IGNITION SYSTEM

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 IGNITER AND 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) Ground the spark plug.
   (5) Check if spark occurs while engine is being cranked.

NOTICE:
To prevent excess fuel being injected from the injectors during this test, do not crank the engine for more than 5 - 10 seconds at a time.
If a spark does not occur, do the test as follows:

<table>
<thead>
<tr>
<th>SPARK TEST</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>CHECK CONNECTION OF IGNITION COIL AND IGNITER</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAD</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>CHECK POWER SUPPLY TO IGNITION COIL AND IGNITER</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Turn ignition switch to ON.</td>
</tr>
<tr>
<td>2. Check that there is battery positive voltage at ignition coil positive (+) terminal.</td>
</tr>
<tr>
<td>BAD</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CHECK RESISTANCE OF IGNITION COIL (See step 3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resistance: Cold Hot</td>
</tr>
<tr>
<td>Primary: 0.54 - 0.84 Ω 0.68 - 0.98 Ω</td>
</tr>
<tr>
<td>BAD</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CHECK RESISTANCE OF CAMSHAFT POSITION SENSOR (See step 4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resistance: Cold Hot</td>
</tr>
<tr>
<td>835 - 1,400 Ω 1,060 - 1,645 Ω</td>
</tr>
<tr>
<td>BAD</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CHECK RESISTANCE OF CRANKSHAFT POSITION SENSOR (See step 5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resistance: Cold Hot</td>
</tr>
<tr>
<td>1,630 - 2,740 Ω 2,065 - 3,225 Ω</td>
</tr>
<tr>
<td>BAD</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CHECK IGT SIGNAL FROM ECM (See page DI-252)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAD</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TRY ANOTHER IGNITER</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO</td>
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</tbody>
</table>

IG-1
2. INSPECT SPARK PLUGS

NOTICE:
- Never use a wire brush for cleaning.
- Never attempt to adjust the electrode gap on used a spark plug.
- Spark plugs should be replaced every 100,000 km (60,000 miles).

(a) Remove the ignition coils assemblies.
(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 (c).

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

Simple Method:
- Quickly race the engine 5 times to 4,000 rpm.
- Remove the spark plug.
- Visually check the spark plug.
  - If the electrode is dry ... OK
  - If the electrode is wet ... Proceed to step (d).
- Reinstall the spark plug.

(c) Using a 16 mm plug wrench, remove the 6 spark plugs.

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

If abnormal, replace the spark plug.

**Recommended spark plug:**

<table>
<thead>
<tr>
<th>DENSO made</th>
<th>PK20R11</th>
</tr>
</thead>
<tbody>
<tr>
<td>NGK made</td>
<td>BKR6EP11</td>
</tr>
</tbody>
</table>

(e) Inspect the 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:**
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 the 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/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, reinstall the 6 spark plugs.
- Torque: 18 N·m (180 kgf·cm, 13 ft·lbf)

(h) Reinstall the ignition coils assemblies.
(See page IG-7)

3. INSPECT IGNITION COILS
   (a) Remove the No.3 timing belt cover.
   (b) Disconnect the ignition coil connectors.
   (c) Using an ohmmeter, measure the resistance between the terminals.

   **Primary coil resistance:**

<p>| | |</p>
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</tr>
<tr>
<td>Hot</td>
<td>0.68 - 0.98 Ω</td>
</tr>
</tbody>
</table>

   If the resistance is not as specified, replace the ignition coil.
   (d) Reconnect the ignition coil connectors.
   (e) Reinstall the No.3 timing belt cover.

4. INSPECT CAMSHAFT POSITION SENSORS
   (a) Disconnect the camshaft position sensor connectors.
   (b) Using an ohmmeter, measure the resistance between terminals.

   **Resistance:**

<p>| | |</p>
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<td>Hot</td>
<td>1,060 - 1,645 Ω</td>
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   If the resistance is not as specified, replace the camshaft position sensor.
5. **INSPECT CRANKSHAFT POSITION SENSOR**

(a) Remove the No.2 air tube for the CAC.
(b) Disconnect the crankshaft position sensor connector.
(c) Using an ohmmeter, measure the resistance between terminals.

