IGNITION SYSTEM

IG0BX–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 IGNITION COIL (WITH IGNITER) AND SPARK TEST

Check that the spark occurs.

(1) Remove the ignition coils (with igniter).
(See page IG–7)

(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.

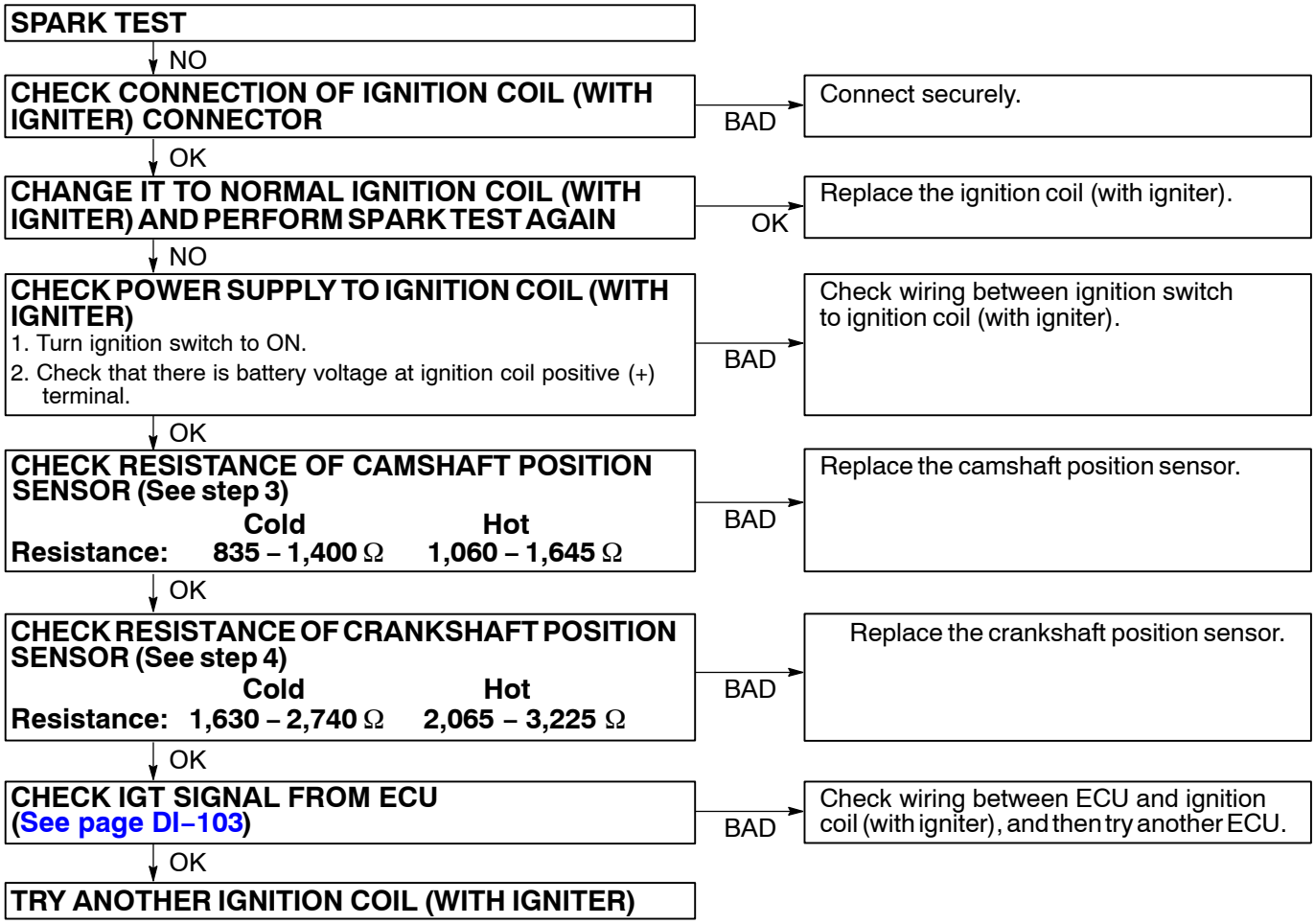
(5) Ground the spark plug.

(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–7)

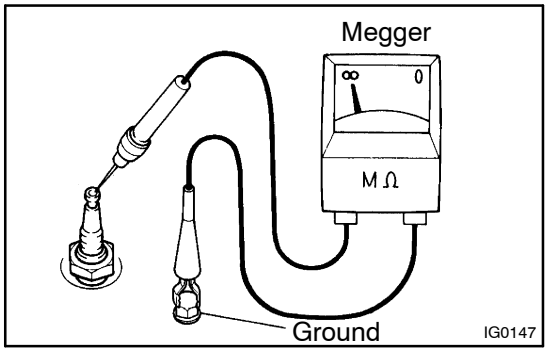
2. Europe and Australia:

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–7)



(b) Check the electrode.

