ON—VEHICLE INSPECTION

SPARK TEST

I30G6-05

CHECK THAT SPARK OCCURS

(a) Disconnect the high—tension cords from the spark plugs.
(b) Remove the spark plugs.
(c) Install the spark plugs to each high—tension cord.
(d) Ground the spark plug.
(e) Check if spark occurs while engine is being cranked.
HINT: (3RZ—FE) To prevent gasoline from being injected from injectors during this test, crank the engine for no more than 1 — 2 seconds at a time.
If the spark does not occur, perform the test as follows:

SPARK TEST
↓ NO
CHECK CONNECTION OF IGNITION COIL IGNITER AND DISTRIBUTOR CONNECTOR → BAD → Connect securely.
↓ OK
CHECK RESISTANCE OF HIGH-TENSION CORD (See page IG-4)
Maximum resistance: 25 kΩ par cord → BAD → Replace the cord (s).
↓ OK
CHECK POWER SUPPLY TO IGNITION COIL AND 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 to ignition coil and igniter
↓ OK
CHECK RESISTANCE OF IGNITION COIL
(See page IG-6)

Resistance:	Cold	Hot
Primary	0.36 - 0.55 Ω	0.45 - 0.65 Ω
Secondary	9.0 - 15.4 kΩ	11.4 - 18.1 kΩ

→ BAD → Replace the ignition coil.
↓ OK
CHECK RESISTANCE OF SIGNAL GENERATOR (PICKUP COIL)
(See page IG-6)

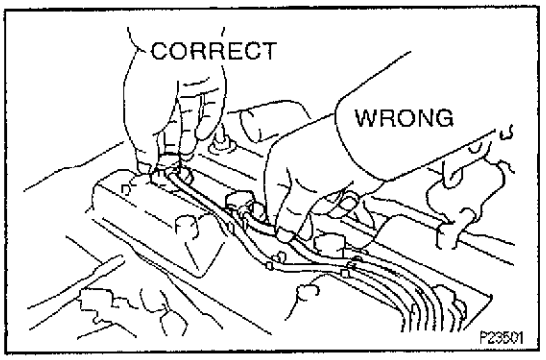
Resistance:	Cold	Hot
G ⊕ and GE ⊖	185 - 275 Ω	240 - 325 Ω

→ BAD → Replace the signal generator (pickup coil) (3RZ-F) or distributor housing assembly (3RZ-FE).
↓ OK
(3RZ-FE) CHECK RESISTANCE OF CRANKSHAFT POSITION SENSOR
(See page IG-7)

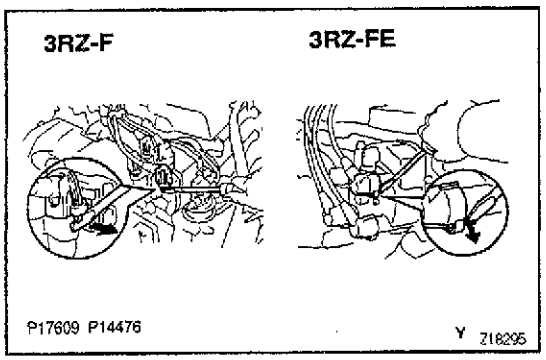
Resistance:	Cold	Hot
NE ⊕ and NE ⊖	1630 - 2740 Ω	2065 - 3225 Ω

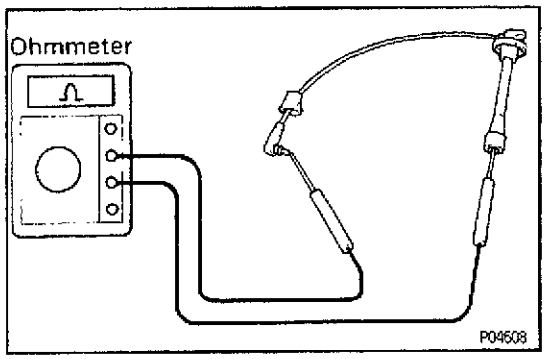
→ BAD → Replace the crankshaft position sensor.
↓ OK
CHECK AIR GAP OF DISTRIBUTOR
(See page IG-6)
Air gap: 0.2 - 0.4 mm (0.008 - 0.016 in.)
→ BAD → Replace the signal generator (pickup coil) (3RZ-F) or distributor housing assembly (3RZ-FE).
↓ OK
(3RZ-FE) CHECK IGT SIGNAL FROM ECU
(See page EG-158)
→ BAD → Check wiring between ECU, distributor and igniter, and then try another ECU.
↓
TRY ANOTHER IGNITER

