Component Description

IGNITION COIL & POWER TRANSISTOR
The ignition signal from the ECM is sent to and amplified by the power transistor. The power transistor turns on and off the ignition coil primary circuit. This on-off operation induces the proper high voltage in the coil secondary circuit.

On Board Diagnosis Logic
Malfunction is detected when the ignition signal in the primary circuit is not sent to ECM during engine cranking or running.

Possible Cause
- Harness or connectors (The ignition primary circuit is open or shorted.)
- Power transistor unit built into ignition coil
- Condenser
- Crankshaft position sensor (REF)
- Crankshaft position sensor (REF) circuit

DTC Confirmation Procedure
NOTE:
- If “DTC Confirmation Procedure” has been previously conducted, always turn ignition switch “OFF” and wait at least 10 seconds before conducting the next test.
- If DTC P1320 is displayed with DTC P0335, P0340, P1335 or P1336, perform trouble diagnosis for DTC P0335, P0340, P1335 or P1336 first. Refer to EC-397, EC-405, EC-595 or EC-601.
DTC P1320 IGNITION SIGNAL

**DTC Confirmation Procedure (Cont’d)**

1) Turn ignition switch “ON”.
2) Select “DATA MONITOR” mode with CONSULT-II.
3) Start engine. (If engine does not run, turn ignition switch to “START” for at least 5 seconds.)
4) If 1st trip DTC is detected, go to “Diagnostic Procedure”, EC-589.

**WITH CONSULT-II**

-跟随上述“WITH CONSULT-II”的步骤。

**WITH GST**

Follow the procedure “WITH CONSULT-II” above.
Wiring Diagram

DTC P1320 IGNITION SIGNAL

Wiring Diagram

EC-IGN/SG-01

- DETECTABLE LINE FOR DTC
- NON-DETECTABLE LINE FOR DTC

REFER TO EL-POWER.

NEXT PAGE
DTC P1320 IGNITION SIGNAL

Wiring Diagram (Cont'd)

EC-IGN/SG-02

- DETECTABLE LINE FOR DTC
- NON-DETECTABLE LINE FOR DTC

ECM

IGN1
Y/R

IGN3
L/R

IGN5
PUL/W

ECM

[Diagram showing wiring connections and components]

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
</tr>
</tbody>
</table>

DTC P1320 IGNITION SIGNAL

EC-587

MEC752C
Diagnostic Procedure

1 CHECK ENGINE START

Turn ignition switch “OFF”, and restart engine.
Is engine running?

Yes or No

| Yes (With CONSULT-II) | GO TO 2. |
| No (Without CONSULT-II) | GO TO 12. |

2 SEARCH FOR MALFUNCTIONING CIRCUIT

With CONSULT-II
1. Perform “POWER BALANCE” in “ACTIVE TEST” mode with CONSULT-II.
2. Search for circuit which does not produce a momentary engine speed drop.
### Diagnostic Procedure (Cont’d)

#### 3 CHECK IGNITION COIL POWER SUPPLY CIRCUIT-I

1. Turn ignition switch ON.
2. Check voltage between ECM terminals 110, 112 and ground with CONSULT-II or tester.

<table>
<thead>
<tr>
<th>OK or NG</th>
<th>Go to:</th>
</tr>
</thead>
<tbody>
<tr>
<td>OK</td>
<td>4</td>
</tr>
<tr>
<td>NG</td>
<td>GO TO 5.</td>
</tr>
</tbody>
</table>

#### 4 CHECK IGNITION COIL POWER SUPPLY CIRCUIT-II

1. Turn ignition switch OFF.
2. Disconnect condenser harness connector.

3. Turn ignition switch ON.
4. Check voltage between condenser terminal 1 and ground with CONSULT-II or tester.

<table>
<thead>
<tr>
<th>OK or NG</th>
<th>Go to:</th>
</tr>
</thead>
<tbody>
<tr>
<td>OK</td>
<td>10</td>
</tr>
<tr>
<td>NG</td>
<td>5</td>
</tr>
</tbody>
</table>
## DTC P1320 IGNITION SIGNAL

### Diagnostic Procedure (Cont’d)

#### 5 CHECK IGNITION COIL POWER SUPPLY CIRCUIT-III

1. Turn ignition switch OFF.
2. Disconnect ECM relay.

3. Check harness continuity between ECM relay terminal 7 and condenser terminal 1. Refer to Wiring Diagram. **Continuity should exist.**
4. Also check harness for short to ground and short to power.

<table>
<thead>
<tr>
<th>OK or NG</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>OK</td>
<td>►</td>
</tr>
<tr>
<td>NG</td>
<td>►</td>
</tr>
</tbody>
</table>

#### 6 DETECT MALFUNCTIONING PART

Check the following.
- Harness connectors F18, E15
- Harness for open or short between ECM relay and condenser

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
</table>
| ► | Repair open circuit or short to ground or short to power in harness or connectors.

