CONTROL SYSTEM [ZM]

01–40A CONTROL SYSTEM [ZM]

CONTROL SYSTEM COMPONENT
LOCATION INDEX [ZM] .................. 01–40A–2
CONTROL SYSTEM DIAGRAM [ZM] .. 01–40A–4
CONTROL SYSTEM WIRING
DIAGRAM [ZM] ...................... 01–40A–5
PCM REMOVAL/INSTALLATION [ZM] .. 01–40A–7
PCM INSPECTION [ZM] .......... 01–40A–7
PCM Inspection Using the SST
(WDS or equivalent) ................ 01–40A–7
PCM Inspection Using the SST
(104 Pin Breakout Box) .......... 01–40A–12
Inspection Using An Oscilloscope
(Reference) ..................... 01–40A–21
INSPECTION USING AN
OSCILLOSCOPE (REFERENCE) [ZM] 01–40A–25
Purpose ........................... 01–40A–25

MASS AIR FLOW (MAF)/INTAKE AIR
TEMPERATURE (IAT) SENSOR
INSPECTION [ZM] .................. 01–40A–26
MAF Sensor Inspection ............. 01–40A–26
Circuit Open/Short Inspection ... 01–40A–26
IAT Sensor Resistance Inspection .. 01–40A–27
Circuit Open/Short Inspection ... 01–40A–28
THROTTLE POSITION (TP) SENSOR
INSPECTION [ZM] .................. 01–40A–28
Resistance Inspection ............. 01–40A–28
Circuit Open/Short Inspection ... 01–40A–29
THROTTLE POSITION (TP) SENSOR
REMOVAL/INSTALLATION [ZM] .. 01–40A–30
ENGINE COOLANT TEMPERATURE
(ECT) SENSOR
REMOVAL/INSTALLATION [ZM] .. 01–40A–30
ENGINE COOLANT TEMPERATURE
(ECT) SENSOR INSPECTION [ZM] 01–40A–31
ECT Sensor Resistance Inspection .. 01–40A–31
Circuit Open/Short Inspection ... 01–40A–32

CRANKSHAFT POSITION (CKP) SENSOR
INSPECTION [ZM] .................. 01–40A–32
Air Gap Inspection ................ 01–40A–32
Resistance Inspection ............. 01–40A–33
Circuit Open/Short Inspection ... 01–40A–33
CRANKSHAFT POSITION (CKP) SENSOR
ADJUSTMENT [ZM] ................ 01–40A–34
CRANKSHAFT POSITION (CKP) SENSOR
REMOVAL/INSTALLATION [ZM] .. 01–40A–34
PLATE REMOVAL/INSTALLATION
[ZM] .................................. 01–40A–34

CAMS SHAFT POSITION (CMP) SENSOR
REMOVAL/INSTALLATION [ZM] .. 01–40A–35
CAMS SHAFT POSITION (CMP) SENSOR
INSPECTION [ZM] .................. 01–40A–35
Visual Inspection .................. 01–40A–35
Wave profile Inspection ........... 01–40A–35
Circuit Open/Short Inspection ... 01–40A–36
HEATED OXYGEN SENSOR (HO2S)
INSPECTION [ZM] .................. 01–40A–36
HO2S (Front and Rear) Voltage
Inspection ......................... 01–40A–36
HO2S Heater (Front and Rear)
Resistance Inspection ............ 01–40A–37

EGR BOOST SENSOR INSPECTION
[ZM] .................................. 01–40A–38
Circuit Open/Short Inspection ... 01–40A–39

FUEL TANK PRESSURE SENSOR
INSPECTION [ZM] .................. 01–40A–40
Circuit Open/Short Inspection ... 01–40A–41
CLUTCH SWITCH INSPECTION [ZM] 01–40A–41
Circuit Open/Short Inspection ... 01–40A–42
NEUTRAL SWITCH INSPECTION [ZM] .. 01–40A–42
Circuit Open/Short Inspection ... 01–40A–43

POWER STEERING PRESSURE (PSP)
SWITCH INSPECTION [ZM] ........ 01–40A–43
Continuity Inspection ............ 01–40A–43
Circuit Open/Short Inspection ... 01–40A–44
CONTROL SYSTEM [ZM]

CONTROL SYSTEM COMPONENT LOCATION INDEX [ZM]

Engine compartment side

1. PCM
   (See 01-40A-7 PCM REMOVAL/INSTALLATION [ZM])
   (See 01-40A-7 PCM INSPECTION [ZM])

2. Mass air flow (MAF)/intake air temperature (IAT) sensor
   (See 01-40A-26 MASS AIR FLOW (MAF)/INTAKE AIR TEMPERATURE (IAT) SENSOR INSPECTION [ZM])

3. Throttle position (TP) sensor
   (See 01-40A-28 THROTTLE POSITION (TP) SENSOR INSPECTION [ZM])
   (See 01-40A-30 THROTTLE POSITION (TP) SENSOR REMOVAL/INSTALLATION [ZM])

4. Engine coolant temperature (ECT) sensor
   (See 01-40A-30 ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [ZM])
   (See 01-40A-31 ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [ZM])

5. Crankshaft position (CKP) sensor
   (See 01-40A-32 CRANKSHAFT POSITION (CKP) SENSOR INSPECTION [ZM])
   (See 01-40A-34 CRANKSHAFT POSITION (CKP) SENSOR ADJUSTMENT [ZM])
   (See 01-40A-34 CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [ZM])

6. Main relay
   (See 09-21-5 RELAY INSPECTION)

7. Camshaft position (CMP) sensor
   (See 01-40A-35 CAMSHAFT POSITION (CMP) SENSOR removal/INSTALLATION [ZM])
   (See 01-40A-35 CAMSHAFT POSITION (CMP) SENSOR INSPECTION [ZM])

8. Heated oxygen sensor (front)
   (See 01-40A-36 HEATED OXYGEN SENSOR (HO2S) INSPECTION [ZM])

9. Heated oxygen sensor (rear)
   (See 01-40A-36 HEATED OXYGEN SENSOR (HO2S) INSPECTION [ZM])

10. EGR boost sensor
    (See 01-40A-38 EGR BOOST SENSOR INSPECTION [ZM])

11. Clutch switch
    (See 01-40A-41 CLUTCH SWITCH INSPECTION [ZM])
CONTROL SYSTEM [ZM]

| 12 | Neutral switch  
(See 01–40A–42 NEUTRAL SWITCH INSPECTION [ZM]) |
|----|-----------------------------------|
| 13 | Power steering pressure (PSP) switch  
(See 01–40A–43 POWER STEERING PRESSURE (PSP) SWITCH INSPECTION [ZM]) |

Fuel tank side

1. Fuel tank pressure sensor  
(See 01–40A–40 FUEL TANK PRESSURE SENSOR INSPECTION [ZM])
PCM REMOVAL/INSTALLATION [ZM]

1. Disconnect the negative battery cable.
2. Remove the front passenger side scuff plate.
3. Remove the front passenger side trims.
4. Partially peel off the floor covering from the front of the passenger’s side.

**Warning**
- The edge of the PCM plate is sharp. Be careful not to cut yourself when handling the PCM plate.

5. Remove in the order indicated in the table.
6. Install in the reverse order of removal.

**PCM Inspection Using the SST (WDS or equivalent)**

**Note**
- PID for the following parts are not available on this model. Go to the appropriate part inspection page.
  — CMP sensor (See 01–40A–35 CAMSHAFT POSITION (CMP) SENSOR INSPECTION [ZM].)
  — Main relay (See 09–21–5 RELAY INSPECTION.)

1. Connect the WDS or equivalent to the DLC-2. (See 01–02A–8 ON-BOARD DIAGNOSTIC TEST [ZM].)
2. Turn the ignition switch to ON.
3. Measure the value.
   - If the value is not within the specification, follow the instruction in action column.
## CONTROL SYSTEM [ZM]

### PID/DATA MONITOR table (Reference)

<table>
<thead>
<tr>
<th>Monitor item (Definition)</th>
<th>Unit/Condition</th>
<th>Condition/Specification (Reference)</th>
<th>Action</th>
<th>PCM terminal</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCS (A/C relay)</td>
<td>ON/OFF</td>
<td>A/C operating: ON Ignition switch ON: OFF</td>
<td>Inspect following PIDs: RPM, TP, ECT, ACSW Inspect A/C relay (See 09–21–5 RELAY INSPECTION)</td>
<td>96</td>
</tr>
<tr>
<td>ACSW (A/C switch)</td>
<td>ON/OFF</td>
<td>A/C switch and fan switch ON: ON A/C switch OFF: OFF</td>
<td>Inspect A/C switch (See 07–40–11 CLIMATE CONTROL UNIT INSPECTION)</td>
<td>41</td>
</tr>
<tr>
<td>ALTF (Generator field coil control duty value)</td>
<td>%</td>
<td>Ignition switch ON: 0% Idle: 0—100% Generator operating → E/L ON: Duty value rise</td>
<td>Inspect following PIDs: IAT, RPM, VPWR, B+2, ALT V Inspect generator (See 01–17–3 GENERATOR INSPECTION)</td>
<td>53</td>
</tr>
<tr>
<td>ALTT V (Generator output voltage)</td>
<td>V</td>
<td>Ignition switch ON: 0 V Idle: 14—16 V</td>
<td>Inspect following PIDs: IAT, RPM, VPWR, B+2, ALT V Inspect generator (See 01–17–3 GENERATOR INSPECTION)</td>
<td>30</td>
</tr>
<tr>
<td>ARPMDES (Target engine speed)</td>
<td>rpm</td>
<td>Idle (No load): 650—750 rpm</td>
<td>Perform &quot;On-Board Diagnostic Test&quot; (See 01–02A–8 ON-BOARD DIAGNOSTIC TEST [ZM])</td>
<td>—</td>
</tr>
<tr>
<td>BARO (Barometric pressure)</td>
<td>kPa</td>
<td>Below 400 m (0.25 mile) above sea level: 99—103 kPa (29—30 inHg)</td>
<td>Inspect EGR boost sensor (See 01–40A–38 EGR BOOST SENSOR INSPECTION [ZM])</td>
<td>34</td>
</tr>
<tr>
<td>BOO (Brake switch)</td>
<td>ON/OFF</td>
<td>Brake pedal depressed: ON Brake pedal released: OFF</td>
<td>Inspect brake switch (See 04–11–5 BRAKE SWITCH INSPECTION)</td>
<td>92</td>
</tr>
<tr>
<td>B+2 (PCM back-up positive voltage)</td>
<td>V</td>
<td>Constant: B+</td>
<td>Inspect battery (See 01–17–1 BATTERY INSPECTION)</td>
<td>4</td>
</tr>
<tr>
<td>CDCV (Canister drain cut valve)</td>
<td>ON/OFF</td>
<td>Ignition switch ON: OFF Idle: OFF</td>
<td>Inspect CDCV (See 01–16–10 CANISTER DRAIN CUT VALVE (CDCV) INSPECTION)</td>
<td>18</td>
</tr>
<tr>
<td>CPP*2 (Clutch switch)</td>
<td>ON/OFF</td>
<td>Clutch pedal depressed: ON Clutch pedal released: OFF</td>
<td>Inspect clutch switch (See 01–40A–41 CLUTCH SWITCH INSPECTION [ZM])</td>
<td>6</td>
</tr>
<tr>
<td>ECT (Engine coolant temperature)</td>
<td>°C</td>
<td>ECT 20 °C (68 °F): 20 °C (68 °F) ECT 60 °C (140 °F): 20 °C (68 °F)</td>
<td>Inspect ECT sensor (See 01–40A–31 ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [ZM])</td>
<td>38</td>
</tr>
<tr>
<td>EGRCHK (EGR boost sensor solenoid valve)</td>
<td>ON/OFF</td>
<td>Ignition switch ON: OFF Idle: OFF</td>
<td>Inspect EGR boost sensor solenoid valve (See 01–16–17 EGR BOOST SENSOR SOLENOID VALVE INSPECTION)</td>
<td>98</td>
</tr>
<tr>
<td>EVAPCP (Purge solenoid valve duty value)</td>
<td>%</td>
<td>Ignition switch ON: 0% Idle: 0%</td>
<td>Inspect following PIDs: IAT, RPM, ECT, MAF, TP, BARO, O2S11, VPWR Inspect purge solenoid valve (See 01–16–12 PURGE SOLENOID VALVE INSPECTION)</td>
<td>67</td>
</tr>
<tr>
<td>FAN2 (Condenser fan control)</td>
<td>ON/OFF</td>
<td>A/C operated: ON Others: OFF</td>
<td>Inspect following PIDs: RPM, TP, ECT, ACSW, TEST Inspect condenser fan relay (See 09–21–5 RELAY INSPECTION)</td>
<td>45</td>
</tr>
</tbody>
</table>
## CONTROL SYSTEM [ZM]

