

# IGNITION SYSTEM

## ON-VEHICLE INSPECTION

IG0G2-01

**NOTICE:**

"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**

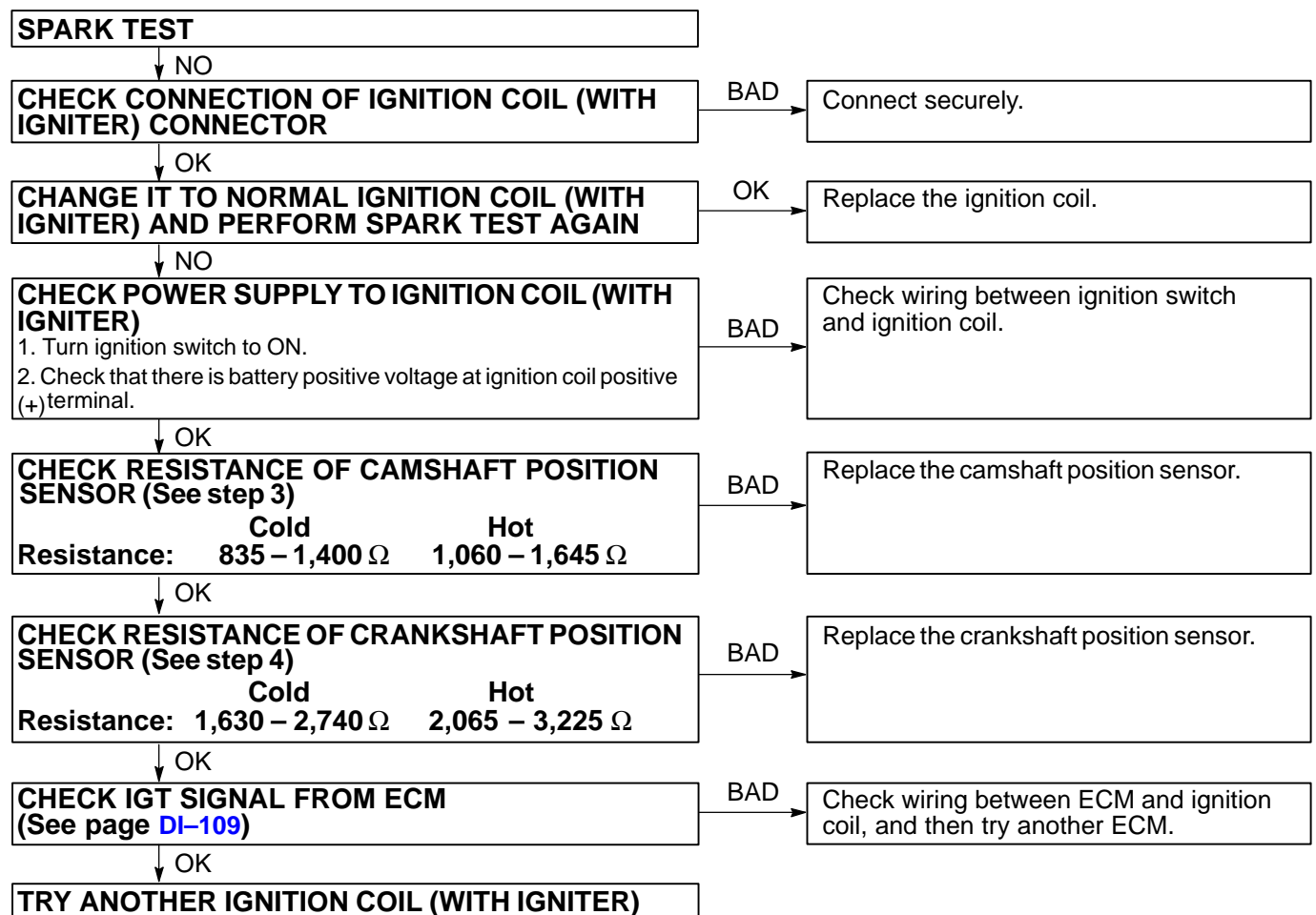
Check that the spark occurs.

- (1) Remove the ignition coils (See page IG-4).
- (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 spark occurs while engine is being cranked.