**Resistance:**

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If the resistance is not as specified, replace the sensor.
(d) Reconnect the crankshaft position sensor connector.
(e) Reinstall the No.2 air tube for the CAC.
IGNITION (2JZ-GTE) - IGNITION COIL

IGNITION COIL COMPONENTS

- Ignition Coil
- Bracket
- Boot
- No.3 Timing Belt Cover
- Oil Filler Cap
- PCV Hose

1997 SUPRA (RM502U)
**REMOVAL**

1. REMOVE NO.3 TIMING BELT COVER
2. REMOVE PCV HOSES
3. DISCONNECT IGNITION COIL CONNECTORS
4. REMOVE BRACKET AND IGNITION COILS ASSEMBLIES

Remove the 2 bolts and 2 ignition coils assembly.

Torque: 8.8 N·m (90 kgf·cm, 78 in.-lbf)

5. REMOVE IGNITION COILS FROM BRACKET
   (a) Remove the rubber boot from the ignition coil.
   (b) Remove the 2 screws and ignition coil.
CAMSHAFT POSITION SENSOR

COMPONENTS

- Camshaft Position Sensor No.1
- Connector
- Gasket
- Camshaft Position Sensor No.2
- Air Hose for IAC Valve
- Engine Hanger
- Ground Strap
REMOVAL

1. DISCONNECT IAC VALVE CONNECTOR
2. DISCONNECT AIR HOSE FROM IAC VALVE
3. REMOVE ENGINE HANGER
   Remove the 2 bolts, ground strap and engine hanger.
   Torque: 39 N·m (400 kgf·cm, 29 ft·lbf)
4. DISCONNECT CAMSHAFT POSITION SENSOR CONNECTORS
5. REMOVE CAMSHAFT POSITION SENSORS
   Remove the 4 bolts, 2 camshaft position sensors and 2 gaskets.
   Torque: 8.8 N·m (90 kgf·cm, 78 in·lbf)
CRANKSHAFT POSITION SENSOR

COMPONENTS

- Drive Belt Tensioner Damper (M/T)
- Pipe Bracket (A/T)
- Pipe Clamp (A/T)
- Drive Belt
- Generator Wire
- Generator Connector
- Generator
- Crankshaft Position Sensor
- A/T Oil Cooler Pipe
- No.2 Fan Shroud
- No.2 Air Tube
- Engine Under Cover
- Generator Wire

IGNITION (2JZ-GTE) - CRANKSHAFT POSITION SENSOR

1997 SUPRA (RM502U)

Author: Date: 1505
REMOVAL

1. REMOVE GENERATOR
   (See page CH-8 )

2. DISCONNECT CRANKSHAFT POSITION SENSOR CONNECTOR
   (a) Disconnect the sensor connector from the bracket.
   (b) Disconnect the sensor connector from the wiring connector.

3. REMOVE CRANKSHAFT POSITION SENSOR
   (a) Disconnect the wire clamp from the cylinder block.
   (b) Remove the bolt and crankshaft position sensor.
   Torque: 8.8 N-m (90 kgf·cm, 78 in·lbf)
STARTER COMPONENTS

- Engine Wire Bracket
- Starter
- Starter Connector
- Starter Wire
Magnetic Switch Assembly

- Starter Clutch Assembly
- Return Spring
- Magnetic Switch Assembly
- Steel Ball
- Bearing
- O-Ring
- End Cover
- Field Frame (Field Coil)
- Armature
- Rear Bearing
- Front Bearing
- Starter Housing
- Idler Gear
- Starter Clutch Assembly
- O-Ring
- Dust protector
- Brush Holder
- Dust Protector
- O-Ring
- O-Ring
- End Cover
- Bearing

N·m (kgf·cm, ft·lbf) : Specified torque
◆ Non-reusable part

1997 SUPRA (RM502U)