IGNITION SYSTEM

IG0KB–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 SPARK TEST

Check that the spark occurs.

(1) Remove the ignition coil. (See page IG–6)
(2) Remove the spark plug.
(3) Install the spark plug to the ignition coil, and connect the ignition coil connector.
(4) Disconnect the 8 injector connectors.
(5) Ground the spark plug.
(6) 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 time.

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

SPARK TEST

NO

CHECK CONNECTIONS OF IGNITION COIL (WITH IGNITER) CONNECTORS

BAD → Connect securely.

OK

CHANGE IT TO NORMAL IGNITION COIL (WITH IGNITER) AND PERFORM SPARK TEST AGAIN

OK → Replace ignition coil (with igniter).

NO

CHECK POWER SUPPLY TO IGNITION COILS (WITH IGNITER)

1. Turn ignition switch to ON.
2. Check that there is battery positive voltage at ignition coil positive (+) terminal.

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

OK

CHECK RESISTANCE OF SENSORS (See steps 4 and 5)

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 camshaft position sensor. (See page IG–8)
Replace crankshaft position sensor.

OK

CHECK IGT SIGNAL FROM ECU (See page DI–118)

BAD → Check wiring between ECU and ignition coils (with igniters), and then try another ECU.

OK

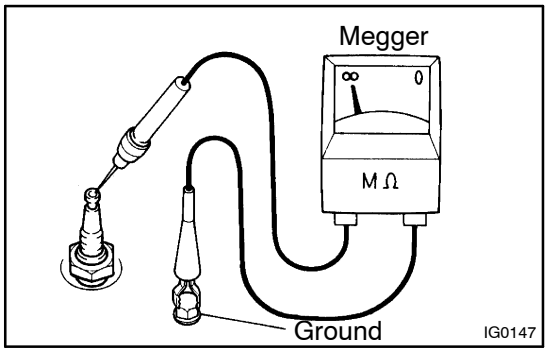
TRY ANOTHER IGNITION COIL (WITH IGNITER)

2. Iridium Tipped Type (Unleaded Gasoline): INSPECT SPARK PLUGS

NOTICE:

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

(a) Remove the 8 ignition coils (See page IG–6).

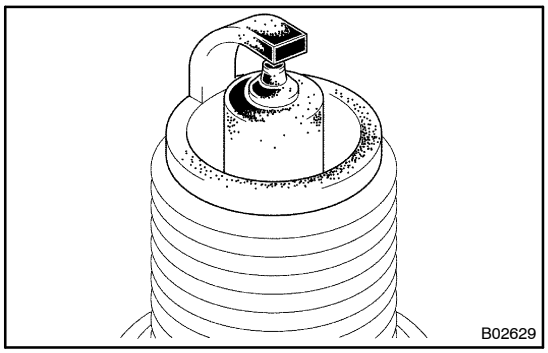


(b) Inspect the electrode.
Using a megger (insulation resistance meter), measure the insulation resistance.
Standard correct insulation resistance:
10 MΩ or more

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

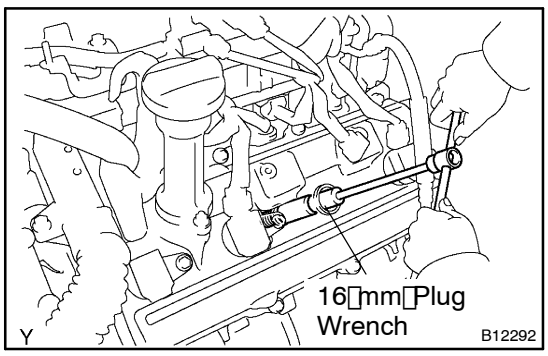
HINT:

If a megger is not available, these 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))



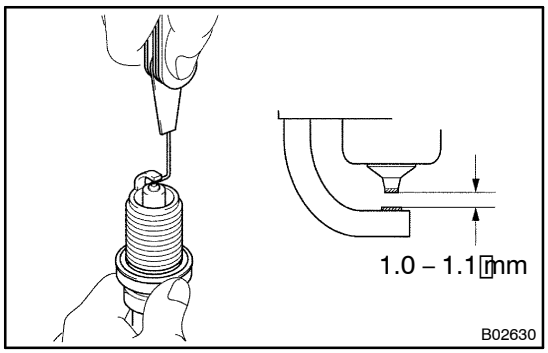
(c) Using a 16 mm plug wrench, remove the 8 spark plugs.

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

If abnormal, replace the spark plug.

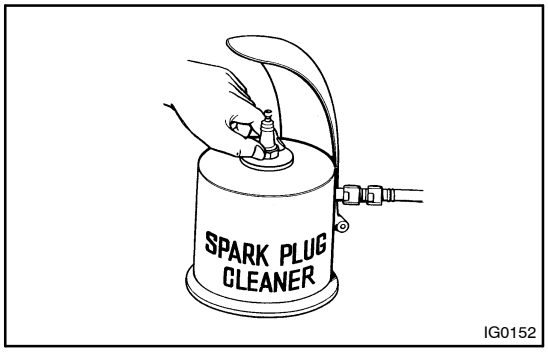
Recommended spark plug:

DENSO made	SK20R11
NGK made	IFR6A11



(e) Inspect the electrode gaps.
Correct electrode gap:
1.0 mm – 1.1 mm (0.039 – 0.043 in.)
Maximum electrode gap:
1.3 mm (0.051 in.)