<table>
<thead>
<tr>
<th>Monitor item (Definition)</th>
<th>Unit/Condition</th>
<th>Condition/Specification (Reference)</th>
<th>Action</th>
<th>PCM terminal</th>
</tr>
</thead>
<tbody>
<tr>
<td>FAN3 (Cooling fan control)</td>
<td>ON/OFF</td>
<td>Cooling fan operating (ECT above 97 °C [207 °F]) or terminal TEN grounded and throttle valve open or A/C relay on: ON Others: OFF</td>
<td>Inspect following PIDs: RPM, TP, ECT, ACSW, TEST Coolant operating fan relay (See 09–21–5 RELAY INSPECTION)</td>
<td>47</td>
</tr>
<tr>
<td>FP (Fuel pump relay)</td>
<td>ON/OFF</td>
<td>Ignition switch ON: OFF Idle: ON Cranking: ON</td>
<td>Inspect following PID: RPM Fuel pump relay (See 09–21–5 RELAY INSPECTION)</td>
<td>80</td>
</tr>
<tr>
<td>FPRC (PRC solenoid valve)</td>
<td>ON/OFF</td>
<td>Ignition switch ON: OFF Idle: OFF After hot start: ON</td>
<td>Inspect PRC solenoid valve (See 01–14–31 PRC SOLENOID VALVE INSPECTION)</td>
<td>95</td>
</tr>
<tr>
<td>FTL V (Fuel tank level signal voltage)</td>
<td>V</td>
<td>Idle condition • Fuel tank full: 1.0—1.5 V • Fuel tank empty: 4.4—4.8 V • Fuel tank half: 2.8—3.4 V Note The voltages above will be measured when the battery positive voltage is between 12V and 14 V.</td>
<td>Inspect fuel gauge sender unit (See 09–22–4 Fuel Gauge)</td>
<td>63</td>
</tr>
<tr>
<td>FTP (Fuel tank pressure)</td>
<td>kPa/inHg</td>
<td>Ignition switch ON: 0—1.0 kPa (0—0.3 inHg) Idle: 0—1.0 kPa (0—0.3 inHg) Note The pressure and output voltage varies according to the fuel temperature.</td>
<td>Inspect fuel tank pressure sensor (See 01–40A–40 FUEL TANK PRESSURE SENSOR INSPECTION [ZM])</td>
<td>62</td>
</tr>
<tr>
<td>FTP1SV</td>
<td>kPa</td>
<td>Perform “DTC INSPECTION”.</td>
<td>(See 01–02A–15 DTC TABLE [ZM])</td>
<td>—</td>
</tr>
<tr>
<td>FTP2SV</td>
<td>kPa</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FUELPW1 (Fuel injection duration)</td>
<td>ms</td>
<td>Ignition switch ON: 0 msec Idle: 2.5—4.0 msec</td>
<td></td>
<td>74, 75, 100, 101</td>
</tr>
<tr>
<td>GEAR (Gear position)</td>
<td>1/2/3/4</td>
<td>1GR: 1 2GR: 2 3GR: 3 4GR: 4</td>
<td>Inspect following PIDs: SSA/SS1, SSB/SS2, SSC/SS3, SSD/SS4, SSE/SS5</td>
<td>1, 27, 82, 99, 102</td>
</tr>
<tr>
<td>HTR11 (HO2S heater (Front))</td>
<td>ON/OFF</td>
<td>Ignition switch ON (engine stopped): OFF Approx. 15 seconds after engine start with ECT 20—30 °C (68—86 °F): ON Others: ON ⇔ OFF</td>
<td>Inspect following PIDs: ECT, MAF Inspect HO2S heater (See 01–40A–37 HO2S Heater (Front and Rear) Resistance Inspection)</td>
<td>94</td>
</tr>
<tr>
<td>HTR12 (HO2S heater (Rear))</td>
<td>ON/OFF</td>
<td>ECT above 70 °C (158 °F): ON HO2S (Rear) heater is malfunctioning: OFF</td>
<td>Inspect following PIDs: ECT, MAF Inspect HO2S heater (See 01–40A–37 HO2S Heater (Front and Rear) Resistance Inspection)</td>
<td>93</td>
</tr>
</tbody>
</table>
## CONTROL SYSTEM [ZM]

<table>
<thead>
<tr>
<th>Monitor Item</th>
<th>Unit/Condition</th>
<th>Condition/Specification (Reference)</th>
<th>Action</th>
<th>PCM terminal</th>
</tr>
</thead>
<tbody>
<tr>
<td>IAC (IAC valve)</td>
<td>%</td>
<td>Ignition switch ON: 0%</td>
<td>Inspect following PIDs: IAT, RPM, ECT, MAF, TP. See 01–13A–7 IDLE AIR CONTROL (IAC) VALVE INSPECTION [ZM]</td>
<td>54, 83</td>
</tr>
<tr>
<td>IAT (Intake air temperature)</td>
<td>°C, °F</td>
<td>IAT 20 °C (68 °F): 20 °C (68 °F)</td>
<td>Inspect IAT sensor. See 01–40A–26 MASS AIR FLOW (MAF)/INTAKE AIR TEMPERATURE (IAT) SENSOR INSPECTION [ZM]</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>V</td>
<td>IAT 20 °C (68 °F): 2.3—2.4 V</td>
<td>Inspect IAT sensor. See 01–40A–26 MASS AIR FLOW (MAF)/INTAKE AIR TEMPERATURE (IAT) SENSOR INSPECTION [ZM]</td>
<td>39</td>
</tr>
<tr>
<td>IMRC (VTCS solenoid valve)</td>
<td>ON/OFF</td>
<td>ECT above 65 °C (149 °F) while idling: OFF</td>
<td>Inspect following PIDs: ECT, RPM, TP. See 01–13A–11 VARIABLE TUMBLE CONTROL SYSTEM (VTCS) SOLENOID VALVE INSPECTION [ZM]</td>
<td>19</td>
</tr>
<tr>
<td>LOAD (Load)</td>
<td>%</td>
<td>Idle: 13—20% (MTX), 14—22% (ATX)</td>
<td>Perform “On-Board Diagnostic Test”. See 01–02A–8 ON-BOARD DIAGNOSTIC TEST [ZM]</td>
<td>—</td>
</tr>
<tr>
<td>LPS*1 (Pressure control solenoid)</td>
<td>A</td>
<td>Change current value according to throttle opening angle</td>
<td>Inspect pressure control solenoid. See 05–17–28 SOLENOID VALVES INSPECTION</td>
<td>44, 81</td>
</tr>
<tr>
<td>MAF (Intake MAF)</td>
<td>g/s</td>
<td>Idle: 1.6—2.2 g/s (MTX), 1.6—2.4 g/s (ATX)</td>
<td>Inspect MAF sensor. See 01–40A–26 MAF Sensor Inspection</td>
<td>88</td>
</tr>
<tr>
<td></td>
<td>V</td>
<td>Ignition switch ON: 0.6—2.0 V</td>
<td>Inspect MAF sensor. See 01–40A–26 MASS AIR FLOW (MAF)/INTAKE AIR TEMPERATURE (IAT) SENSOR INSPECTION [ZM]</td>
<td>88</td>
</tr>
<tr>
<td>MIL (Malfunction indicator light)</td>
<td>ON/OFF</td>
<td>Ignition switch ON: ON DTC output: ON No DTC output: OFF</td>
<td>Inspect MIL</td>
<td>2</td>
</tr>
<tr>
<td>MODE1 (Readiness Function Code)</td>
<td>ON/OFF</td>
<td>RFC exists: ON No RFC: OFF</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>O2S11 (HO2S (Front))</td>
<td>V</td>
<td>Ignition switch ON: 0—1.0 V After warm up: 0—1.0 V Acceleration: 0.5—1.0 V Deceleration: 0—0.5 V</td>
<td>Inspect HO2S. See 01–40A–36 HO2S (Front and Rear) Voltage Inspection</td>
<td>60</td>
</tr>
<tr>
<td>O2S12 (HO2S (Rear))</td>
<td>V</td>
<td>Ignition switch ON: 0—1.0 V Idle (After warm up): 0—1.0 V Idle (Engine cold): 0—0.5 V Accelerate: 0.5—1.0 V Decelerate: 0—0.5 V</td>
<td>Inspect HO2S. See 01–40A–36 HO2S (Front and Rear) Voltage Inspection</td>
<td>35</td>
</tr>
<tr>
<td>PNP*1 (TR switch)</td>
<td>ON/OFF</td>
<td>P or N range: ON Others: OFF</td>
<td>Inspect TR switch. See 05–17–20 TRANSAXLE RANGE (TR SWITCH) INSPECTION</td>
<td>64</td>
</tr>
<tr>
<td>PNP*2 (Neutral switch)</td>
<td>ON/OFF</td>
<td>Shift position at neutral: ON Others: OFF</td>
<td>Inspect neutral switch. See 01–40A–42 NEUTRAL SWITCH INSPECTION [ZM]</td>
<td>64</td>
</tr>
<tr>
<td>PSP (PSP switch)</td>
<td>ON/OFF</td>
<td>Steering wheel is at straight ahead position: OFF Steering wheel is fully turned: ON</td>
<td>Inspect PSP switch. See 01–40A–43 POWER STEERING PRESSURE (PSP) SWITCH INSPECTION [ZM]</td>
<td>31</td>
</tr>
</tbody>
</table>
# CONTROL SYSTEM [ZM]

