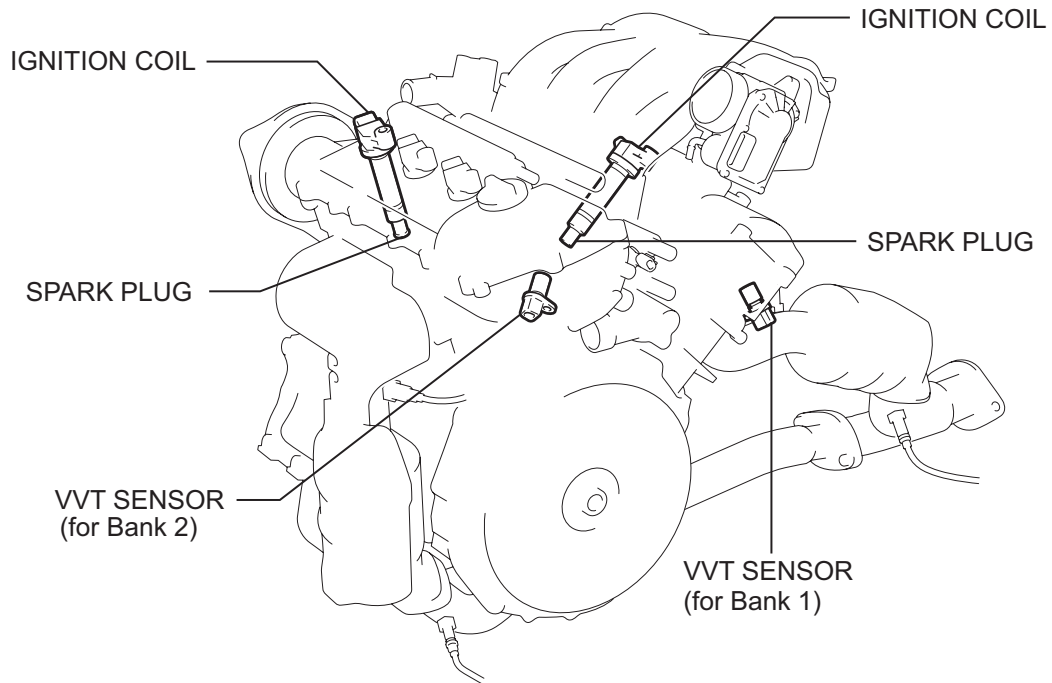


# IGNITION SYSTEM

## PARTS LOCATION



## ON-VEHICLE INSPECTION

### NOTICE:

In this section, the terms "cold" and "hot" refer to the temperature of the coils. "Cold" means approximately -10 to 50°C (14 to 122°F). "Hot" means approximately 50 to 100°C (122 to 212°F).

### 1. PERFORM SPARK TEST

- (a) Check for DTCs.

#### NOTICE:

**If a DTC is present, perform troubleshooting procedures for that DTC.**

- (b) Check if sparks occur.

- (1) Remove the intake air surge tank (See page [FU-11](#)).
- (2) Remove the ignition coils (with igniter).
- (3) Using a 16 mm plug wrench, remove the spark plugs.
- (4) Install the spark plugs to each ignition coil (with igniter) and connect the ignition connectors.
- (5) Disconnect the 6 injector connectors.
- (6) Ground the spark plugs.
- (7) Check if spark occurs at each spark plug while engine is being cranked.

#### NOTICE:

- **Be sure to ground the spark plug when checking.**
- **If the ignition coil has been struck or dropped, replace it.**
- **Do not crank the engine for more than 2 seconds.**

- (c) Perform the spark test according to the flowchart below.

- (1) Check that the wire harness side connector of ignition coil with igniter is securely connected.

#### Result

Result	Proceed to
NG	Connect securely
OK	Go to next step

- (2) Perform a spark test on each ignition coil with igniter.

1. Replace the ignition coil with igniter with a normal one.
2. Perform spark test again.

#### Result

Result	Proceed to
OK	Replace ignition coil with igniter
NG	Go to next step

- (3) Check the power supply to ignition coil with igniter.

1. Turn the ignition switch on.

2. Check that there is battery voltage at ignition coil positive (+) terminal.

**Result**

Result	Proceed to
NG	Check wiring between engine switch and ignition coil with igniter
OK	Go to next step

- (4) Check the resistance of the VVT sensor (See page [IG-8](#)).

**Standard resistance**

Temperature	Specified Condition
Cold	835 to 1,400 $\Omega$
Hot	1,060 to 1,645 $\Omega$

**Result**

Result	Proceed to
NG	Replace VVT sensor
OK	Go to next step

- (5) Check the resistance of the crankshaft position sensor (See page [ES-368](#)).

**Standard resistance**

Temperature	Specified Condition
Cold	1,630 to 2,740 $\Omega$
Hot	2,065 to 3,225 $\Omega$

**Result**

Result	Proceed to
NG	Replace crankshaft position sensor
OK	Go to next step

- (6) Check the IGT signal from the ECM (See page [ES-182](#)).