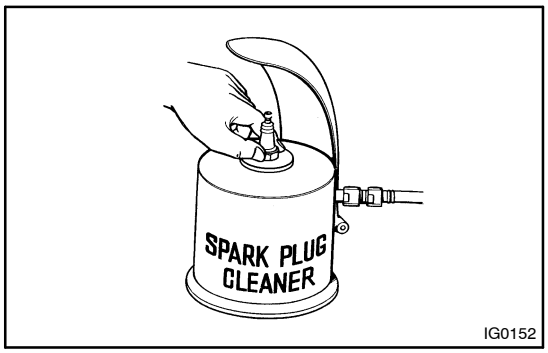
If the gap is greater than maximum, replace the spark plug.



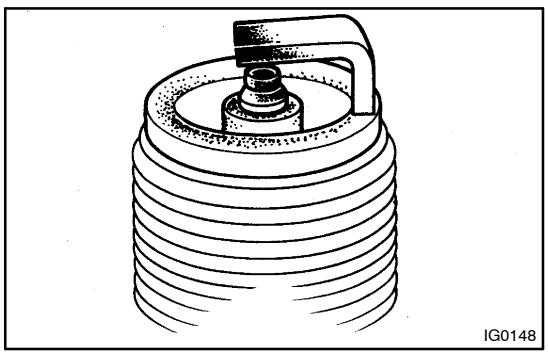
(f) Clean the spark plugs.
If the electrode has traces of wet carbon, allow it to dry and then clean with a spark plug cleaner.
Air pressure: Below 588 kPa (6 kgf/cm², 85 psi)
Duration: 20 seconds or less
HINT:
If there are traces of oil, remove it with gasoline before using the spark plug cleaner.
(g) Using a 16 mm plug wrench, install the 8 spark plugs.
Torque: 18 N·m (180 kgf·cm, 13 ft·lbf)
(h) Reinstall the 8 ignition coil (See page IG–6).

3. Conventional Type (Leaded Gasoline): INSPECT SPARK PLUGS

(a) Remove the ignition coil with igniters (See page IG–6).
(b) Using a 16 mm plug wrench, remove the spark plugs.

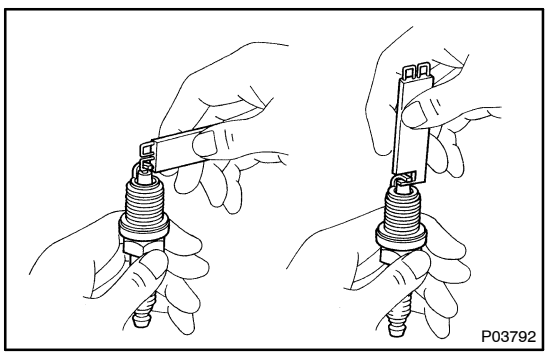


(c) Clean the spark plugs.
If the electrode has traces of wet carbon, allow it to dry and then clean with a spark plug cleaner.
Air pressure: Below 588 kPa (6 kgf/cm², 85 psi)
Duration: 20 seconds or less
HINT:
If there are traces of oil, remove it with gasoline before using the spark plug cleaner.



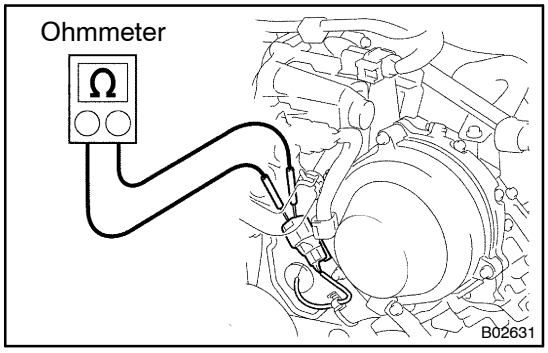
(d) Check the spark plug for thread damage and insulator damage.
If abnormal, replace the spark plug.
Recommended spark plug:

DENSO	K20R–U
NGK	BKR6EYA



(e) Adjust electrode gap.
Carefully bend the outer electrode to obtain the correct electrode gap.
Electrode gap: 0.8 mm (0.031 in.)
(f) Using a 16 mm plug wrench, install the spark plugs.
Torque: 18 N·m (180 kgf·cm, 13 ft·lbf)
(g) Reinstall the ignition coil with igniters (See page IG–6).

4. INSPECT IGNITION COILS (WITH IGNITERS) (See step 1)



5. INSPECT CAMSHAFT POSITION SENSOR

(a) Remove the 2 bolts, 2 cap nuts and V–bank cover.

(b) Disconnect the sensor connector.

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

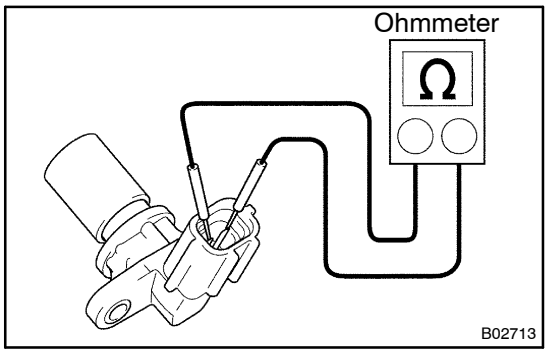
Resistance:

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

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

(d) Reconnect the sensor connector.

(e) Reinstall the V–bank cover with the 2 bolts and 2 cap nuts.



6. INSPECT CRANKSHAFT POSITION SENSOR

(a) Remove the sensor (See page IG–10).

(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 sensor.

(c) Reinstall the sensor (See page IG–10).