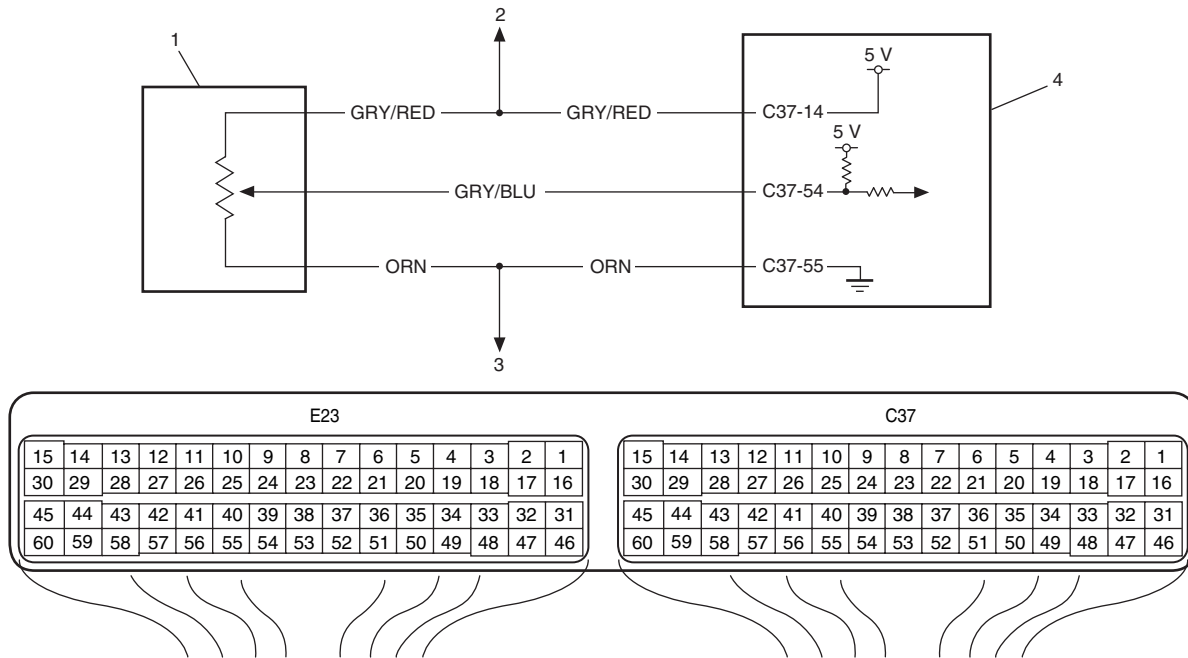


Step	Action	Yes	No
10	<p>Wire circuit check</p> <p>1) Measure resistance between “C37-14” terminal of ECM connector and “GRY/RED” wire terminal of TP sensor connector, between “C37-54” terminal of ECM connector and “GRY/BLU” wire terminal of TP sensor connector with ignition switch turned OFF.</p> <p><i>Is each resistance below 5 Ω?</i></p>	Go to Step 11.	“GRY/RED” and/or “GRY/BLU” wire are high resistance circuit.
11	<p>Ground circuit check</p> <p>1) Connect connectors to ECM with ignition switch turned OFF.</p> <p>2) Measure resistance between “ORN” wire terminal of TP sensor connector and vehicle body ground.</p> <p><i>Is resistance below 5 Ω?</i></p>	Go to Step 13.	Go to Step 12.
12	<p>Ground circuit check</p> <p>1) Remove ECM from its bracket with ECM connectors connected.</p> <p>2) Measure resistance between “C37-55” terminal of ECM connector and vehicle body ground.</p> <p><i>Is resistance below 5 Ω?</i></p>	“ORN” wire is open circuit or high resistance circuit. Poor “C37-55” connection.	Faulty ECM ground circuit. If circuit is OK, substitute a known-good ECM and recheck.
13	<p>TP sensor check</p> <p>1) Measure resistance between terminals of TP sensor referring to “Throttle Position (TP) Sensor On-Vehicle Inspection (For A/T and M/T Models): in Section 1C”.</p> <p><i>Are measured values within specifications?</i></p>	Go to Step 14.	Replace TP sensor.
14	<p>MAF sensor for performance check</p> <p>1) Check MAF sensor performance referring to Step 3 of “DTC P0101: Mass Air Flow Circuit Range / Performance: ”.</p> <p><i>Is it in good condition?</i></p>	Go to Step 15.	Repair MAF and IAT sensor circuit or replace MAF and IAT sensor.
15	<p><i>Is DTC P0505 detected?</i></p>	Go to “DTC P0505: Idle Air Control System (For A/T and M/T models): ”.	Go to Step 16.
16	<p>Idle air control (IAC) valve check</p> <p>1) Check idle air control valve referring to “Idle Air Control (IAC) Valve Operation Inspection (For A/T and M/T Models): in Section 1C”.</p> <p><i>Is it in good condition?</i></p>	Go to Step 17.	Repair idle air control valve circuit or replace idle air control valve.
17	<p>Throttle body check</p> <p>1) Check throttle body for clog or leak.</p> <p><i>Is it OK?</i></p>	Substitute a known-good ECM and recheck.	Repair throttle body.

DTC P0122: Throttle Position Sensor Circuit Low (For A/T and M/T Models)

S4RS0B1104030

Wiring Diagram



I4RS0A110027-01

1. TP sensor	3. To other sensors
2. To MAP sensor and A/C refrigerant pressure sensor (if equipped with A/C)	4. ECM

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
Voltage of TP sensor output is less than specified value for 0.5 seconds continuously. (1 driving cycle detection logic)	<ul style="list-style-type: none"> TP sensor circuit TP sensor MAP sensor A/C refrigerant pressure sensor (if equipped with A/C) ECM

DTC Confirmation Procedure

- 1) With ignition switch turned OFF, connect scan tool.
- 2) Turn ON ignition switch and clear DTC using scan tool.
- 3) Start engine and run it for 10 sec. or more.
- 4) Check DTC and pending DTC.

DTC Troubleshooting

NOTE

- Before performed trouble shooting, be sure to read the "Precautions of ECM Circuit Inspection: ".
- When measuring circuit voltage, resistance and/or pulse signal at ECM connector, connect the special tool to ECM and/or the ECM connectors referring to "Inspection of ECM and Its Circuits: ".
- Upon completion of inspection and repair work, perform "DTC Confirmation Procedure" and confirm that the trouble has been corrected.

Step	Action	Yes	No
1	<p>Was "Engine and Emission Control System Check" performed?</p>	Go to Step 2.	Go to "Engine and Emission Control System Check: ".
2	<p>TP sensor and its circuit check</p> <ol style="list-style-type: none"> 1) Connect scan tool to DLC with ignition switch turned OFF and then turn ON ignition switch. 2) Check throttle valve opening percentage displayed on scan tool. 3) Check throttle valve opening percentage displayed on scan tool while opening throttle valve from idle position to full open position. <p><i>Is displayed value 0%?</i></p>	Go to Step 3.	<p>Intermittent trouble.</p> <p>Check for intermittent referring to "Intermittent and Poor Connection Inspection: in Section 00".</p>
3	<p>Wire harness check</p> <ol style="list-style-type: none"> 1) Disconnect connector from TP sensor with ignition switch turned OFF. 2) Check for proper connection to TP sensor at "GRY/RED", "GRY/BLU" and "ORN" wire terminals. 3) If OK, then with ignition switch turned ON, check following terminal voltages. <ul style="list-style-type: none"> • Between "GRY/RED" wire terminal of TP sensor connector and vehicle body ground • Between "GRY/BLU" wire terminal of TP sensor connector and vehicle body ground <div data-bbox="375 1034 777 1357" style="text-align: center;"> <p style="text-align: center;">I4RS0A110028-01</p> </div> <p><i>Is each terminal voltage about 4 – 6 V?</i></p>	Go to Step 7.	Go to Step 4.
4	<p>Wire harness check</p> <ol style="list-style-type: none"> 1) Turn ignition switch to OFF position. 2) Disconnect connectors from MAP sensor and A/C refrigerant pressure sensor (if equipped with A/C). 3) Turn ignition switch to ON position. 4) Measure voltage between "GRY/RED" wire terminal of TP sensor connector and vehicle body ground. <p><i>Is terminal voltage about 4 – 6 V?</i></p>	<p>Faulty MAP sensor and/or A/C refrigerant pressure sensor (if equipped with A/C), check MAP sensor and/or A/C refrigerant pressure sensor (if equipped with A/C) according to "Manifold Absolute Pressure (MAP) Sensor Inspection: in Section 1C" or "A/C Refrigerant Pressure Sensor and Its Circuit Inspection: in Section 7B".</p>	Go to Step 5.

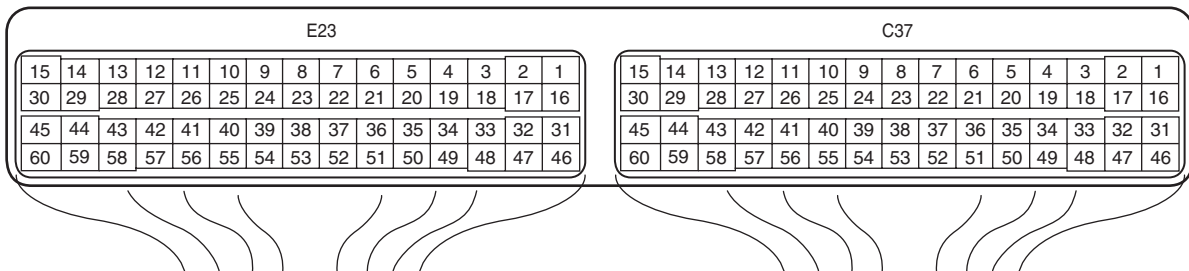
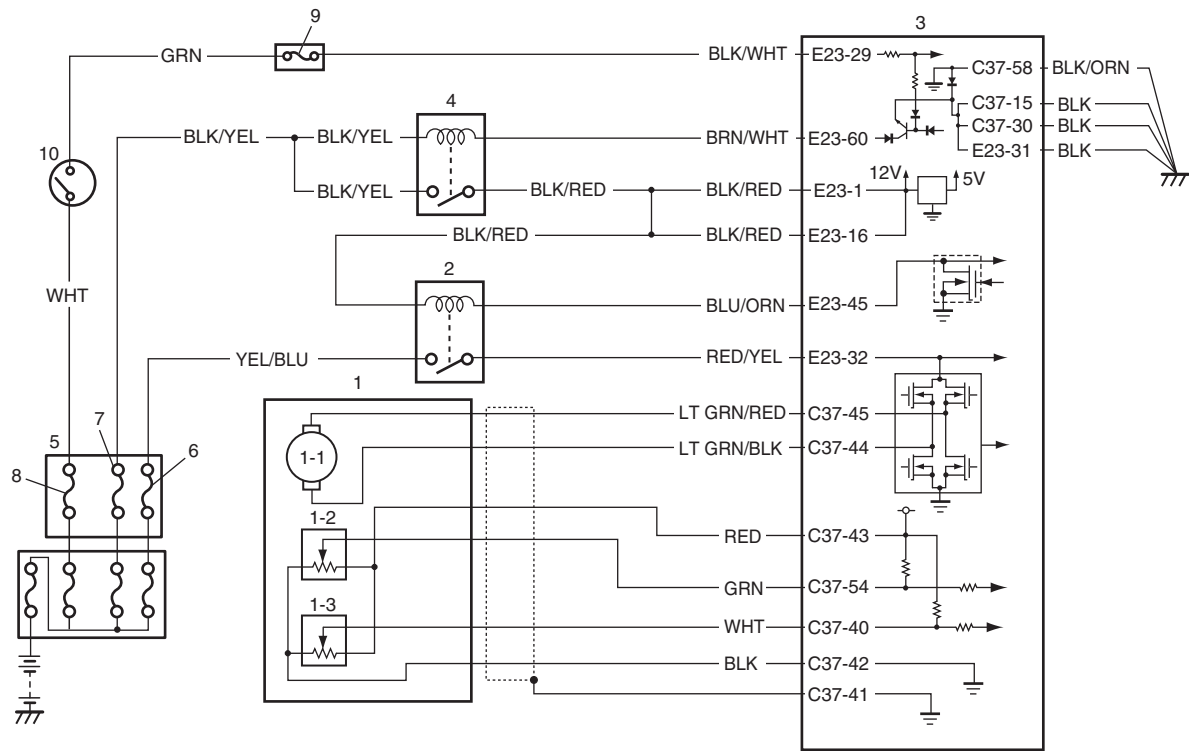
1A-98 Engine General Information and Diagnosis:

Step	Action	Yes	No
5	ECM voltage check 1) Turn ignition switch to OFF position. 2) Remove ECM from its bracket with ECM connectors connected. 3) Check for proper connection of ECM connector at "C37-14" terminal. 4) Turn ignition switch to ON position. 5) Measure voltage between "C37-14" terminal of ECM connector and vehicle body ground. <i>Is terminal voltage about 4 – 6 V?</i>	"GRY/RED" wire is open or high resistance circuit.	Go to Step 6.
6	Wire circuit check 1) Disconnect connectors from ECM with ignition switch turn OFF. 2) Measure resistance between "GRY/RED" wire terminal of TP sensor connector and vehicle body ground, between "GRY/BLU" wire terminal of TP sensor connector and vehicle body ground and between "GRY/BLU" and "ORN" wire terminals of TP sensor connector. <i>Is resistance infinity?</i>	Go to Step 7.	"GRY/RED" and/or "GRY/BLU" wires are shorted to ground circuit and / or "GRY/BLU" wire is shorted to "ORN" wire. If wires are OK, substitute a known-good ECM and recheck.
7	TP sensor check 1) Measure resistance between terminals of TP sensor referring to "Throttle Position (TP) Sensor On-Vehicle Inspection (For A/T and M/T Models): in Section 1C". <i>Are measured values within specifications?</i>	Substitute a known-good ECM and recheck.	Replace TP sensor.

DTC P0122: Throttle Position Sensor (Main) Circuit Low (For Automated Manual Transaxle Model)

S4RS0B1104073

Wiring Diagram



I4RS0B110021-02

1. Electric throttle body assembly	3. ECM	8. "IG ACC" fuse
1-1. Throttle actuator	4. Main relay	9. "IG COIL" fuse
1-2. Throttle position sensor (main)	5. Individual circuit fuse box No.1	10. Ignition switch
1-3. Throttle position sensor (sub)	6. "TH MOT" fuse	
2. Throttle actuator control relay	7. "FI" fuse	

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
Output voltage of throttle position sensor (main) is less than specified value for specified time continuously. (1 driving detection logic)	<ul style="list-style-type: none"> • Throttle position sensor (main) circuit • Electric throttle body assembly • ECM

NOTE

When DTC P0122 (for Automated Manual Transaxle model) and P0222 are indicated together, it is possible that "RED" wire open circuit.

DTC Confirmation Procedure

- 1) With ignition switch turned OFF, connect scan tool.
- 2) Turn ON ignition switch and clear DTC using scan tool.
- 3) Keep the accelerator pedal at idle position for 2 seconds.
- 4) Keep the accelerator pedal at fully depressed position for 2 seconds.

1A-100 Engine General Information and Diagnosis:

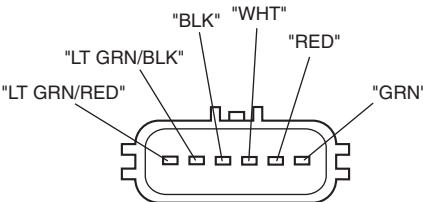
5) Repeat Step 3) and 4) for 3 times.