**NOTICE:**

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

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



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

**Torque: 25 N·m (255 kgf·cm, 19 ft·lbf)**

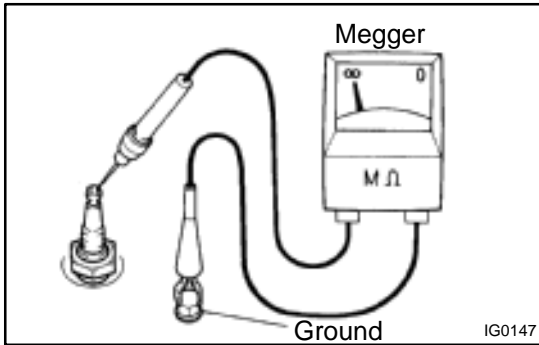
- (8) Reinstall the ignition coils (See page IG-4).

**2. INSPECT SPARK PLUGS**

**NOTICE:**

- **Never use a wire brush for cleaning.**
- **Never attempt to adjust the electrode gap on used spark plug.**
- **Spark plug should be replaced every 200,000 km (120,000 miles).**

(a) Remove the ignition coils (See page IG-4).



(b) Check the electrode.

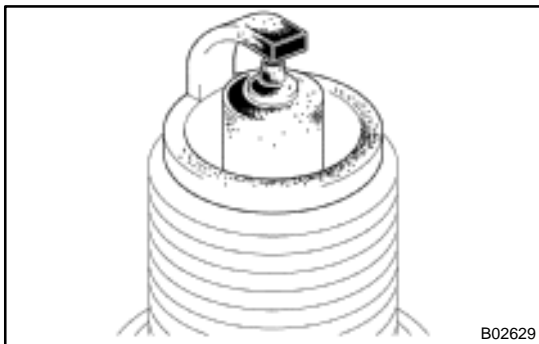
- Using a megger (insulation resistance meter), measure the insulation resistance.

**Correct insulation resistance: 10 MΩ or more**

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

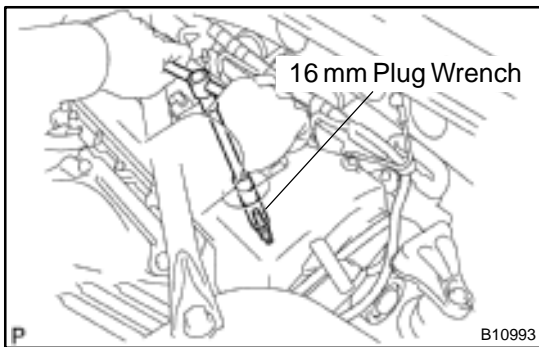
**HINT:**

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



- **Simple Method:**

- Quickly race the engine to 4,000 rpm 5 times.
- Remove the spark plug (See step (c)).
- Visually check the spark plug.  
If the electrode is dry ... OK.  
If the electrode is wet ... Proceed to step (d).
- Reinstall the spark plug (See step (g)).



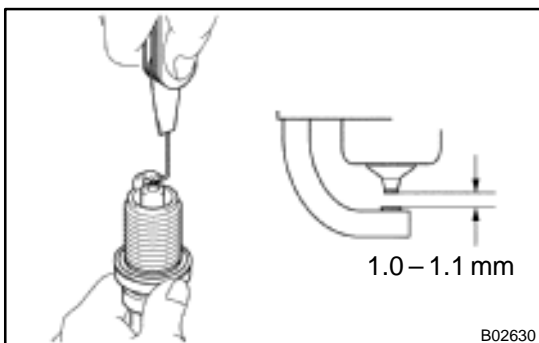
(c) Using a 16 mm plug wrench, remove the spark plugs.

(d) Check the spark plug for thread damage and insulator damage.

If abnormal, replace the spark plug.

**Recommended spark plug:**

DENSO made	SK16R11
NGK made	IFR5A11



(e) Check the spark plug electrode gap.

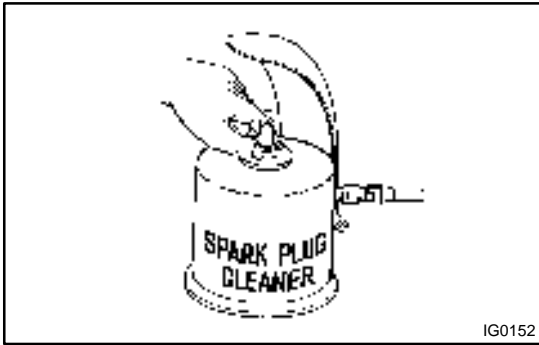
**Maximum electrode gap for used spark plug:  
1.3 mm (0.051 in.)**

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

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

**NOTICE:**

**If 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.**



- (f) Clean the spark plugs.  
If the electrode has traces of wet carbon, allow it to dry and then clean with a spark plug cleaner.