<table>
<thead>
<tr>
<th>Monitor item (Definition)</th>
<th>Unit/Condition</th>
<th>Condition/Specification (Reference)</th>
<th>Action</th>
<th>PCM terminal</th>
</tr>
</thead>
<tbody>
<tr>
<td>RPM (Engine speed)</td>
<td>rpm</td>
<td>Idle: 650—750 rpm</td>
<td>Inspect CKP sensor (See 01–40A–32 CRANKSHAFT POSITION (CKP) SENSOR INSPECTION [ZM])</td>
<td>21, 22</td>
</tr>
<tr>
<td>SEGRP (EGR valve (stepping motor) position)</td>
<td>step</td>
<td>Ignition switch ON: 0 step Idle: 0 step Cranking: 0—60 steps</td>
<td>Inspect following PIDs: ECT, TP Inspect EGR valve (See 01–16–15 EGR VALVE INSPECTION)</td>
<td>46, 56, 68, 72</td>
</tr>
<tr>
<td>SHRFT/1 (Short fuel trim)</td>
<td>%</td>
<td>Idle: -10—10%</td>
<td>Perform &quot;On-Board Diagnostic Test&quot; (See 01–02A–8 ON-BOARD DIAGNOSTIC TEST [ZM])</td>
<td>—</td>
</tr>
<tr>
<td>SPARKADV (Ignition timing)</td>
<td>BTDC</td>
<td>Idle: BTDC 6—18° Idle (Terminal TEN ground): BTDC 9—11°</td>
<td>Inspect following PIDs: MAF, IAT, RPM, TP, ECT, PSP, PNP, CPP, ACSW, TEST Perform Engine tune-up. (See 01–10A–25 ENGINE TUNE-UP [ZM])</td>
<td>26, 52</td>
</tr>
<tr>
<td>SSA/SS1*1 (Shift solenoid A)</td>
<td>%</td>
<td>Fourth gear: 100% Others: 0%</td>
<td>Inspect shift solenoid A (See 05–17–28 SOLENOID VALVES INSPECTION)</td>
<td>82</td>
</tr>
<tr>
<td>SSB/SS2*1 (Shift solenoid B)</td>
<td>%</td>
<td>First gear: 100% Others: 0%</td>
<td>Inspect shift solenoid B (See 05–17–28 SOLENOID VALVES INSPECTION)</td>
<td>99</td>
</tr>
<tr>
<td>SSC/SS3*1 (Shift solenoid C)</td>
<td>%</td>
<td>First gear: 100% Second gear: 100% N position: ON Others: 0%</td>
<td>Inspect shift solenoid C (See 05–17–28 SOLENOID VALVES INSPECTION)</td>
<td>102</td>
</tr>
<tr>
<td>SSD/SS4*1 (Shift solenoid D)</td>
<td>ON/OFF</td>
<td>P or N position: ON 1 range: ON Others: OFF</td>
<td>Inspect shift solenoid D (See 05–17–28 SOLENOID VALVES INSPECTION)</td>
<td>27</td>
</tr>
<tr>
<td>SSE/SS5*1 (Shift solenoid E)</td>
<td>ON/OFF</td>
<td>TCC operating: ON 1 range: ON Others: OFF</td>
<td>Inspect shift solenoid E (See 05–17–28 SOLENOID VALVES INSPECTION)</td>
<td>1</td>
</tr>
<tr>
<td>TCIL (O/D OFF indicator light)</td>
<td>ON/OFF</td>
<td>O/D OFF mode: ON Others: OFF</td>
<td>Inspect O/D OFF indicator light</td>
<td>43</td>
</tr>
<tr>
<td>TCS (O/D OFF switch)</td>
<td>ON/OFF</td>
<td>O/D OFF switch pressed: ON Others: OFF</td>
<td>Inspect O/D OFF switch (See 05–17–19 O/D OFF SWITCH INSPECTION)</td>
<td>29</td>
</tr>
<tr>
<td>TEST (TEN terminal (DLC))</td>
<td>ON/OFF</td>
<td>Open terminal TEN: OFF Short terminal TEN: ON</td>
<td>Inspect DLC TEN terminal and PCM connector terminal 5</td>
<td>5</td>
</tr>
<tr>
<td>TFT*1 (Transaxle fluid temperature)</td>
<td>°C</td>
<td>TFT 20 °C (68 °F); 20 °C (68 °F)</td>
<td>Inspect TFT sensor (See 05–17–25 TRANSAXLE FLUID TEMPERATURE (TFT) SENSOR INSPECTION)</td>
<td>37</td>
</tr>
<tr>
<td>TFTV*1 (TFT sensor signal voltage)</td>
<td>V</td>
<td>TFT 20 °C (68 °F): 3.4—3.6 V TFT 130 °C (266 °F): 0.4—0.5 V</td>
<td>Inspect TFT sensor (See 05–17–25 TRANSAXLE FLUID TEMPERATURE (TFT) SENSOR INSPECTION)</td>
<td>37</td>
</tr>
<tr>
<td>TPOD*1 (TP)</td>
<td>%</td>
<td>CTP: 0% WOT: 100%</td>
<td>Inspect TP sensor (See 01–40A–28 THROTTLE POSITION (TP) SENSOR INSPECTION [ZM])</td>
<td>89</td>
</tr>
<tr>
<td>TP (TP sensor signal voltage)</td>
<td>V</td>
<td>CTP: 0.1—1.1 V WOT: 3.0—4.6 V</td>
<td>Inspect TP sensor (See 01–40A–28 THROTTLE POSITION (TP) SENSOR INSPECTION [ZM])</td>
<td>89</td>
</tr>
<tr>
<td>TRL*1 (TR switch [1 range])</td>
<td>ON/OFF</td>
<td>1 range: ON Others: OFF</td>
<td>Inspect TR switch (See 05–17–20 TRANSAXLE RANGE (TR) SWITCH INSPECTION)</td>
<td>7</td>
</tr>
<tr>
<td>TROD*1 (TR switch [D range])</td>
<td>ON/OFF</td>
<td>D range: ON Others: OFF</td>
<td>Inspect TR switch (See 05–17–20 TRANSAXLE RANGE (TR) SWITCH INSPECTION)</td>
<td>6</td>
</tr>
</tbody>
</table>
### CONTROL SYSTEM [ZM]

#### PCM Inspection Using the SST (104 Pin Breakout Box)
1. Disconnect the negative battery cable.
2. Disconnect the PCM connector.
3. Connect the SST (104 Pin Breakout Box) to the PCM as shown.
4. Tighten the connector bolt.

**Tightening torque**

7.9—10.7 N·m

{80—110 kgf·m, 69.5—95.4 in·lbf}

5. Connect the negative battery cable.
6. Measure the voltage at each terminal.
   - If any incorrect voltage is detected, inspect the related system(s), wiring harnesses and connector(s) referring to the action column in the terminal voltage table.

#### Terminal voltage table (Reference)

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Signal</th>
<th>Connected to</th>
<th>Test condition</th>
<th>Voltage (V)</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Shift solenoid E control</td>
<td>Shift solenoid E</td>
<td>Idle (P position)</td>
<td>Below 1.0</td>
<td>Inspect shift solenoid E (See 05–17–28 SOLENOID VALVES INSPECTION) Inspect related harness</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 range (1GR)</td>
<td>B+</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>MIL control</td>
<td>MIL (in instrument cluster)</td>
<td>Ignition switch ON</td>
<td>Below 1.0</td>
<td>Inspect MIL Inspect related harness</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Idle</td>
<td>B+</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>4</td>
<td>B+ monitor</td>
<td>Battery</td>
<td>Under any condition</td>
<td>B+</td>
<td>Inspect battery (See 01–17–1 BATTERY INSPECTION) Inspect EGI fuse Inspect related harness</td>
</tr>
</tbody>
</table>
### CONTROL SYSTEM [ZM]

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Signal</th>
<th>Connected to</th>
<th>Test condition</th>
<th>Voltage (V)</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Diagnostic test mode</td>
<td>DLC terminal TEN</td>
<td>Ignition switch ON</td>
<td>B+</td>
<td>• Inspect related harness</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Open terminal TEN</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Short to ground terminal TEN</td>
<td>Below 1.0</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Clutch operation (MTX)</td>
<td>Clutch switch</td>
<td>Clutch pedal depressed</td>
<td>Below 1.0</td>
<td>• Inspect clutch switch (See 01–40A–41 CLUTCH SWITCH INSPECTION [ZM])</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Clutch pedal released</td>
<td>B+</td>
<td>• Inspect related harness</td>
</tr>
<tr>
<td>7</td>
<td>D range (ATX)</td>
<td>TR switch (terminal G)</td>
<td>Ignition switch ON</td>
<td>B+</td>
<td>• Inspect TR switch (See 05–17–20 TRANSAXLE RANGE (TR) SWITCH INSPECTION)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Selector lever is at D range</td>
<td></td>
<td>• Inspect related harness</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Selector lever is at other than D range</td>
<td>Below 1.0</td>
<td></td>
</tr>
<tr>
<td>7*1</td>
<td>1 range</td>
<td>TR switch (terminal E)</td>
<td>Ignition switch ON</td>
<td>B+</td>
<td>• Inspect TR switch (See 05–17–20 TRANSAXLE RANGE (TR) SWITCH INSPECTION)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Selector lever is at 1 range</td>
<td></td>
<td>• Inspect related harness</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Selector lever is at other than 1 range</td>
<td>Below 1.0</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>9*1</td>
<td>2 range</td>
<td>TR switch (terminal F)</td>
<td>Ignition switch ON</td>
<td>B+</td>
<td>• Inspect TR switch (See 05–17–20 TRANSAXLE RANGE (TR) SWITCH INSPECTION)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Selector lever is at 2 range</td>
<td></td>
<td>• Inspect related harness</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Selector lever is at other than 2 range</td>
<td>Below 1.0</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>—</td>
<td>—</td>
<td>—</td>
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<tr>
<td>11</td>
<td>—</td>
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<td>—</td>
</tr>
<tr>
<td>12</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>13</td>
<td>EPROM flashing</td>
<td>DLC-2 terminal FEPS</td>
<td>Because this terminal is for serial communication, good/no good judgment by terminal voltage is not possible.</td>
<td>• Inspect related harness</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
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<tr>
<td>15</td>
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<td>16</td>
<td>—</td>
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<tr>
<td>17</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>18</td>
<td>CDCV control</td>
<td>CDCV</td>
<td>Ignition switch ON</td>
<td>B+</td>
<td>• Inspect CDCV (See 01–16–10 CANISTER DRAIN CUT VALVE (CDCV) INSPECTION)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Diagnosis executed (while on-board device control is carrying out)</td>
<td>Below 1.0</td>
<td>• Inspect related harness</td>
</tr>
<tr>
<td>19</td>
<td>VTCS control</td>
<td>VTCS solenoid valve</td>
<td>ECT above 65 °C (149 °F) while idling</td>
<td>B+</td>
<td>• Inspect VTCS solenoid valve (See 01–13A–11 VARIABLE TUMBLE CONTROL SYSTEM (VTCS) SOLENOID VALVE INSPECTION [ZM])</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ECT below 65 °C (149 °F) and engine speed at 1,500 rpm</td>
<td>Below 1.0</td>
<td>• Inspect related harness</td>
</tr>
<tr>
<td>20</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>
### CONTROL SYSTEM [ZM]

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Signal</th>
<th>Connected to</th>
<th>Test condition</th>
<th>Voltage (V)</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>NE (+)</td>
<td>CKP sensor</td>
<td><strong>Inspect using the wave profile.</strong> (See 01-40A-21 Inspection Using An Oscilloscope (Reference))</td>
<td>•</td>
<td>• Inspect CKP sensor (See 01-40A-32 CRANKSHAFT POSITION (CKP) SENSOR INSPECTION [ZM]) • Inspect related harness</td>
</tr>
<tr>
<td>22</td>
<td>NE (−)</td>
<td>CKP sensor</td>
<td><strong>Inspect using the wave profile.</strong> (See 01-40A-21 Inspection Using An Oscilloscope (Reference))</td>
<td>•</td>
<td>• Inspect CKP sensor (See 01-40A-32 CRANKSHAFT POSITION (CKP) SENSOR INSPECTION [ZM]) • Inspect related harness</td>
</tr>
<tr>
<td>23&lt;sup&gt;*&lt;/sup&gt;</td>
<td>Input/turbine speed (−)</td>
<td>Input/turbine speed sensor</td>
<td><strong>Inspect using the wave profile.</strong> (See 01-40A-21 Inspection Using An Oscilloscope (Reference))</td>
<td>•</td>
<td>• Inspect input/turbine speed sensor (See 05-17-26 INPUT/TURBINE SPEED SENSOR INSPECTION) • Inspect related harness</td>
</tr>
<tr>
<td>24</td>
<td>GND</td>
<td>GND</td>
<td>Under any condition</td>
<td>Below 1.0</td>
<td>• Inspect related harness</td>
</tr>
<tr>
<td>25</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>26</td>
<td>IGT1</td>
<td>Ignition coil (No. 1, 4 cylinders)</td>
<td><strong>Inspect using the wave profile.</strong> (See 01-40A-21 Inspection Using An Oscilloscope (Reference))</td>
<td>•</td>
<td>• Inspect ignition coil (See 01-19-2 IGNITION COIL INSPECTION) • Inspect related harness</td>
</tr>
<tr>
<td>27&lt;sup&gt;*&lt;/sup&gt;</td>
<td>Shift solenoid D control</td>
<td>Shift solenoid D</td>
<td>Idle</td>
<td>Selector lever is at P, N position and 1 range; Others</td>
<td>B+ Below 1.0</td>
</tr>
<tr>
<td>28&lt;sup&gt;*&lt;/sup&gt;</td>
<td>Vehicle speed output</td>
<td>Speedometer (in instrument cluster)</td>
<td><strong>Inspect using the wave profile.</strong> (See 01-40A-21 Inspection Using An Oscilloscope (Reference))</td>
<td>•</td>
<td>• Inspect speedometer (See 09-22-4 Speedometer) • Inspect related harness</td>
</tr>
<tr>
<td>29&lt;sup&gt;*&lt;/sup&gt;</td>
<td>O/D OFF signal</td>
<td>O/D OFF switch</td>
<td>Ignition switch ON/O/D OFF switch pushed/O/D OFF switch released</td>
<td>Below 1.0/B+</td>
<td>• Inspect O/D OFF switch (See 05-17-19 O/D OFF SWITCH INSPECTION) • Inspect related harness</td>
</tr>
<tr>
<td>30</td>
<td>Generator output voltage</td>
<td>Generator (terminal P)</td>
<td><strong>Inspect using the wave profile.</strong> (See 01-40A-21 Inspection Using An Oscilloscope (Reference))</td>
<td>•</td>
<td>• Inspect generator (See 01-17-3 GENERATOR INSPECTION) • Inspect related harness</td>
</tr>
</tbody>
</table>
## CONTROL SYSTEM [ZM]

