ON-VEHICLE INSPECTION

SPARK TEST

CHECK THAT SPARK OCCURS

(Conventional Type)

(a) Disconnect high-tension cord from the distributor.

(b) Hold the end approx. 12.7 mm (0.50 in.) from body of car.

(c) See if spark occurs while engine is being cranked.

(IIA Type)

(a) Disconnect high-tension cord from 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 (2RZ-E): 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

NG

CHECK RESISTANCE OF HIGH-TENSION CORD
(See page IG-8)

NG → Replace the cord(s).

OK

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

NG → Check wiring between ignition and ignition coil.

OK

CHECK RESISTANCE OF IGNITION COIL
(See page IG-11)
Resistance (cold):

1RZ (Conventional type)	**Primary**	**1.3 – 1.7 Ω**
	Secondary	**10.7 – 14.5 kΩ**
1RZ (IIA type), 2RZ	**Primary**	**1.2 – 1.6 Ω**
	Secondary	**10.2 – 13.8 kΩ**
2RZ-E	**Primary**	**0.4 – 0.5 Ω**
	Secondary	**10.0 – 14.0 kΩ**

NG → Replace the ignition coil.

OK

(IIA TYPE)
CHECK RESISTANCE OF PICKUP COIL
(See page IG-13)
Resistance: 1RZ, 2RZ 140 – 180 Ω
2RZ-E 280 – 360 Ω

NG → (1RZ, 2RZ)
Replace the pickup coil.
(2RZ-E)
Replace the housing assembly.

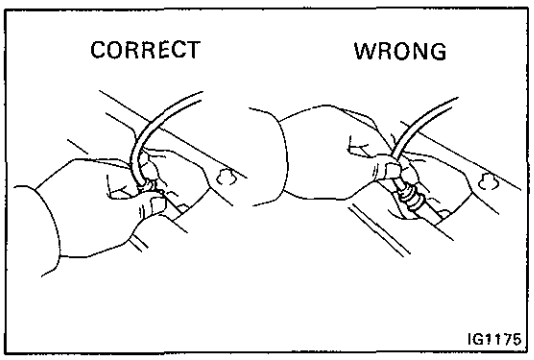
OK

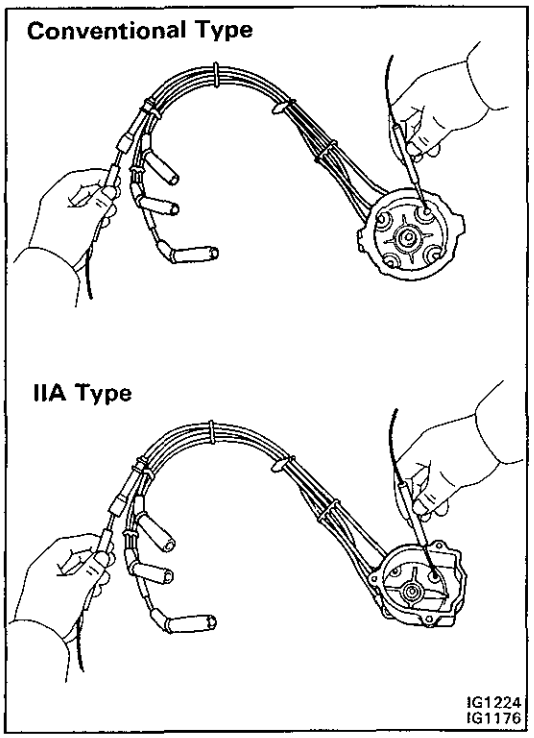
(IIA TYPE)
CHECK AIR GAP OF DISTRIBUTOR
(See page IG-13)

NG → (1RZ, 2RZ)
Replace the pickup coil.
(2RZ-E)
Replace the housing assembly

OK

TRY ANOTHER IGNITER





INSPECTION OF HIGH-TENSION CORDS

1. **CAREFULLY REMOVE HIGH-TENSION CORD BY RUBBER BOOT**

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

2. **INSPECT HIGH-TENSION CORD TERMINALS**

   Check the terminals for corrosion, breaks or distortion.