**Air pressure: Below 588 kPa (6 kgf/cm<sup>2</sup>, 85 psi)**

**Duration: 20 seconds or less**

HINT:

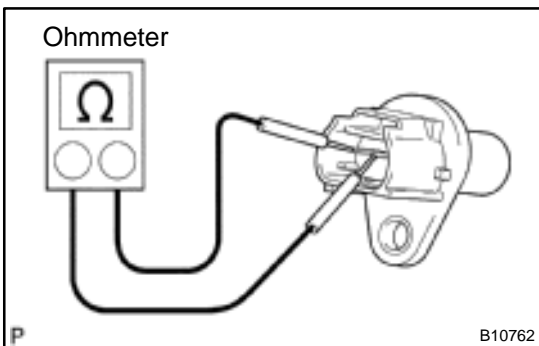
If there are traces of oil, remove it with gasoline before using the spark plug cleaner.

- (g) Using a 16 mm plug wrench, install the spark plugs.  
**Torque: 25 N·m (255 kgf-cm, 19 ft-lbf)**

- (h) Reinstall the ignition coils (See page IG-4).

**3. INSPECT CAMSHAFT POSITION SENSOR**

- (a) Remove the camshaft position sensor (See page IG-5).



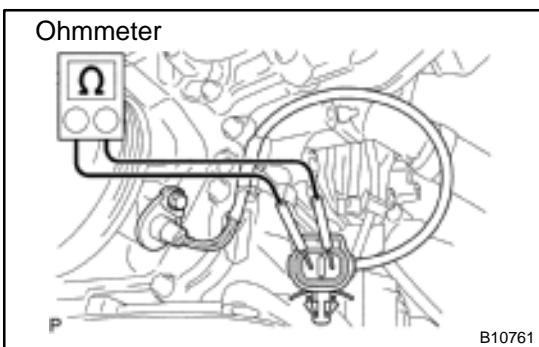
- (b) Using an ohmmeter, measure the resistance between terminals.

**Resistance:**

Cold	835 – 1,400 Ω
Hot	1,060 – 1,645 Ω

If the resistance is not as specified, replace the sensor.

- (c) Reconnect the camshaft position sensor connector.



**4. INSPECT CRANKSHAFT POSITION SENSOR**

- (a) Remove the front engine under cover.
- (b) Disconnect the A/C compressor (See page AC-49).
- (c) Disconnect the connector from the oil level gauge clamp.
- (d) Using an ohmmeter, measure the resistance between the terminals.