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Signal</th>
<th>Connected to</th>
<th>Test condition</th>
<th>Voltage (V)</th>
<th>Action</th>
</tr>
</thead>
</table>
| 31       | PSP    | PSP switch   | Ignition switch ON | B+          | • Inspect PSP switch (See 01–40A–43 POWER STEERING PRESSURE (PSP) SWITCH INSPECTION [ZM])
|          |        |              | Steering wheel at straight ahead position | B+          | • Inspect power steering system
|          |        |              | While turning steering wheel | Below 1.0   | • Inspect related harness |

| 32       | R position | TR switch (terminal C) | Ignition switch ON | Selector lever is at R position | B+          | • Inspect TR switch (See 05–17–20 TRANSAXLE RANGE (TR) SWITCH INSPECTION)
|          |            |                    |                   | Selector lever is at other than R position | Below 1.0   | • Inspect related harness |

| 33       | —        | —              | —                | —           | — |

| 34       | BARO/EGR boost | EGR boost sensor | Ignition switch ON (Barometric pressure at 102 kPa (765 mmHg, 30 inHg)) | Approx. 4.0 | • Inspect EGR boost sensor (See 01–40A–38 EGR BOOST SENSOR INSPECTION [ZM])
|          |                |                 |                   |            | • Inspect related harness |

| 35       | Catalytic converter efficiency | HO2S (Rear) | Ignition switch ON | Engine cold | Approx. 0 |
|          |                                 |              |                   | After warm up | 0.1—0.9 |
|          |                                 | Idle        |                   |              | |

| 36       | —        | —              | —                | —           | — |

| 37       | TFT      | TFT sensor    | Ignition switch ON | TFT 20 °C (68 °F) | 3—4 | • Inspect TFT sensor (See 05–17–25 TRANSAXLE FLUID TEMPERATURE (TFT) SENSOR INSPECTION)
|          |          |              |                   | TFT 130 °C (266 °F) | 0.2—0.7 | • Inspect related harness |

| 38       | ECT      | ECT sensor    | Ignition switch ON | ECT 20 °C (68 °F) | 2.9—3.1 | • Inspect ECT sensor (See 01–40A–31 ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [ZM])
|          |          |              |                   | After warm up | 0.2—1.0 | • Inspect related harness |

| 39       | IAT      | IAT sensor (integrated with MAF sensor) | Ignition switch ON | IAT 20 °C (68 °F) | 2.3—2.4 | • Inspect IAT sensor (See 01–40A–27 IAT Sensor Resistance Inspection)
|          |          |              |                   | IAT 30 °C (86 °F) | 1.7—1.9 | • Inspect related harness |

| 40       | —        | —              | —                | —           | — |

| 41       | A/C on signal | Refrigerant pressure switch | Idle | A/C switch and fan switch on | Below 1.0 | • Inspect A/C switch (See 07–40–9 REFRIGERANT PRESSURE SWITCH INSPECTION)
|          |              |                    |     | A/C switch off | B+ | • Inspect related harness |

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**01–40A–15**
### CONTROL SYSTEM [ZM]

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Signal</th>
<th>Connected to</th>
<th>Test condition</th>
<th>Voltage (V)</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>42</td>
<td>Generator warning light control</td>
<td>Generator warning light (in instrument cluster)</td>
<td>Ignition switch ON</td>
<td>Below 1.0</td>
<td>• Inspect generator warning light&lt;br&gt;• Inspect related harness</td>
</tr>
<tr>
<td>43&lt;sup&gt;1&lt;/sup&gt;</td>
<td>O/D OFF indicator light signal</td>
<td>O/D OFF indicator light</td>
<td>Ignition switch ON&lt;br&gt;O/D OFF indicator light illuminates&lt;br&gt;O/D OFF indicator light does not illuminate</td>
<td>B+</td>
<td>• Inspect O/D OFF indicator light&lt;br&gt;• Inspect related harness</td>
</tr>
<tr>
<td>44&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Pressure control solenoid control (+)</td>
<td>Pressure control solenoid</td>
<td></td>
<td></td>
<td>• Inspect using the wave profile.&lt;br&gt;(See 01–40A–21 Inspection Using An Oscilloscope (Reference))&lt;br&gt;• Inspect pressure control solenoid&lt;br&gt;(See 05–17–28 SOLENOID VALVES INSPECTION)&lt;br&gt;• Inspect related harness</td>
</tr>
<tr>
<td>45</td>
<td>Condenser fan control</td>
<td>Condenser fan relay</td>
<td>Ignition switch ON&lt;br&gt;Idle&lt;br&gt;Condenser fan operating&lt;br&gt;Others</td>
<td>B+&lt;br&gt;B+&lt;br&gt;B+&lt;br&gt;B+</td>
<td>• Inspect condenser fan relay&lt;br&gt;(See 09–21–5 RELAY INSPECTION)&lt;br&gt;• Inspect related harness</td>
</tr>
<tr>
<td>46</td>
<td>EGR valve #3 coil control</td>
<td>EGR valve (terminal B)</td>
<td>Ignition switch ON&lt;br&gt;Idle</td>
<td>B+&lt;br&gt;B+</td>
<td>• Inspect EGR valve&lt;br&gt;(See 01–16–15 EGR VALVE INSPECTION)&lt;br&gt;• Inspect related harness</td>
</tr>
<tr>
<td>47</td>
<td>Cooling fan control</td>
<td>Cooling fan relay</td>
<td>Ignition switch ON&lt;br&gt;Idle&lt;br&gt;Cooling fan operating&lt;br&gt;Others</td>
<td>B+&lt;br&gt;B+&lt;br&gt;B+&lt;br&gt;B+</td>
<td>• Inspect cooling fan relay&lt;br&gt;(See 09–21–5 RELAY INSPECTION)&lt;br&gt;• Inspect related harness</td>
</tr>
<tr>
<td>48</td>
<td>Engine speed</td>
<td>Tachometer (in instrument cluster, DLC terminal IG–)</td>
<td></td>
<td></td>
<td>• Inspect using the wave profile.&lt;br&gt;(See 01–40A–21 Inspection Using An Oscilloscope (Reference))&lt;br&gt;• Inspect tachometer&lt;br&gt;(See 09–22–4 Tachometer)&lt;br&gt;• Inspect related harness</td>
</tr>
<tr>
<td>49</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>50</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>51</td>
<td>GND</td>
<td>GND</td>
<td>Under any condition</td>
<td>Below 1.0</td>
<td>• Inspect related harness</td>
</tr>
<tr>
<td>52</td>
<td>IGT2</td>
<td>Ignition coil (No. 2, 3 cylinders)</td>
<td></td>
<td></td>
<td>• Inspect using the wave profile.&lt;br&gt;(See 01–40A–21 Inspection Using An Oscilloscope (Reference))&lt;br&gt;• Inspect ignition coil&lt;br&gt;(See 01–18–2 IGNITION COIL INSPECTION)&lt;br&gt;• Inspect related harness</td>
</tr>
<tr>
<td>53</td>
<td>Generator field coil control</td>
<td>Generator (terminal D)</td>
<td></td>
<td></td>
<td>• Inspect using the wave profile.&lt;br&gt;(See 01–40A–21 Inspection Using An Oscilloscope (Reference))&lt;br&gt;• Inspect generator&lt;br&gt;(See 01–17–3 GENERATOR INSPECTION)&lt;br&gt;• Inspect related harness</td>
</tr>
<tr>
<td>54</td>
<td>IAC (+)</td>
<td>IAC valve</td>
<td>Ignition switch ON&lt;br&gt;Idle (After warm up and E/L off)</td>
<td>B+</td>
<td>• Inspect IAC valve&lt;br&gt;(See 01–13A–7 IDLE AIR CONTROL (IAC) VALVE INSPECTION [ZM])&lt;br&gt;• Inspect related harness</td>
</tr>
</tbody>
</table>

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**01–40A–16**
## CONTROL SYSTEM [ZM]