6) Check DTC.

DTC Troubleshooting

NOTE

- Before performed trouble shooting, be sure to read the “Precautions of ECM Circuit Inspection: ”.
- When measuring circuit voltage, resistance and/or pulse signal at ECM connector, connect the special tool to ECM and/or the ECM connectors referring to “Inspection of ECM and Its Circuits: ”.
- Upon completion of inspection and repair work, perform “DTC Confirmation Procedure” and confirm that the trouble has been corrected.

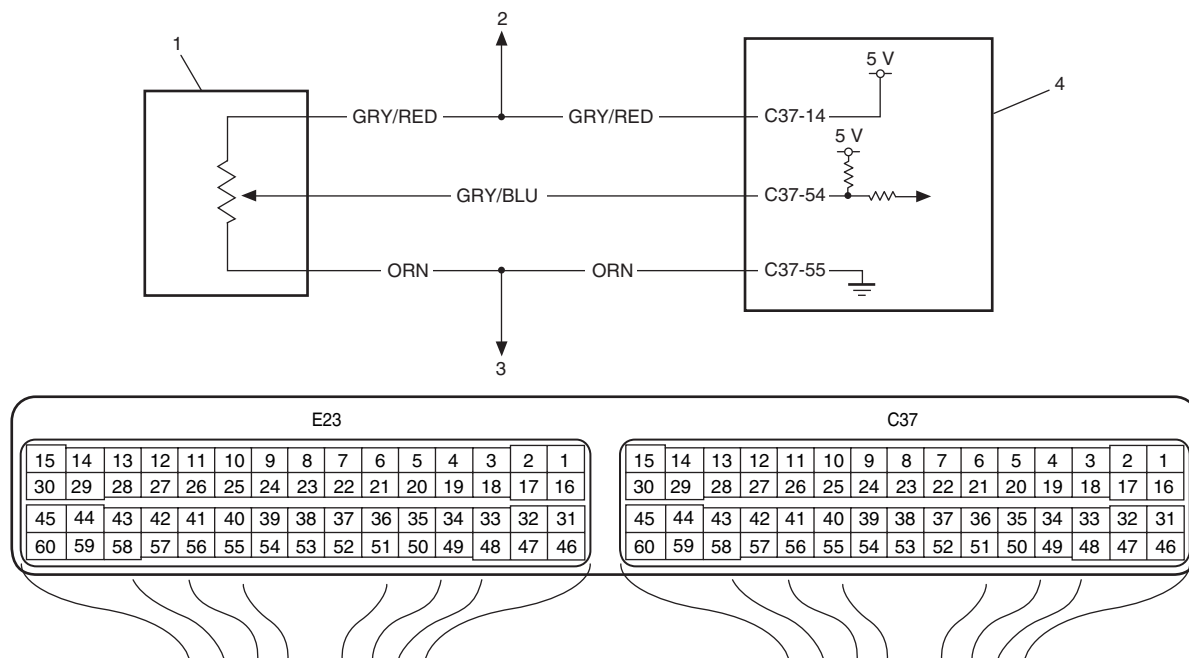
Step	Action	Yes	No
1	Was “Engine and Emission Control System Check” performed?	Go to Step 2.	Go to “Engine and Emission Control System Check: ”.
2	<p>Throttle position sensor and its circuit check</p> <p>1) Connect scan tool to DLC with ignition switch turned OFF.</p> <p>2) Turn ON ignition switch, check “TP Sensor 1 Volt” displayed on scan tool when accelerator pedal is idle position and fully depressed.</p> <p><i>Is displayed TP sensor value as described voltage in “Scan Tool Data: ”?</i></p>	<p>Intermittent trouble.</p> <p>Check for intermittent referring to “Intermittent and Poor Connection Inspection: in Section 00”.</p>	Go to Step 3.
3	<p>ECM voltage check</p> <p>1) Disconnect connector from electric throttle body assembly with ignition switch turned OFF.</p> <p>2) Check for proper connection to electric throttle body assembly at “RED”, “GRN” and “BLK” wire terminals.</p> <div style="text-align: center;">  <p style="text-align: right; font-size: small;">I4RS0B110022-02</p> </div> <p>3) If OK, measure voltage between “RED” wire terminal of electric throttle body assembly connector and engine ground with ignition switch turned ON.</p> <p><i>Is voltage 4 – 6 V?</i></p>	Go to Step 6.	Go to Step 4.
4	<p>ECM voltage check</p> <p>1) Turn OFF ignition switch.</p> <p>2) Remove ECM from its bracket with ECM connectors connected.</p> <p>3) Check for proper connection of ECM connector at “C37-43” terminal.</p> <p>4) If OK, measure voltage between “C37-43” terminal of ECM connector and engine ground with ignition switch turned ON.</p> <p><i>Is voltage 4 – 6 V?</i></p>	“RED” wire is open or high resistance circuit.	Go to Step 5.

Step	Action	Yes	No
5	<p>Wire harness check</p> <ol style="list-style-type: none"> 1) Disconnect connectors from ECM with ignition switch turned OFF. 2) Measure resistance between “C37-43” terminal of ECM connector and engine ground. <p><i>Is resistance infinity?</i></p>	Substitute a known-good ECM and recheck.	“RED” wire is shorted to ground circuit.
6	<p>Wire harness check</p> <ol style="list-style-type: none"> 1) Measure voltage between “GRN” wire terminal of electric throttle body assembly connector and engine ground with ignition switch turned ON. <p><i>Is voltage 4 – 6 V?</i></p>	Go to Step 9.	Go to Step 7.
7	<p>Wire harness check</p> <ol style="list-style-type: none"> 1) Disconnect connectors from ECM with ignition switch turned OFF. 2) Check for proper connection of ECM connector at “C37-54” and “C37-42” terminals. 3) If OK, measure resistance between “GRN” and “BLK” wire terminals of electric throttle body assembly connector. <p><i>Is resistance infinity?</i></p>	Go to Step 8.	“GRN” wire is shorted to “BLK” wire.
8	<p>Wire harness check</p> <ol style="list-style-type: none"> 1) Measure resistance between “GRN” wire terminal of electric throttle body assembly connector and engine ground with ignition switch turned OFF. <p><i>Is resistance infinity?</i></p>	Substitute a known-good ECM and recheck.	“GRN” wire is shorted to ground circuit.
9	<p>Electric throttle body assembly check</p> <ol style="list-style-type: none"> 1) Check throttle pedal position sensor referring to “Throttle Position Sensor Performance Check” under “Electric Throttle Body Assembly On-Vehicle Inspection (For Automated Manual Transaxle Model): in Section 1C”. <p><i>Is output voltage within specified value?</i></p>	Substitute a known-good ECM and recheck.	Replace electric throttle body assembly.

DTC P0123: Throttle Position Sensor Circuit High (For A/T and M/T Models)

S4RS0B1104031

Wiring Diagram



I4RS0A110027-01

1. TP sensor	3. To other sensors
2. To MAP sensor and A/C refrigerant pressure sensor (if equipped with A/C)	4. ECM

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
Voltage of TP sensor output is more than specified value for 0.5 seconds continuously. (1 driving cycle detection logic)	<ul style="list-style-type: none"> TP sensor circuit TP sensor MAP sensor A/C refrigerant pressure sensor (if equipped with A/C) ECM

DTC Confirmation Procedure

NOTE

When DTC P0108, P0113 and P0118 are indicated together, it is possible that “ORN” wire circuit open.

- 1) With ignition switch turned OFF, connect scan tool.
- 2) Turn ON ignition switch and clear DTC using scan tool.
- 3) Start engine and run it for 10 sec. or more.
- 4) Check DTC and pending DTC.

DTC Troubleshooting

NOTE

- Before performed trouble shooting, be sure to read the “Precautions of ECM Circuit Inspection: ”.
- When measuring circuit voltage, resistance and/or pulse signal at ECM connector, connect the special tool to ECM and/or the ECM connectors referring to “Inspection of ECM and Its Circuits: ”.
- Upon completion of inspection and repair work, perform “DTC Confirmation Procedure” and confirm that the trouble has been corrected.

Step	Action	Yes	No
1	<p>Was "Engine and Emission Control System Check" performed?</p>	Go to Step 2.	Go to "Engine and Emission Control System Check: ".
2	<p>TP sensor and its circuit check</p> <ol style="list-style-type: none"> 1) Connect scan tool to DLC with ignition switch turned OFF and then turn ON ignition switch. 2) Check throttle valve opening percentage displayed on scan tool. 3) Check throttle valve opening percentage displayed on scan tool while opening throttle valve from idle position to full open position. <p><i>Is displayed value 100%?</i></p>	Go to Step 3.	<p>Intermittent trouble.</p> <p>Check for intermittent referring to "Intermittent and Poor Connection Inspection: in Section 00".</p>
3	<p>Wire harness check</p> <ol style="list-style-type: none"> 1) Disconnect connector from TP sensor with ignition switch turned OFF. 2) Check for proper connection to TP sensor at "GRY/RED", "GRY/BLU" and "ORN" wire terminals. 3) If OK, then with ignition switch turned ON, check following terminal voltages. <ul style="list-style-type: none"> • Between "GRY/RED" wire terminal of TP sensor connector and vehicle body ground • Between "GRY/BLU" wire terminal of TP sensor connector and vehicle body ground <div data-bbox="375 1027 777 1342" style="text-align: center;"> <p style="text-align: center;">I4RS0A110028-01</p> </div> <p><i>Is each terminal voltage about 4 – 6 V?</i></p>	Go to Step 8.	Go to Step 4.
4	<p>Was "GRY/RED" wire terminal voltage in Step 3 within specification?</p>	Go to Step 6.	Go to Step 5.
5	<p>Wire harness check</p> <ol style="list-style-type: none"> 1) Turn ignition switch to OFF position. 2) Disconnect connectors from ECM. 3) Check for proper connection of ECM connector at "C37-14" terminal. 4) Turn ignition switch to ON position. 5) Measure voltage between "GRY/RED" wire terminal of TP sensor connector and vehicle body ground. <p><i>Is terminal voltage about 0 V?</i></p>	Substitute a known-good ECM and recheck.	"GRY/RED" wire is shorted to power circuit.

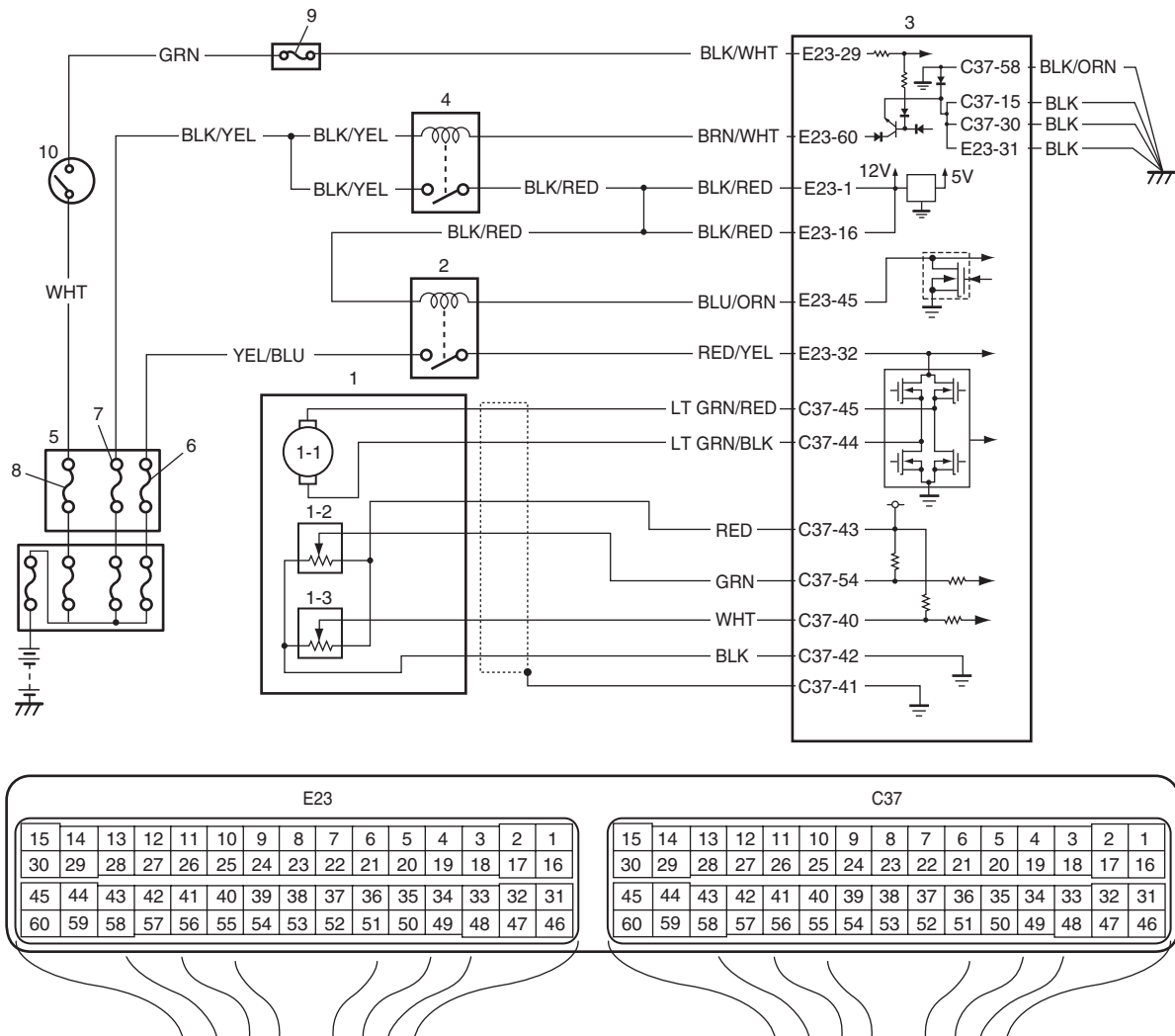
1A-104 Engine General Information and Diagnosis:

Step	Action	Yes	No
6	<p>Wire circuit check</p> <ol style="list-style-type: none"> 1) Disconnect connectors from ECM with ignition switch turned OFF. 2) Turn ON ignition switch. 3) Check for proper connection of ECM connector at "C37-54" terminal. 4) Measure voltage between "GRY/BLU" wire terminal of TP sensor connector and vehicle body ground. <p><i>Is voltage about 0 V at each terminal?</i></p>	Go to Step 7.	"GRY/BLU" wire is shorted to power circuit. If wire is OK, substitute a known-good ECM and recheck.
7	<p>Wire circuit check</p> <ol style="list-style-type: none"> 1) Measure resistance between "C37-54" wire terminal of ECM connector and "GRY/BLU" wire terminal of TP sensor connector with ignition switch turned OFF. <p><i>Is resistance below 5 Ω?</i></p>	Go to Step 8.	"GRY/BLU" wire is open or high resistance circuit.
8	<p>Ground circuit check</p> <ol style="list-style-type: none"> 1) Connect connectors to ECM with ignition switch turned OFF. 2) Measure resistance between "ORN" wire terminal of TP sensor connector and vehicle body ground. <p><i>Is resistance below 5 Ω?</i></p>	Go to Step 10.	Go to Step 9.
9	<p>Ground circuit check</p> <ol style="list-style-type: none"> 1) Remove ECM from its bracket with ECM connectors connected. 2) Measure resistance between "C37-55" terminal of ECM connector and vehicle body ground. <p><i>Is resistance below 5 Ω?</i></p>	"ORN" wire is open circuit or high resistance circuit. Poor "C37-55" connection.	Faulty ECM ground circuit. If circuit is OK, substitute a known-good ECM and recheck.
10	<p>TP sensor check</p> <ol style="list-style-type: none"> 1) Measure resistance between terminals of TP sensor referring to "Throttle Position (TP) Sensor On-Vehicle Inspection (For A/T and M/T Models): in Section 1C". <p><i>Are measured values within specifications?</i></p>	Substitute a known-good ECM and recheck.	Replace TP sensor.