   Replace cord as required.

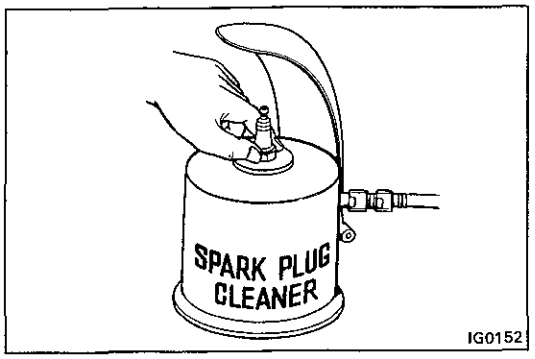
3. **INSPECT HIGH-TENSION CORD RESISTANCE**

   Using an ohmmeter, measure the resistance without disconnecting the cap.

   Maximum resistance: 25 kΩ per cord

   If resistance is greater than maximum, check the terminals.

   If necessary, replace the high-tension cord and/or distributor cap.

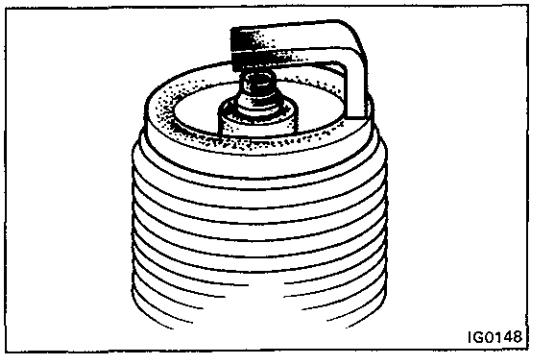


INSPECTION OF SPARK PLUGS (Conventional Tipped Type)

1. REMOVE SPARK PLUGS

2. CLEAN SPARK PLUGS

Using a spark plug cleaner or wire brush, clean the spark plug.



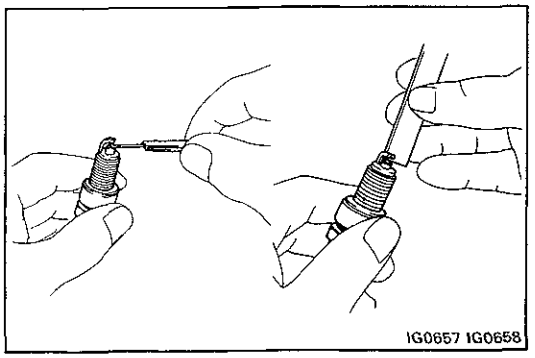
3. VISUALLY INSPECT SPARK PLUGS

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

If abnormal, replace the plugs.

Recommended spark plug:

1RZ (Europe, Singapore)	**ND**	**W16EXR-U**
	NGK	**BPR5EY**
Others	**ND**	**W16EX-U**
	NGK	**BP5EY**



4. ADJUST ELECTRODE GAP

Carefully bend the outer electrode to obtain the correct electrode gap.

Correct electrode gap: 0.8 mm(0.031 in.)

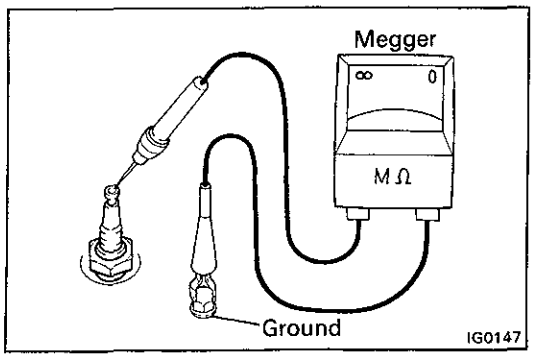
5. INSTALL SPARK PLUGS

Torque: 180 kg-cm (13 ft-lb, 18 N·m)

INSPECTION OF SPARK PLUGS (Platinum Tipped Type)