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Signal</th>
<th>Connected to</th>
<th>Test condition</th>
<th>Voltage (V)</th>
<th>Action</th>
</tr>
</thead>
</table>
| 55       | Back-up power supply | Battery (positive terminal) | Under any condition | B+ | • Inspect battery (See 01–17–1 BATTERY INSPECTION)  
• Inspect EGI fuse  
• Inspect related harness |
| 56       | EGR valve #4 coil control | EGR valve (terminal F) | Ignition switch ON | Below 1.0 | • Inspect EGR valve (See 01–16–15 EGR VALVE INSPECTION)  
• Inspect related harness |
| 57       | —      | —            | —              | —           | —      |
| 58       | Vehicle speed | Speedometer (MTX) | Connectors     | —           | —      |
|          | VSS (ATX) | • Inspect using the wave profile. (See 01–40A–21 Inspection Using An Oscilloscope (Reference)) | — | — | — |
| 59       | —      | —            | —              | —           | —      |
| 60       | HO2S (Front) | HO2S (Front) | Ignition switch ON | 0—1.0 | • Inspect HO2S (Front) (See 01–40A–36 HO2S (Front and Rear) Voltage Inspection)  
• Inspect related harness |
|          |        | Idle         | 0—1.0 | — | — |
|          |        | Acceleration | 0.5—1.0 | — | — |
|          |        | Deceleration | 0—0.5 | — | — |
| 61       | —      | —            | —              | —           | —      |
| 62       | Fuel tank pressure | Fuel tank pressure sensor | Ignition switch ON | Approx. 2.5 | • Inspect fuel tank pressure sensor (See 01–40A–40 FUEL TANK PRESSURE SENSOR INSPECTION [ZM])  
• Inspect related harness |
|          |        | Fuel tank pressure 0 kPa | 0 mmHg, 0 inHg | — | — |
|          |        | Fuel tank pressure 1 kPa | 7.5 mmHg, 0.3 inHg | — | — |
| 63       | Fuel tank level | Fuel gauge sender unit | Full fuel | 0.2—0.5 | • Inspect fuel gauge sender unit (See 09–22–4 Fuel Gauge)  
• Inspect related harness |
|          |        | Half fuel    | 2.0—2.8 | — | — |
|          |        | Empty fuel   | 3.4—4.4 | — | — |
| 64       | Neutral position (MTX) | Neutral switch | Shift lever is at neutral position | Below 1.0 | • Inspect neutral switch (See 01–40A–42 NEUTRAL SWITCH INSPECTION [ZM])  
• Inspect related harness |
|          |        | Shift lever is not at neutral position | B+ | — | — |
| 65       | Load/no load signal (ATX) | TR switch (terminal H) | Ignition switch ON | B+ | • Inspect TR switch (See 01–17–20 TRANSAXLE RANGE (TR) SWITCH INSPECTION)  
• Inspect related harness |
<p>| 66       | —      | —            | —              | —           | —      |</p>
<table>
<thead>
<tr>
<th>Terminal</th>
<th>Signal</th>
<th>Connected to</th>
<th>Test condition</th>
<th>Voltage (V)</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>67</td>
<td>Purge control</td>
<td>Purge solenoid valve</td>
<td>Ignition switch ON</td>
<td>Below 1.0</td>
<td>• Inspect purge solenoid valve (See 01–16–12 PURGE SOLENOID VALVE INSPECTION)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Idle</td>
<td>Below 1.0</td>
<td>• Inspect related harness</td>
</tr>
<tr>
<td>68</td>
<td>EGR valve #1 coil control</td>
<td>EGR valve (terminal E)</td>
<td>Ignition switch ON</td>
<td>Below 1.0</td>
<td>• Inspect EGR valve (See 01–16–15 EGR VALVE INSPECTION)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Idle</td>
<td>Below 1.0</td>
<td>• Inspect related harness</td>
</tr>
<tr>
<td>69</td>
<td></td>
<td></td>
<td>Ignition switch ON</td>
<td>B+</td>
<td>• Inspect main relay (See 09–21–5 RELAY INSPECTION)</td>
</tr>
<tr>
<td>70</td>
<td></td>
<td></td>
<td>Ignition switch ON</td>
<td>Below 1.0</td>
<td>• Inspect EGR valve (See 01–16–15 EGR VALVE INSPECTION)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Idle</td>
<td>B+</td>
<td>• Inspect related harness</td>
</tr>
<tr>
<td>71</td>
<td>Power supply</td>
<td>Main relay</td>
<td>Ignition switch ON</td>
<td>B+</td>
<td>• Inspect fuel injector No.3 (See 01–14–24 FUEL INJECTOR INSPECTION)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Ignition switch ON</td>
<td>B+</td>
<td>• Inspect fuel injector No.3 (See 01–14–24 FUEL INJECTOR INSPECTION)</td>
</tr>
<tr>
<td>72</td>
<td>EGR valve #2 coil control</td>
<td>EGR valve (terminal A)</td>
<td>Ignition switch ON</td>
<td>B+</td>
<td>• Inspect fuel injector No.1 (See 01–14–24 FUEL INJECTOR INSPECTION)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Idle</td>
<td>B+</td>
<td>• Inspect related harness</td>
</tr>
<tr>
<td>73</td>
<td></td>
<td></td>
<td>Ignition switch ON</td>
<td>B+</td>
<td>• Inspect fuel injector No.3 (See 01–14–24 FUEL INJECTOR INSPECTION)</td>
</tr>
<tr>
<td>74</td>
<td>Fuel injection (#3)</td>
<td>Fuel injector No.3</td>
<td>Ignition switch ON</td>
<td>B+</td>
<td>• Inspect fuel injector No.3 (See 01–14–24 FUEL INJECTOR INSPECTION)</td>
</tr>
<tr>
<td>75</td>
<td>Fuel injection (#1)</td>
<td>Fuel injector No.1</td>
<td>Ignition switch ON</td>
<td>B+</td>
<td>• Inspect fuel injector No.1 (See 01–14–24 FUEL INJECTOR INSPECTION)</td>
</tr>
<tr>
<td>76</td>
<td>GND</td>
<td>GND</td>
<td>Under any condition</td>
<td>Below 1.0</td>
<td>• Inspect related harness</td>
</tr>
<tr>
<td>77</td>
<td>GND</td>
<td>GND</td>
<td>Under any condition</td>
<td>Below 1.0</td>
<td>• Inspect related harness</td>
</tr>
<tr>
<td>78</td>
<td></td>
<td></td>
<td>Ignition switch ON</td>
<td>B+</td>
<td>• Inspect fuel pump relay (See 09–21–5 RELAY INSPECTION)</td>
</tr>
<tr>
<td>79</td>
<td>K-LINE (serial communication)</td>
<td>DLC terminal KLN</td>
<td>Ignition switch ON</td>
<td>B+</td>
<td>• Inspect fuel pump relay (See 09–21–5 RELAY INSPECTION)</td>
</tr>
<tr>
<td>80</td>
<td>Fuel pump control</td>
<td>Fuel pump relay</td>
<td>Ignition switch ON</td>
<td>B+</td>
<td>• Inspect fuel pump relay (See 09–21–5 RELAY INSPECTION)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Cranking</td>
<td>Below 1.0</td>
<td>• Inspect related harness</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Idle</td>
<td>Below 1.0</td>
<td>• Inspect related harness</td>
</tr>
<tr>
<td>81*1</td>
<td>Pressure control solenoid</td>
<td>Pressure control solenoid</td>
<td>Ignition switch ON</td>
<td>B+</td>
<td>• Inspect pressure control solenoid (See 05–17–28 SOLENOID VALVES INSPECTION)</td>
</tr>
<tr>
<td></td>
<td>(control)</td>
<td></td>
<td>Idle</td>
<td>B+</td>
<td>• Inspect related harness</td>
</tr>
</tbody>
</table>

**Terminal Signal Connected to Test condition Voltage (V) Action**

- **Terminal: 01–40A–18**
## CONTROL SYSTEM [ZM]

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Signal</th>
<th>Connected to</th>
<th>Test condition</th>
<th>Voltage (V)</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>82</td>
<td>Shift solenoid A</td>
<td>Shift solenoid A</td>
<td>• Inspect using the wave profile. (See 01–40A–21 Inspection Using An Oscilloscope (Reference))</td>
<td>• Inspect shift solenoid A (See 05–17–28 SOLENOID VALVES INSPECTION)</td>
<td>• Inspect related harness</td>
</tr>
<tr>
<td></td>
<td>control</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>83</td>
<td>IAC (-)</td>
<td>IAC valve</td>
<td>• Inspect using the wave profile. (See 01–40A–21 Inspection Using An Oscilloscope (Reference))</td>
<td>• Inspect IAC valve (See 01–13A–7 IDLE AIR CONTROL (IAC) VALVE INSPECTION [ZM])</td>
<td>• Inspect related harness</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>84</td>
<td>Input/turbine</td>
<td>Input/turbine</td>
<td>• Inspect using the wave profile. (See 01–40A–21 Inspection Using An Oscilloscope (Reference))</td>
<td>• Inspect input/turbine speed sensor (See 05–17–26 INPUT/TURBINE SPEED SENSOR INSPECTION)</td>
<td>• Inspect related harness</td>
</tr>
<tr>
<td></td>
<td>speed (+)</td>
<td>speed sensor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>85</td>
<td>SGC</td>
<td>CMP sensor</td>
<td>• Inspect using the wave profile. (See 01–40A–21 Inspection Using An Oscilloscope (Reference))</td>
<td>• Inspect CMP sensor (See 01–40A–35 CAMSHAFT POSITION (CMP) SENSOR INSPECTION [ZM])</td>
<td>• Inspect related harness</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>86</td>
<td>—</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>87</td>
<td>—</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>88</td>
<td>MAF</td>
<td>MAF sensor</td>
<td>Ignition switch ON</td>
<td>0.9—2.0</td>
<td>• Inspect MAF sensor (See 01–40A–28 MASS AIR FLOW (MAF)/INTAKE AIR TEMPERATURE (IAT) SENSOR INSPECTION [ZM])</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Idle</td>
<td>1.7—2.4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>89</td>
<td>Throttle position</td>
<td>TP sensor</td>
<td>Ignition switch ON</td>
<td>CTP</td>
<td>0.1—1.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>WOT</td>
<td>3.0—4.6</td>
</tr>
<tr>
<td>90</td>
<td>Constant voltage</td>
<td>TP sensor, EGR boost sensor, Fuel tank pressure sensor</td>
<td>Ignition switch ON</td>
<td>Approx. 5.0</td>
<td>• Inspect related harness</td>
</tr>
<tr>
<td></td>
<td>(Vref)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>91</td>
<td>Sensor GND</td>
<td>ECT sensor, IAT sensor, EGR boost sensor, Fuel tank pressure sensor, TP sensor, HO2S (Front, Rear), TFT sensor</td>
<td>Under any condition</td>
<td>Below 1.0</td>
<td>• Inspect related harness</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>92</td>
<td>Brake</td>
<td>Brake switch</td>
<td>Brake pedal depressed</td>
<td>B±</td>
<td>• Inspect brake switch (See 04–11–5 BRAKE SWITCH INSPECTION)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Brake pedal released</td>
<td>Below 1.0</td>
<td></td>
</tr>
</tbody>
</table>
### CONTROL SYSTEM [ZM]

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Signal Description</th>
<th>Connected to</th>
<th>Test condition</th>
<th>Voltage (V)</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>93</td>
<td>HO2S (Rear) heater control</td>
<td>HO2S (Rear)</td>
<td>Idle</td>
<td>ECT above 70°C (158 °F)</td>
<td>B+</td>
</tr>
<tr>
<td>94</td>
<td>HO2S (Front) heater control</td>
<td>HO2S (Front)</td>
<td>Ignition switch ON (engine stopped)</td>
<td>B+</td>
<td>• Inspect HO2S (Front) heater (See 01–40A–37 HO2S Heater (Front and Rear) Resistance Inspection) • Inspect related harness</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Approx. 15 seconds after engine start with ECT 20—30°C (68—86 °F)</td>
<td>Below 1.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Others</td>
<td>Below 1.0 =&gt; B+</td>
<td></td>
</tr>
<tr>
<td>95</td>
<td>PRC solenoid valve</td>
<td>PRC solenoid valve</td>
<td>Ignition switch ON</td>
<td>B+</td>
<td>• Inspect PRC solenoid valve (See 01–14–31 PRC SOLENOID VALVE INSPECTION) • Inspect related harness</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>After hot start</td>
<td>Below 1.0</td>
<td></td>
</tr>
<tr>
<td>96</td>
<td>A/C control</td>
<td>A/C relay</td>
<td>Idle</td>
<td>A/C switch on &amp; fan switch on</td>
<td>Below 1.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>A/C switch off</td>
<td>B+</td>
<td></td>
</tr>
<tr>
<td>97</td>
<td>Power supply</td>
<td>Main relay</td>
<td>Ignition switch ON</td>
<td>B+</td>
<td>• Inspect main relay (See 09–21–5 RELAY INSPECTION) • Inspect related harness</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Ignition switch OFF</td>
<td>Below 1.0</td>
<td></td>
</tr>
<tr>
<td>98</td>
<td>EGR boost sensor switching control</td>
<td>EGR boost solenoid valve</td>
<td>Ignition switch ON</td>
<td>B+</td>
<td>• Inspect EGR boost solenoid valve (See 01–16–17 EGR BOOST SENSOR SOLENOID VALVE INSPECTION) • Inspect related harness</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Idle</td>
<td>B+</td>
<td></td>
</tr>
<tr>
<td>99†</td>
<td>Shift solenoid B control</td>
<td>Shift solenoid B</td>
<td>• Inspect using the wave profile. (See 01–40A–21 Inspection Using An Oscilloscope (Reference))</td>
<td>• Inspect shift solenoid B (See 05–17–28 SOLENOID VALVES INSPECTION) • Inspect related harness</td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>Fuel injection (#4)</td>
<td>Fuel injector No.4</td>
<td>• Inspect using the wave profile. (See 01–40A–21 Inspection Using An Oscilloscope (Reference))</td>
<td>• Inspect fuel injector No.4 (See 01–14–24 FUEL INJECTOR INSPECTION) • Inspect related harness</td>
<td></td>
</tr>
<tr>
<td>101</td>
<td>Fuel injection (#2)</td>
<td>Fuel injector No.2</td>
<td>• Inspect using the wave profile. (See 01–40A–21 Inspection Using An Oscilloscope (Reference))</td>
<td>• Inspect fuel injector No.2 (See 01–14–24 FUEL INJECTOR INSPECTION) • Inspect related harness</td>
<td></td>
</tr>
</tbody>
</table>
**CONTROL SYSTEM [ZM]**

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Signal</th>
<th>Connected to</th>
<th>Test condition</th>
<th>Voltage (V)</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>102*1</td>
<td>Shift solenoid C</td>
<td>Shift solenoid C</td>
<td></td>
<td></td>
<td>• Inspect using the wave profile. (See 01–40A–21 Inspection Using An Oscilloscope (Reference))</td>
</tr>
<tr>
<td>103</td>
<td>GND</td>
<td>GND</td>
<td>Under any condition</td>
<td>Below 1.0</td>
<td>• Inspect related harness</td>
</tr>
<tr>
<td>104</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

*1: ATX only

**Inspection Using An Oscilloscope (Reference)**

- **Ne signal**
  - PCM terminal: 21(+)-22(-)
  - Oscilloscope setting: 2 V/DIV(Y), 2ms/DIV(X), AC range
  - Vehicle condition: idle after warm up

- **IGT signal**
  - PCM terminal: — IGT1: 26(+)-103(-) — IGT2: 52(+)-103(-)
  - Oscilloscope setting: 1 V/DIV(Y), 10ms/DIV(X), DC range
  - Vehicle condition: idle after warm up

- **Input/turbine speed signal**
  - PCM terminal: 84(+)-23(-)
  - Oscilloscope setting: 0.4 V/DIV(Y), 2.5 ms/DIV(X), DC range
  - Vehicle condition: idle after warm up
CONTROL SYSTEM [ZM]

Generator output voltage signal
- PCM terminal: 30(+)-103(-)
- Oscilloscope setting: 2 V/DIV(Y), 5 ms/DIV(X), DC range
- Vehicle condition: idle after warm up

Pressure control solenoid control signal
- CTP
  - PCM terminal: 80(+)-103(-)
  - Oscilloscope setting: 0.5 V/DIV(Y), 0.1 ms/DIV(X), DC range
  - Vehicle condition: ignition key at ON (Engine OFF) and closed throttle position.