DTC P0123: Throttle Position Sensor (Main) Circuit High (For Automated Manual Transaxle Model)

S4RS0B1104074

Wiring Diagram



1. Electric throttle body assembly	3. ECM	8. "IG ACC" fuse
1-1. Throttle actuator	4. Main relay	9. "IG COIL" fuse
1-2. Throttle position sensor (main)	5. Individual circuit fuse box No.1	10. Ignition switch
1-3. Throttle position sensor (sub)	6. "TH MOT" fuse	
2. Throttle actuator control relay	7. "FI" fuse	

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
Output voltage of throttle position sensor (main) is more than specified value for specified time continuously. (1 driving detection logic)	<ul style="list-style-type: none"> • Throttle position sensor (main) circuit • Electric throttle body assembly • ECM

NOTE

When DTC P0123 (for Automated Manual Transaxle model) and P0223 are indicated together, it is possible that "RED" wire shorted to power circuit and/or "BLK" wire open.

DTC Confirmation Procedure

- 1) With ignition switch turned OFF, connect scan tool.
- 2) Turn ON ignition switch and clear DTC using scan tool.
- 3) Keep the accelerator pedal at idle position for 2 seconds.
- 4) Keep the accelerator pedal at fully depressed position for 2 seconds.

1A-106 Engine General Information and Diagnosis:

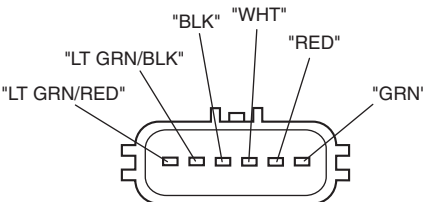
5) Repeat Step 3) and 4) for 3 times.

6) Check DTC.

DTC Troubleshooting

NOTE

- Before performed trouble shooting, be sure to read the “Precautions of ECM Circuit Inspection: ”.
- When measuring circuit voltage, resistance and/or pulse signal at ECM connector, connect the special tool to ECM and/or the ECM connectors referring to “Inspection of ECM and Its Circuits: ”.
- Upon completion of inspection and repair work, perform “DTC Confirmation Procedure” and confirm that the trouble has been corrected.

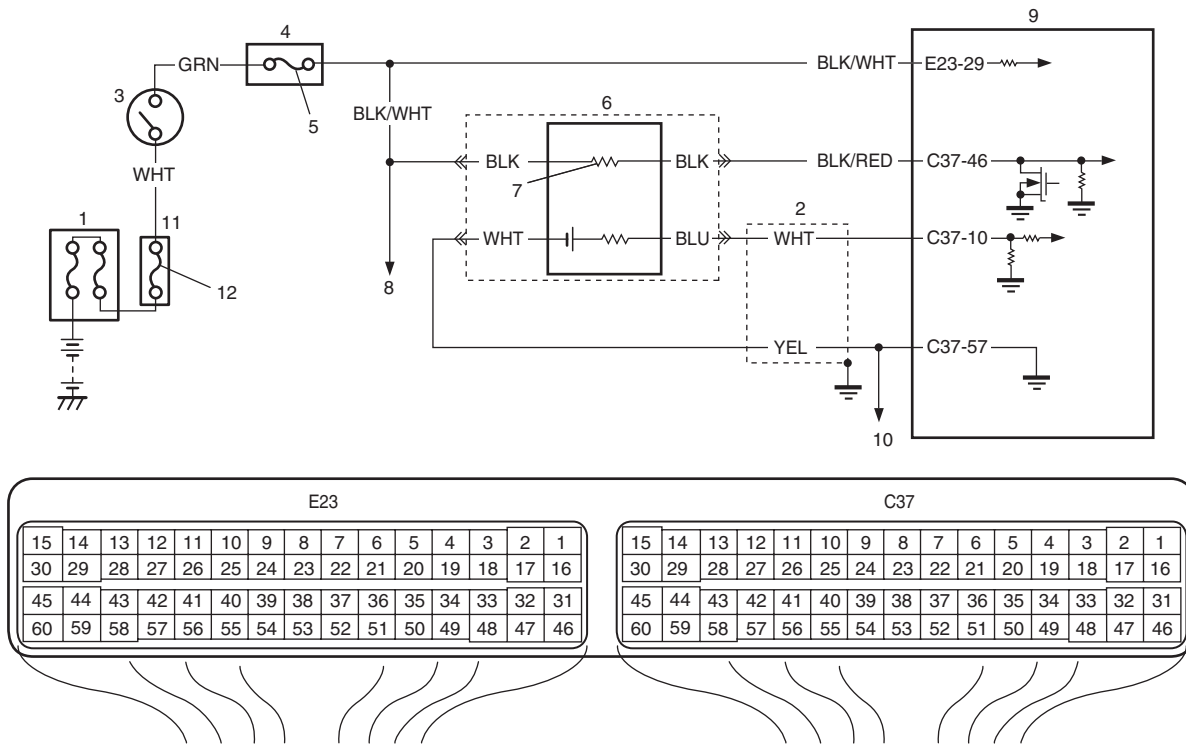
Step	Action	Yes	No
1	Was “Engine and Emission Control System Check” performed?	Go to Step 2.	Go to “Engine and Emission Control System Check: ”.
2	<p>Throttle position sensor and its circuit check</p> <p>1) Connect scan tool to DLC with ignition switch turned OFF.</p> <p>2) Turn ON ignition switch, check “TP Sensor 1 Volt” displayed on scan tool when accelerator pedal is idle position and fully depressed.</p> <p><i>Is displayed TP sensor value as described voltage in “Scan Tool Data: ”?</i></p>	<p>Intermittent trouble.</p> <p>Check for intermittent referring to “Intermittent and Poor Connection Inspection: in Section 00”.</p>	Go to Step 3.
3	<p>ECM voltage check</p> <p>1) Disconnect connector from electric throttle body assembly with ignition switch turned OFF.</p> <p>2) Check for proper connection to electric throttle body assembly at “RED”, “GRN” and “BLK” wire terminals.</p> <div style="text-align: center;">  <p style="font-size: small;">I4RS0B110022-02</p> </div> <p>3) If OK, measure voltage between “RED” wire terminal of electric throttle body assembly connector and engine ground with ignition switch turned ON.</p> <p><i>Is voltage 4 – 6 V?</i></p>	Go to Step 5.	Go to Step 4.
4	<p>Wire harness check</p> <p>1) Disconnect connectors from ECM with ignition switch turned OFF.</p> <p>2) Check for proper connection of ECM connector at “C37-43” terminal.</p> <p>3) Measure voltage between “C37-43” terminal of ECM connector and engine ground with ignition switch turned ON.</p> <p><i>Is voltage 0 V?</i></p>	Substitute a known-good ECM and recheck.	“RED” wire is shorted to power circuit.

Step	Action	Yes	No
5	<p>Wire harness check</p> <p>1) Measure voltage between “GRN” wire terminal of electric throttle body assembly connector and engine ground with ignition switch turned ON.</p> <p><i>Is voltage 4 – 6 V?</i></p>	Go to Step 9.	Go to Step 6.
6	<p>Wire harness check</p> <p>1) Turn OFF ignition switch.</p> <p>2) Remove ECM from its bracket with ECM connectors connected.</p> <p>3) Check for proper connection of ECM connector at “C37-43” and “C37-54” terminals.</p> <p>4) If OK, measure voltage between “C37-54” terminal of ECM connector and engine ground with ignition switch turned ON.</p> <p><i>Is voltage 4 – 6 V?</i></p>	“GRN” wire is open or high resistance circuit.	Go to Step 7.
7	<p>Wire harness check</p> <p>1) Disconnect connectors from ECM with ignition switch turned OFF.</p> <p>2) Measure resistance between “GRN” and “RED” wire terminals of electric throttle body assembly connector.</p> <p><i>Is resistance infinity?</i></p>	Go to Step 8.	“GRN” wire is shorted to “RED” wire.
8	<p>Wire harness check</p> <p>1) Turn ON ignition switch.</p> <p>2) Measure voltage between “C37-54” terminal of ECM connector and engine ground.</p> <p><i>Is voltage 0 V?</i></p>	Substitute a known-good ECM and recheck.	“GRN” wire is shorted to power circuit.
9	<p>Ground circuit check</p> <p>1) Turn OFF ignition switch.</p> <p>2) Measure resistance between “BLK” wire terminal of electric throttle body assembly connector and engine ground.</p> <p><i>Is resistance below 5 Ω?</i></p>	Go to Step 11.	Go to Step 10.
10	<p>Ground circuit check</p> <p>1) Remove ECM from its bracket with ECM connectors connected.</p> <p>2) Check for proper connection of ECM connector at “C37-42” terminal.</p> <p>3) Measure resistance between “C37-42” terminal of ECM connector and engine ground with ignition switch turned OFF.</p> <p><i>Is resistance below 5 Ω?</i></p>	“BLK” wire is open or high resistance circuit.	Faulty ECM ground circuit. If circuit is OK, substitute a known-good ECM and recheck.
11	<p>Electric throttle body assembly check</p> <p>1) Check throttle pedal position sensor referring to “Throttle Position Sensor Performance Check” under “Electric Throttle Body Assembly On-Vehicle Inspection (For Automated Manual Transaxle Model): in Section 1C”.</p> <p><i>Is output voltage within specified value?</i></p>	Substitute a known-good ECM and recheck.	Replace electric throttle body assembly.

DTC P0131 / P0132: O2 Sensor (HO2S) Circuit Low Voltage / High Voltage (Sensor-1)

S4RS0B1104032

Wiring Diagram



I4RS0B110027-08

1. Main fuse box	4. Junction block assembly	7. Heater	10. To HO2S-2
2. Shield wire	5. "IG COIL" fuse	8. To HO2S-2 heater	11. Individual circuit fuse box No.1
3. Ignition switch	6. HO2S-1	9. ECM	12. "IG ACC" fuse

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
<p>DTC P0131: Maximum HO2S voltage is less than 0.6 V (2 driving cycle detection logic)</p> <p>DTC P0132: Minimum HO2S voltage is 0.3 V or more (*2 driving cycle detection logic, monitoring once / 1 driving)</p>	<ul style="list-style-type: none"> • HO2S-1 circuit • HO2S-1 • Fuel system • ECM • Fuel shortage • Exhaust system • Air intake system

DTC Confirmation Procedure

⚠ WARNING

- When performing a road test, select a place where there is no traffic or possibility of a traffic accident and be very careful during testing to avoid occurrence of an accident.
- Road test should be carried out by 2 persons, a driver and a tester, on a level road.

NOTE

Check to make sure that following conditions are satisfied when using this “DTC Confirmation Procedure”.

- Intake air temperature at engine start: –10 °C (14 °F) to 80 °C (176 °F)
- Intake air temperature: –10 °C (14 °F) to 70 °C (158 °F)
- Engine coolant temperature: 70 °C (158 °F) to 150 °C (302 °F)
- Altitude (barometric pressure): 2400 m, 8000 ft or less (560 mmHg, 72 kPa or more)

- 1) With ignition switch turned OFF, connect scan tool.
- 2) Turn ON ignition switch and clear DTC using scan tool.
- 3) Start engine and warm up to normal operating temperature.
- 4) Drive vehicle at 40 mph (60 km/h) or higher. (engine speed: 2500 – 3000 r/min.)
- 5) Keep above vehicle speed for 6 min. or more. (Throttle valve opening is kept constant in this step.)
- 6) Release accelerator pedal and with engine brake applied, keep vehicle coasting (with fuel cut for 3 sec. or more) and then stop vehicle.
- 7) Check DTC and pending DTC.

DTC Troubleshooting

NOTE

- Before performed trouble shooting, be sure to read the “Precautions of ECM Circuit Inspection: ”.
- When measuring circuit voltage, resistance and/or pulse signal at ECM connector, connect the special tool to ECM and/or the ECM connectors referring to “Inspection of ECM and Its Circuits: ”.
- Upon completion of inspection and repair work, perform “DTC Confirmation Procedure” and confirm that the trouble has been corrected.

Step	Action	Yes	No
1	Was “Engine and Emission Control System Check” performed?	Go to Step 2.	Go to “Engine and Emission Control System Check: ”.
2	Is there DTC(s) other than HO2S-1?	Go to applicable DTC diag. flow.	Go to Step 3.
3	<p>HO2S-1 signal check</p> <p>1) Connect scan tool to DLC with ignition switch turned OFF.</p> <p>2) Warm up engine to normal operating temperature and keep it at 2000 r/min. for 60 sec.</p> <p>3) Repeat racing engine (Repeat depressing accelerator pedal 5 to 6 times continuously to enrich A/F mixture and take foot off from pedal to enlean it).</p> <p><i>Does HO2S-1 output voltage deflect between below 0.3 V and over 0.6 V repeatedly?</i></p>	Intermittent trouble. Check for intermittent referring to “Intermittent and Poor Connection Inspection: in Section 00”. If check result is OK, go to Step 9.	Go to Step 4.
4	<p>HO2S-1 ground check</p> <p>1) Disconnect connector from HO2S-1 with ignition switch turned OFF.</p> <p>2) Check for proper connection to HO2S-1 connector at “BLK/RED”, “WHT”, “BLK/WHT” and “YEL” wire terminals.</p> <p>3) If connections are OK, measure resistance between “YEL” wire terminal of HO2S-1 connector and engine ground.</p> <p><i>Is measured resistance less than 5 Ω?</i></p>	Go to Step 5.	<p>“YEL” wire is open or high resistance circuit. Poor “C37-57” terminal connection. Faulty ECM ground.</p> <p>If they are OK, substitute a known-good ECM and recheck.</p>