**Resistance:**

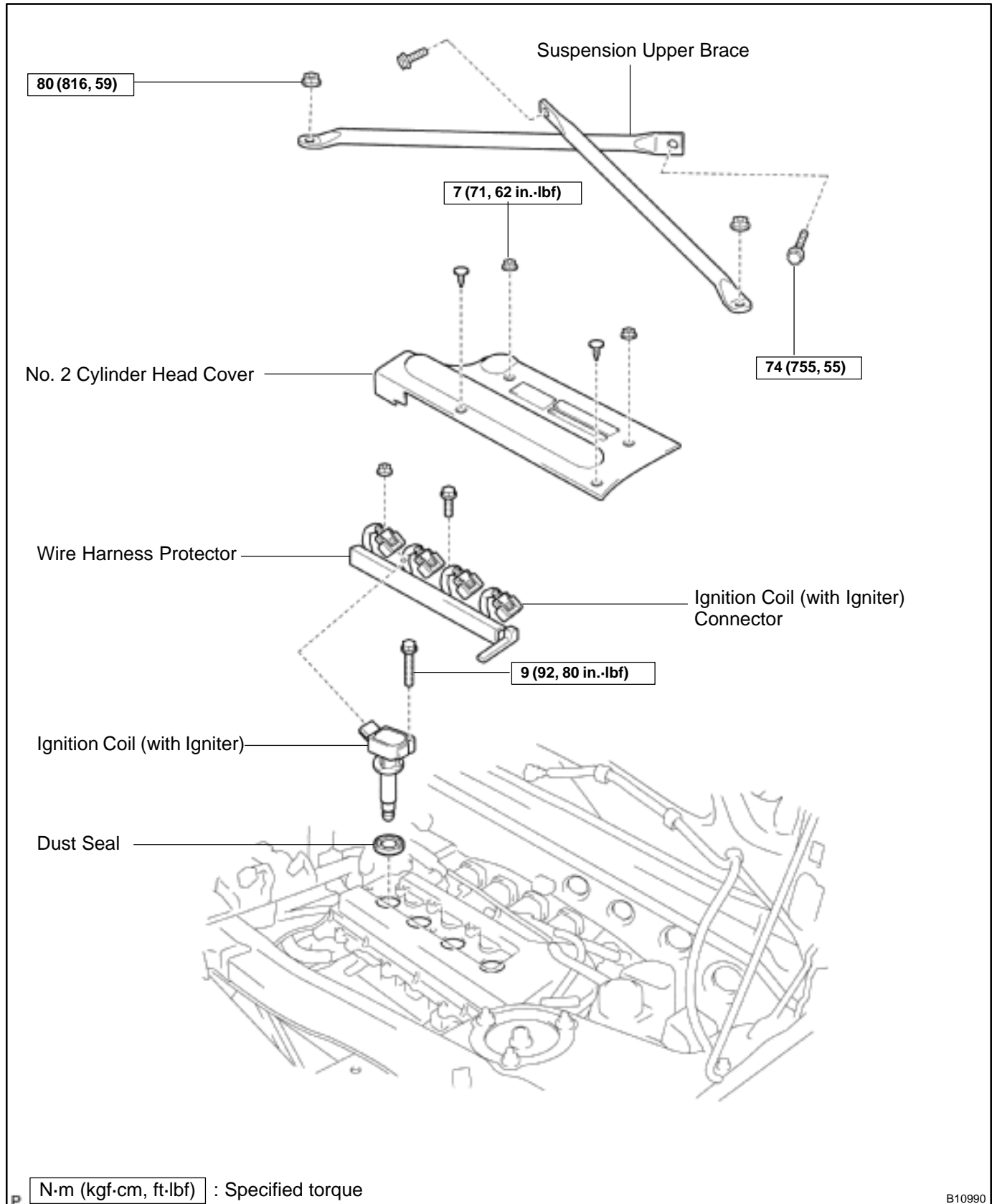
Cold	1,630 – 2,740 Ω
Hot	2,065 – 3,225 Ω

If the resistance is not as specified, replace the sensor.

- (e) Reinstall the connector with the oil level gauge clamp.
- (f) Reconnect the A/C compressor (See page AC-55).
- (g) Reinstall the front engine under cover.