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).**



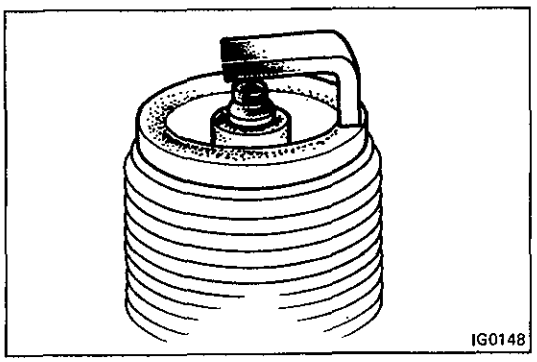
1. INSPECT ELECTRODE

(a) If using a megger (insulation resistance meter).

Measure the insulation resistance.

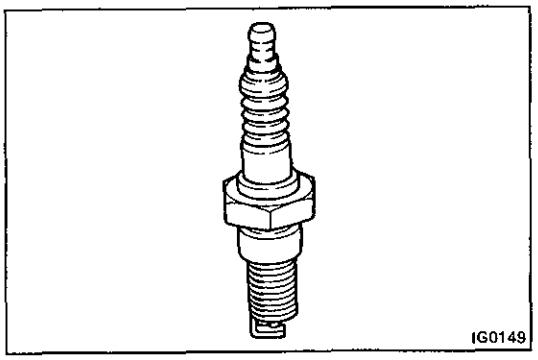
Correct insulation resistance: More than 10 MΩ

If less than 10 MΩ, clean the plug.


IG0148

(b) If not using a megger.
Quickly race the engine to 4,000 rpm five times.
Visually inspect the spark plugs.
If the electrode is dry ..... Okay
If the electrode is wet ..... Clean the plug

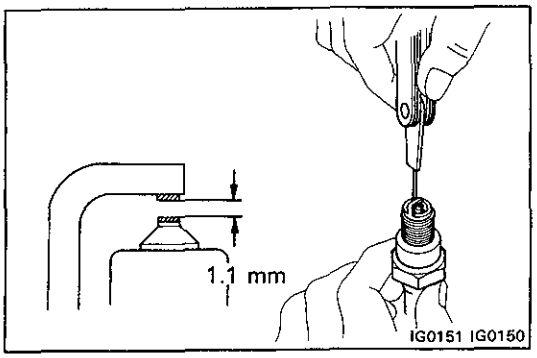
2. REMOVE SPARK PLUGS


IG0149

3. VISUALLY INSPECT SPARK PLUGS

Check the spark plugs for thread or insulation damage.
If abnormal, replace the plug.

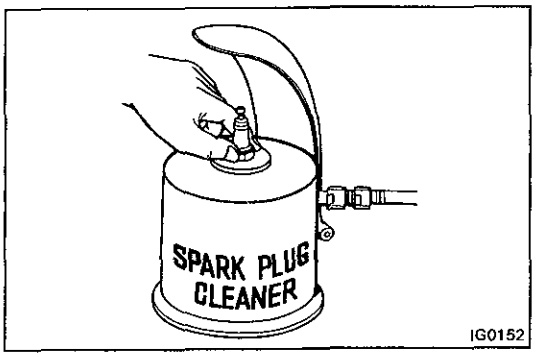
Spark plug: ND P16R
NGK BPR5EP 11



IG0151 IG0150

4. INSPECT ELECTRODE GAP

Maximum electrode gap: 1.3 mm (0.051 in.)
If the gap is greater than maximum, replace the plug.
Correct electrode gap of new plug: 1.1 mm (0.043 in.)
If adjusting the gap of a new plug, bend only the base of the ground electrode. Do not touch the tip.