#### 7 CHECK IGNITION COIL POWER SUPPLY CIRCUIT-IV

Check voltage between ECM relay terminal 6 and ground with CONSULT-II or tester.

<table>
<thead>
<tr>
<th>Voltage: Battery voltage</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>OK or NG</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>OK</td>
<td>►</td>
</tr>
<tr>
<td>NG</td>
<td>►</td>
</tr>
</tbody>
</table>

#### 8 DETECT MALFUNCTIONING PART

Check the following.
- 15A fuse
- Harness for open and short between ECM relay and fuse

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
</table>
| ► | Repair or replace harness or connectors.

EC-591
9 **CHECK ECM RELAY**

1. Apply 12V direct current between ECM relay terminals 1 and 2.
2. Check continuity between ECM relay terminals 3 and 5, 6 and 7.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Continuity</th>
</tr>
</thead>
<tbody>
<tr>
<td>12V direct current supply between terminals 1 and 2</td>
<td>Yes</td>
</tr>
<tr>
<td>OFF</td>
<td>No</td>
</tr>
</tbody>
</table>

OK or NG

- OK ► GO TO 17.
- NG ► Replace ECM relay.

---

10 **CHECK CONDENSER GROUND CIRCUIT FOR OPEN AND SHORT**

1. Turn ignition switch OFF.
2. Check harness continuity between condenser terminal 2 and engine ground. Refer to Wiring Diagram. **Continuity should exist.**
3. Also check harness for short to ground and short to power.

OK or NG

- OK ► GO TO 11.
- NG ► Repair open circuit or short to ground or short to power in harness or connectors.

---

11 **CHECK CONDENSER**

Check resistance between condenser terminals 1 and 2.

Resistance: Above 1MΩ at 25°C (77°F)

OK or NG

- OK ► GO TO 12.
- NG ► Replace condenser.
12 CHECK IGNITION COIL POWER SUPPLY CIRCUIT-V

1. Turn ignition switch OFF.
2. Reconnect harness connectors disconnected.
3. Disconnect ignition coil harness connector.
4. Turn ignition switch ON.
5. Check voltage between ignition coil terminal 3 and ground with CONSULT-II or tester.

<table>
<thead>
<tr>
<th>OK or NG</th>
</tr>
</thead>
<tbody>
<tr>
<td>OK ➔ GO TO 14.</td>
</tr>
<tr>
<td>NG ➔ GO TO 13.</td>
</tr>
</tbody>
</table>

13 DETECT MALFUNCTIONING PART

Check the harness for open or short between ignition coil and harness connector F18.

| ➔ Repair or replace harness or connectors. |

14 CHECK IGNITION COIL GROUND CIRCUIT FOR OPEN AND SHORT

1. Turn ignition switch OFF.
2. Check harness continuity between ignition coil terminal 2 and engine ground. Refer to Wiring Diagram. **Continuity should exist.**
3. Also check harness for short to ground and short to power.

<table>
<thead>
<tr>
<th>OK or NG</th>
</tr>
</thead>
<tbody>
<tr>
<td>OK ➔ GO TO 15.</td>
</tr>
<tr>
<td>NG ➔ Repair open circuit or short to ground or short to power in harness or connectors.</td>
</tr>
</tbody>
</table>
### 15 CHECK IGNITION COIL OUTPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

1. Disconnect ECM harness connector.
2. Check harness continuity between ECM terminals 21, 22, 23, 30, 31, 32 and ignition coil terminal 1. Refer to Wiring Diagram. 
   **Continuity should exist.**
3. Also check harness for short to ground and short to power.

<table>
<thead>
<tr>
<th>OK or NG</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>OK</td>
<td>➤ GO TO 16.</td>
</tr>
<tr>
<td>NG</td>
<td>➤ Repair open circuit or short to ground or short to power in harness or connectors.</td>
</tr>
</tbody>
</table>

### 16 CHECK IGNITION COIL WITH POWER TRANSISTOR

Check resistance between ignition coil terminals 2 and 3.

<table>
<thead>
<tr>
<th>Terminals</th>
<th>Resistance</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 and 3</td>
<td>Not 0Ω</td>
<td>OK</td>
</tr>
<tr>
<td></td>
<td>0Ω</td>
<td>NG</td>
</tr>
</tbody>
</table>

OK or NG

| OK       | ➤ GO TO 17. |
| NG       | ➤ Replace ignition coil with power transistor. |

### 17 CHECK INTERMITTENT INCIDENT

Refer to "TROUBLE DIAGNOSIS FOR INTERMITTENT INCIDENT", [EC-161](#).

➤ INSPECTION END