an ohmmeter, measure the resistance between the terminals.

Resistance:

RESISTANCE SPECIFICATION

Cold	985 to 1,600 ohm
Hot	1,265 to 1,890 ohm

If the result is not as specified, replace the sensor (see **CRANKSHAFT POSITION SENSOR**).

- c. Reconnect the sensor connector.

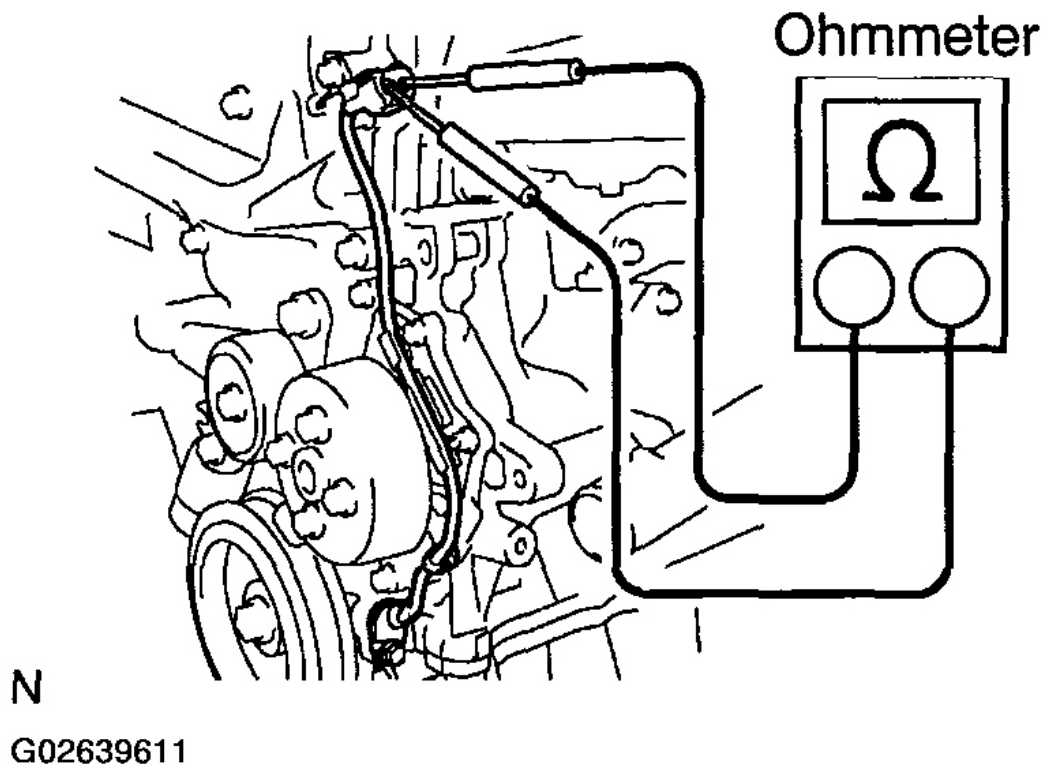


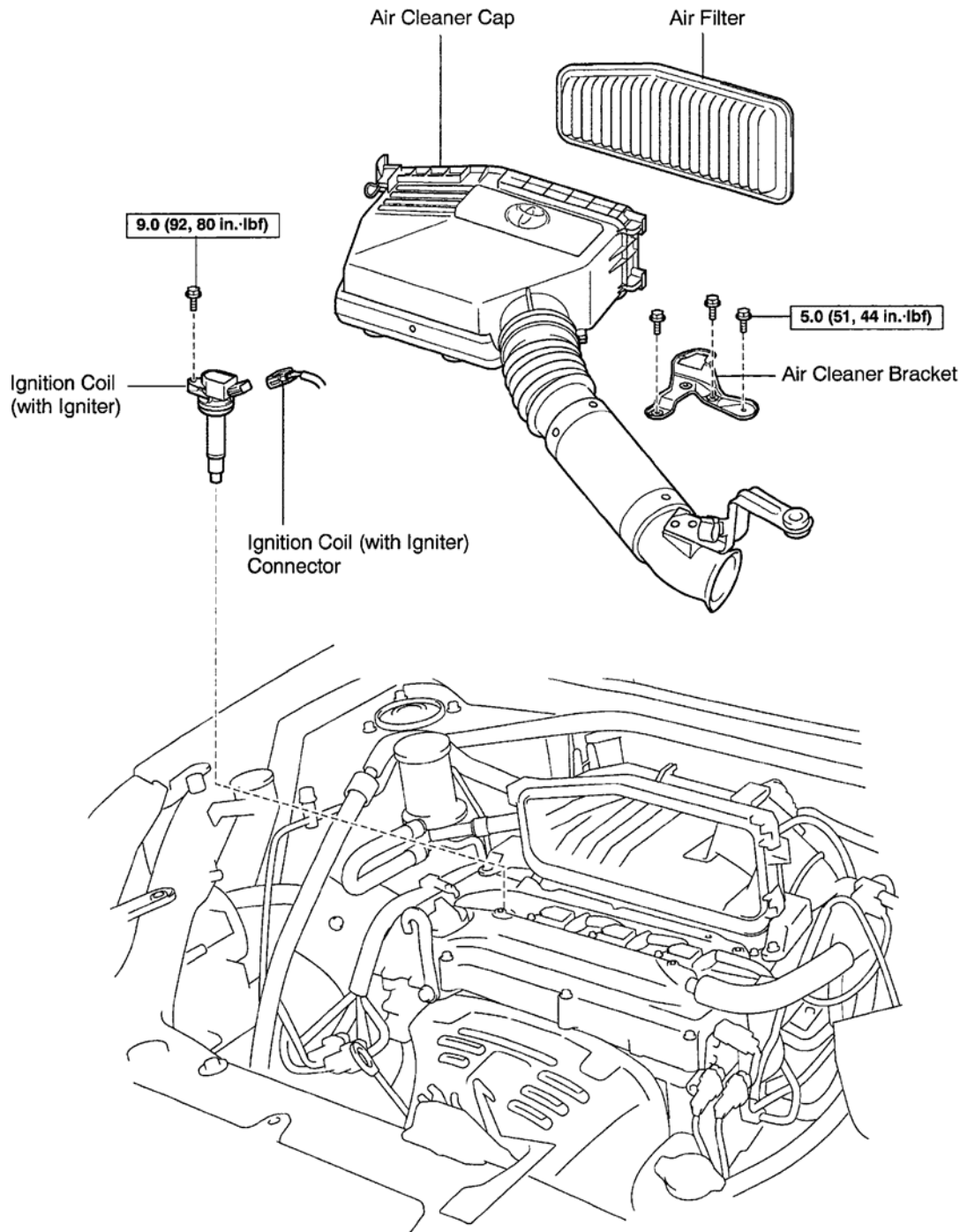
Fig. 8: Measuring Resistance Between Terminals

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COMPONENTS



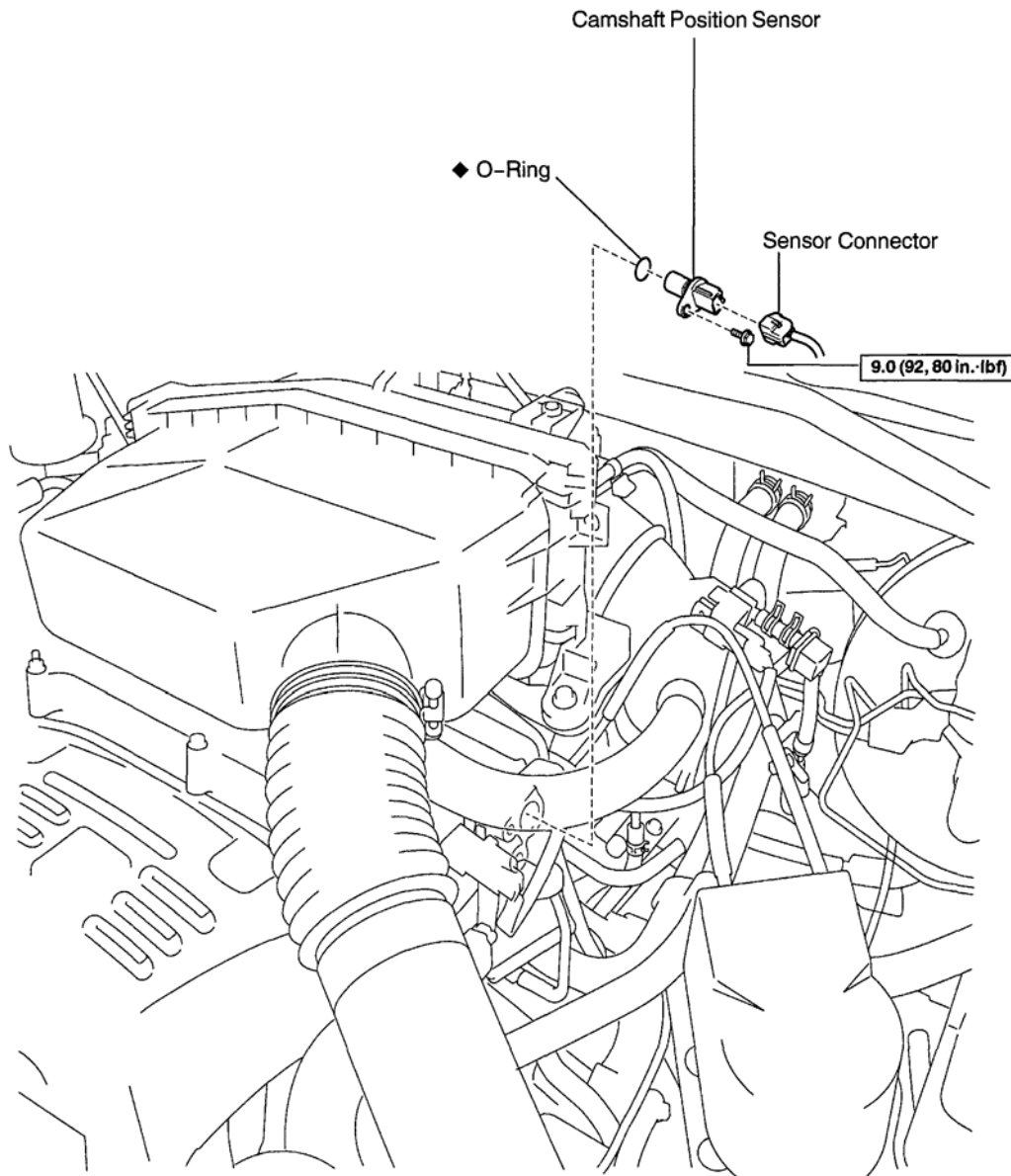
P N·m (kgf·cm, ft·lbf) : Specified torque