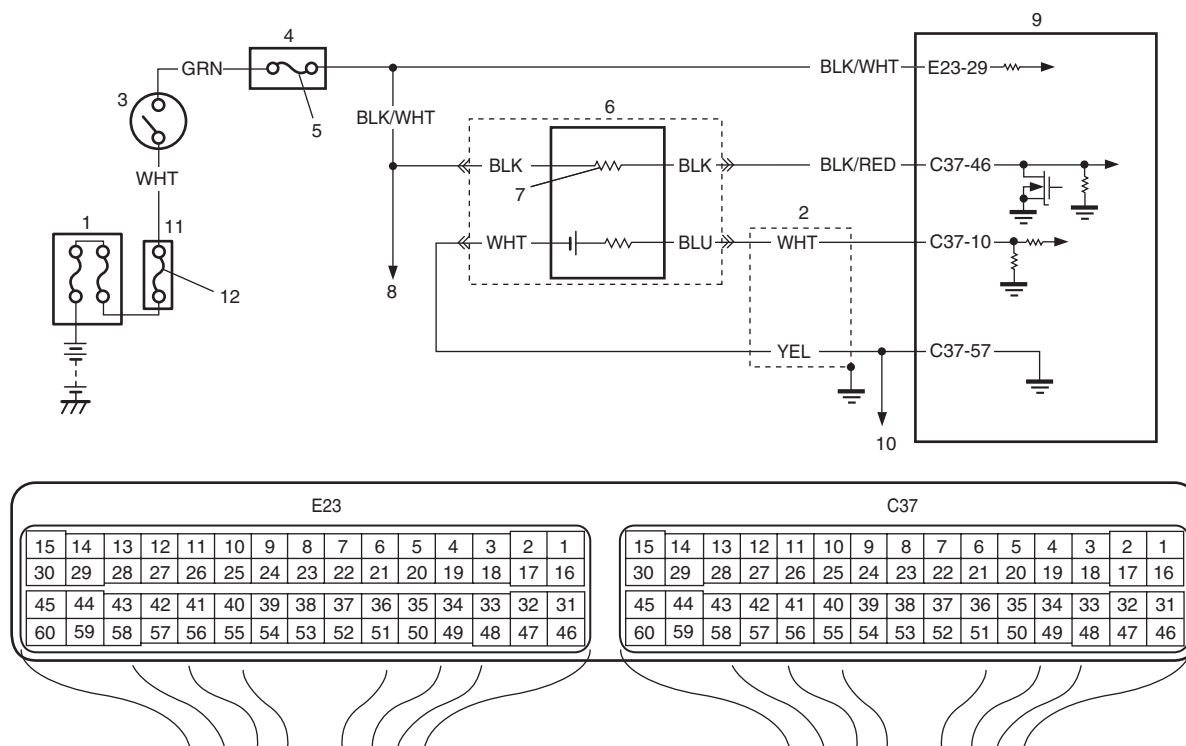
1A-110 Engine General Information and Diagnosis:

Step	Action	Yes	No
5	Wire circuit check 1) Turn OFF ignition switch. 2) Remove ECM from its bracket with ECM connectors connected. 3) Measure resistance between "WHT" wire terminal of HO2S-1 connector and "C37-10" terminal of ECM connector. <i>Is resistance less than 5 Ω?</i>	Go to Step 6.	"WHT" wire is high resistance circuit or open circuit. Poor "C37-10" terminal connection. Faulty ECM ground. If they are OK, substitute a known-good ECM and recheck.
6	Wire circuit check 1) Disconnect connectors from ECM with ignition switch turn OFF. 2) Measure resistance between "WHT" wire terminal of HO2S-1 connector and vehicle body ground. <i>Is resistance infinity?</i>	Go to Step 7.	"WHT" wire is shorted to ground circuit.
7	HO2S-1 signal circuit check 1) Measure voltage between "WHT" wire terminal of HO2S-1 connector and vehicle body ground. <i>Is voltage 0 V?</i>	Go to Step 8.	"WHT" wire is shorted to other circuit.
8	HO2S-1 heater circuit check 1) Check HO2S-1 heater circuit referring to "DTC P0031 / P0032: HO2S Heater Control Circuit Low / High (Sensor-1):". <i>Is circuit in good condition?</i>	Go to Step 9.	Repair HO2S-1 circuit.
9	Exhaust system check 1) Check exhaust system for exhaust gas leakage. <i>Is it OK?</i>	Go to Step 4 in "DTC P0171 / P0172: Fuel System Too Lean / Rich:". If it is in good condition, go to Step 10.	Repair leakage of exhaust system.
10	Air intake system check 1) Check air intake system for clog or leak. <i>Is it OK?</i>	Check HO2S-1 referring to "Heated Oxygen Sensor (HO2S-1 and HO2S-2) Heater On-Vehicle Inspection: in Section 1C". If it is in good condition, substitute a known-good ECM and recheck.	Repair or replace air intake system.

DTC P0133: O2 Sensor (HO2S) Circuit Slow Response (Sensor-1)

S4RS0B1104033

Wiring Diagram



I4RS0B110027-08

1. Main fuse box	4. Junction block assembly	7. Heater	10. To HO2S-2
2. Shield wire	5. "IG COIL" fuse	8. To HO2S-2 heater	11. Individual circuit fuse box No.1
3. Ignition switch	6. HO2S-1	9. ECM	12. "IG ACC" fuse

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
Response time (time to change from lean to rich or from rich to lean) of HO2S-1 output voltage is about 1 sec. at minimum or average time of 1 cycle is 5 sec. at minimum. (*2 driving cycle detection logic, monitoring once / 1 driving)	Heated oxygen sensor-1

DTC Confirmation Procedure

▲ WARNING

- When performing a road test, select a place where there is no traffic or possibility of a traffic accident and be very careful during testing to avoid occurrence of an accident.
- Road test should be carried out by 2 persons, a driver and a tester, on a level road.

NOTE

Check to make sure that following conditions are satisfied when using this "DTC Confirmation Procedure".

- Intake air temperature at engine start: -10 °C (14 °F) to 80 °C (176 °F)
- Intake air temperature: -10 °C (14 °F) to 70 °C (158 °F)
- Engine coolant temperature: 70 °C (158 °F) to 150 °C (302 °F)
- Altitude (barometric pressure): 2400 m, 8000 ft or less (560 mmHg, 75 kPa or more)

- 1) With ignition switch turned OFF, connect scan tool.
- 2) Turn ON ignition switch and clear DTC using scan tool.
- 3) Start engine and warm up to normal operating temperature.
- 4) Drive vehicle at 40 mph (60 km/h) or higher. (engine speed: 2500 – 3000 r/min.)

1A-112 Engine General Information and Diagnosis:

- 5) Keep above vehicle speed for 6 min. or more. (Throttle valve opening is kept constant in this step.)
- 6) Release accelerator pedal and with engine brake applied, keep vehicle coasting (with fuel cut for 3 sec. or more) and then stop vehicle.
- 7) Check if DTC and pending DTC exist by using scan tool. If not, check if oxygen sensor monitoring test has been completed by using scan tool. If not in both of above checks (i.e., no DTC and pending DTC and oxygen sensor monitoring test not completed), check vehicle condition (environmental) and repeat Step 3) through 6).

DTC Troubleshooting

NOTE

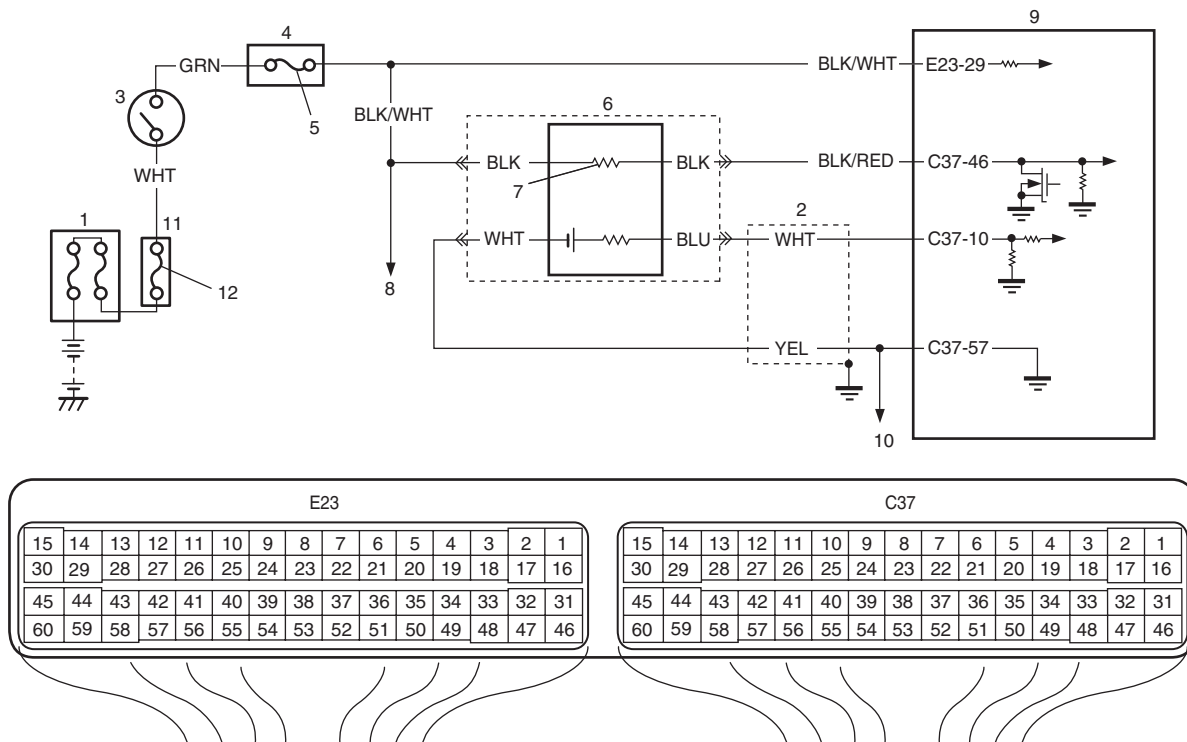
- Before performed trouble shooting, be sure to read the “Precautions of ECM Circuit Inspection: ”.
- When measuring circuit voltage, resistance and/or pulse signal at ECM connector, connect the special tool to ECM and/or the ECM connectors referring to “Inspection of ECM and Its Circuits: ”.
- Upon completion of inspection and repair work, perform “DTC Confirmation Procedure” and confirm that the trouble has been corrected.

Step	Action	Yes	No
1	Was “Engine and Emission Control System Check” performed?	Go to Step 2.	Go to “Engine and Emission Control System Check: ”.
2	Is there DTC(s) other than HO2S-1 (DTC P0133)?	Go to applicable DTC diag. flow.	Replace HO2S-1.

DTC P0134: O2 Sensor (HO2S) Circuit No Activity Detected (Sensor-1)

S4RS0B1104034

Wiring Diagram



I4RS0B110027-08

1. Main fuse box	4. Junction block assembly	7. Heater	10. To HO2S-2
2. Shield wire	5. "IG COIL" fuse	8. To HO2S-2 heater	11. Individual circuit fuse box No.1
3. Ignition switch	6. HO2S-1	9. ECM	12. "IG ACC" fuse

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
HO2S voltage is higher than 0.6 V for more than 1 min continuously after warming up engine or HO2S voltage is lower than 0.3 V for more than 1 min continuously after warming up engine. (2 driving cycle detection logic)	<ul style="list-style-type: none"> • HO2S-1 • HO2S-1 circuit • Exhaust gas leakage • ECM • Air intake system

DTC Confirmation Procedure

▲ WARNING

- When performing a road test, select a place where there is no traffic or possibility of a traffic accident and be very careful during testing to avoid occurrence of an accident.
- Road test should be carried out by 2 persons, a driver and a tester, on a level road.

NOTE

Check to make sure that following conditions are satisfied when using this “DTC Confirmation Procedure”.

- Intake air temperature at engine start: -10 °C (14 °F) to 80 °C (176 °F)
- Intake air temperature: -10 °C (14 °F) to 70 °C (158 °F)
- Engine Coolant temperature: 70 °C (158 °F) to 150 °C (302 °F)
- Altitude (barometric pressure): 2400 m, 8000 ft or less (560 mmHg, 75 kPa or more)

- 1) With ignition switch turned OFF, connect scan tool.
- 2) Turn ON ignition switch and clear DTC using scan tool.
- 3) Start engine and warm up to normal operating temperature.
- 4) Drive vehicle at 40 mph (60 km/h) or higher. (engine speed: 2500 – 3000 r/min.)
- 5) Keep above vehicle speed for 6 min. or more. (Throttle valve opening is kept constant in this step.)
- 6) Release accelerator pedal and with engine brake applied, keep vehicle coasting (with fuel cut for 3 sec. or more) and then stop vehicle.
- 7) Check if DTC and pending DTC exist by using scan tool. If not, check if oxygen sensor monitoring test has been completed by using scan tool. If not in both of above checks (i.e., no DTC and pending DTC and oxygen sensor monitoring test not completed), check vehicle condition (environmental) and repeat Step 3) through 6).

DTC Troubleshooting

NOTE

- Before performed trouble shooting, be sure to read the “Precautions of ECM Circuit Inspection: ”.
- When measuring circuit voltage, resistance and/or pulse signal at ECM connector, connect the special tool to ECM and/or the ECM connectors referring to “Inspection of ECM and Its Circuits: ”.
- Upon completion of inspection and repair work, perform “DTC Confirmation Procedure” and confirm that the trouble has been corrected.

1A-114 Engine General Information and Diagnosis:

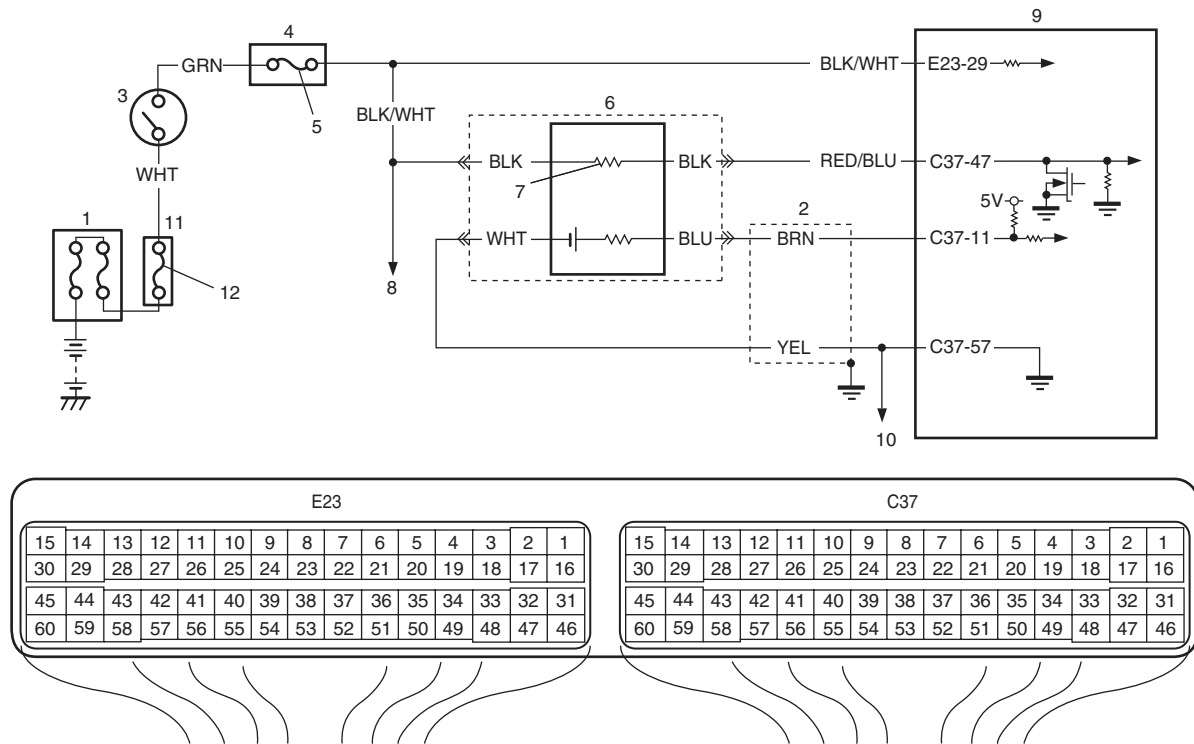
Step	Action	Yes	No
1	Was "Engine and Emission Control System Check" performed?	Go to Step 2.	Go to "Engine and Emission Control System Check: ".
2	HO2S-1 output voltage check 1) Connect scan tool to DLC with ignition switch turned OFF. 2) Warm up engine to normal operating temperature and keep it at 2000 r/min. for 60 sec. 3) Repeat racing engine (Repeat depressing accelerator pedal 5 to 6 times continuously to enrich A/F mixture and take foot off from pedal to enlean it) and check HO2S output voltages displayed on scan tool. <i>Is over 0.6 V and below 0.3 V indicated?</i>	Intermittent trouble. Check for intermittent referring to "Intermittent and Poor Connection Inspection: in Section 00". If check result is OK, go to Step 3.	Go to Step 3.
3	HO2S-1 ground check 1) Disconnect connector from HO2S-1 with ignition switch turned OFF. 2) Check for proper connection to HO2S-1 at "BLK/RED", "WHT", "BLK/WHT" and "YEL" wire terminals. 3) If wire and connection are OK, measure resistance between "YEL" wire terminal of HO2S-1 connector and engine ground. <i>Is resistance less than 5 Ω?</i>	Go to Step 4.	"YEL" wire is open or high resistance circuit. Poor "C37-57" terminal connection. Faulty ECM ground. If they are OK, substitute a known-good ECM and recheck.
4	Wire circuit check 1) Turn OFF ignition switch. 2) Remove ECM from its bracket with ECM connectors connected. 3) Measure resistance between "WHT" wire terminal of HO2S-1 connector and "C37-10" terminal of ECM connector. <i>Is resistance less than 5 Ω?</i>	Go to Step 5.	"WHT" wire is high resistance circuit or open circuit. Poor "C37-10" terminal connection of ECM connector. Faulty ECM ground. If they are OK, substitute a known-good ECM and recheck.
5	Wire circuit check 1) Disconnect connectors from ECM with ignition switch turned OFF. 2) Measure resistance between "WHT" wire terminal of HO2S-1 connector and vehicle body ground. <i>Is resistance infinity?</i>	Go to Step 6.	"WHT" wire is shorted to ground circuit.
6	HO2S-1 heater circuit check 1) Check HO2S-1 heater circuit referring to "DTC P0031 / P0032: HO2S Heater Control Circuit Low / High (Sensor-1): ". <i>Is it in good condition?</i>	Go to Step 7.	Repair HO2S-1 circuit.
7	Exhaust system check 1) Check exhaust system for exhaust gas leakage. <i>Is it OK?</i>	Go to Step 4 in "DTC P0171 / P0172: Fuel System Too Lean / Rich: ". If it is in good condition, go to Step 8.	Repair leakage of exhaust system.