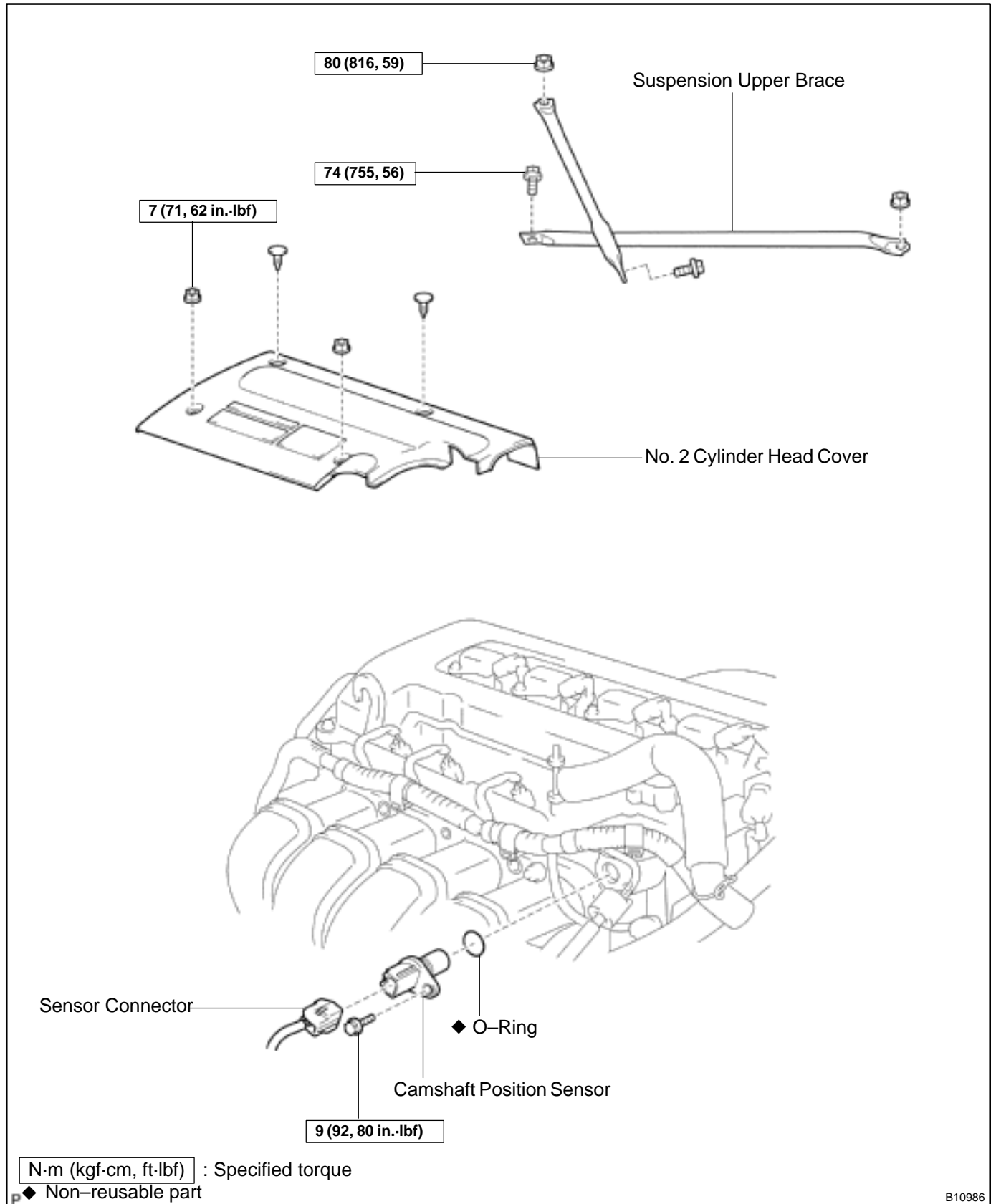
# IGNITION COIL COMPONENTS

IG080-05



# CAMSHAFT POSITION SENSOR COMPONENTS

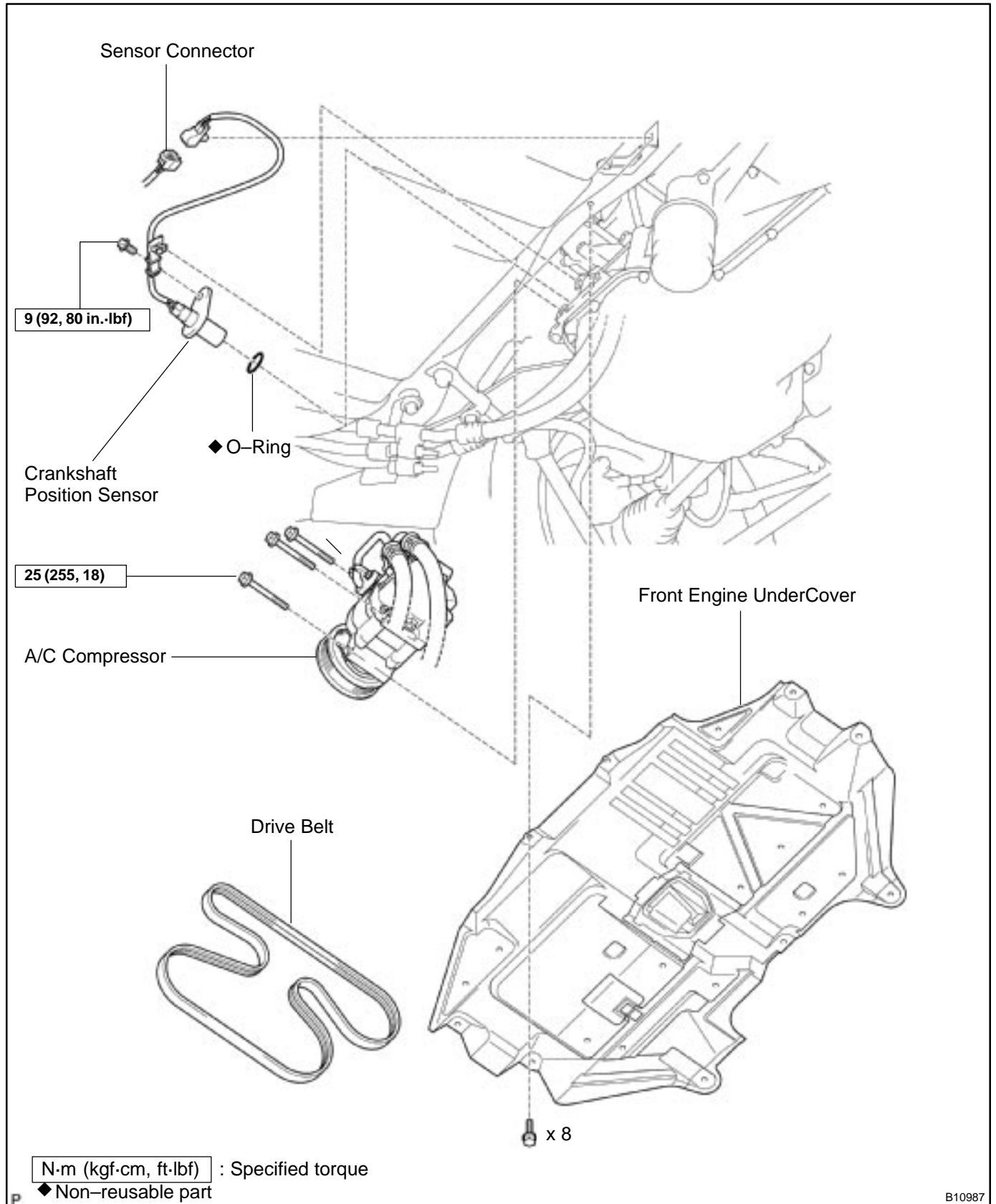
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