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Fig. 9: Identifying Ignition Coil Components & Torque Specifications
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

CAMSHAFT POSITION SENSOR

COMPONENTS



N·m (kgf·cm, ft·lbf) : Specified torque

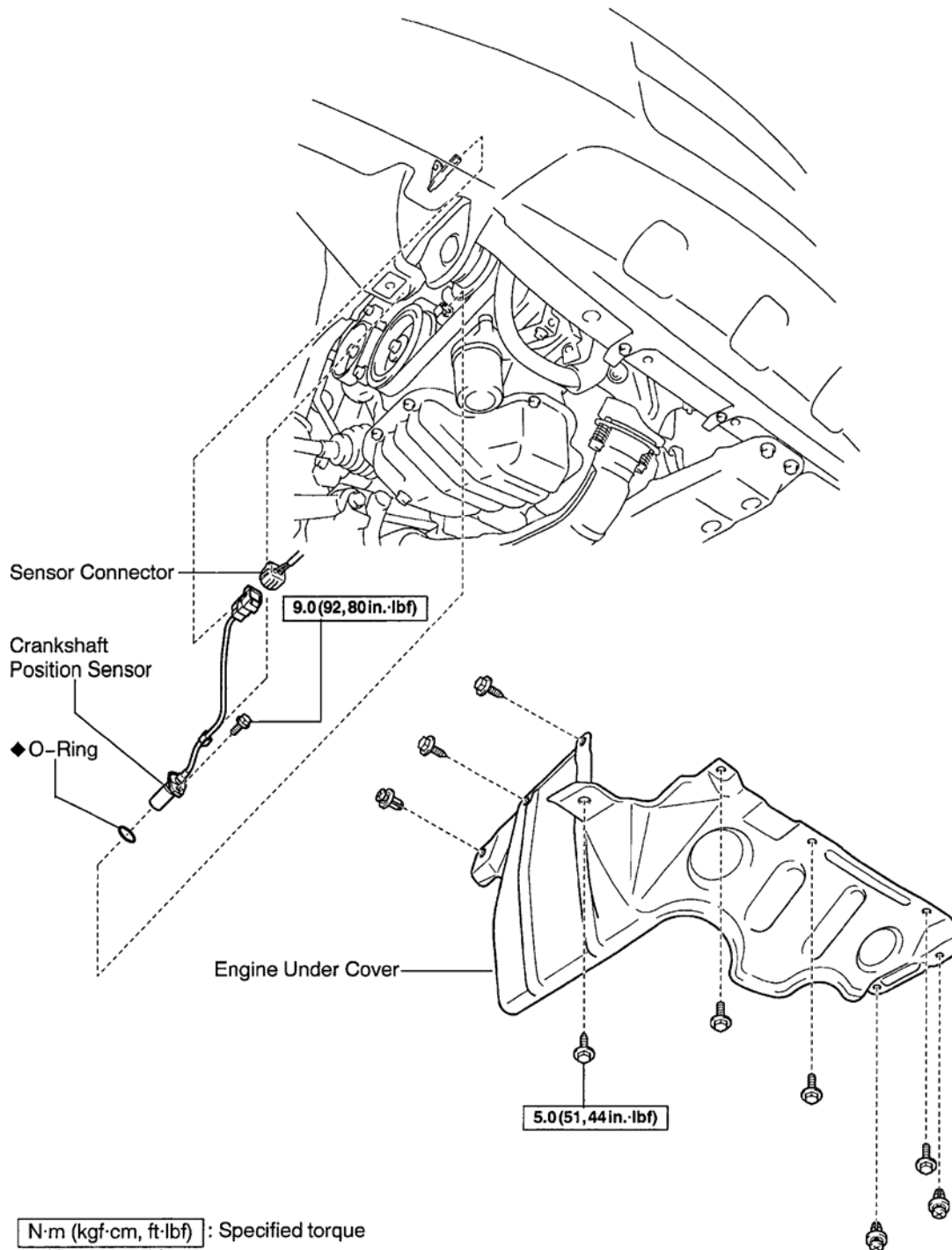
P ◆ Non-reusable part

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Fig. 10: Camshaft Position Sensor Components & Torque Specifications
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CRANKSHAFT POSITION SENSOR