Step	Action	Yes	No
8	Air intake system check 1) Check air intake system for clog or leak. <i>Is it OK?</i>	Check HO2S-1 referring to "Heated Oxygen Sensor (HO2S-1 and HO2S-2) Heater On-Vehicle Inspection: in Section 1C". If it is in good condition, substitute a known-good ECM and recheck.	Repair or replace air intake system.

DTC P0137 / P0138: O2 Sensor (HO2S) Circuit Low Voltage / High Voltage (Sensor-2)

S4RS0B1104035

Wiring Diagram



1. Main fuse box	4. Junction block assembly	7. Heater	10. To HO2S-1
2. Shield wire	5. "IG COIL" fuse	8. To HO2S-1 heater	11. Individual circuit fuse box No.1
3. Ignition switch	6. HO2S-2	9. ECM	12. "IG ACC" fuse

I4RS0B110014-01

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
DTC P0137: HO2S-2 voltage is lower than 0.4 V while engine is idling after driving with high engine load (high speed) for specified time. And HO2S-2 max. voltage minus HO2S-2 min. voltage is less than 0.2 V for 40 sec continuously. (2 driving cycle detection logic) DTC P0138: HO2S-2 voltage is higher than 0.85 V while engine is idling after driving with high engine load (high speed) for specified time. And HO2S-2 max. voltage minus HO2S-2 min. voltage is less than 0.2 V for 40 sec continuously. (2 driving cycle detection logic)	<ul style="list-style-type: none"> • HO2S-2 • HO2S-2 circuit • Fuel system • ECM • Fuel shortage • Exhaust system • Air intake system

DTC Confirmation Procedure

▲ WARNING

- When performing a road test, select a place where there is no traffic or possibility of a traffic accident and be very careful during testing to avoid occurrence of an accident.
- Road test should be carried out by 2 persons, a driver and a tester, on a level road.

NOTE

Check to make sure that following conditions are satisfied when using this “DTC Confirmation Procedure”.

- Intake air temperature at engine start: **-10 °C (14 °F) to 80 °C (176 °F)**
- Intake air temperature: **-10 °C (14 °F) to 70 °C (158 °F)**
- Engine Coolant temperature: **70 °C (158 °F) to 150 °C (302°F)**
- Altitude (barometric pressure): **2400 m, 8000 ft or less (560 mmHg, 75 kPa or more)**

- 1) With ignition switch turned OFF, connect scan tool.
- 2) Turn ON ignition switch and clear DTC using scan tool.
- 3) Start engine and warm up to normal operating temperature.
- 4) Increase vehicle speed to 60 – 80 km/h (37 – 50 mile/h) at 5th gear or D range.
- 5) Release accelerator pedal and with engine brake applied, keep vehicle coasting (with fuel cut for 4 sec. or more), then stop vehicle and run engine at idle speed for 60 sec. or more.
- 6) Repeat Step 4).
- 7) Keep above vehicle speed for 8 min. or more. (Throttle valve opening is kept constant in this step.)
- 8) Repeat Step 5).
- 9) Check DTC and pending DTC.

DTC Troubleshooting

NOTE

- Before performed trouble shooting, be sure to read the “Precautions of ECM Circuit Inspection: ”.
- When measuring circuit voltage, resistance and/or pulse signal at ECM connector, connect the special tool to ECM and/or the ECM connectors referring to “Inspection of ECM and Its Circuits: ”.
- Upon completion of inspection and repair work, perform “DTC Confirmation Procedure” and confirm that the trouble has been corrected.

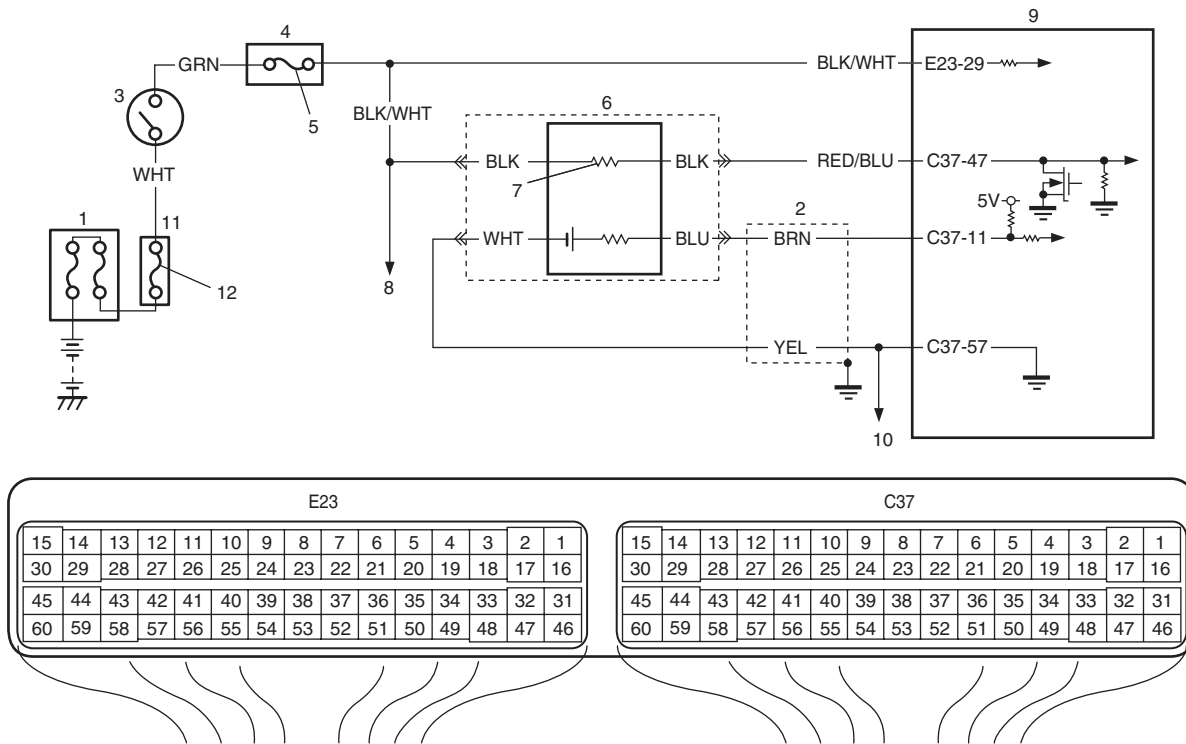
Step	Action	Yes	No
1	Was “Engine and Emission Control System Check” performed?	Go to Step 2.	Go to “Engine and Emission Control System Check: ”.
2	Is there DTC(s) other than fuel system (DTC P0171 / P0172) and HO2S-2 (DTC P0140)?	Go to applicable DTC diag. flow.	Go to Step 3.
3	<p>HO2S-2 and its circuit check</p> <p>1) Connect scan tool to DLC with ignition switch turned OFF.</p> <p>2) Warm up engine to normal operating temperature and keep it at 2000 r/min. for 60 sec.</p> <p>3) Repeat racing engine (Repeat depressing accelerator pedal 5 to 6 times continuously to enrich A/F mixture and take foot off from pedal to enlean it).</p> <p>Does HO2S-2 output voltage indicate deflection between over 0.35 V and below 0.25 V?</p>	Go to “DTC P0171 / P0172: Fuel System Too Lean / Rich: ”.	Go to Step 4.

Step	Action	Yes	No
4	<p>HO2S-2 ground check</p> <p>1) Disconnect connector from HO2S-2 with ignition switch turned OFF.</p> <p>2) Check for proper connection to HO2S-2 connector at "RED/BLU", "BRN", "YEL" and "BLK/WHT" wire terminals.</p> <p>3) If connections are OK, measure resistance between "YEL" wire terminal of HO2S-2 connector and engine ground.</p> <p><i>Is resistance less than 5 Ω?</i></p>	Go to Step 5.	<p>"YEL" wire is open or high resistance circuit. Poor "C37-57" terminal connection. Faulty ECM ground.</p> <p>If they are OK, substitute a known-good ECM and recheck.</p>
5	<p>Wire circuit check</p> <p>1) Turn OFF ignition switch.</p> <p>2) Remove ECM from its bracket with ECM connectors connected.</p> <p>3) Measure resistance between "BRN" wire terminal of HO2S-2 connector and "C37-11" terminal of ECM connector.</p> <p><i>Is resistance less than 5 Ω?</i></p>	Go to Step 6.	<p>"BRN" wire is high resistance circuit or open circuit. Poor "C37-11" terminal connection.</p> <p>If they are OK, substitute a known-good ECM and recheck.</p>
6	<p>Wire circuit check</p> <p>1) Disconnect connectors from ECM with ignition switch turned OFF.</p> <p>2) Measure resistance between "BRN" wire terminal of HO2S-2 connector and vehicle body ground.</p> <p><i>Is resistance infinity?</i></p>	Go to Step 7.	"BRN" wire is shorted to ground circuit.
7	<p>HO2S-2 signal circuit check</p> <p>1) Measure voltage between "BRN" wire terminal of HO2S-2 connector and vehicle body ground.</p> <p><i>Is voltage 0 V?</i></p>	Go to Step 8.	"BRN" wire is shorted to other circuit.
8	<p>HO2S-2 heater circuit check</p> <p>1) Check HO2S-2 heater circuit referring to "DTC P0037 / P0038: HO2S Heater Control Circuit Low / High (Sensor-2):".</p> <p><i>Is circuit in good condition?</i></p>	Go to Step 9.	Repair HO2S-2 circuit.
9	<p>Exhaust system check</p> <p>1) Check exhaust system for exhaust gas leakage.</p> <p><i>Is it OK?</i></p>	<p>Go to Step 4 in "DTC P0171 / P0172: Fuel System Too Lean / Rich:".</p> <p>If it is in good condition, go to Step 10.</p>	Repair leakage of exhaust system.
10	<p>Air intake system check</p> <p>1) Check air intake system for clog or leak.</p> <p><i>Is it OK?</i></p>	<p>Check HO2S-2 referring to "Heated Oxygen Sensor (HO2S-1 and HO2S-2) Heater On-Vehicle Inspection: in Section 1C".</p> <p>If it is in good condition, substitute a known-good ECM and recheck.</p>	Repair or replace air intake system.

DTC P0140: O2 Sensor (HO2S) Circuit No Activity Detected (Sensor-2)

S4RS0B1104036

Wiring Diagram



I4RS0B110014-01

1. Main fuse box	4. Junction block assembly	7. Heater	10. To HO2S-1
2. Shield wire	5. "IG COIL" fuse	8. To HO2S-1 heater	11. Individual circuit fuse box No.1
3. Ignition switch	6. HO2S-2	9. ECM	12. "IG ACC" fuse

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
HO2S-2 voltage is higher than specified value after warming up engine (circuit open). (2 driving cycle detection logic)	<ul style="list-style-type: none"> • HO2S-2 • HO2S-2 circuit • ECM • Exhaust gas leakage • Air intake system

DTC Confirmation Procedure

▲ WARNING

- When performing a road test, select a place where there is no traffic or possibility of a traffic accident and be very careful during testing to avoid occurrence of an accident.
- Road test should be carried out by 2 persons, a driver and a tester, on a level road.

- 1) With ignition switch turned OFF, connect scan tool.
- 2) Turn ON ignition switch and clear DTC using scan tool.
- 3) Start engine and warm up to normal operating temperature.
- 4) Increase vehicle speed to 60 – 80 km/h (37 – 50 mile/h) at 5th gear or D range.
- 5) Release accelerator pedal and with engine brake applied, keep vehicle coasting (with fuel cut for 4 sec. or more), then stop vehicle and run engine at idle speed for 60 sec. or more.
- 6) Check DTC and pending DTC.

DTC Troubleshooting

NOTE

- Before performed trouble shooting, be sure to read the “Precautions of ECM Circuit Inspection: ”.
- When measuring circuit voltage, resistance and/or pulse signal at ECM connector, connect the special tool to ECM and/or the ECM connectors referring to “Inspection of ECM and Its Circuits: ”.
- Upon completion of inspection and repair work, perform “DTC Confirmation Procedure” and confirm that the trouble has been corrected.