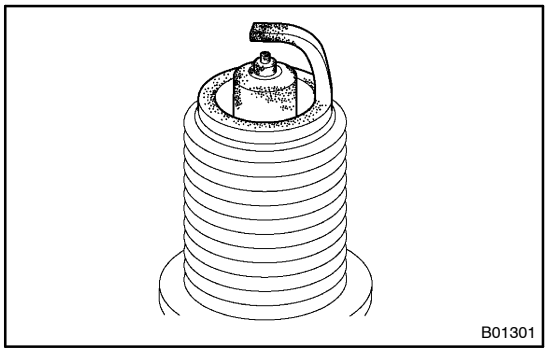
- Using a megger (insulation resistance meter), measure the insulation resistance.

Correct insulation resistance: 10 MΩ or more

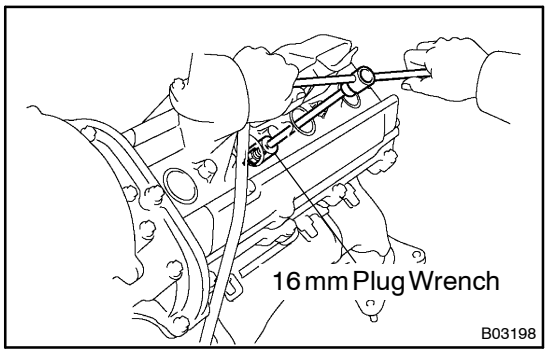
If the resistance is less than specified, proceed to step (c).

HINT:

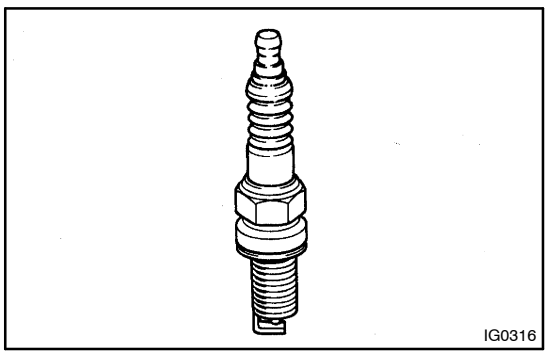
If a megger is not available, the following simple method of inspection provides fairly accurate results.



- 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.

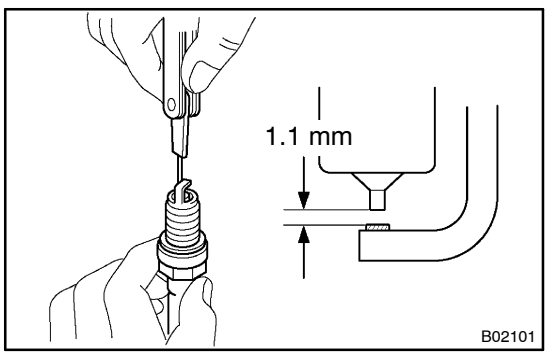


(d) Check the spark plug for thread damage and insulator damage.

If abnormal, replace the spark plug.

Recommended spark plug:

DENSO made	SK20R11
NGK made	IFR6A11



(e) Check the spark plug electrode gap.

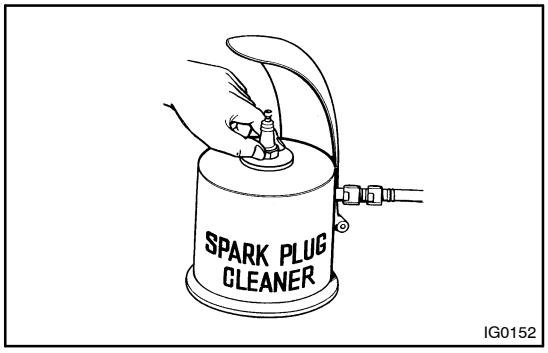
Maximum electrode gap for used spark plug:
1.2 mm (0.047 in.)

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

Correct electrode gap for new spark plug:
1.1 mm (0.043 in.)

