IGNITION SYSTEM

IG0FI–01

ON–VEHICLE INSPECTION

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 IGNITERS AND SPARK TEST

Check that the spark occurs.

(1) Disconnect the high–tension cord from the spark plug.
(2) Remove the spark plug.
(3) Install the spark plug to the high–tension cord.
(4) Ground the spark plug.
(5) See 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 a time.

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

SPARK TEST

NO

CHECK CONNECTION OF IGNITION COIL WITH IGNITER CONNECTORS → BAD → Connect securely.

OK

CHECK RESISTANCE OF HIGH–TENSION CORDS (See step 2)
Maximum resistance: 25 kΩ per cord → BAD → Replace cord(s).

OK

CHECK POWER SUPPLY TO IGNITION COILS WITH IGNITERS
1. Turn ignition switch to ON.
2. Check that there is battery voltage at ignition coil positive (+) terminal.

→ BAD → Check wiring between ignition switch to ignition coils with igniters.

OK

CHECK RESISTANCE OF IGNITION COILS (See step 4)

Resistance:	**Cold**	**Hot**
Secondary	**9.7 – 16.7 kΩ**	**12.4 – 19.6 kΩ**

→ BAD → Replace ignition coil(s) with igniter(s).

OK

CHECK RESISTANCE OF SENSORS (See steps 5 and 6)

Resistance:	**Cold**	**Hot**
Camshaft position sensor	**835 – 1,400 Ω**	**1,060 – 1,645 Ω**
Crankshaft position sensor	**1,630 – 2,740 Ω**	**2,065 – 3,225 Ω**

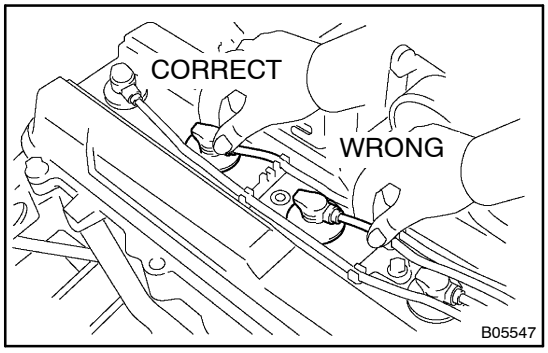
→ BAD → Replace sensor(s)

OK

CHECK IGT SIGNAL FROM ECU
(See page DI–60) → BAD → Check wiring between ECU and ignitions coil with igniters,and then try another ECU.

OK

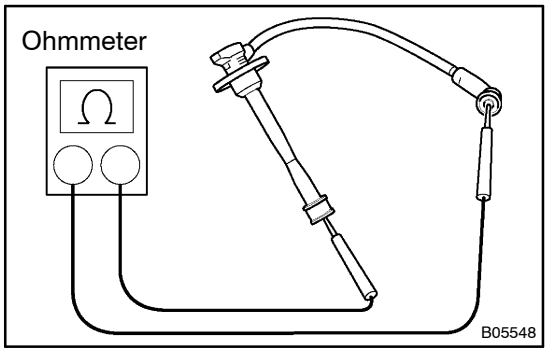
TRY ANOTHER IGNITION COILS WITH IGNITERS



2. INSPECT HIGH–TENSION CORDS

(a) Remove the high–tension cords.
Disconnect the high–tension cords at the rubber boot. Do not pull on the high–tension cords.

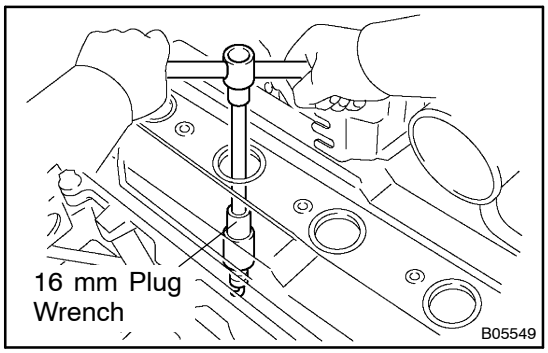
NOTICE:
Pulling on or bending the cords may damage the conductor inside.



(b) Using an ohmmeter, measure the high–tension cord resistance.
Maximum resistance: 25 kΩ per cord

If the resistance is greater than maximum, check the terminals. If necessary, replace the high–tension cord.

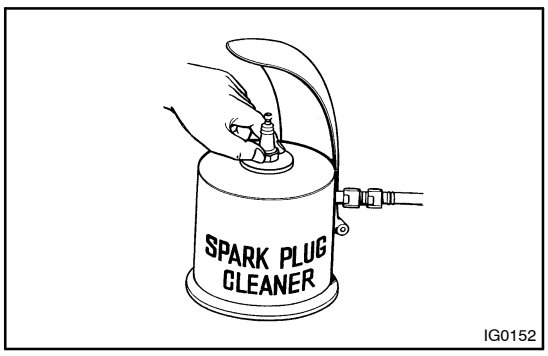
(c) Reinstall the high–tension cords.