Step	Action	Yes	No
1	Was “Engine and Emission Control System Check” performed?	Go to Step 2.	Go to “Engine and Emission Control System Check: ”.
2	<p>HO2S-2 ground check</p> <p>1) Disconnect connector from HO2S-2 with ignition switch turned OFF.</p> <p>2) Check for proper connection to HO2S-2 connector at “RED/BLU”, “BRN”, “YEL” and “BLK/WHT” wire terminals.</p> <p>3) If connections are OK, measure resistance between “YEL” wire terminal of HO2S-2 connector and engine ground.</p> <p><i>Is resistance less than 5 Ω?</i></p>	Go to Step 3.	<p>“YEL” wire is open or high resistance circuit. Poor “C37-57” terminal connection. Faulty ECM ground.</p> <p>If they are OK, substitute a known-good ECM and recheck.</p>
3	<p>Wire circuit check</p> <p>1) Turn OFF ignition switch.</p> <p>2) Remove ECM from its bracket with ECM connectors connected.</p> <p>3) Measure resistance between “BRN” wire terminal of HO2S-2 connector and “C37-11” terminal of ECM connector.</p> <p><i>Is resistance less than 5 Ω?</i></p>	Go to Step 4.	<p>“BRN” wire is high resistance circuit or open circuit. Poor “C37-11” terminal connection.</p> <p>If they are OK, substitute a known-good ECM and recheck.</p>
4	<p>HO2S-2 signal circuit check</p> <p>1) Disconnect connectors from ECM with ignition switch turned OFF.</p> <p>2) Measure voltage between “BRN” wire terminal of HO2S-2 connector and vehicle body ground.</p> <p><i>Is voltage 0 V?</i></p>	Go to Step 5.	“BRN” wire is shorted to other circuit.
5	<p>HO2S-2 heater circuit check</p> <p>1) Check HO2S-2 heater circuit referring to “DTC P0037 / P0038: HO2S Heater Control Circuit Low / High (Sensor-2): ”.</p> <p><i>Is circuit in good condition?</i></p>	Go to Step 6.	Repair HO2S-2 circuit. If circuit is OK, substitute a known-good ECM and recheck.
6	<p>HO2S-2 check</p> <p>1) Check HO2S-2 referring to “Heated Oxygen Sensor (HO2S-1 and HO2S-2) Heater On-Vehicle Inspection: in Section 1C”.</p> <p><i>Is it in good condition?</i></p>	Substitute a known-good ECM and recheck.	Replace HO2S-2.

DTC P0171 / P0172: Fuel System Too Lean / Rich

S4RS0B1104037

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
DTC P0171: Total fuel trim is higher than 35% or short term fuel trim is higher than 20% for more than 1 min. continuously. (2 driving cycle detection logic) DTC P0172: Total fuel trim is lower than -35% or short term fuel trim is lower than -20% for more than 1 min. continuously. (2 driving cycle detection logic)	<ul style="list-style-type: none"> • Vacuum leakage • Exhaust gas leakage • Fuel pressure out of specification • Fuel injector malfunction • Heated oxygen sensor-1 malfunction • MAF sensor malfunction • ECT sensor malfunction

DTC Confirmation Procedure**▲ WARNING**

- When performing a road test, select a place where there is no traffic or possibility of a traffic accident and be very careful during testing to avoid occurrence of an accident.
- Road test should be carried out by 2 persons, a driver and a tester, on a level road.

NOTE

Check to make sure that following conditions are satisfied when using this "DTC Confirmation Procedure".

- Intake air temperature at engine start: -10 °C (14 °F) to 80 °C (176 °F)
- Intake air temperature: -10 °C (14 °F) to 70 °C (158 °F)
- Engine coolant temperature: 70 °C (158 °F) to 150 °C (302 °F)
- Altitude (barometric pressure): 2400 m, 8000 ft or less (560 mmHg, 75 kPa or more)

- 1) With ignition switch turned OFF, connect scan tool.
- 2) Turn ON ignition switch and print Freeze Frame Data or write them down using scan tool.
- 3) Clear DTC using scan tool.
- 4) Start engine and warm up to normal operating temperature.
- 5) Operate vehicle with condition as noted freeze frame data for 5 min.
- 6) Stop vehicle and check DTC and pending DTC.

DTC Troubleshooting

NOTE

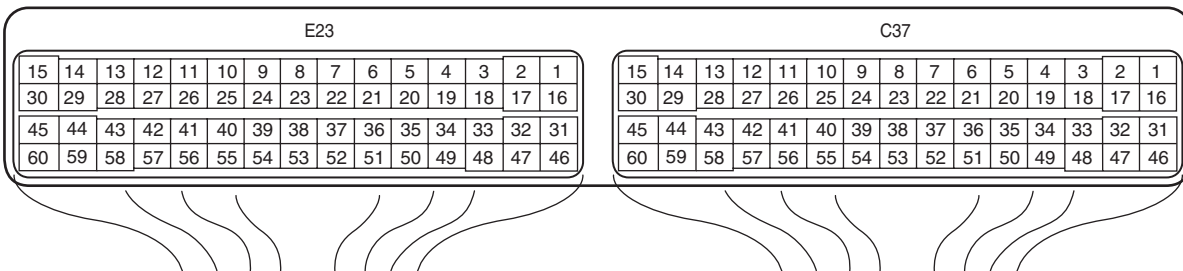
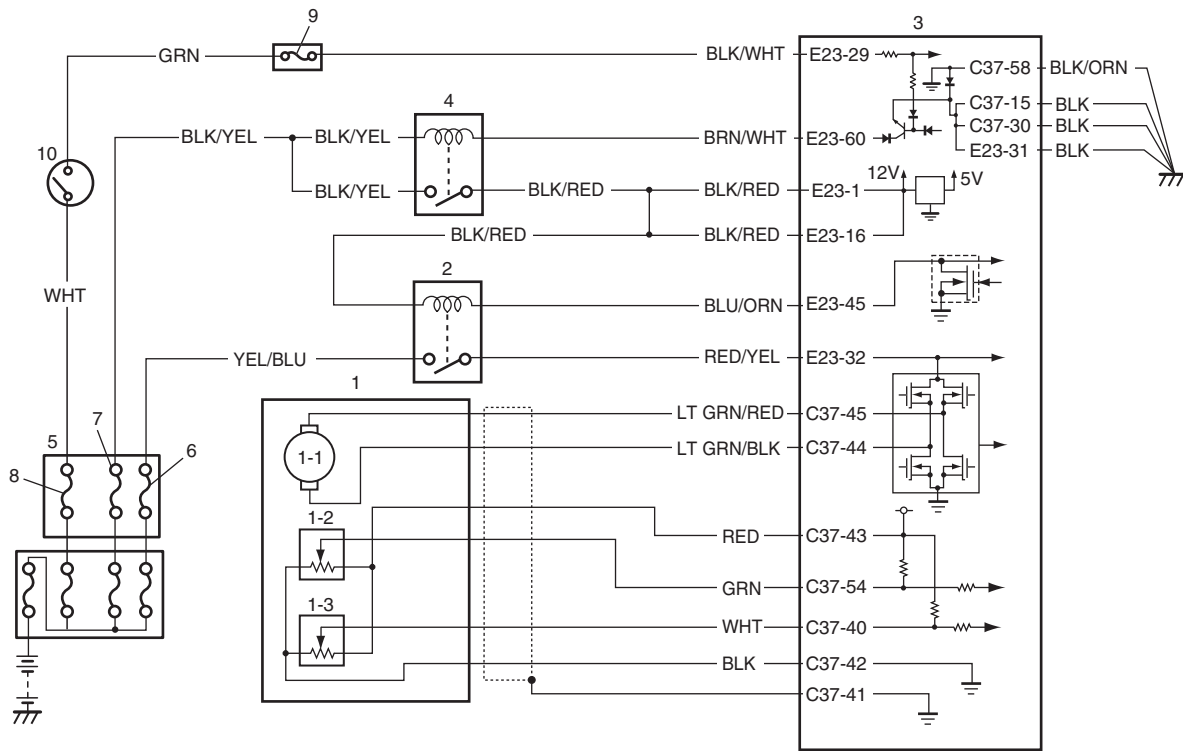
- Before performed trouble shooting, be sure to read the “Precautions of ECM Circuit Inspection: ”.
- When measuring circuit voltage, resistance and/or pulse signal at ECM connector, connect the special tool to ECM and/or the ECM connectors referring to “Inspection of ECM and Its Circuits: ”.
- Upon completion of inspection and repair work, perform “DTC Confirmation Procedure” and confirm that the trouble has been corrected.

Step	Action	Yes	No
1	Was “Engine and Emission Control System Check” performed?	Go to Step 2.	Go to “Engine and Emission Control System Check: ”.
2	Is there DTC(s) other than fuel system (DTC P0171 / P0172)?	Go to applicable DTC diag. flow.	Go to Step 3.
3	Intake system and exhaust system for leakage check Are intake system and exhaust system in good condition?	Go to Step 4.	Repair or replace defective part.
4	Fuel pressure check 1) Check fuel pressure referring to “Fuel Pressure Check: ”. Is check result satisfactory?	Go to Step 5.	Repair or replace defective part.
5	Fuel injectors and its circuit check 1) Check fuel injectors referring to “Fuel Injector Inspection: in Section 1G”. Is check result satisfactory?	Go to Step 6.	Faulty injector(s) or its circuit.
6	Visual inspection 1) Check MAF sensor and air intake system. <ul style="list-style-type: none"> • Objects which block measuring duct and resistor of MAF sensor. • Other air flow which does not pass MAF sensor. Are they in good condition?	Go to Step 7.	Repair or replace defective part.
7	MAF sensor for performance check 1) With ignition switch turned OFF, install scan tool. 2) Start engine and warm up to normal operating temperature. 3) Check MAF value using scan tool (Refer to “Scan Tool Data: ” for normal value.). Is each value within specified range?	Go to Step 8.	Go to “DTC P0101: Mass Air Flow Circuit Range / Performance: ”.
8	ECT sensor for performance check 1) Check ECT sensor referring to Step 3 and 4 of “DTC P0118: Engine Coolant Temperature Circuit High: ”. Is check result satisfactory?	Go to Step 9.	Faulty ECT sensor or its circuit.
9	HO2S-1 for performance check 1) Check HO2S-1 referring to Step 3 of “DTC P0131 / P0132: O2 Sensor (HO2S) Circuit Low Voltage / High Voltage (Sensor-1): ”. Is check result satisfactory?	Substitute a known-good ECM and recheck.	Faulty HO2S-1 or its circuit.

DTC P0222: Throttle Position Sensor (Sub) Circuit Low (For Automated Manual Transaxle Model)

S4RS0B1104075

Wiring Diagram



I4RS0B110021-02

1. Electric throttle body assembly	3. ECM	8. "IG ACC" fuse
1-1. Throttle actuator	4. Main relay	9. "IG COIL" fuse
1-2. Throttle position sensor (main)	5. Individual circuit fuse box No.1	10. Ignition switch
1-3. Throttle position sensor (sub)	6. "TH MOT" fuse	
2. Throttle actuator control relay	7. "FI" fuse	

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
Output voltage of throttle position sensor (sub) is less than specified value for specified time continuously. (1 driving detection logic)	<ul style="list-style-type: none"> Throttle position sensor (sub) circuit Electric throttle body assembly ECM

NOTE

When DTC P0122 (for Automated Manual Transaxle model) and P0222 are indicated together, it is possible that "RED" wire open circuit.

DTC Confirmation Procedure

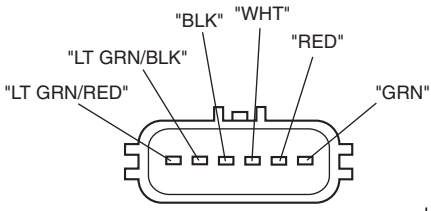
- 1) With ignition switch turned OFF, connect scan tool.
- 2) Turn ON ignition switch and clear DTC using scan tool.
- 3) Keep the accelerator pedal at idle position for 2 seconds.
- 4) Keep the accelerator pedal at fully depressed position for 2 seconds.

- 5) Repeat Step 3) and 4) for 3 times.
- 6) Check DTC.

DTC Troubleshooting

NOTE

- Before performed trouble shooting, be sure to read the “Precautions of ECM Circuit Inspection: ”.
- When measuring circuit voltage, resistance and/or pulse signal at ECM connector, connect the special tool to ECM and/or the ECM connectors referring to “Inspection of ECM and Its Circuits: ”.
- Upon completion of inspection and repair work, perform “DTC Confirmation Procedure” and confirm that the trouble has been corrected.

Step	Action	Yes	No
1	Was “Engine and Emission Control System Check” performed?	Go to Step 2.	Go to “Engine and Emission Control System Check: ”.
2	<p>Throttle position sensor and its circuit check</p> <ol style="list-style-type: none"> 1) Connect scan tool to DLC with ignition switch turned OFF. 2) Turn ON ignition switch, check “TP Sensor 2 Volt” displayed on scan tool when accelerator pedal is idle position and fully depressed. <p>Is displayed TP sensor value as described voltage in “Scan Tool Data: ”?</p>	<p>Intermittent trouble.</p> <p>Check for intermittent referring to “Intermittent and Poor Connection Inspection: in Section 00”.</p>	Go to Step 3.
3	<p>ECM voltage check</p> <ol style="list-style-type: none"> 1) Disconnect connector from electric throttle body assembly with ignition switch turned OFF. 2) Check for proper connection to electric throttle body assembly at “RED”, “WHT” and “BLK” wire terminals.  <p style="text-align: right; font-size: small;">I4RS0B110022-02</p> <ol style="list-style-type: none"> 3) If OK, measure voltage between “RED” wire terminal of electric throttle body assembly connector and engine ground with ignition switch turned ON. <p>Is voltage 4 – 6 V?</p>	Go to Step 6.	Go to Step 4.
4	<p>ECM voltage check</p> <ol style="list-style-type: none"> 1) Turn OFF ignition switch. 2) Remove ECM from its bracket with ECM connectors connected. 3) Check for proper connection of ECM connector at “C37-43” terminal. 4) If OK, measure voltage between “C37-43” terminal of ECM connector and engine ground with ignition switch turned ON. <p>Is voltage 4 – 6 V?</p>	“RED” wire is open or high resistance circuit.	Go to Step 5.