# CRANKSHAFT POSITION SENSOR COMPONENTS

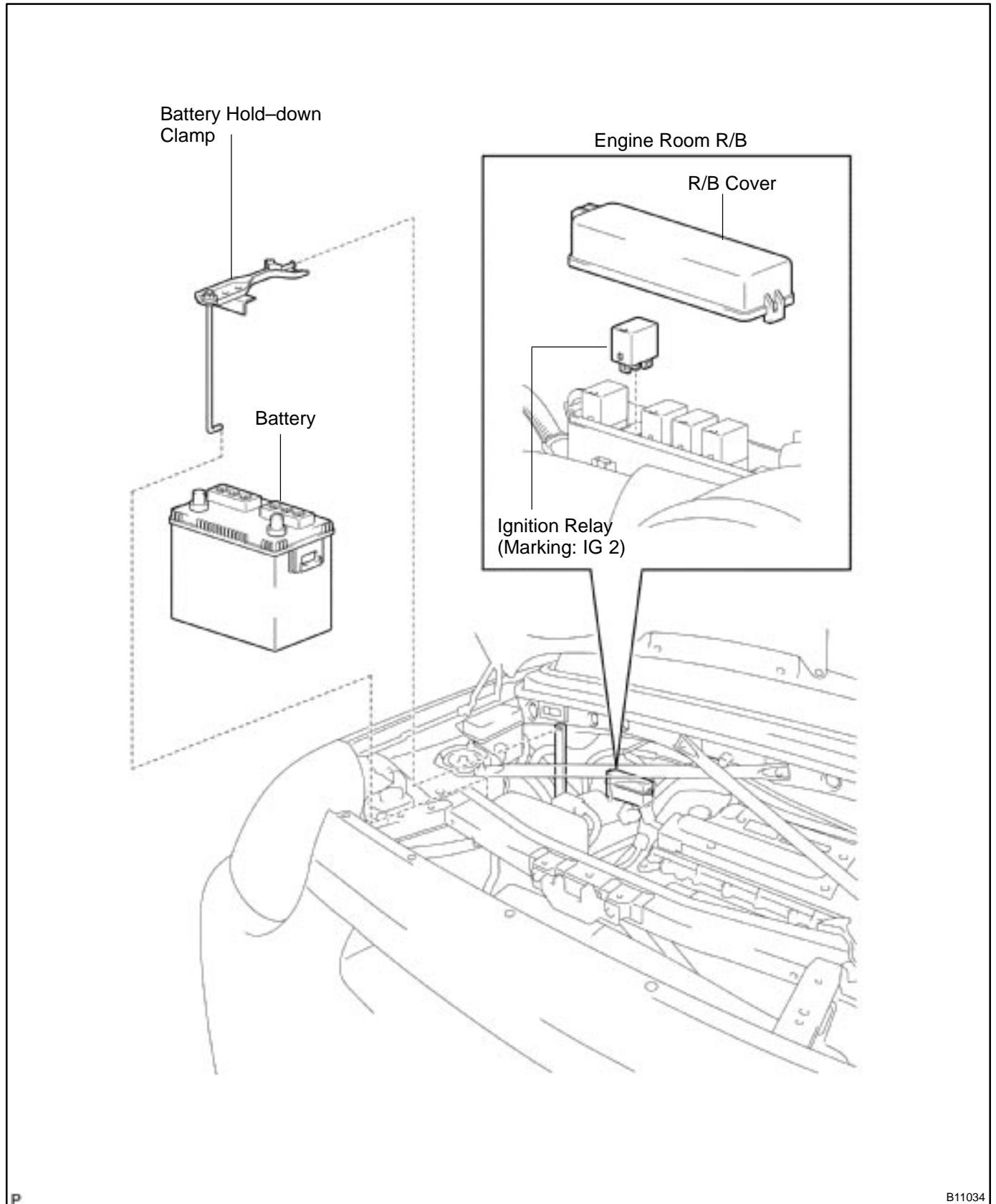
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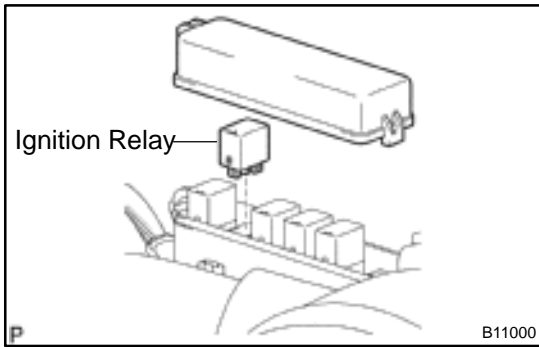