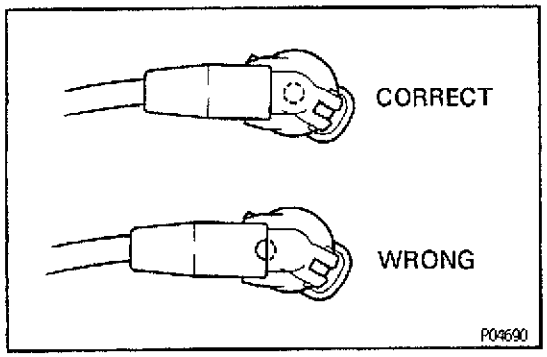
Y
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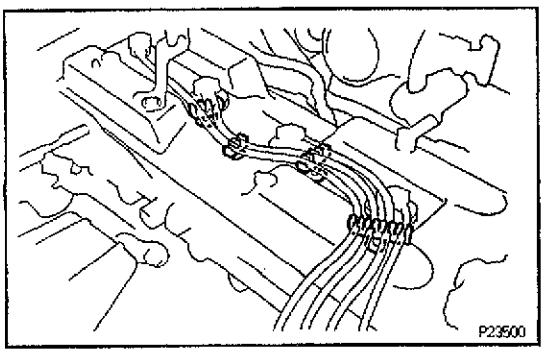


IG









HIGH–TENSION CORDS INSPECTION

IG004-01

1. DISCONNECT HIGH–TENSION CORDS FROM SPARK PLUGS

Disconnect the high – tension cords at the rubber boot.

DO NOT pull on the cords.

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

2. DISCONNECT HIGH–TENSION CORDS FROM DISTRIBUTOR CAP

(a) Using a screwdriver, lift up the lock claw and disconnect the holder from the distributor cap.

(b) Disconnect the high–tension cord at the grommet.

DO NOT pull on the cord.

NOTICE:

- **Pulling on or bending the cords may damage the conductor inside.**
- **Do not wipe any of the oil from the grommet after the high–tension cord is disconnected.**

3. INSPECT HIGH–TENSION CORD RESISTANCE

Using an ohmmeter, measure the resistance.

Maximum resistance:

25 kΩ per cord

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

4. RECONNECT HIGH–TENSION CORDS TO DISTRIBUTOR CAP

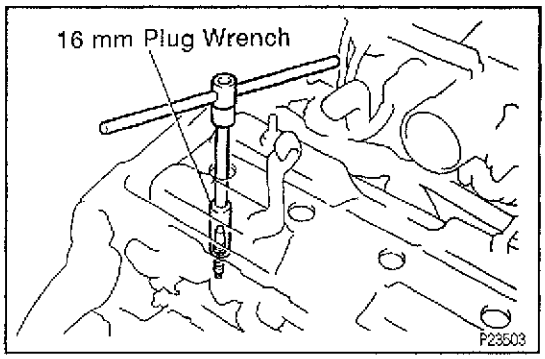
(a) Connect the high–tension cords to the distributor cap.

NOTICE: Check that the holder is correctly installed to the grommet and distributor cap as shown in the illustration.

(b) Check that the lock claw of the holder is engaged by lightly pulling the holder.

5. RECONNECT HIGH–TENSION CORDS TO SPARK PLUGS

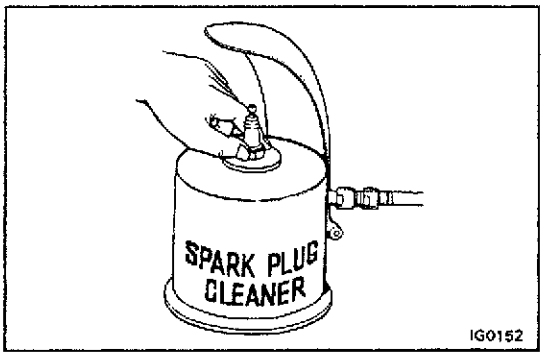
Secure the high–tension cords with the clamps as shown in the illustration.



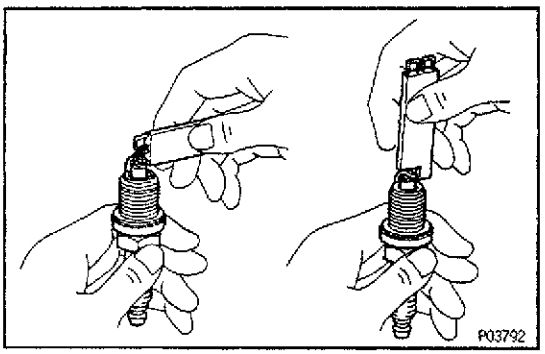
SPARK PLUGS INSPECTION

IGGJ2–03

1. **DISCONNECT HIGH–TENSION CORDS FROM SPARK PLUGS**
   (See steps 1 in high–tension cords inspection)
2. **REMOVE SPARK PLUGS**
   Using a 16 mm plug wrench, remove the spark plug.