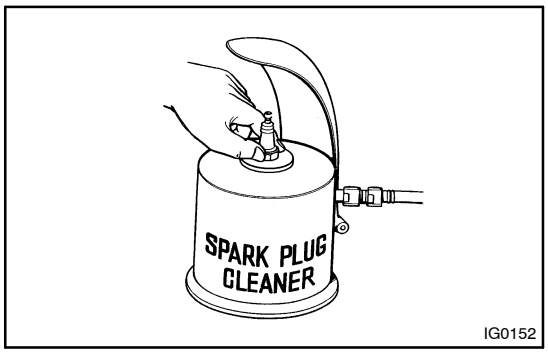
NOTICE:

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.

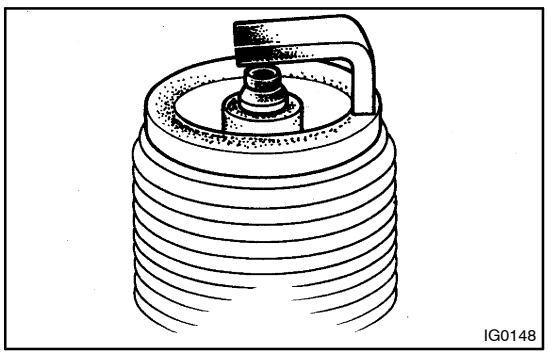


(f) Clean the spark plugs.
If the electrode has traces of wet carbon, allow it to dry and then clean with a spark plug cleaner.
Air pressure: Below 588 kPa (6 kgf/cm^2, 85 psi)
Duration: 20 seconds or less
HINT:
If there are traces of oil, remove it with gasoline before using the spark plug cleaner.
(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–7)

3. Others:
INSPECT SPARK PLUGS
(a) Remove the ignition coils (with igniter).
(See page IG–7)
(b) Using a 16 mm plug wrench, remove the spark plugs.

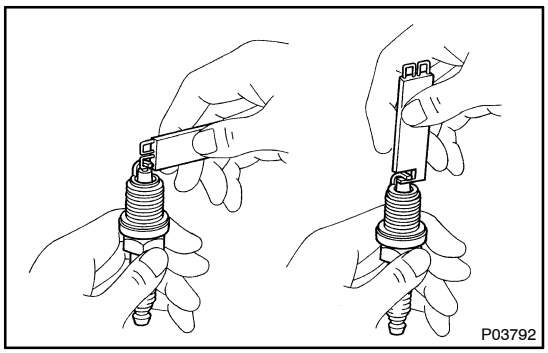


(c) Clean the spark plugs.
If the electrode has traces of wet carbon, allow it to dry and then clean with a spark plug cleaner.
Air pressure: Below 588 kPa (6 kgf/cm^2, 85 psi)
Duration: 20 seconds or less
HINT:
If there are traces of oil, remove it with gasoline before using the spark plug cleaner.



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

DENSO made	K20R–U
NGK made	BKR6EYA

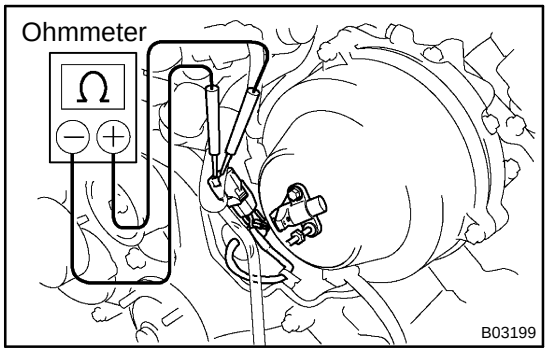


(e) Adjust electrode gap.
Carefully bend the outer electrode to obtain the correct electrode gap.
Electrode gap: 0.8 mm (0.03 1 in.)
(f) Using a 16 mm plug wrench, install the spark plugs.
Torque: 17.5 N·m (180 kgf·cm, 13 ft·lbf)
(g) Reinstall the ignition coil with igniters.
(See page IG–7)

4. 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.

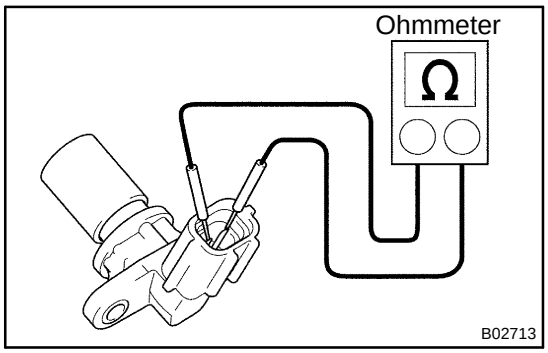
Resistance:

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.



5. INSPECT CRANKSHAFT POSITION SENSOR

(a) Remove the crankshaft position sensor.
(See page IG−13)

(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.