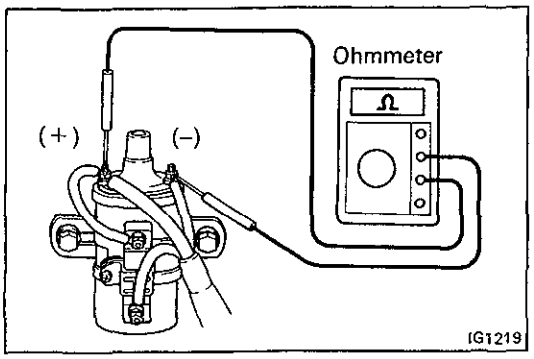
IG0152

5. CLEAN SPARK PLUGS

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

6. INSTALL SPARK PLUGS

Torque: 180 kg-cm (13 ft-lb, 18 N·m)



INSPECTION OF IGNITION COIL [1RZ (Conventional Type)]

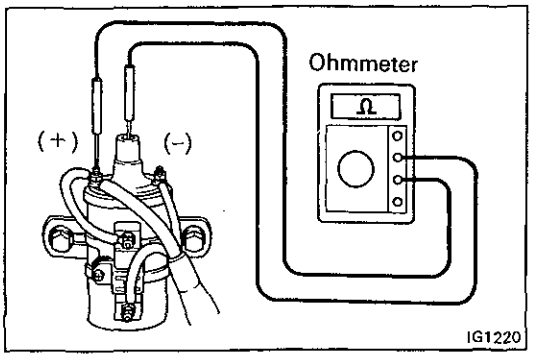
1. **DISCONNECT HIGH-TENSION CORD**

2. **INSPECT PRIMARY COIL RESISTANCE**

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

Primary coil resistance (cold): 1.2 – 1.7 Ω

If the resistance is not within specification, replace the ignition coil.

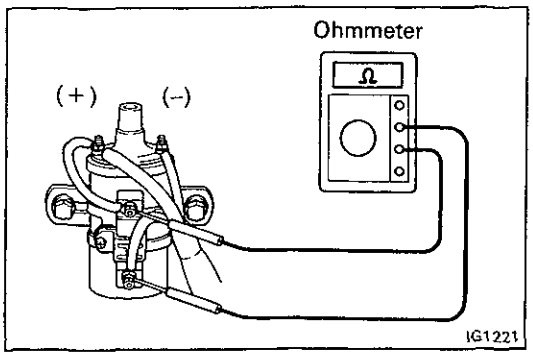


3. **INSPECT SECONDARY COIL RESISTANCE**

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

Secondary coil resistance (cold): 10.7 – 14.5 KΩ

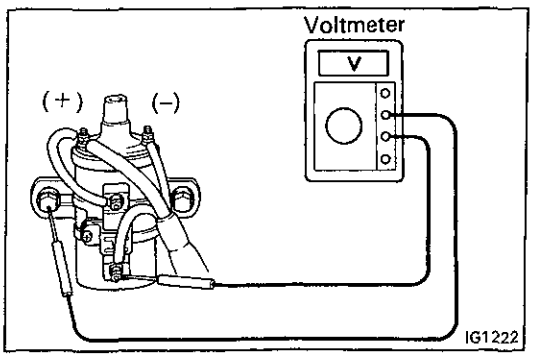
If the resistance is not within specification, replace the ignition coil.



4. **INSPECT RESISTOR RESISTANCE**

Using an ohmmeter, measure the resistance of the resistor.

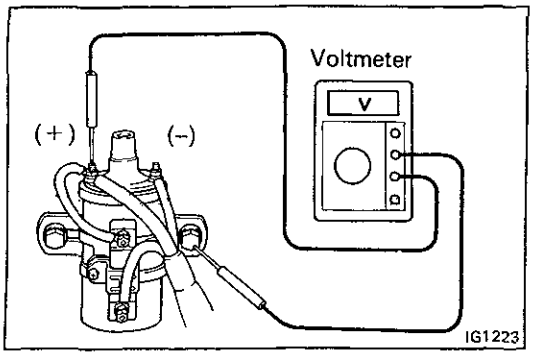
Resistor resistance (cold): 1.3 – 1.5 Ω



5. **INSPECT POWER SOURCE LINE**

(a) With the ignition switch at ON and using a voltmeter, connect the positive (+) probe to the terminal of resistor (black and red wire) and the negative (–) probe to body ground.