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# IGNITION RELAY (No.2) COMPONENTS

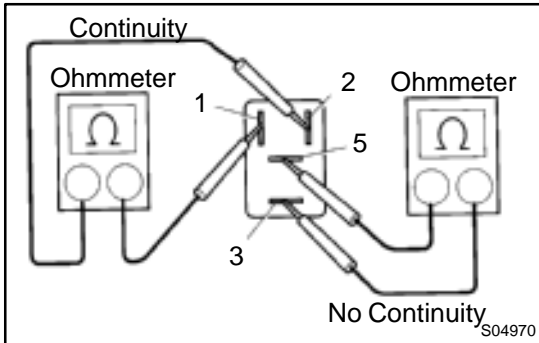
IG0G4-01





## INSPECTION

### 1. REMOVE IGNITION RELAY (Marking: IG2)



### 2. INSPECT IGNITION RELAY

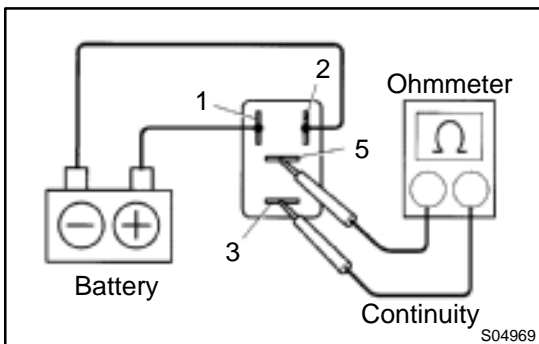
#### (a) Inspect the relay continuity.

- (1) Using an ohmmeter, check that there is continuity between terminals 1 and 2.

If there is no continuity, replace the relay.

- (2) Check that there is no continuity between terminals 3 and 5.

If there is continuity, replace the relay.



#### (b) Inspect the relay operation.

- (1) Apply battery positive voltage across terminals 1 and 2.

- (2) Using an ohmmeter, check that there is continuity between terminals 3 and 5.

If there is no continuity, replace the relay.

### 3. REINSTALL IGNITION RELAY