COMPONENTS



N·m (kgf·cm, ft·lbf) : Specified torque

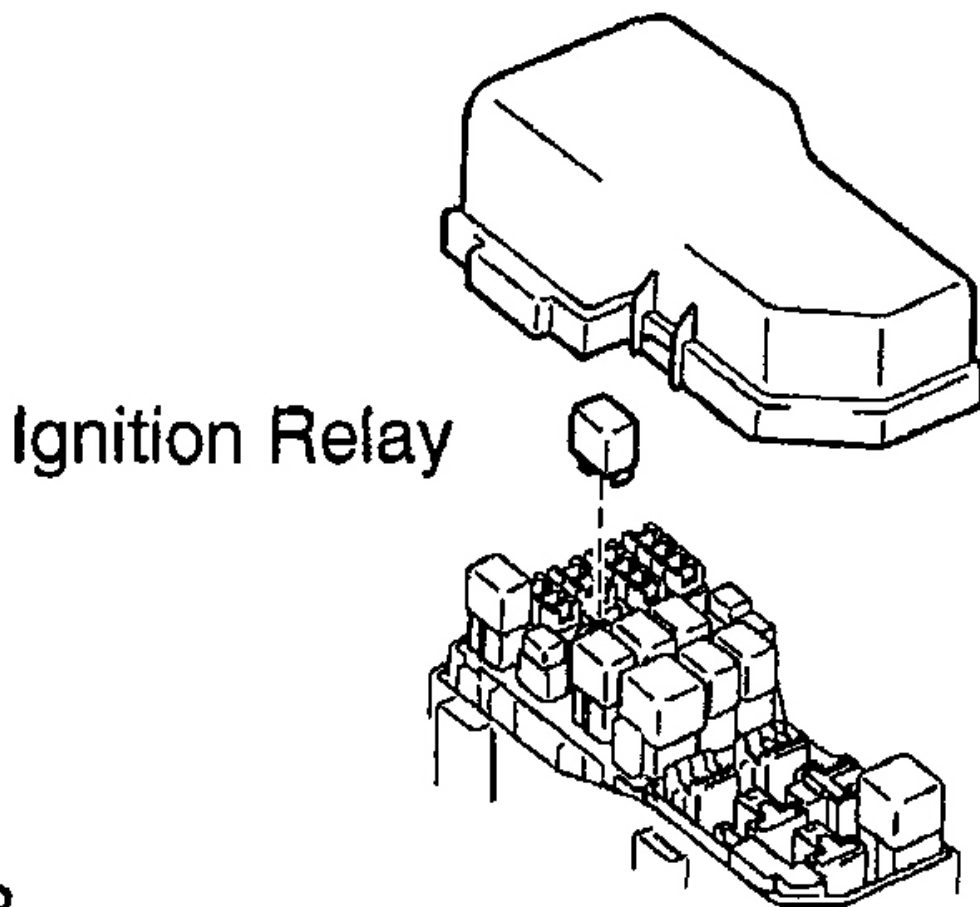
P ♦ Non-reusable part

Fig. 11: Crankshaft Position Sensor Components & Torque Specifications

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IGNITION RELAY (NO.2) INSPECTION

1. REMOVE IGNITION RELAY (Marking: IG2)



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Fig. 12: Removing Ignition Relay

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. INSPECT IGNITION RELAY
 - a. Check the resistance of the IG relay.