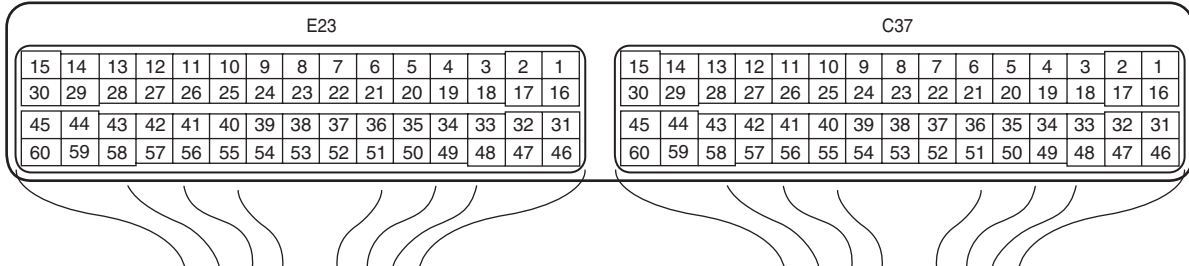
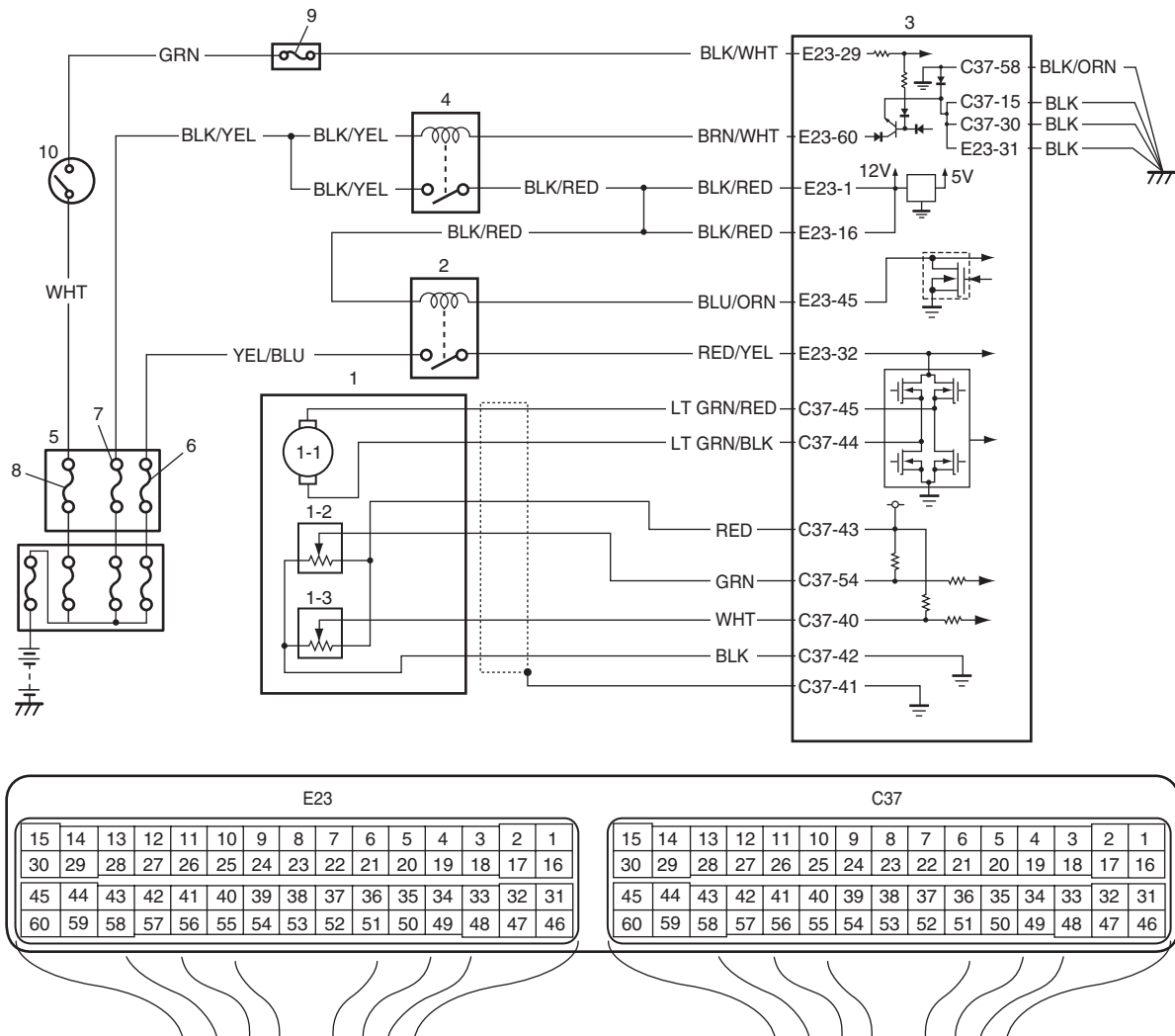
1A-124 Engine General Information and Diagnosis:

Step	Action	Yes	No
5	Wire harness check 1) Disconnect connectors from ECM with ignition switch turned OFF. 2) Measure resistance between "C37-43" terminal of ECM connector and engine ground. <i>Is resistance infinity?</i>	Substitute a known-good ECM and recheck.	"RED" wire is shorted to ground circuit.
6	Wire harness check 1) Measure voltage between "WHT" wire terminal of electric throttle body assembly connector and engine ground with ignition switch turned ON. <i>Is voltage 4 – 6 V?</i>	Go to Step 9.	Go to Step 7.
7	Wire harness check 1) Disconnect connectors from ECM with ignition switch turned OFF. 2) Check for proper connection of ECM connector at "C37-40" and "C37-42" terminals. 3) If OK, measure resistance between "WHT" and "BLK" wire terminals of electric throttle body assembly connector. <i>Is resistance infinity?</i>	Go to Step 8.	"WHT" wire is shorted to "BLK" wire.
8	Wire harness check 1) Measure resistance between "WHT" wire terminal of electric throttle body assembly connector and engine ground with ignition switch turned OFF. <i>Is resistance infinity?</i>	Substitute a known-good ECM and recheck.	"WHT" wire is shorted to ground circuit.
9	Electric throttle body assembly check 1) Check throttle pedal position sensor referring to "Throttle Position Sensor Performance Check" under "Electric Throttle Body Assembly On-Vehicle Inspection (For Automated Manual Transaxle Model): in Section 1C". <i>Is output voltage within specified value?</i>	Substitute a known-good ECM and recheck.	Replace electric throttle body assembly.

DTC P0223: Throttle Position Sensor (Sub) Circuit High (For Automated Manual Transaxle Model)

S4RS0B1104076

Wiring Diagram



I4RS0B110021-02

1. Electric throttle body assembly	3. ECM	8. "IG ACC" fuse
1-1. Throttle actuator	4. Main relay	9. "IG COIL" fuse
1-2. Throttle position sensor (main)	5. Individual circuit fuse box No.1	10. Ignition switch
1-3. Throttle position sensor (sub)	6. "TH MOT" fuse	
2. Throttle actuator control relay	7. "FI" fuse	

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
Output voltage of throttle position sensor (sub) is more than specified value for specified time continuously. (1 driving detection logic)	<ul style="list-style-type: none"> • Throttle position sensor (sub) circuit • Electric throttle body assembly • ECM

NOTE

When DTC P0123 (for Automated Manual Transaxle model) and P0223 are indicated together, it is possible that "RED" wire shorted to power circuit and/or "BLK" wire open.

DTC Confirmation Procedure

- 1) With ignition switch turned OFF, connect scan tool.
- 2) Turn ON ignition switch and clear DTC using scan tool.
- 3) Keep the accelerator pedal at idle position for 2 seconds.
- 4) Keep the accelerator pedal at fully depressed position for 2 seconds.

1A-126 Engine General Information and Diagnosis:

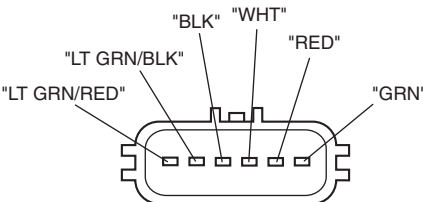
5) Repeat Step 3) and 4) for 3 times.

6) Check DTC.

DTC Troubleshooting

NOTE

- Before performed trouble shooting, be sure to read the “Precautions of ECM Circuit Inspection: ”.
- When measuring circuit voltage, resistance and/or pulse signal at ECM connector, connect the special tool to ECM and/or the ECM connectors referring to “Inspection of ECM and Its Circuits: ”.
- Upon completion of inspection and repair work, perform “DTC Confirmation Procedure” and confirm that the trouble has been corrected.

Step	Action	Yes	No
1	Was “Engine and Emission Control System Check” performed?	Go to Step 2.	Go to “Engine and Emission Control System Check: ”.
2	<p>Throttle position sensor and its circuit check</p> <p>1) Connect scan tool to DLC with ignition switch turned OFF.</p> <p>2) Turn ON ignition switch, check “TP Sensor 2 Volt” displayed on scan tool when accelerator pedal is idle position and fully depressed.</p> <p><i>Is displayed TP sensor value as described voltage in “Scan Tool Data: ”?</i></p>	<p>Intermittent trouble.</p> <p>Check for intermittent referring to “Intermittent and Poor Connection Inspection: in Section 00”.</p>	Go to Step 3.
3	<p>ECM voltage check</p> <p>1) Disconnect connector from electric throttle body assembly with ignition switch turned OFF.</p> <p>2) Check for proper connection to electric throttle body assembly at “RED”, “WHT” and “BLK” wire terminals.</p> <div style="text-align: center;">  <p style="font-size: small;">I4RS0B110022-02</p> </div> <p>3) If OK, measure voltage between “RED” wire terminal of electric throttle body assembly connector and engine ground with ignition switch turned ON.</p> <p><i>Is voltage 4 – 6 V?</i></p>	Go to Step 5.	Go to Step 4.
4	<p>Wire harness check</p> <p>1) Disconnect connectors from ECM with ignition switch turned OFF.</p> <p>2) Check for proper connection of ECM connector at “C37-43” terminal.</p> <p>3) Measure voltage between “C37-43” terminal of ECM connector and engine ground with ignition switch turned ON.</p> <p><i>Is voltage 0 V?</i></p>	Substitute a known-good ECM and recheck.	“RED” wire is shorted to power circuit.

Step	Action	Yes	No
5	<p>Wire harness check</p> <p>1) Measure voltage between “WHT” wire terminal of electric throttle body assembly connector and engine ground with ignition switch turned ON.</p> <p><i>Is voltage 4 – 6 V?</i></p>	Go to Step 9.	Go to Step 6.
6	<p>Wire harness check</p> <p>1) Turn OFF ignition switch.</p> <p>2) Remove ECM from its bracket with ECM connectors connected.</p> <p>3) Check for proper connection of ECM connector at “C37-43” and “C37-40” terminals.</p> <p>4) If OK, measure voltage between “C37-40” terminal of ECM connector and engine ground with ignition switch turned ON.</p> <p><i>Is voltage 4 – 6 V?</i></p>	“WHT” wire is open or high resistance circuit.	Go to Step 7.
7	<p>Wire harness check</p> <p>1) Disconnect connectors from ECM with ignition switch turned OFF.</p> <p>2) Measure resistance between “WHT” and “RED” wire terminals of electric throttle body assembly connector.</p> <p><i>Is resistance infinity?</i></p>	Go to Step 8.	“WHT” wire is shorted to “RED” wire.
8	<p>Wire harness check</p> <p>1) Turn ON ignition switch.</p> <p>2) Measure voltage between “C37-40” terminal of ECM connector and engine ground.</p> <p><i>Is voltage 0 V?</i></p>	Substitute a known-good ECM and recheck.	“WHT” wire is shorted to power circuit.
9	<p>Ground circuit check</p> <p>1) Turn OFF ignition switch.</p> <p>2) Measure resistance between “BLK” wire terminal of electric throttle body assembly connector and engine ground.</p> <p><i>Is resistance below 5 Ω?</i></p>	Go to Step 11.	Go to Step 10.
10	<p>Ground circuit check</p> <p>1) Remove ECM from its bracket with ECM connectors connected.</p> <p>2) Check for proper connection of ECM connector at “C37-42” terminal.</p> <p>3) Measure resistance between “C37-42” terminal of ECM connector and engine ground with ignition switch turned OFF.</p> <p><i>Is resistance below 5 Ω?</i></p>	“BLK” wire is open or high resistance circuit.	Faulty ECM ground circuit. If circuit is OK, substitute a known-good ECM and recheck.
11	<p>Electric throttle body assembly check</p> <p>1) Check throttle position sensor referring to “Throttle Position Sensor Performance Check” under “Electric Throttle Body Assembly On-Vehicle Inspection (For Automated Manual Transaxle Model): in Section 1C”.</p> <p><i>Is output voltage within specified value?</i></p>	Substitute a known-good ECM and recheck.	Replace electric throttle body assembly.

DTC P0300 / P0301 / P0302 / P0303 / P0304: Random Misfire Detected / Cylinder 1 / Cylinder 2 / Cylinder 3 / Cylinder 4 Misfire Detected

S4RS0B1104038

System Description

ECM measures the angle of the crankshaft based on the pulse signal from the CKP sensor and CMP sensor for each cylinder. If it detects a large change in the angle speed of the crankshaft, it concludes occurrence of a misfire. When the number of misfire is counted by ECM beyond the DTC detecting condition, it determines the cylinder where the misfire occurred and output it as DTC.

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
<p>DTC P0300:</p> <ul style="list-style-type: none"> Misfire, which causes catalyst to overheat during 200 engine revolutions, is detected at 2 or more cylinders. (MIL flashes as long as this misfire occurs continuously.) <p>or</p> <ul style="list-style-type: none"> Misfire, which affects exhaust emission adversely during 1000 engine revolution, is detected at 2 or more cylinders. (2 driving cycle detection logic) 	<ul style="list-style-type: none"> Ignition system Fuel injector and its circuit Fuel pressure EGR system Abnormal air drawn in Engine compression Valve lash adjuster Valve timing Fuel shortage Exhaust system Fuel of poor quality
<p>DTC P0301, P0302, P0303, P0304:</p> <ul style="list-style-type: none"> Misfire, which causes catalyst to overheat during 200 engine revolutions, is detected at 1 cylinder. (MIL flashes as long as this misfire occurs continuously.) <p>or</p> <ul style="list-style-type: none"> Misfire, which affects exhaust emission adversely during 1000 engine revolution, is detected at 1 cylinder. (2 driving cycle detection logic) 	

DTC Confirmation Procedure

▲ WARNING

- When performing a road test, select a place where there is no traffic or possibility of a traffic accident and be very careful during testing to avoid occurrence of an accident.
- Road test should be carried out by 2 persons, a driver and a tester, on a level road.

NOTE

Check to make sure that following conditions are satisfied when using this “DTC Confirmation Procedure”.

- Intake air temp.: -7 °C, 19.4 °F or higher
- Engine coolant temp.: -10 °C, 14 °F or higher
- Altitude (barometric pressure): 2500 m, 8200 ft or less (540 mmHg, 72 kPa or more)

- With ignition switch turned OFF, connect scan tool.
- Turn ON ignition switch and print Freeze Frame Data or write them down using scan tool.
- Clear DTC using scan tool.
- Drive vehicle under freeze frame data condition as noted for 1 min. or more.
- Stop vehicle and check DTC and pending DTC.

DTC Troubleshooting

NOTE

- Before performed trouble shooting, be sure to read the “Precautions of ECM Circuit Inspection: ”.
- When measuring circuit voltage, resistance and/or pulse signal at ECM connector, connect the special tool to ECM and/or the ECM connectors referring to “Inspection of ECM and Its Circuits: ”.
- Upon completion of inspection and repair work, perform “DTC Confirmation Procedure” and confirm that the trouble has been corrected.

Step	Action	Yes	No
1	Was “Engine and Emission Control System Check” performed?	Go to Step 2.	Go to “Engine and Emission Control System Check: ”.
2	Does fuel level meter indicate “E” level (empty)?	Add fuel and recheck.	Go to Step 3.
3	Fuel quality check 1) Check that there is fuel of good quality in the fuel tank. <i>Is it OK?</i>	Go to Step 4.	Clean in fuel system circuit and change fuel.
4	Ignition system check 1) Check spark plug and ignition spark of cylinder where misfire occurs, referring to “Spark Plug Inspection: in Section 1H” and “Ignition Spark Test: in Section 1H”. <i>Are they in good condition?</i>	Go to Step 5.	Faulty ignition coil, wire harness, spark plug or other system parts.
5	Fuel injector circuit check 1) Using sound scope, check each injector operating sound at engine cranking or idling. <i>Do all injectors make operating sound?</i>	Go to Step 6.	Check coupler connection and wire harness of injector not making operating sound and injector itself. If OK, substitute a known-good ECM and recheck.
6	Fuel pressure check 1) Check fuel pressure referring to “Fuel Pressure Check: ”. <i>Is check result satisfactory?</i>	Go to Step 7.	Repair or replace fuel system.
7	Fuel injector check 1) Check fuel injector(s) referring to “Fuel Injector Inspection: in Section 1G”. <i>Is check result satisfactory?</i>	Go to Step 8.	Replace defective injector.
8	Ignition timing check 1) Check ignition timing referring to “Ignition Timing Inspection: in Section 1H”. <i>Is check result satisfactory?</i>	Go to Step 9.	Check related sensors.
9	EGR system check 1) Check EGR system referring to “EGR System Inspection: in Section 1B”. <i>Is check result satisfactory?</i>	Go to Step 10.	Repair or replace EGR system.
10	Exhaust system check 1) Check exhaust system for exhaust gas clogged. <i>Is it OK?</i>	Go to Step 11.	Repair clogged of exhaust system.

