

# IGNITION SYSTEM

## ON-VEHICLE INSPECTION

IG09C-01

**NOTICE:**

"Cold" and "Hot" in these sentences express the temperature of the coils themselves. "Cold" is from  $-10^{\circ}\text{C}$  ( $14^{\circ}\text{F}$ ) to  $50^{\circ}\text{C}$  ( $122^{\circ}\text{F}$ ) and "Hot" is from  $50^{\circ}\text{C}$  ( $122^{\circ}\text{F}$ ) to  $100^{\circ}\text{C}$  ( $212^{\circ}\text{F}$ ).

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

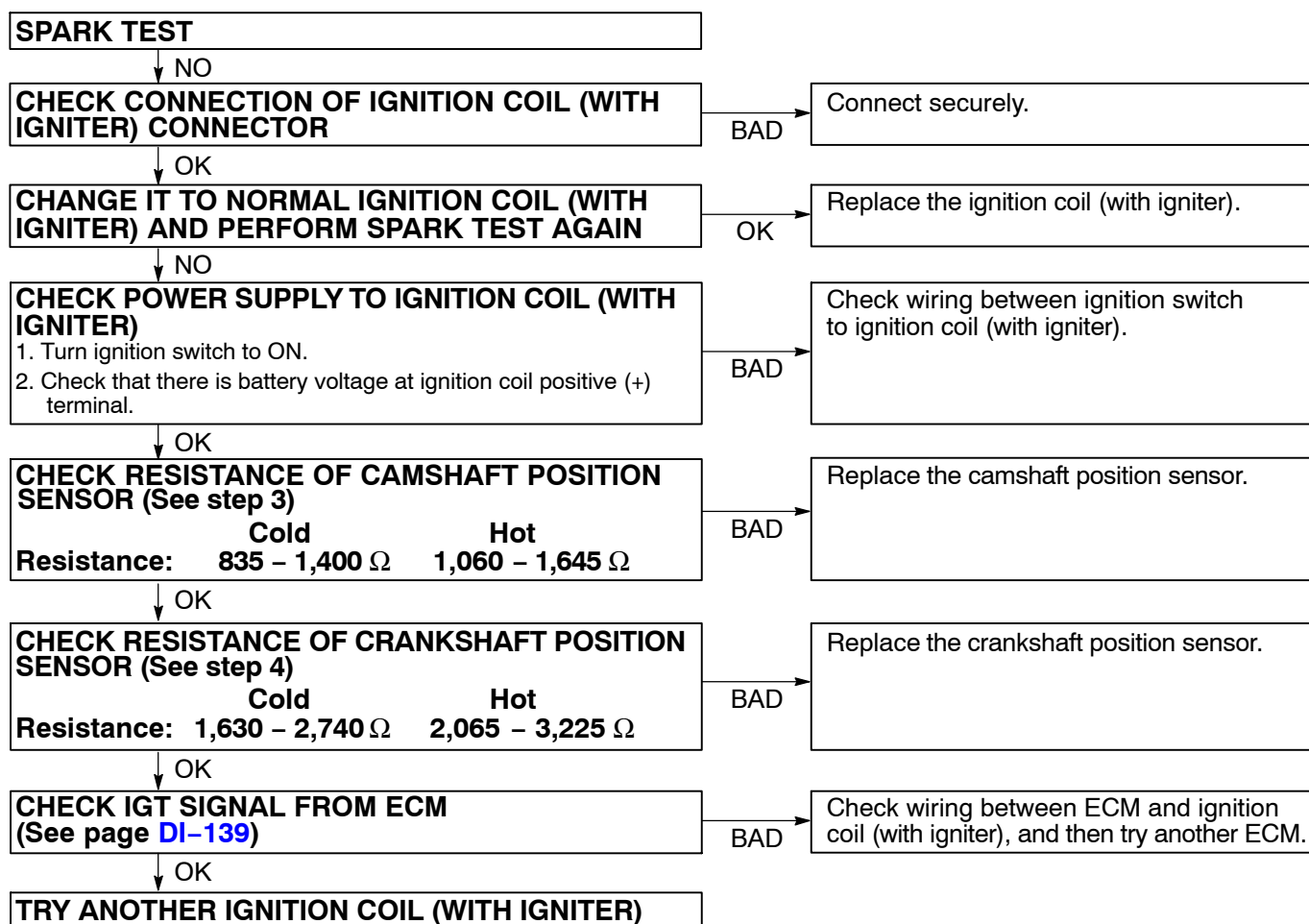
Check that the spark occurs.

- (1) Remove the ignition coils (with igniter).  
(See page [IG-6](#))
- (2) Remove the spark plugs.
- (3) Install the spark plugs to each ignition coil (with igniter), and connect the ignition coil (with igniter) connector.
- (4) Disconnect the 8 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, install the spark plugs.

**Torque: 17.5 N·m (180 kgf·cm, 13 ft·lbf)**

(8) Reinstall the ignition coils (with igniter).

(See page IG-6)

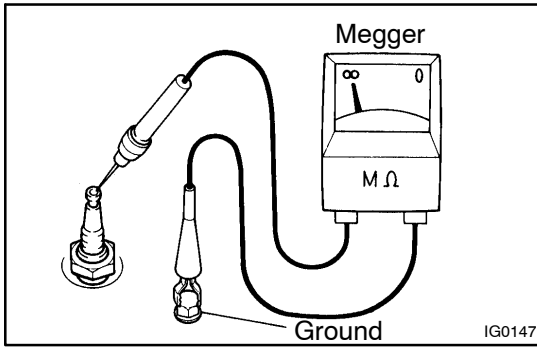
## 2. INSPECT SPARK PLUGS

### 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 100,000 km (60,000 miles).

(a) Remove the ignition coils (with igniter).