- WOT
  - PCM terminal: 81(+)-103(-)
  - Oscilloscope setting: 0.5 V/DIV(Y), 0.1 ms/DIV(X), DC range
  - Vehicle condition: ignition key at ON (Engine OFF) and wide open throttle

Engine speed signal
- PCM terminal: 48(+)-103(-)
- Oscilloscope setting: 2 V/DIV(Y), 20 ms/DIV(X), DC range
- Vehicle condition: idle after warm up

01–40A–22
CONTROL SYSTEM [ZM]

Generator field coil control signal
- PCM terminal: 53(+)-103(-)
- Oscilloscope setting: 0.2 V/DIV(Y), 2ms/DIV(X), DC range
- Vehicle condition: idle after warm up

Vehicle speed signal
- PCM terminal: 58(+)-103(-)
- Oscilloscope setting: 1 V/DIV(Y), 2.5 ms/DIV(X), DC range
- Vehicle condition: drive the vehicle with 32 km/h [20 mph]

Purge control signal
- PCM terminal: 67(+)-103(-)
- Oscilloscope setting: 4 V/DIV(Y), 20 ms/DIV(X), DC range
- Vehicle condition: idle after warm up

Fuel injection signal
- PCM terminal
  - No.1:75(+)-103(-)
  - No.2:101(+)-103(-)
  - No.3:74(+)-103(-)
  - No.4:100(+)-103(-)
- Oscilloscope setting: 2 V/DIV(Y), 5 ms/DIV(X), DC range
- Vehicle condition: idle after warm up
CONTROL SYSTEM [ZM]

Shift solenoid A control
- PCM terminal: 82(+)-103(-)
- Oscilloscope setting: 5 V/DIV(Y), 5 ms/DIV(X), DC range
- Vehicle condition: drive in the 4th gear

IAC signal
- PCM terminal: 83(+)-103(-)
- Oscilloscope setting: 2 V/DIV(Y), 0.5 ms/DIV(X), DC range
- Vehicle condition: idle after warm up

SGC signal
- PCM terminal: 85(+)-103(-)
- Oscilloscope setting: 2 V/DIV(Y), 20 ms/DIV(X), DC range
- Vehicle condition: idle after warm up

Shift solenoid B control signal
- PCM terminal: 99(+)-103(-)
- Oscilloscope setting: 5 V/DIV(Y), 5 ms/DIV(X), DC range
- Vehicle condition: Drive in D range, 1st gear
CONTROL SYSTEM [ZM]

Shift solenoid C control signal
- PCM terminal: 102(+)-103(-)
- Oscilloscope setting: 5 V/DIV(Y), 5 ms/DIV(X), DC range
- Vehicle condition: Drive in 1st or 2nd gear

INSPECTION USING AN OSCILLOSCOPE (REFERENCE) [ZM]

Note
- “INSPECTION USING AN OSCILLOSCOPE (REFERENCE)” is a general inspection for the following output devices.
  - Fuel injector
  - Purge solenoid valve
  - PRC solenoid valve
  - VTCS solenoid valve
  - EGR boost sensor solenoid valve

Purpose
1. The use of oscilloscope makes the inspection of a part such as a stuck solenoid valve possible without actually removing parts.

When normal
1. Counter electromotive voltage A, generated when the three-way solenoid valve or the fuel injector is turned off from on, shows irregular convergence because induced electromotive voltage B, generated by the plunger return operation, is added to it.
When plunger stuck
1. When the plunger is stuck, pulse convergence is smooth because no induced electromotive voltage B is generated.

MASS AIR FLOW (MAF)/INTAKE AIR TEMPERATURE (IAT) SENSOR INSPECTION [ZM]

Note
• Perform the following test only when directed.

MAF Sensor Inspection
1. Visually inspect for damage, cracks, terminal bends and terminal rust on the MAF sensor.
   • If any of the above are found, replace the MAF sensor.
   • If the MAF sensor PID value or PCM terminal 88 voltage are out of specification, carry out the “Circuit Open/Short Inspection”.

Circuit Open/Short Inspection
1. Disconnect the PCM connector. (See 01–40A–7 PCM REMOVAL/INSTALLATION [ZM].)
2. Connect the SST (104 Pin Breakout Box) to the PCM as shown.
3. Tighten the connector attaching screw.

   Tightening torque
   7.9—10.7 N·m
   {80—110 kgf·cm, 69.5—95.4 in-lbf}

4. Inspect for an open or short circuit in the following wiring harnesses by probing the applicable sensor and SST (104 Pin Breakout Box) terminals with ohmmeter leads.
   • If there is an open or short circuit, repair or replace wiring harnesses.
   • If there is no open or short circuit, replace the MAF sensor.

Open circuit
• MAF signal circuit (MAF sensor connector terminal C and PCM connector terminal 88)
• Power circuit (MAF sensor connector terminal A and main relay terminal D through common connector)
• GND circuit (MAF sensor connector terminal B and PCM connector terminal 77 through common connector)

Short circuit
• MAF signal circuit (MAF sensor connector terminal C and PCM connector terminal 88 to GND)
• Power circuit (MAF sensor connector terminal A and main relay terminal D through common connector to GND)

5. Reconnect the MAF sensor connector.

Note
• The scan tool shows the MAF rate and load value.
CONTROL SYSTEM [ZM]

Specification

<table>
<thead>
<tr>
<th>Intake MAF (g/s)</th>
<th>Engine load calculated value (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MTX</td>
</tr>
<tr>
<td>Idle*1</td>
<td>1.6—2.2</td>
</tr>
<tr>
<td>Engine speed 2,500 rpm*2</td>
<td>5.1—6.5</td>
</tr>
</tbody>
</table>

*1: 650—750 rpm
*2: No load, neutral or P position

IAT Sensor Resistance Inspection

1. Disconnect the MAF sensor connector.
2. Measure the resistance between MAF sensor terminals D and E using an ohmmeter.
   - If not as specified, replace the MAF sensor.
   - If IAT sensor is okay, but PID value or PCM terminal 39 voltage are out of specification, carry out the “Circuit Open/Short Inspection”.

Specification

<table>
<thead>
<tr>
<th>Ambient temperature (°C (°F))</th>
<th>Resistance (kilohm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 (50)</td>
<td>3.1—4.4</td>
</tr>
<tr>
<td>20 (68)</td>
<td>2.2—2.7</td>
</tr>
<tr>
<td>30 (86)</td>
<td>1.4—1.9</td>
</tr>
</tbody>
</table>

IAT sensor signal characteristic (reference)

![Graph of IAT sensor signal characteristic](image)
**CONTROL SYSTEM [ZM]**

**Circuit Open/Short Inspection**

1. Remove the PCM. (See 01–40A–7 PCM REMOVAL/INSTALLATION [ZM].)
2. Connect the SST (104 Pin Breakout Box) to the PCM as shown.
3. Tighten the connector attaching screw.

   **Tightening torque**
   7.9—10.7 N·m
   {80—110 kgf·cm, 69.5—95.4 in·lbf}

4. Inspect for an open or short circuit in the following wiring harnesses by probing the applicable sensor and SST (104 Pin Breakout Box) terminals with ohmmeter leads.
   - If there is an open or short circuit, repair or replace wiring harnesses.
   - If there is no open or short circuit, replace the MAF sensor.

   **Open circuit**
   - IAT signal circuit (MAF sensor connector terminal D and PCM connector terminal 39)
   - GND circuit (MAF sensor connector terminal E and PCM connector terminal 91 through common connector)

   **Short circuit**
   - IAT signal circuit (MAF sensor connector terminal D and PCM connector terminal 39 to GND)

5. Reconnect the sensor connector.

---

**THROTTLE POSITION (TP) SENSOR INSPECTION [ZM]**

**Note**
- The TP sensor on this type of vehicle is a maintenance-free type.
- Perform the following test only when directed.

**Resistance Inspection**

1. Verify that the throttle valve is at CTP.
2. Inspect accelerator cable free play. (See 01–13A–13 ACCELERATOR CABLE INSPECTION/ADJUSTMENT [ZM].)
3. Measure the resistance between TP sensor terminals A and C using an ohmmeter.
   - If not as specified, replace the TP sensor.
   - If as specified, but PID value or PCM terminal 89 voltage is out of specification, carry out the "Circuit Open/Short Inspection".

**Specification**
- 2.5—6 kilohms
Circuit Open/Short Inspection

1. Remove the PCM. (See 01–40A–7 PCM REMOVAL/INSTALLATION [ZM].)
2. Connect the SST (104 Pin Breakout Box) to the PCM as shown.
3. Tighten the connector attaching screw.

   **Tightening torque**
   7.9—10.7 N·m
   (80—110 kgf·cm, 69.5—95.4 in·lbf)

4. Inspect for an open or short circuit in the following wiring harnesses by probing the applicable sensor and SST (104 Pin Breakout Box) terminals with ohmmeter leads.
   - If there is an open or short circuit, repair or replace wiring harnesses.
   - If there is no open or short circuit, replace the TP sensor.

   **Open circuit**
   - Constant voltage circuit (TP sensor connector terminal A and PCM connector terminal 90)
   - TP signal circuit (TP sensor connector terminal C and PCM connector terminal 89)
   - GND circuit (TP sensor connector terminal B and PCM connector terminal 91)

   **Short circuit**
   - Constant voltage circuit (TP sensor connector terminal A and PCM connector terminal 90 to GND)
   - TP signal circuit (TP sensor connector terminal C and PCM connector terminal 89 to GND)

5. Reconnect the TP sensor connector.
THROTTLE POSITION (TP) SENSOR REMOVAL/INSTALLATION [ZM]

1. Disconnect the TP sensor connector.
2. Remove the TP sensor screws.
3. Remove the TP sensor from the throttle body.
4. Verify that the throttle valve is fully closed.
5. Install the TP sensor to the throttle body.
6. Tighten the TP sensor screws.

**Tightening torque**
1.6—2.3 N·m (16—24 kgf·cm, 14—20 in·lbf)

7. Verify that the throttle valve moves smoothly.
8. Reconnect the TP sensor connector.

ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [ZM]

**Warning**

- When the engine is hot, it can badly burn. Turn off the engine and wait until it is cool before removing or installing the ECT sensor.

1. Drain the engine coolant. (See 01–12–2 COOLING SYSTEM SERVICE WARNINGS.) (See 01–12–3 ENGINE COOLANT REPLACEMENT.)
2. Disconnect the ECT sensor connector.
3. Remove the ECT sensor.
4. Replace the gasket.
5. Install in the reverse order of removal.
6. Refill the engine coolant. (See 01–12–2 COOLING SYSTEM SERVICE WARNINGS.) (See 01–12–3 ENGINE COOLANT REPLACEMENT.)
Note
• Perform the following test only when directed.

ECT Sensor Resistance Inspection
1. Drain the engine coolant. (See 01–12–2 COOLING SYSTEM SERVICE WARNINGS.) (See 01–12–3 ENGINE COOLANT REPLACEMENT.)
2. Remove the ECT sensor.
3. Place the ECT sensor in water with a thermometer, and heat the water gradually.
4. Measure the resistance between the ECT sensor terminals A and B using an ohmmeter.
   • If not as specified, replace the ECT sensor.
   • If the ECT sensor is okay, but PID value or PCM terminal 38 voltage are out of specification, carry out the "Circuit Open/Short Inspection".