3. **CLEAN SPARK PLUGS**
   Using a spark plug cleaner or wire brush, clean the spark plug.
4. **VISUALLY INSPECT SPARK PLUGS**
   Check the spark plug for electrode wear, threads damage and insulator damage.
   If abnormal, replace the plugs.
   Recommended spark plugs:
   ND: K16R–U
   NGK: BKR5EYA



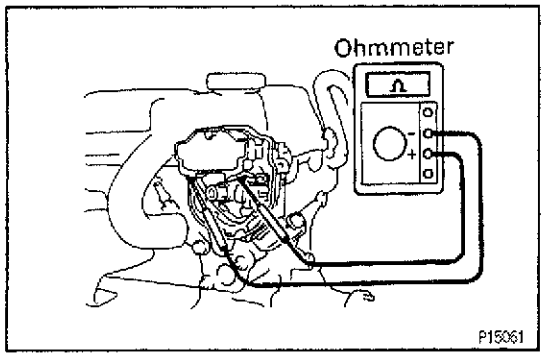
5. **ADJUST ELECTRODE GAP**
   Carefully bend the outer electrode to obtain the correct electrode gap.
   Correct electrode gap:
   0.8 mm (0.031 in.)
6. **INSTALL SPARK PLUGS**
   Using a 16 mm plug wrench, install the spark plug.
   Torque: 20 N·m (200 kgf·cm, 14 ft·lbf)
7. **RECONNECT HIGH–TENSION CORDS TO SPARK PLUGS**
   (See steps 5 in high–tension cords inspection)

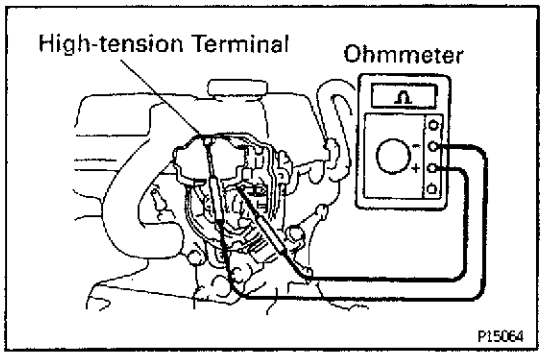
DISTRIBUTOR INSPECTION

IGGG5–01

NOTICE: "Cold" and "Hot" in the following 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. **DISCONNECT DISTRIBUTOR CONNECTOR**
2. **REMOVE DISTRIBUTOR CAP AND ROTOR**
3. **REMOVE IGNITION COIL DUST COVER**





Ignition Coil

4. INSPECT PRIMARY COIL RESISTANCE

Using an ohmmeter, measure the resistance between the positive (+) and negative (–) terminals.

Primary coil resistance:

Cold: 0.36 – 0.55 Ω

Hot: 0.45 – 0.65 Ω

If the resistance is not as specified, replace the ignition coil.

5. INSPECT SECONDARY COIL RESISTANCE

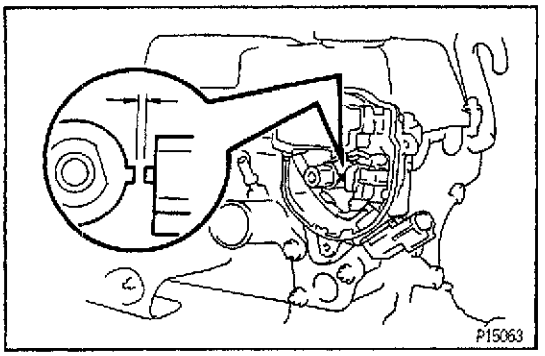
Using an ohmmeter, measure the resistance between positive (+) and high–tension terminals.

Secondary coil resistance:

Cold: 9.0 – 15.4 kΩ

Hot: 11.4 – 18.1 kΩ

If the resistance is not as specified, replace the ignition coil.