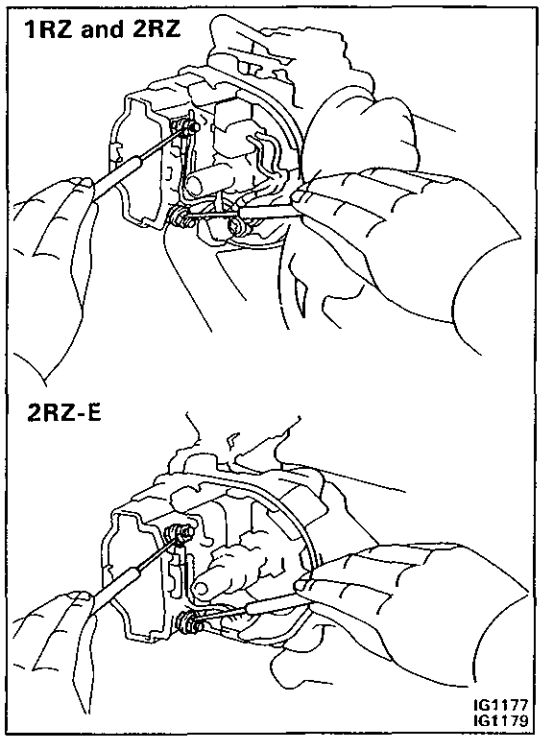
Voltage: Approx. 12 V



(b) With the ignition switch at START and using a voltmeter, connect the positive (+) probe to the ignition coil (+) terminal and the negative (–) probe to body ground.

Voltage: Approx. 12 V

If a problem is found, check the ignition switch and wire harness.



[1RZ (IIA Type), 2RZ AND 2RZ-E]

1. **REMOVE DISTRIBUTOR CAP, ROTOR AND DUST COVERS**

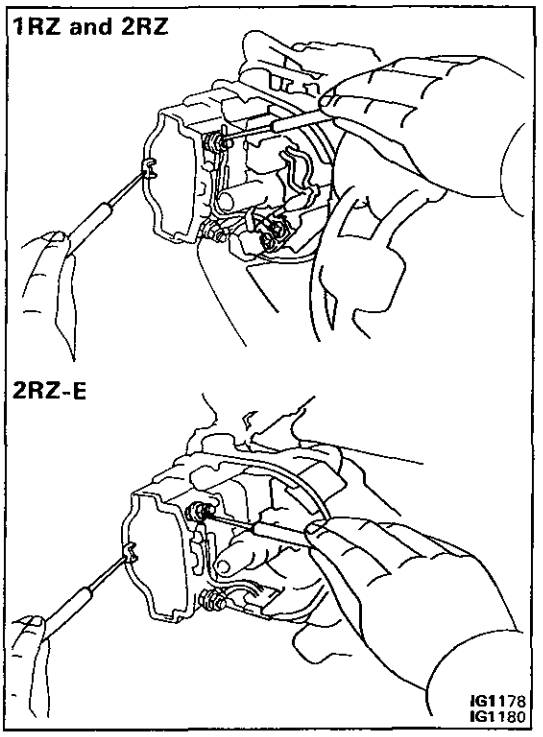
2. **INSPECT PRIMARY COIL RESISTANCE**

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

Primary coil resistance (cold):

1RZ, 2RZ	**1.2 – 1.6 Ω**
2RZ-E	**0.4 – 0.5 Ω**

If the resistance is not within specification, replace the ignition coil.



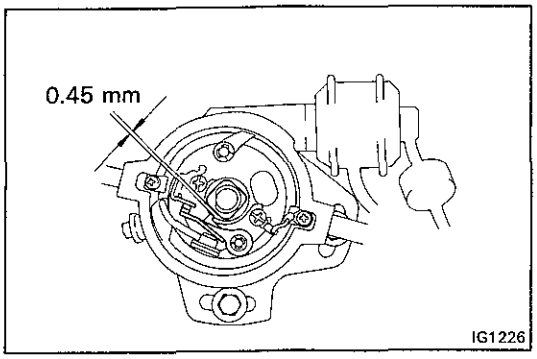
3. **INSPECT SECONDARY COIL RESISTANCE**

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

Secondary coil resistance (cold):

1RZ, 2RZ	**10.2 – 13.8 kΩ**
2RZ-E	**10.0 – 14.0 kΩ**

If the resistance is not within specification, replace the ignition coil.