Specification

<table>
<thead>
<tr>
<th>Water temperature (°C (°F))</th>
<th>Resistance (kiloohm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 (68)</td>
<td>2.2—2.6</td>
</tr>
<tr>
<td>80 (176)</td>
<td>0.29—0.34</td>
</tr>
</tbody>
</table>

ECT sensor signal characteristic (reference)
CONTROL SYSTEM [ZM]

Circuit Open/Short Inspection
1. Remove the PCM. (See 01–40A–7 PCM REMOVAL/INSTALLATION [ZM].)
2. Connect the SST (104 Pin Breakout Box) to the PCM as shown.
3. Tighten the connector attaching screw.
   Tightening torque
   16—23 N·m
   {1.6—2.4 kgf·m, 12—17 ft·lbf}
4. Inspect for an open or short circuit in the following wiring harnesses by probing the applicable sensor and SST (104 Pin Breakout Box) terminals with ohmmeter leads.
   • If there is an open or short circuit, repair or replace wiring harnesses.
   • If there is no open or short circuit, replace the ECT sensor.

Open circuit
• ECT signal circuit (ECT sensor connector terminal A and PCM connector terminal 38 through common connector)
• GND circuit (ECT sensor connector terminal B and PCM connector terminal 91)

Short circuit
• ECT signal circuit (ECT sensor connector terminal A and PCM connector terminal 38 to GND)
• GND circuit (ECT sensor connector terminal B and PCM connector terminal 91 to GND)
5. Install the ECT sensor.

CRANKSHAFT POSITION (CKP) SENSOR INSPECTION [ZM]

Air Gap Inspection

Note
• Perform the following test only when directed.
1. Verify that the CKP sensor is installed properly.
2. Measure the air gap between the plate teeth and the CKP sensor using a feeler gauge.
   • If not as specified, adjust the CKP sensor or inspect the plate teeth for being twisted and/or chipped.
   • If any of the plate teeth is twisted and/or chipped, replace the plate. (See 01–40A–34 PLATE REMOVAL/INSTALLATION [ZM].)

Specification
0.5—1.5 mm (0.020—0.059 in)
Resistance Inspection

1. Disconnect the CKP sensor connector.
2. Measure the resistance between CKP sensor terminals A and B using an ohmmeter.
   - If not as specified, replace the CKP sensor.
   - If CKP sensor resistance is okay, but PID value or PCM terminal 21 and 22 voltage are out of specification, carry out the "Circuit Open/Short Inspection".

Specification
Approx. 550 ohms

Circuit Open/Short Inspection

1. Remove the PCM. (See 01–40A–7 PCM REMOVAL/INSTALLATION [ZM].)
2. Connect the SST (104 Pin Breakout Box) to the PCM as shown.
3. Tighten the connector attaching screw.
   - Tightening torque
     7.9—10.7 N·m
     (80—110 kgf·cm, 69.5—95.4 in·lbf)
4. Inspect for an open or short circuit in the following wiring harnesses by probing the applicable sensor and SST (104 Pin Breakout Box) terminals with ohmmeter leads.
   - If there is an open or short circuit, repair or replace wiring harnesses.
   - If there is no open or short circuit, replace the CKP sensor.

   Open circuit
   - CKP signal (+) circuit (CKP sensor connector terminal A and PCM connector terminal 21)
   - CKP signal (−) circuit (CKP sensor connector terminal B and PCM connector terminal 22)

   Short circuit
   - CKP signal (+) circuit (CKP sensor connector terminal A and PCM connector 21 to GND)
   - CKP signal (−) circuit (CKP sensor connector terminal B and PCM connector terminal 22)
5. Reconnect the CKP sensor connector.
CONTROL SYSTEM [ZM]

CRANKSHAFT POSITION (CKP) SENSOR ADJUSTMENT [ZM]

1. Loosen the CKP sensor installation bolt.
2. While moving the CKP sensor, adjust the air gap between the CKP sensor and the plate teeth on the plate using a feeler gauge.
   - If not adjusted within specification, replace the plate behind the crankshaft pulley or CKP sensor. (See 01–40A–34 PLATE REMOVAL/INSTALLATION [ZM].) (See 01–40A–34 CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [ZM].)

   Specification
   0.5—1.5 mm (0.020—0.059 in)

3. Tighten the CKP sensor installation bolt.

   Tightening torque
   7.9—10.7 N·m
   {80—110 kgf·cm, 69.5—95.4 in·lbf}

CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [ZM]

Caution
- When foreign material such as an iron chip is on the CKP sensor, it can cause abnormal output from the sensor because of flux turbulence and adversely affect the engine control. Be sure there is no foreign material on the CKP sensor when replacing.

1. Disconnect the CKP sensor connector.
2. Remove the undercover.
3. Remove the CKP sensor installation bolt.
4. Install in the reverse order of removal.

   Tightening torque
   7.9—10.7 N·m
   {80—110 kgf·cm, 69.5—95.4 in·lbf}

5. Reconnect the CKP sensor connector.

Caution
- Do not forcefully pull the wiring harness of the CKP sensor, or harness will be damaged.

6. Adjust the air gap. (See 01–40A–34 CRANKSHAFT POSITION (CKP) SENSOR ADJUSTMENT [ZM].)

PLATE REMOVAL/INSTALLATION [ZM]

1. Remove the crankshaft pulley. (See 01–10A–9 TIMING BELT REMOVAL/INSTALLATION [ZM].)
2. Remove the plate.

   Note
   - Adjust the drive belt when installing the drive belt. (See 01–10A–4 DRIVE BELT ADJUSTMENT [ZM].)

3. Install in the reverse order of removal.

01–40A–34
CAMSHAFT POSITION (CMP) SENSOR REMOVAL/INSTALLATION [ZM]

Caution
• When foreign material such as an iron chip is on the CMP sensor, it can cause abnormal output from the sensor because of flux turbulence and adversely affect the engine control. Be sure there is no foreign material on the CMP sensor when replacing.

1. Disconnect the negative battery cable.
2. Disconnect the CMP sensor connector.
3. Remove the CMP sensor installation bolt.
4. Remove the CMP sensor.
5. Make sure that the CMP sensor is free of any metallic shavings or particles.
   • If metallic shavings or particles are found on the sensor, clean them off.
6. Install in the reverse order of removal.

Tightening torque
7.9—10.7 N·m
(80—110 kgf-cm, 69.5—95.4 in·lbf)

CAMSHAFT POSITION (CMP) SENSOR INSPECTION [ZM]

Visual Inspection
1. Remove the CMP sensor. (See 01–40A–35 CAMSHAFT POSITION (CMP) SENSOR REMOVAL/INSTALLATION [ZM].)

   Note
• Make sure that the CMP sensor is free of any metallic shavings or particles.
• If metallic shavings or particles are found on the sensor, clean them off.

2. Install the CMP sensor. (See 01–40A–35 CAMSHAFT POSITION (CMP) SENSOR REMOVAL/INSTALLATION [ZM].)

Wave profile Inspection
1. Remove the PCM. (See 01–40A–7 PCM REMOVAL/INSTALLATION [ZM].)
2. Connect the SST (104 Pin Breakout Box) to the PCM as shown.
3. Tighten the connector attaching screw.

   Tightening torque
7.9—10.7 N·m
(80—110 kgf-cm, 69.5—95.4 in·lbf)

4. Connect the oscilloscope testleads to the following PCM connector terminals.
   • (+) lead: PCM terminal 85
   • (-) lead: PCM terminal 103
5. Start the engine.
6. Monitor RPM PID.
7. Inspect wave profile at idle.
   • If wave profile or voltage are out of specifications, carry out the “Circuit Open/Short Inspection”.
     — PCM terminal: 85(+) $\Leftrightarrow$ 103(-)
     — Oscilloscope setting: 2 V/DIV(Y), 20 ms/DIV(X), DC range
     — Vehicle condition: Idle after warm up
CONTROL SYSTEM [ZM]

Circuit Open/Short Inspection
1. Remove the PCM. (See 01–40A–7 PCM REMOVAL/INSTALLATION [ZM].)
2. Connect the SST (104 Pin Breakout Box) to the PCM as shown.
3. Tighten the connector attaching screw.

Tightening torque
7.9—10.7 N·m
{80—110 kgf·cm, 69.5—95.4 in·lbf}

4. Inspect for an open or short circuit in the following wiring harnesses by probing the applicable sensor and SST (104 Pin Breakout Box) terminals with ohmmeter leads.
   • If there is an open or short circuit, repair or replace wiring harnesses.
   • If there is no open or short circuit, replace the CMP sensor.

Open circuit
• CMP signal circuit (CMP sensor connector terminal B and PCM connector terminal 85)
• Power circuit (CMP sensor connector terminal A and main relay terminal D through common connector)
• GND circuit (CMP sensor connector terminal C and PCM connector terminal 103)

Short circuit
• CMP signal circuit (CMP sensor connector terminal B and PCM connector terminal 85 to GND)
• Power circuit (CMP sensor connector terminal A and main relay terminal D through common connector to GND)

5. Reconnect the CMP sensor connector.
6. Inspect the camshaft pulley (exhaust side) for damage and cracks.

HEATED OXYGEN SENSOR (HO2S) INSPECTION [ZM]

HO2S (Front and Rear) Voltage Inspection

Note
• Perform the following test only when directed.

1. Warm up the engine and run it at idle.
2. Disconnect the HO2S (Front or Rear) connector.
3. Connect the voltmeter test leads to the following HO2S terminals:
   • (+) lead—HO2S terminal A
   • (–) lead—HO2S terminal B
4. Run the engine at 3,000 rpm until the voltmeter indicates approx. 0—1.0 V.
5. Verify that the voltmeter needle moves when the engine speed increases and decreases suddenly several times.
   • If not as specified, replace the HO2S.
   • If the HO2S is okay, but PID value or PCM terminal 60 (Front), 35 (Rear) voltage is out of specification, carry out the “Circuit Open/Short Inspection”.

Specification

<table>
<thead>
<tr>
<th>Engine speed</th>
<th>Voltage (V)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase</td>
<td>0.5—1.0</td>
</tr>
<tr>
<td>Decrease</td>
<td>0—0.5</td>
</tr>
</tbody>
</table>

01–40A–36
CONTROL SYSTEM [ZM]

Circuit Open/Short Inspection
1. Remove the PCM. (See 01–40A–7 PCM REMOVAL/INSTALLATION [ZM].)
2. Connect the SST (104 Pin Breakout Box) to the PCM as shown.
3. Tighten the connector attaching screw.

   **Tightening torque**
   7.9—10.7 N·m
   (80—110 kgf·cm, 69.5—95.4 in·lbf)

4. Inspect for an open or short circuit in the following wiring harnesses by probing the applicable sensor and SST (104 Pin Breakout Box) terminals with ohmmeter leads.
   - If there is an open or short circuit, repair or replace wiring harnesses.
   - If there is no open or short circuit, replace the HO2S.

   **Open circuit**
   - HO2S signal circuit (HO2S connector terminal A and PCM connector terminal 60 (Front), 35 (Rear))
   - GND circuit (HO2S connector terminal B and PCM connector terminal 91)

   **Short circuit**
   - HO2S signal circuit (HO2S terminal A and PCM connector terminal 60 (Front), 35 (Rear) to GND)

5. Reconnect the HO2S connector.

HO2S Heater (Front and Rear) Resistance Inspection
1. Disconnect the HO2S (Front or Rear) connector.
2. Measure the resistance between HO2S terminals C and D using an ohmmeter.
   - If not as specified, replace the HO2S.
   - If the HO2S heater is okay, but PID value or PCM terminal 94 (Front), 93 (Rear) voltage are out of specification, carry out the "Circuit Open/Short Inspection".

**Specification**
- **Front:** Approx. 5.6 ohms
- **Rear:** Approx. 15.7 ohms
CONTROL SYSTEM [ZM]

Circuit Open/Short Inspection
1. Remove the PCM. (See 01–40A–7 PCM REMOVAL/INSTALLATION [ZM].)
2. Connect the SST (104 Pin Breakout Box) to the PCM as shown.
3. Tighten the connector attaching screw.