**Result**

Result	Proceed to
NG	Check ECM
OK	Repair wiring between ignition coil and ECM

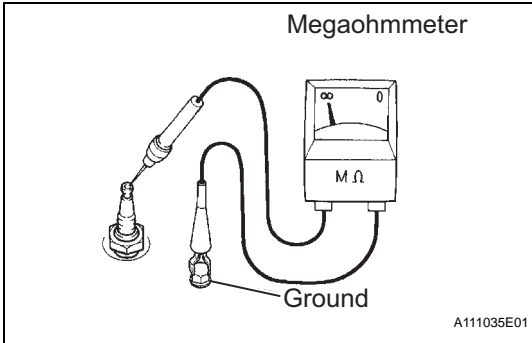
- (d) Using a 16 mm plug wrench, install the spark plug.  
**Torque: 25 N\*m (250 kgf\*cm, 18 ft.\*lbf)**
- (e) Install the ignition coils (with igniter).  
**Torque: 8.0 N\*m (82 kgf\*cm, 71 in.\*lbf)**
- (f) Install the intake air surge tank (See page [FU-15](#)).

# INSPECTION

## 1. INSPECT SPARK PLUG

### NOTICE:

- Do not use a wire brush for cleaning.
- Do not attempt to adjust the electrode gap of a used spark plug.
- Spark plug should be replaced every 200,000 km (120,000 miles).



- (a) Check the electrode.
- (1) Using a megaohmmeter, measure the insulation resistance.

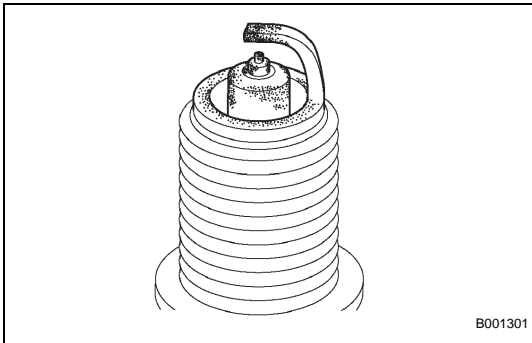
### Correct insulation resistance:

**10 MΩ or higher**

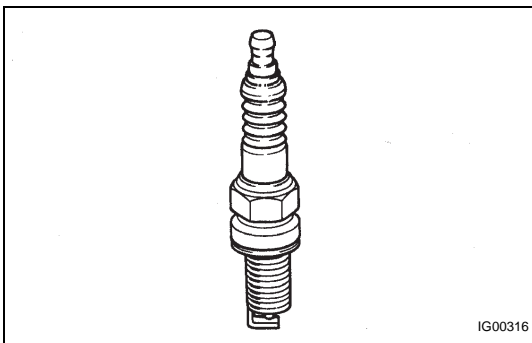
If the resistance is less than the specified value, proceed to step (d).

### HINT:

If a megaohmmeter is not available, do the following simple inspection instead.



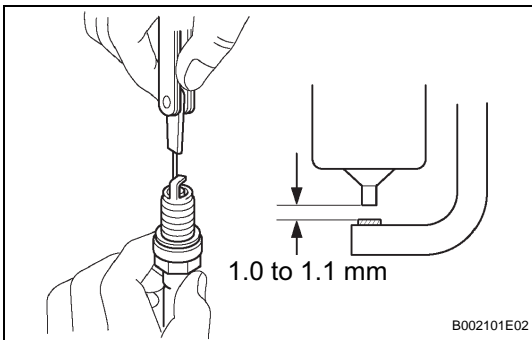
- (b) Alternative inspection method:
- (1) Quickly accelerate the engine to 4,000 rpm 5 times.
  - (2) Remove the spark plug.
  - (3) Visually check the spark plug.
  - (4) If the electrode is dry...OK.
  - (5) If the electrode is wet...Proceed to step (c).
  - (6) Reinstall the spark plug.



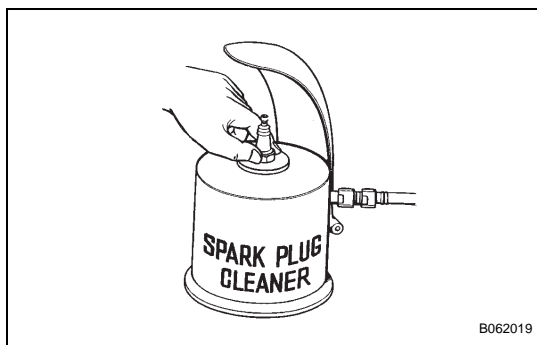
- (c) Check the spark plug for any damage to its thread and insulator.
- If there is damage, replace the spark plug.

### Recommended spark plug:

DENSO made	SK20R11
NGK made	IFR6A11



- (d) 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 to 1.1 mm (0.039 to 0.043 in.)**



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

**Air pressure:**

**Blow 588 kPa (6 kgf/cm<sup>2</sup>, 85 psi)**

**Duration:**

**20 seconds or less**

**HINT:**

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