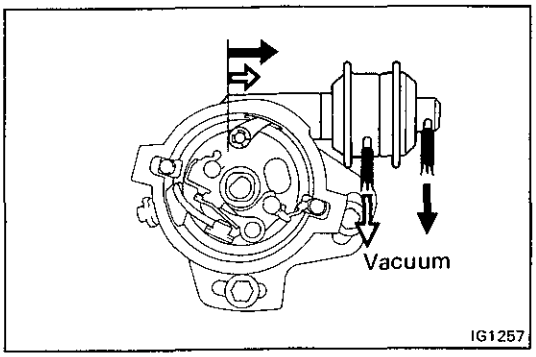
INSPECTION OF DISTRIBUTOR [1RZ (Conventional Type)]

1. INSPECT BREAKER POINT

Using a thickness gauge, measure the gap between the cam and rubbing block.

Rubbing block gap: 0.45 mm (0.018 in.)

If the gap is not as specified, adjust the gap.
'(See step 3 on page EM-24)

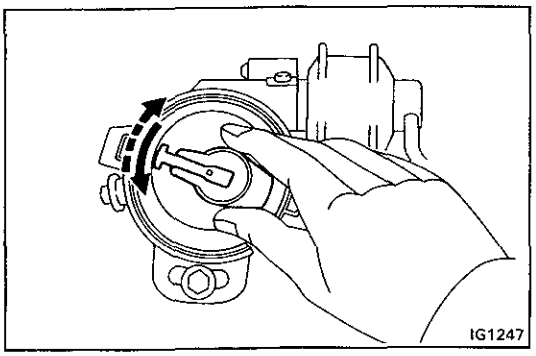


2. INSPECT VACUUM ADVANCER

(a) Disconnect the vacuum hoses.

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

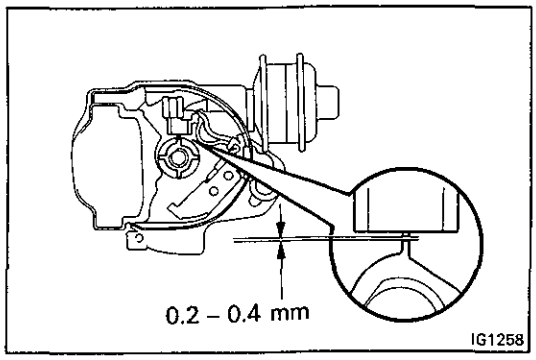
If the vacuum advancer does not work, repair or replace as necessary.



3. INSPECT GOVERNOR ADVANCER

(a) Turn the rotor clockwise, release it and check that the rotor returns quickly counterclockwise.

(b) Check that the rotor is not excessively loose.



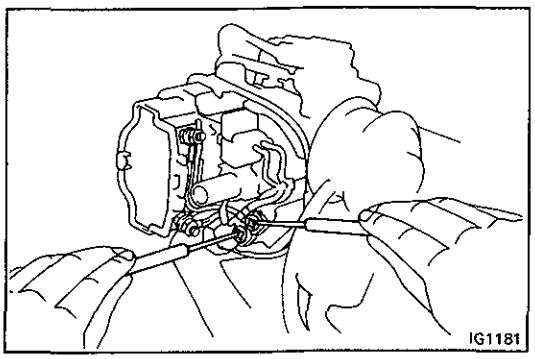
[1RZ (IIA Type) AND 2RZ]

1. INSPECT AIR GAPS

Using a thickness gauge, measure the gap between the signal rotor and signal generator (pickup coil) projection.