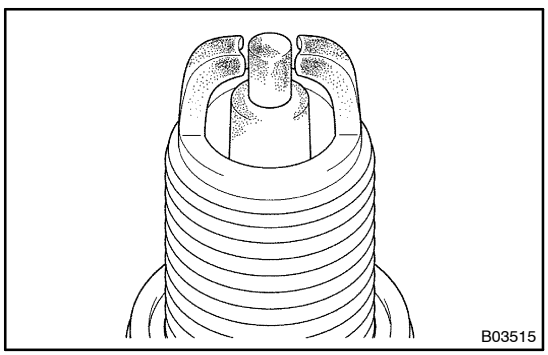
3. INSPECT SPARK PLUGS

(a) Disconnect the high–tension cords from the spark plugs.

(b) Using a 16 mm plug wrench, remove the 6 spark plugs.



(c) Using a spark plug cleaner or wire brush, clean the spark plugs.

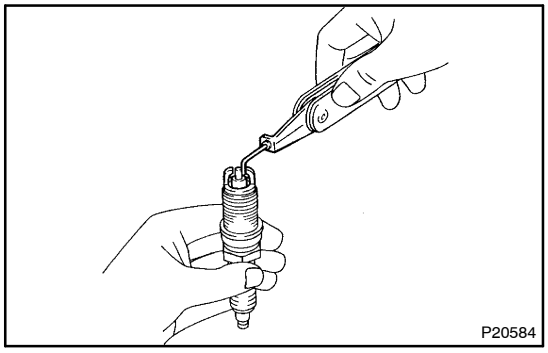


(d) Check the spark plugs for electrode wear, thread damage and insulator damage.

If abnormal, replace the spark plug.

Recommended spark plug:

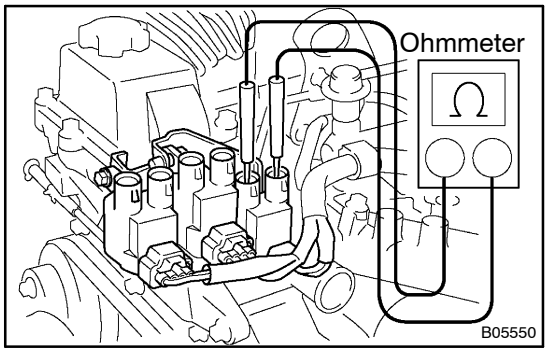
DENSO made	K16TR11
NGK made	BKR5EKB11



(e) Inspect the electrode gaps.
Carefully bend the outer electrode to obtain the correct electrode gap.
Electrode gap: 1.1 mm (0.043 in.)

(f) Using a 16 mm plug wrench, install the 4 spark plugs.
Torque: 20 N·m (204 kgf·cm, 15 ft·lbf)

(g) Reconnect the high–tension cords to the spark plugs.



4. INSPECT IGNITION COILS WITH IGNITERS

(a) Disconnect the high–tension cords from the ignition coils.

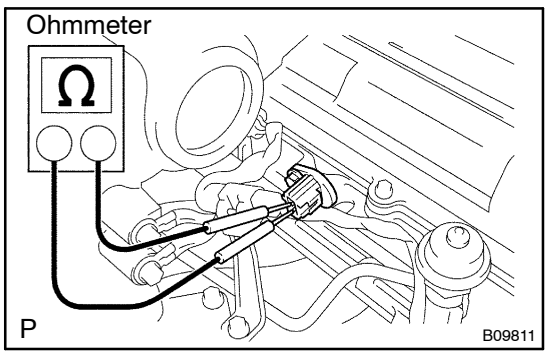
(b) Inspect the secondary coil resistance.
Using an ohmmeter, measure the resistance between the high–tension terminals.
Secondary coil resistance:

Cold	9.7 – 16.7 kΩ
Hot	12.4 – 19.6 kΩ

If the resistance is not as specified, replace the ignition coil (See page IG–6).

(c) Reconnect the high–tension cords to the ignition coils.

(d) Inspect the igniters (See procedure spark test).



5. INSPECT CAMSHAFT POSITION SENSOR

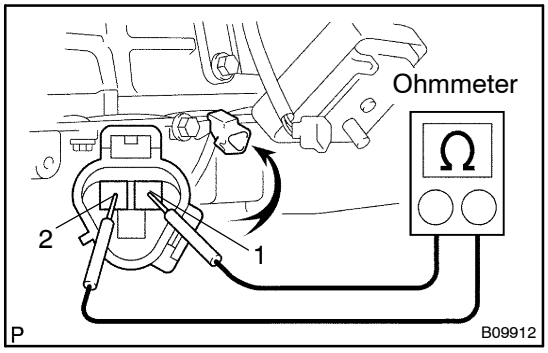
(a) Disconnect the connector.

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

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

If the resistance is not as specified, replace the sensor (See page IG–8).

(c) Reconnect the connector.



6. INSPECT CRANKSHAFT POSITION SENSOR

(a) Disconnect the connector.

(b) Using an ohmmeter, measure the resistance between terminals 1and 2.

Resistance:

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

If the resistance is not as specified, replace the sensor (See page IG–10).

(c) Reconnect the connector.