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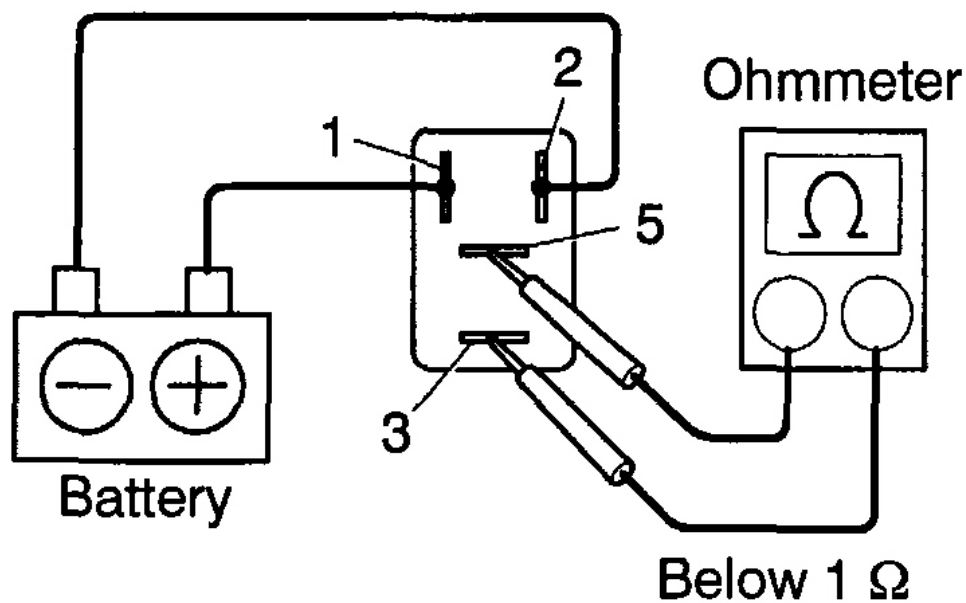
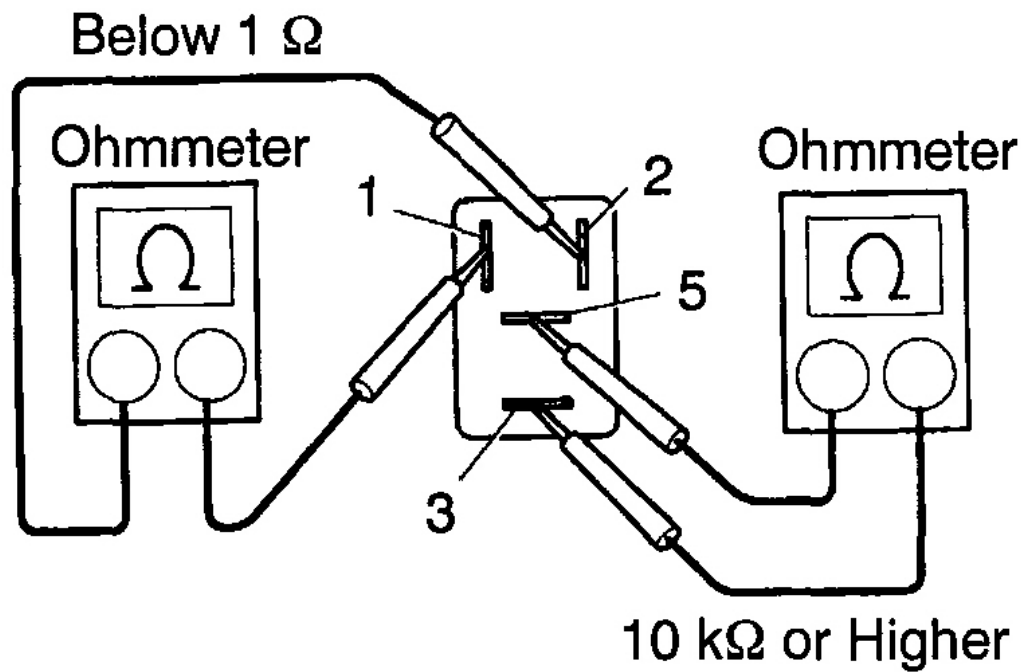
Standard:

SPECIFIED CONDITION CHART

Tester Condition	Specified Condition
3 - 5	10 kohm or higher
3 - 5	Below 1 ohm (when battery voltage is applied to terminals 1 and 2)

If the result is not as specified, replace the relay.

3. REINSTALL IGNITION RELAY



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Fig. 13: Checking Resistance Of IG Relay
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