(See page IG-6)



(b) Check the electrode.

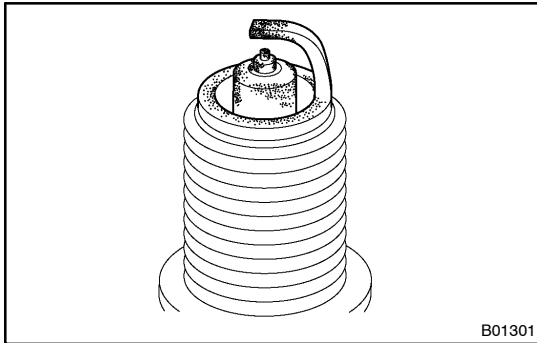
- Using a megger (insulation resistance meter), measure the insulation resistance.

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

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

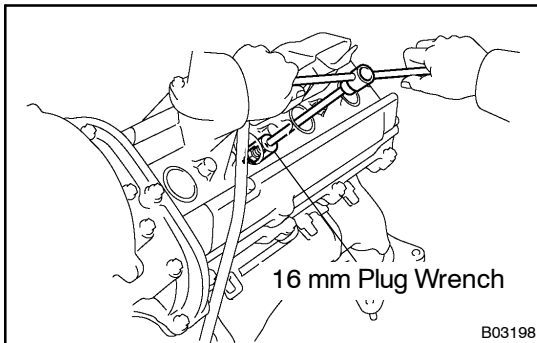
**HINT:**

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

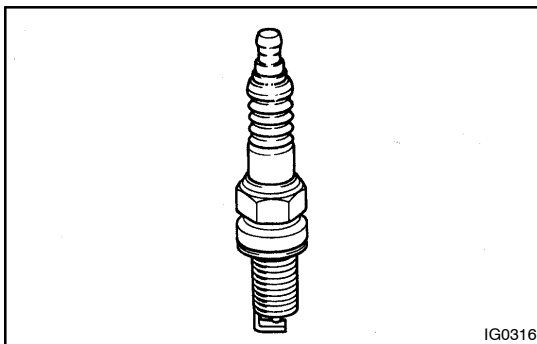


- Simple Method:

- 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.

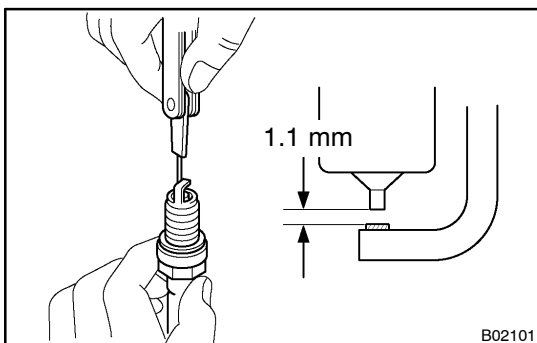


(d) Check the spark plug for thread damage and insulator damage.

If abnormal, replace the spark plug.

**Recommended spark plug:**

DENSO made	SK20R11
NGK made	IFR6A11



(e) Check the spark plug electrode gap.

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

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

**Correct electrode gap for new spark plug:**  
**1.1 mm (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: 17.5 N·m (180 kgf·cm, 13 ft·lbf)**

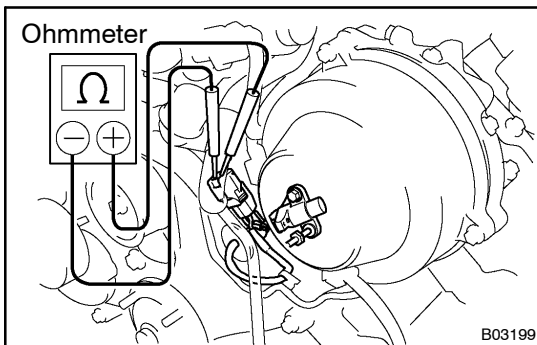
(h) Reinstall the ignition coils (with igniter).

(See page [IG-6](#))

### 3. INSPECT CAMSHAFT POSITION SENSOR

(a) Remove the V-bank cover.

(b) Disconnect the camshaft position sensor connector.



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

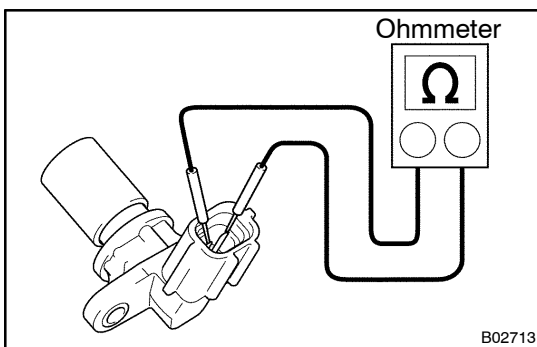
**Resistance:**

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

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

(d) Reconnect the camshaft position sensor connector.

(e) Reinstall the V-bank cover.



### 4. INSPECT CRANKSHAFT POSITION SENSOR

(a) Remove the crankshaft position sensor.

(See page [IG-12](#))

(b) 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 crankshaft position sensor.

(c) Reinstall the crankshaft position sensor.