Distributor

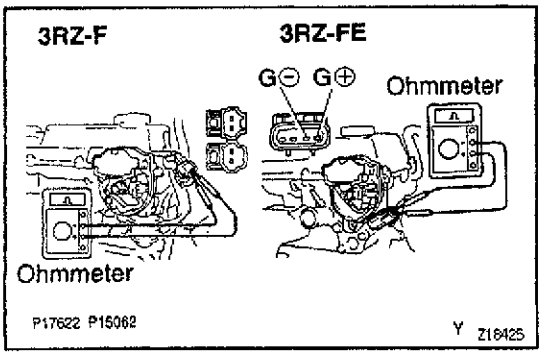
6. INSPECT AIR GAP

Using a feeler gauge, measure the air gap between the signal rotor and pickup coil projection.

Air gap:

0.2 – 0.4 mm (0.008 – 0.016 in.)

If the air gap is not as specified, replace the distributor housing assembly.



7. INSPECT SIGNAL GENERATOR (PICKUP COIL) RESISTANCE

Using an ohmmeter, measure the resistance between the terminals as shown in the illustration.

Pickup coil resistance:

Cold: 185 – 275 Ω

Hot: 240 – 325 Ω

If the resistance is not as specified, replace the signal generator (pickup coil) (3RZ–F) or distributor housing assembly (3RZ–FE).

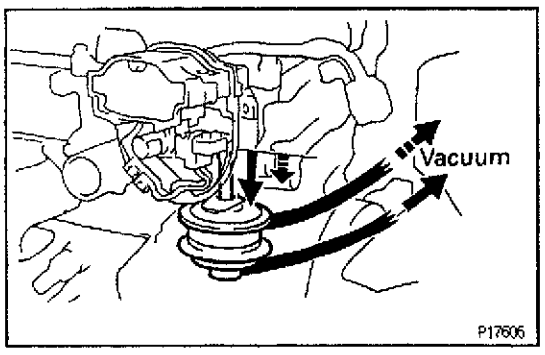
8. 3RZ–F:

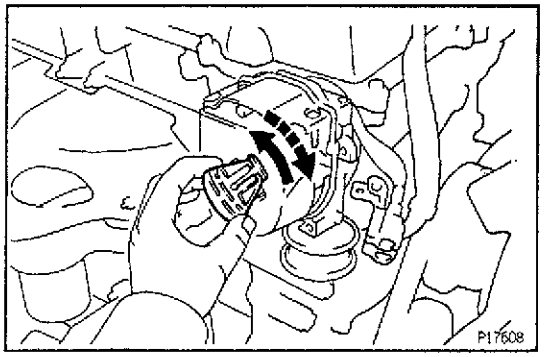
INSPECT VACUUM ADVANCE

(a) Disconnect the vacuum hoses and connect a vacuum pump to the vacuum advancers.

(b) Apply vacuum and check that the vacuum advancer moves .

If the vacuum advancer does not work, repair or replace if necessary.





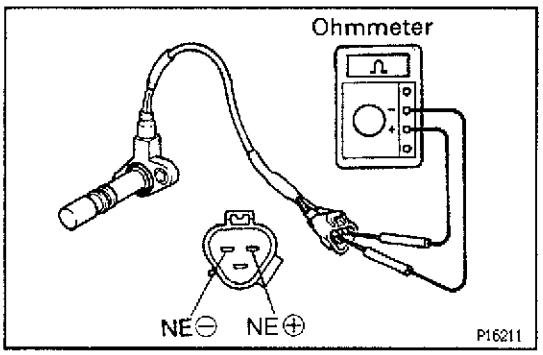
9. **3RZ–F:**
   INSPECT GOVERNOR ADVANCE
   (a) Turn the rotor shaft counterclockwise, release it and check that the rotor returns quickly clockwise.
   (b) Check that the rotor is not excessively loose.
10. **REINSTALL IGNITION COIL DUST COVER**
11. **REINSTALL ROTOR AND DISTRIBUTOR CAP**
12. **RECONNECT DISTRIBUTOR CONNECTOR**

IGOG9–04

CRANKSHAFT POSITION SENSOR INSPECTION (3RZ–FE)

NOTICE: "Cold" and "Hot" in the following sentences express the temperature of the sensors 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. **REMOVE CRANKSHAFT POSITION SENSOR**
   (See crankshaft position sensor removal in crankshaft position sensor)



2. **INSPECT CRANKSHAFT POSITION SENSOR RESISTANCE**
   Using an ohmmeter, measure the resistance between the terminals.
   Resistance (NE ⊕ and NE ⊖):
   Cold: 1,630 – 2,740 Ω
   Hot: 2,065 – 3,225 Ω
   If the resistance is not as specified, replace the crankshaft position sensor.
3. **REINSTALL CRANKSHAFT POSITION SENSOR**

IGOOZ–0J

IGNITER INSPECTION

(See procedure Spark Test in on–vehicle inspection)