Air gap: 0.2 – 0.4 mm (0.008 – 0.016 in.)

If the gap is not within specification, replace the breaker *plate and signal generator (pickup coil) assembly.* *(See* page IG-25)

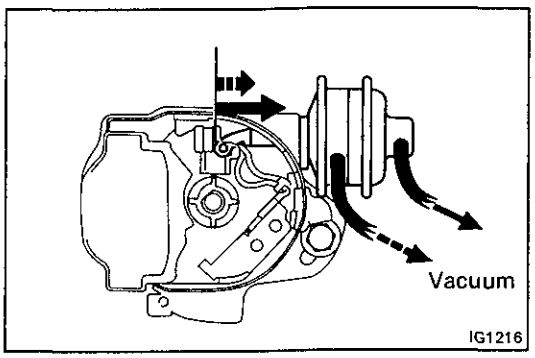


2. INSPECT SIGNAL GENERATOR (PICKUP COIL)

Using an ohmmeter, check resistance of the signal generator (pickup) coil.

Pickup coil resistance: 140 – 180 Ω

If the gap is not within specification, replace the signal generator (pickup coil).

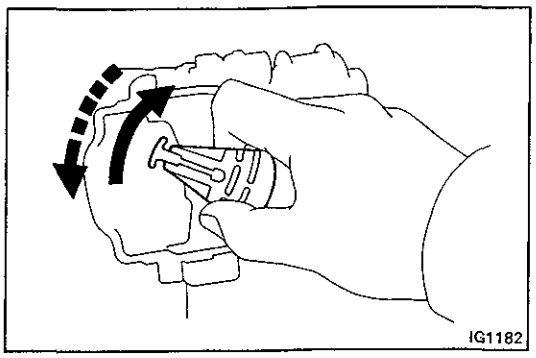


3. INSPECT VACUUM ADVANCER

(a) Disconnect the vacuum hoses.

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

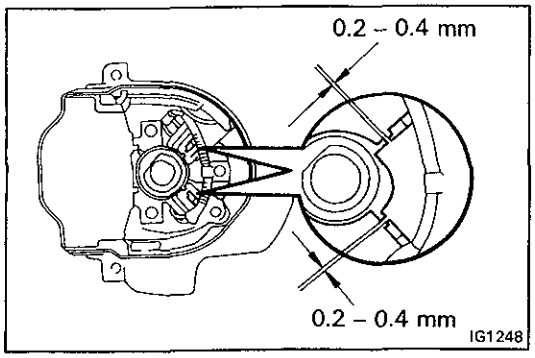
If the vacuum advancer does not work, repair or replace as necessary.



4. INSPECT GOVERNOR ADVANCER

(a) Turn the rotor clockwise, release it and check that the rotor returns quickly counterclockwise.

(b) Check that the rotor is not excessively loose.



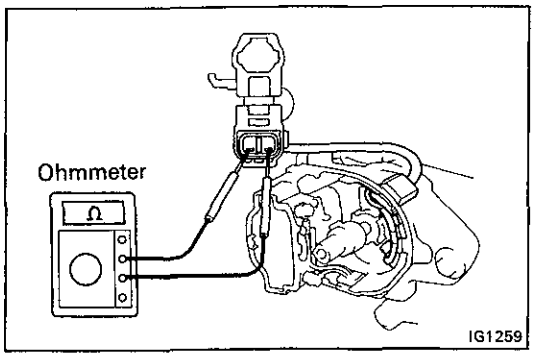
[2RZ-E]

1. INSPECT AIR GAPS

Using a thickness gauge, measure the gap between the signal rotor and signal generator (pickup coil) projection.

Air gap: 0.2 – 0.4 mm (0.008 – 0.016 in.)

If the gap is not within specification, replace the distributor.



2. INSPECT SIGNAL GENERATOR (PICKUP COIL)

Using an ohmmeter, measure the resistance between the terminals.

Signal generator (Pickup coil) resistance: 280 – 360 Ω

If the resistance is not within specification, replace the distributor.