IGNITION SYSTEM (RCH series)

IG0LQ-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 coil with igniter (See page IG–4).
(2) Remove the spark plugs.
(3) Install the spark plugs to each ignition coil with igniter, and connect the ignition coil connector.
(4) Disconnect the 4 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:

SPARK TEST

↓ NO

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

↓ OK

CHANGE IT TO NORMAL IGNITION COIL WITH IGNITER AND PERFORM SPARK TEST AGAIN — OK → Replace the ignition coil.

↓ NO

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

BAD → Check wiring between ignition switch and ignition coil.

↓ OK

CHECK RESISTANCE OF CAMSHAFT POSITION SENSOR (See step 3)

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

BAD → Replace sensor.

↓ OK

CHECK RESISTANCE OF CRANKSHAFT POSITION SENSOR (See step 4)

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

BAD → Replace sensor.

↓ OK

CHECK IGT SIGNAL FROM ENGINE ECU (See page DI–117)

BAD → Check wiring between engine ECU and ignition coil with igniter, and then try another engine ECU.

↓ OK

TRY ANOTHER IGNITION COIL WITH IGNITER

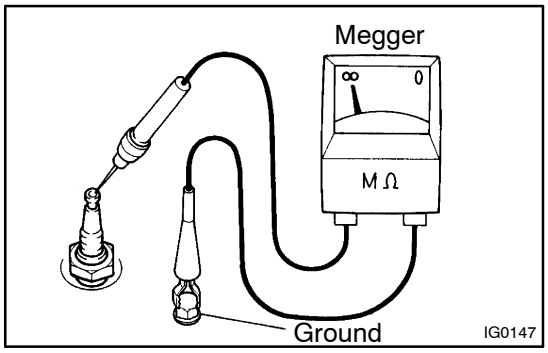
(7) Using a 16 mm plug wrench, install the spark plugs.
Torque: 20 N·m (204 kgf·cm, 15 ft·lbf)
(8) Reinstall the ignition coil.

2. INSPECT SPARK PLUGS

NOTICE:

- **Never use a wire brush for cleaning.**
- **Never attempt to adjust the electrode gap on used spark plug.**

(a) Remove the ignition coils (See page IG–4).



(b) Check the electrode.

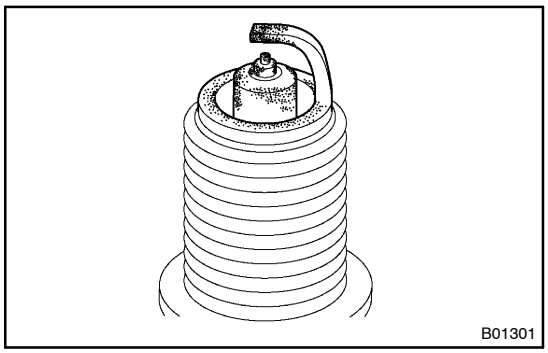
- Using a megger (insulation resistance meter), measure the insulation resistance.

Correct insulation resistance: 10 MΩ or more

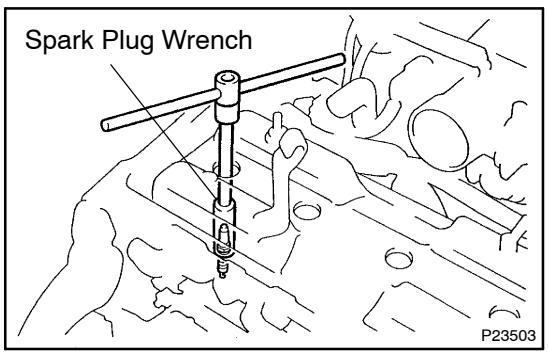
If the resistance is less than the specified value, proceed to step (d).

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)).



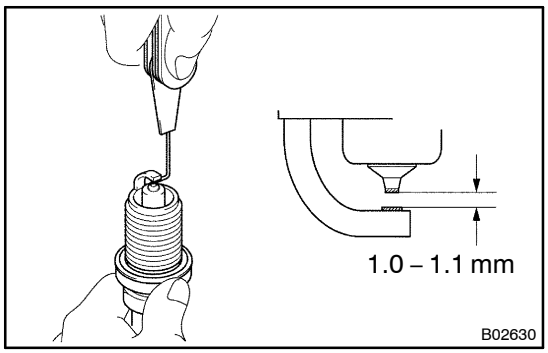
(c) Using a 16 mm plug wrench, remove the spark plugs.

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

If abnormal, replace the spark plug.

Recommended spark plug:

DENSO made	SK16R11
NGK made	IFR5A11



(e) Check the spark plug electrode gap.

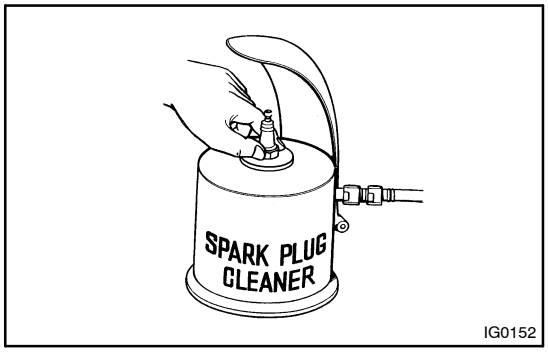
Maximum electrode gap for used spark plug:
1.3 mm (0.051 in.)

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

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

NOTICE:

When 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, make it dry and then clean it with a spark plug cleaner.

Air pressure: Below 588 kPa (6 kgf/cm², 85 psi)
Duration: 20 seconds or less

HINT:

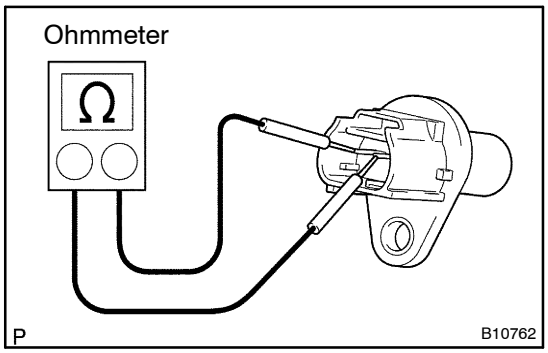
If there are traces of oil, remove them with gasoline before using the spark plug cleaner.

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

(h) Reinstall the ignition coils (See page IG–4).

3. INSPECT CAMSHAFT POSITION SENSOR

(a) Remove the sensor (See page IG–5).

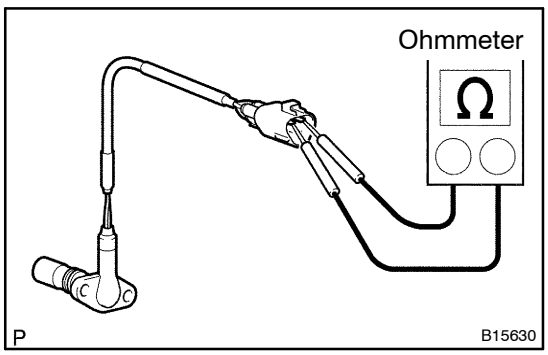


(b) Using an ohmmeter, measure the resistance between the terminals.
Resistance:

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

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

(c) Reconnect the sensor connector.



4. INSPECT CRANKSHAFT POSITION SENSOR

(a) Disconnect the sensor connector.

(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.
(See page IG–6)

(c) Reinstall the connector.