   Tightening torque
   7.9—10.7 N·m
   {80—110 kgf·cm, 69.5—95.4 in·lbf}

4. Inspect for an open or short circuit in the following wiring harnesses by probing the applicable sensor and SST (104 Pin Breakout Box) terminals with ohmmeter leads.
   • If there is an open or short circuit, repair or replace wiring harnesses.
   • If there is no open or short circuit, replace the HO2S.

Open circuit
• Control circuit (HO2S connector terminal C and ignition switch (IG1) circuit through common connector)
• GND circuit (HO2S connector terminal D and PCM connector terminal 94 (Front), 93 (Rear))

Short circuit
• Control circuit (HO2S connector terminal C and ignition switch (IG1) circuit through common connector to GND)
• GND circuit (HO2S connector terminal D and PCM connector terminal 94 (Front), 93 (Rear) to GND)

5. Reconnect the HO2S connector.

EGR BOOST SENSOR INSPECTION [ZM]

Note
• Perform the following test only when directed.
• The following vacuum values are indicated by relative pressure from barometric pressure.

1. Remove the PCM. (See 01–40A–7 PCM REMOVAL/INSTALLATION [ZM].)
2. Connect the SST (104 Pin Breakout Box) to the PCM as shown.
3. Tighten the connector bolt.

   Tightening torque
   7.9—10.7 N·m
   {80—110 kgf·cm, 69.5—95.4 in·lbf}

Caution
• Do not apply vacuum outside of the specified limits, or EGR boost sensor will be damaged.

4. Turn the ignition switch to ON.
5. Disconnect the vacuum hose between the EGR boost sensor and intake manifold.

Note
• The output voltage varies with the measuring condition.

6. Verify that the PCM terminal 34 voltage is within specification.

Measuring condition:
Input voltage: 4.5—5.5 V
Ambient temperature: 10—50 °C (50—122 °F)
Sea level: –20—3,000 m (–656—9,840 ft)
Specification
BARO V variation: 2.3—4.7 V

7. Apply vacuum of –26.6 kPa (–200 mmHg, –7.85 inHg) to EGR boost sensor and verify that PCM 34 terminal voltage from Step 6 is within specification.
• If not as specified, carry out the “Circuit Open/Short Inspection”.

Specification
BARO V variation: 0.8—1.3 V

Circuit Open/Short Inspection
1. Remove the PCM. (See 01–40A–7 PCM REMOVAL/INSTALLATION [ZM].)
2. Connect the SST (104 Pin Breakout Box) to the PCM as shown.
3. Tighten the connector attaching screw.

Tightening torque
7.9—10.7 N-m
(80—110 kgf-cm, 69.5—95.4 in-lbf)

4. Inspect for an open or short circuit in the following wiring harnesses by probing the applicable sensor and SST (104 Pin Breakout Box) terminals with ohmmeter leads.
• If there is an open or short circuit, repair or replace wiring harnesses.
• If there is no open or short circuit, replace the EGR boost sensor.

Open circuit
• EGR boost (Barometric pressure) signal circuit (EGR boost sensor connector terminal A and PCM connector terminal 34)
• Constant voltage circuit (EGR boost sensor connector terminal C and PCM connector terminal 90)

Short circuit
• EGR boost (Barometric pressure) signal circuit (EGR boost sensor connector terminal A and PCM connector terminal 34)
• Constant voltage circuit (EGR boost sensor connector terminal C and PCM connector terminal 90)

5. Reconnect the EGR boost sensor connector.
FUEL TANK PRESSURE SENSOR INSPECTION [ZM]

**Note**
- Perform the following test only when directed.
- The following vacuum values are indicated by relative pressure from barometric pressure.

1. Remove the PCM. (See 01–40A–7 PCM REMOVAL/INSTALLATION [ZM].)
2. Connect the SST (104 Pin Breakout Box) to the PCM as shown.
3. Tighten the connector bolt.

**Caution**
- Do not apply vacuum outside of the specified limits, or the fuel tank pressure sensor will be damaged.

4. Turn the ignition switch to ON.
5. Apply pressure then vacuum to the fuel tank pressure sensor according to the following procedure.

**Note**
- The output voltage varies with the measuring condition.

6. Decrease the applied pressure from +6.6 kPa [+50 mmHg, +1.97 inHg] to −6.6 kPa [−50 mmHg, −1.97 inHg] and verify that the PCM terminal 62 voltage decreases accordingly as specified.
  - If not as specified, replace the fuel tank pressure sensor.
  - If fuel tank pressure sensor is okay, but PCM terminal 62 voltage is out of specification, carry out the “Circuit Open/Short Inspection”.

### Specification

<table>
<thead>
<tr>
<th>Applied vacuum</th>
<th>Output voltage (V)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>−6.6 kPa (−50 mmHg, −1.97 inHg)</td>
<td>0.45—0.55</td>
</tr>
<tr>
<td>0 kPa (0 mmHg, 0 inHg)</td>
<td>2.25—2.75</td>
</tr>
<tr>
<td>+6.6 kPa (+50 mmHg, +1.97 inHg)</td>
<td>4.05—4.95</td>
</tr>
</tbody>
</table>

* : Measuring condition is as follows.

- **Input voltage:** 5.0 V
- **Barometric pressure:** 101.3 kPa (760 mmHg, 29.9 inHg) (Absolute pressure)
- **Barometric temperature:** 30—100 °C (80—182 °F)
CONTROL SYSTEM [ZM]

Circuit Open/Short Inspection
1. Remove the PCM. (See 01–40A–7 PCM REMOVAL/INSTALLATION [ZM].)
2. Connect the SST (104 Pin Breakout Box) to the PCM as shown.
3. Tighten the connector attaching screw.
   
   **Tightening torque**
   
   $7.9—10.7 \text{ N} \cdot \text{m}$
   
   (80—110 kgf·cm, 69.5—95.4 in·lbf)

4. Inspect for an open or short circuit in the following wiring harnesses by probing the applicable sensor and SST (104 Pin Breakout Box) terminals with ohmmeter leads.
   - If there is an open or short circuit, repair or replace wiring harnesses.
   - If there is no open or short circuit, replace the fuel tank pressure sensor.

   **Open circuit**
   - Fuel tank pressure signal circuit (Fuel tank pressure sensor connector terminal B and PCM connector terminal 62)
   - Constant voltage circuit (Fuel tank pressure sensor connector terminal C and PCM connector terminal 90)
   - GND circuit (Fuel tank pressure sensor connector terminal A and PCM connector terminal 91)

   **Short circuit**
   - Fuel tank pressure signal circuit (Fuel tank pressure sensor connector terminal B and PCM connector terminal 62)
   - Constant voltage circuit (Fuel tank pressure sensor connector terminal C and PCM connector terminal 90)

5. Reconnect the fuel tank pressure sensor connector.

CLUTCH SWITCH INSPECTION [ZM]

**Note**

- Perform the following test only when directed.

1. Verify that the clutch switch is installed properly.
2. Disconnect the negative battery cable.
3. Remove the clutch switch. (See 05–10–5 CLUTCH PEDAL REMOVAL/INSTALLATION.)
4. Inspect continuity between the clutch switch terminals A and B using an ohmmeter.
   - If not as specified, replace the clutch switch.
   - If the clutch switch is okay, but PID value or PCM terminal 6 voltage is out of specification, carry out the “Circuit Open/Short Inspection”.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Terminal</th>
</tr>
</thead>
<tbody>
<tr>
<td>The rod is pushed</td>
<td>A</td>
</tr>
<tr>
<td>Except above</td>
<td></td>
</tr>
</tbody>
</table>
CONTROL SYSTEM [ZM]

Circuit Open/Short Inspection
1. Remove the PCM. (See 01–40A–7 PCM REMOVAL/INSTALLATION [ZM].)
2. Connect the SST (104 Pin Breakout Box) to the PCM as shown.
3. Tighten the connector attaching screw.

   Tightening torque
   7.9—10.7 N·m
   {80—110 kgf·cm, 69.5—95.4 in·lbf}

4. Inspect for an open or short circuit in the following wiring harnesses by probing the applicable sensor and SST (104 Pin Breakout Box) terminals with ohmmeter leads.
   • If there is an open or short circuit, repair or replace wiring harnesses.
   • If there is no open or short circuit, replace the clutch switch.

   Open circuit
   • Signal circuit (Clutch switch connector terminal B and PCM connector terminal 6 through common connector)
   • GND circuit (Clutch switch connector terminal A and GND)

   Short circuit
   • Signal circuit (Clutch switch connector terminal B and PCM connector terminal 6 through common connector to GND)

5. Install the clutch switch.

NEUTRAL SWITCH INSPECTION [ZM]

Note
   • Perform the following test only when directed.

1. Disconnect the negative battery cable.
2. Remove the neutral switch.
3. Inspect for continuity between the neutral switch terminals A and B using an ohmmeter.
   • If not as specified, replace the neutral switch.
   • If the neutral switch is okay, but PID value or PCM terminal 64 voltage is out of specification, carry out the "Circuit Open/Short Inspection".

<table>
<thead>
<tr>
<th>Condition</th>
<th>Terminal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
</tr>
<tr>
<td>The rod is pushed</td>
<td>O</td>
</tr>
<tr>
<td>Except above</td>
<td></td>
</tr>
</tbody>
</table>
CONTROL SYSTEM [ZM]

Circuit Open/Short Inspection
1. Remove the PCM. (See 01–40A–7 PCM REMOVAL/INSTALLATION [ZM].)
2. Connect the SST (104 Pin Breakout Box) to the PCM as shown.
3. Tighten the connector attaching screw.

   Tightening torque
   7.9—10.7 N·m
   (80—110 kgf·cm, 69.5—95.4 in·lbf)

4. Inspect for an open or short circuit in the following wiring harnesses by probing the applicable sensor and SST (104 Pin Breakout Box) terminals with ohmmeter leads.
   • If there is an open or short circuit, repair or replace wiring harnesses.
   • If there is no open or short circuit, replace the neutral switch.

   Open circuit
   • Signal circuit (Neutral switch connector terminal A and PCM connector terminal 64 through common connector)
   • GND circuit (Neutral switch connector terminal B and GND through common connector)

   Short circuit
   • Signal circuit (Neutral switch connector terminal A and PCM terminal 64 through common connector to GND)

5. Install the neutral switch.

POWER STEERING PRESSURE (PSP) SWITCH INSPECTION [ZM]

Continuity Inspection

   Note
   • Perform the following test only when directed.

1. Inspect the following if the power steering is inoperative. (See 06–12–3 POWER STEERING FLUID INSPECTION.)
   • Power steering fluid level
   • Power steering fluid leakage
   • Power steering fluid pressure
2. Disconnect the PSP switch connector.
3. Start the engine.
4. Inspect for continuity between the PSP switch terminal and GND using an ohmmeter.
   • If not as specified, replace the PSP switch.
   • If the PSP switch is okay, but PID value or PCM terminal 31 voltage is out of specification, carry out the "Circuit Open/Short Inspection".

<table>
<thead>
<tr>
<th>Condition</th>
<th>Terminal</th>
<th>GND</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steering wheel is in straight ahead position</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Steering wheel is fully turned</td>
<td>✔</td>
<td></td>
</tr>
</tbody>
</table>
CONTROL SYSTEM [ZM]

Circuit Open/Short Inspection
1. Remove the PCM. (See 01–40A–7 PCM REMOVAL/INSTALLATION [ZM].)
2. Connect the SST (104 Pin Breakout Box) to the PCM as shown.
3. Tighten the connector attaching screw.

   **Tightening torque**
   7.9—10.7 N·m
   \( \{80—110 \text{ kgf cm, } 69.5—95.4 \text{ in lb} \} \)

4. Inspect for an open or short circuit in the following wiring harnesses by probing the applicable sensor and SST (104 Pin Breakout Box) terminals with ohmmeter leads.

   - **Open circuit**
     - PSP signal circuit (PSP switch connector terminal and PCM connector terminal 31 through common connector)
     - GND circuit (PSP switch body and GND)
     - If there is an open or short circuit, repair or replace wiring harnesses.
     - If there is no open or short circuit, replace the PSP switch.

   - **Short circuit**
     - PSP signal circuit (PSP switch connector terminal and PCM connector terminal 31 through common connector to GND)

5. Reconnect the PSP switch connector.