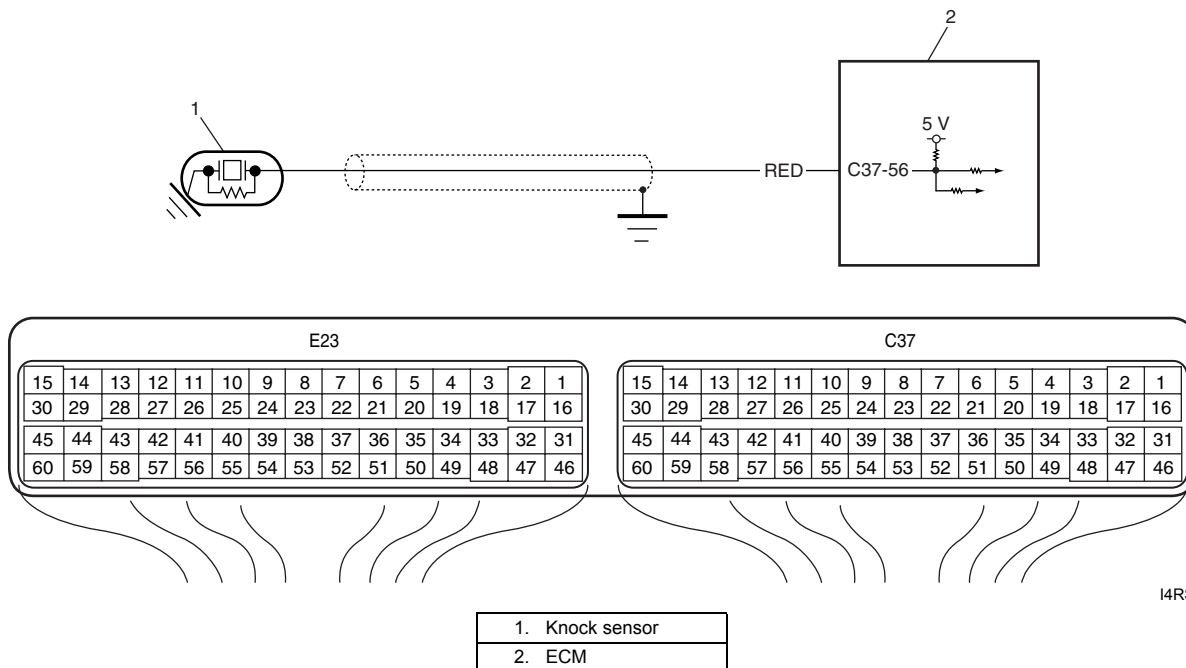
1A-130 Engine General Information and Diagnosis:

Step	Action	Yes	No
11	<p>Engine mechanical system check</p> <p>1) Check engine mechanical parts or system which can cause engine rough idle or poor performance.</p> <ul style="list-style-type: none"> • Engine compression (Refer to “Compression Check: in Section 1D”.) • Valve lash (Refer to “Valve Lash (Clearance) Inspection: in Section 1D”.) • Valve timing (Refer to “Timing Chain and Chain Tensioner Removal and Installation: in Section 1D”.) <p><i>Are they in good condition?</i></p>	Check wire harness and connection of ECM ground, ignition system and fuel injector for intermittent open and short.	Repair or replace defective part.

DTC P0327 / P0328: Knock Sensor Circuit Low / High

S4RS0B1104039

Wiring Diagram



I4RS0A110031-01

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
<p>DTC will be set when all of following conditions are detected for 0.5 seconds continuously.</p> <p>DTC P0327:</p> <ul style="list-style-type: none"> • Engine is running • Voltage of knock sensor is less than 1.23 V (1 driving cycle detection logic) <p>DTC P0328:</p> <ul style="list-style-type: none"> • Engine is running • Voltage of knock sensor is 3.91 V or more (1 driving cycle detection logic) 	<ul style="list-style-type: none"> • Knock sensor circuit (open or short) • Knock sensor • ECM

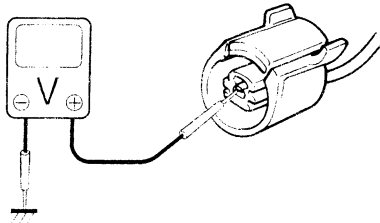
DTC Confirmation Procedure

- 1) Connect scan tool to DLC with ignition switch turned OFF.
- 2) Turn ON ignition switch and clear DTC, pending DTC and freeze frame data by using scan tool.
- 3) Start engine and run it for 10 sec.
- 4) Check DTC by using scan tool.

DTC Troubleshooting

NOTE

- Before performed trouble shooting, be sure to read the “Precautions of ECM Circuit Inspection: ”.
- When measuring circuit voltage, resistance and/or pulse signal at ECM connector, connect the special tool to ECM and/or the ECM connectors referring to “Inspection of ECM and Its Circuits: ”.
- Upon completion of inspection and repair work, perform “DTC Confirmation Procedure” and confirm that the trouble has been corrected.

Step	Action	Yes	No
1	Was “Engine and Emission Control System Check” performed?	Go to Step 2.	Go to “Engine and Emission Control System Check: ”.
2	<p>Knock sensor circuit check</p> <p>1) Remove ECM from its bracket with ECM connectors connected.</p> <p>2) Measure voltage between “C37-56” terminal of ECM connector and vehicle body ground with engine running.</p> <p><i>Is voltage within 1.23 – 3.91 V?</i></p>	Intermittent trouble. Check for intermittent referring to “Intermittent and Poor Connection Inspection: in Section 00”. If OK, substitute a known-good ECM and recheck.	Go to Step 3.
3	<p>Knock sensor circuit for open check</p> <p>1) Disconnect connector from knock sensor with ignition switch turned OFF.</p> <p>2) Turn ON ignition switch, measure voltage between “RED” wire of knock sensor connector and engine ground.</p>  <p style="text-align: right; font-size: small;">I2RH01110089-01</p> <p><i>Is voltage 4 – 6 V?</i></p>	Go to Step 6.	Go to Step 4.
4	<p>Knock sensor circuit for open check</p> <p>1) Turn ON ignition switch, measure voltage between “C37-56” terminal of ECM connector and engine ground</p> <p><i>Is voltage 4 – 6 V?</i></p>	“RED” wire is open circuit.	Go to Step 5.
5	<p>Knock sensor circuit for short check</p> <p>1) Disconnect connectors from ECM with ignition switch turned OFF.</p> <p>2) Measure resistance between “C37-56” terminal of ECM connector and vehicle body ground.</p> <p><i>Is resistance infinity?</i></p>	Go to Step 6.	“RED” wire is shorted to ground circuit. If wire is OK, substitute a known-good ECM and recheck.
6	<p>Knock sensor circuit for short check</p> <p>1) Disconnect connectors from ECM with ignition switch turned OFF.</p> <p>2) Turn ON ignition switch, measure voltage between “C37-56” terminal of ECM connector and vehicle body ground.</p> <p><i>Is voltage 0 V?</i></p>	Go to Step 7.	“RED” wire is shorted to other circuit.

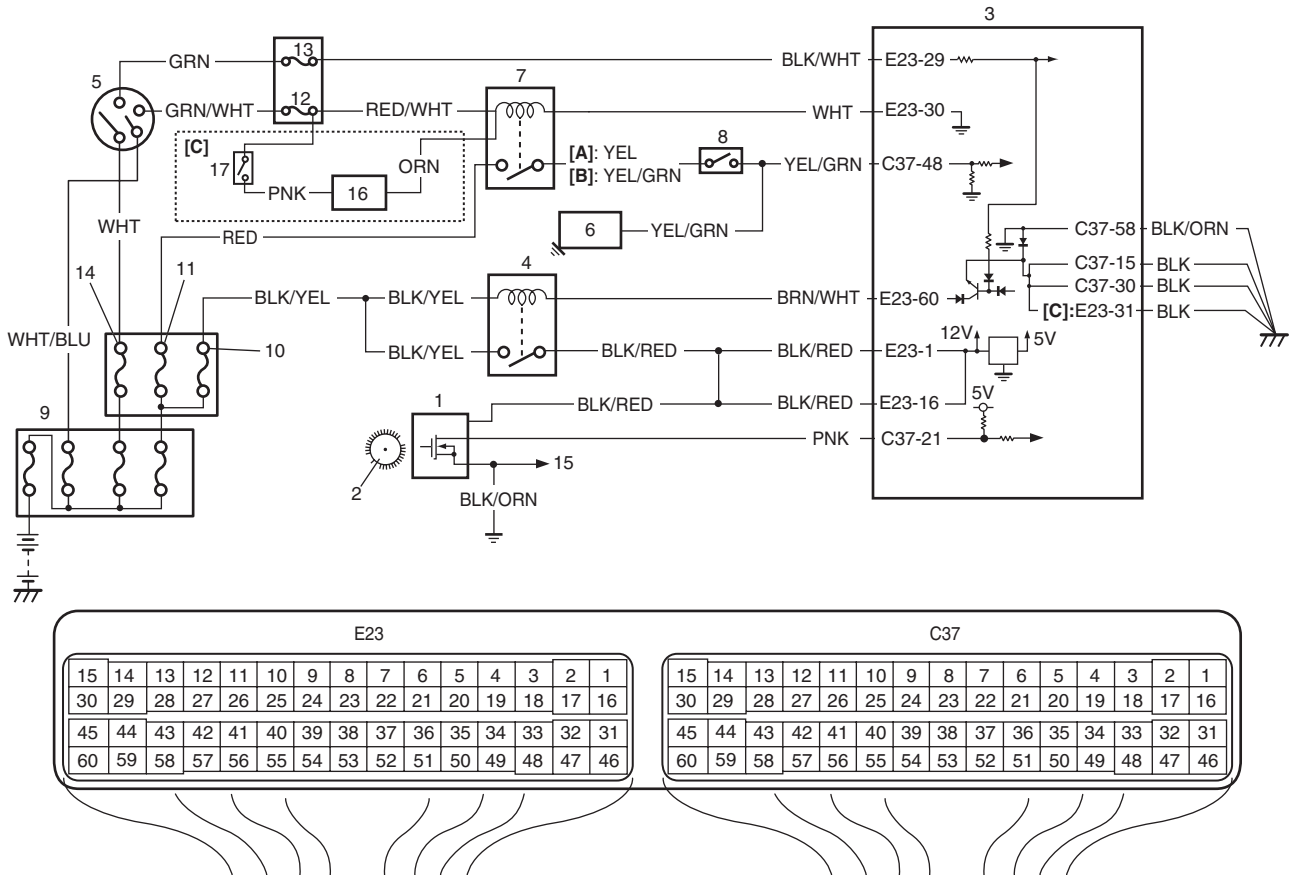
1A-132 Engine General Information and Diagnosis:

Step	Action	Yes	No
7	<p>Knock sensor circuit for high resistance check</p> <p>1) Turn OFF ignition switch, measure resistance between "C37-56" terminal of ECM connector and "RED" wire terminal of knock sensor harness connector.</p> <p><i>Is resistance below 5 Ω?</i></p>	Faulty knock sensor.	"RED" wire is high resistance circuit.

DTC P0335: Crankshaft Position (CKP) Sensor Circuit

S4RS0B1104040

Wiring Diagram



I4RS0B110029-03

[A]: For A/T model	5. Ignition switch	12. "ST SIG" fuse
[B]: For M/T model	6. Starting motor	13. "IG COIL" fuse
[C]: For Automated Manual Transaxle model	7. Starting motor control relay	14. "IG ACC" fuse
1. CKP sensor	8. Transmission range switch (for A/T model)	15. To CMP sensor
2. Sensor plate on crankshaft	9. Main fuse box	16. TCM (for Automated Manual Transaxle model)
3. ECM	10. "FI" fuse	17. Neutral start switch
4. Main relay	11. "ST MOT" fuse	

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
No CKP sensor signal for 2 sec. even if starting motor signal is inputted at engine cranking. (1 driving cycle detection logic)	<ul style="list-style-type: none"> • CKP sensor circuit open or short • Sensor plate teeth damaged • CKP sensor malfunction, foreign material being attached or improper installation • ECM • Engine start signal circuit malfunction

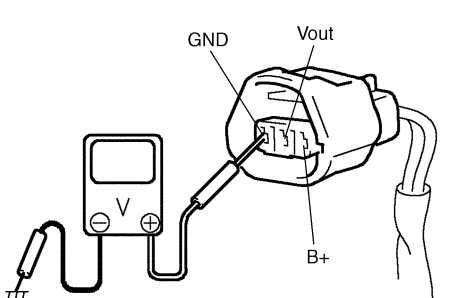
DTC Confirmation Procedure

- 1) With ignition switch turned OFF, connect scan tool.
- 2) Turn ON ignition switch and clear DTC using scan tool.
- 3) Crank engine for 3 – 5 sec.
- 4) Check DTC and pending DTC.

DTC Troubleshooting

NOTE

- Before performed trouble shooting, be sure to read the “Precautions of ECM Circuit Inspection: ”.
- When measuring circuit voltage, resistance and/or pulse signal at ECM connector, connect the special tool to ECM and/or the ECM connectors referring to “Inspection of ECM and Its Circuits: ”.
- Upon completion of inspection and repair work, perform “DTC Confirmation Procedure” and confirm that the trouble has been corrected.

Step	Action	Yes	No
1	Was “Engine and Emission Control System Check” performed?	Go to Step 2.	Go to “Engine and Emission Control System Check: ”.
2	CKP sensor and connector for proper installation check Is CKP sensor installed properly and connector connected securely?	Go to Step 3.	Correct.
3	Wire harness and connection check 1) Disconnect connector from CKP sensor with ignition switch turned OFF. 2) Check for proper connection to CKP sensor at “BLK/RED”, “PNK” and “BLK/ORN” wire terminals. 3) If OK, turn ON ignition switch and check voltage at “BLK/RED”, “PNK” and “BLK/ORN” wire terminals of disconnected CKP sensor connector. CKP sensor voltage Terminal “B+”: 10 – 14 V Terminal “Vout”: 4 – 5 V Terminal “GND”: 0 V  I2RH0B110048-01 Is check result satisfactory?	Go to Step 7.	Go to Step 4.
4	Was terminal “Vout” voltage in Step 3 within specification?	Go to Step 5.	“PNK” wire is open or shorted to ground / power supply circuit. If wire and connection are OK, substitute a known-good ECM and recheck.

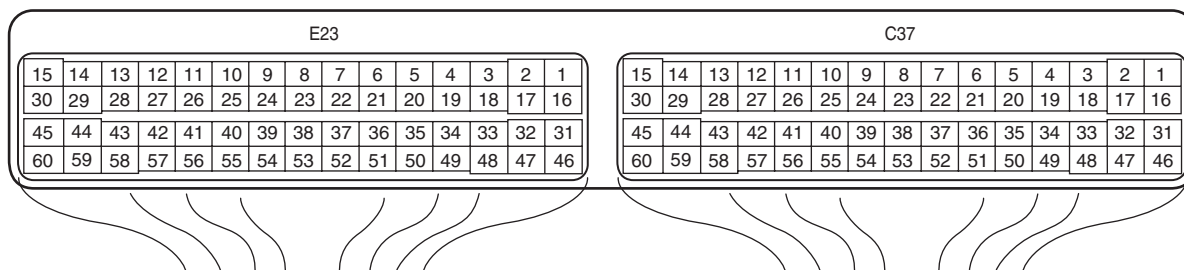
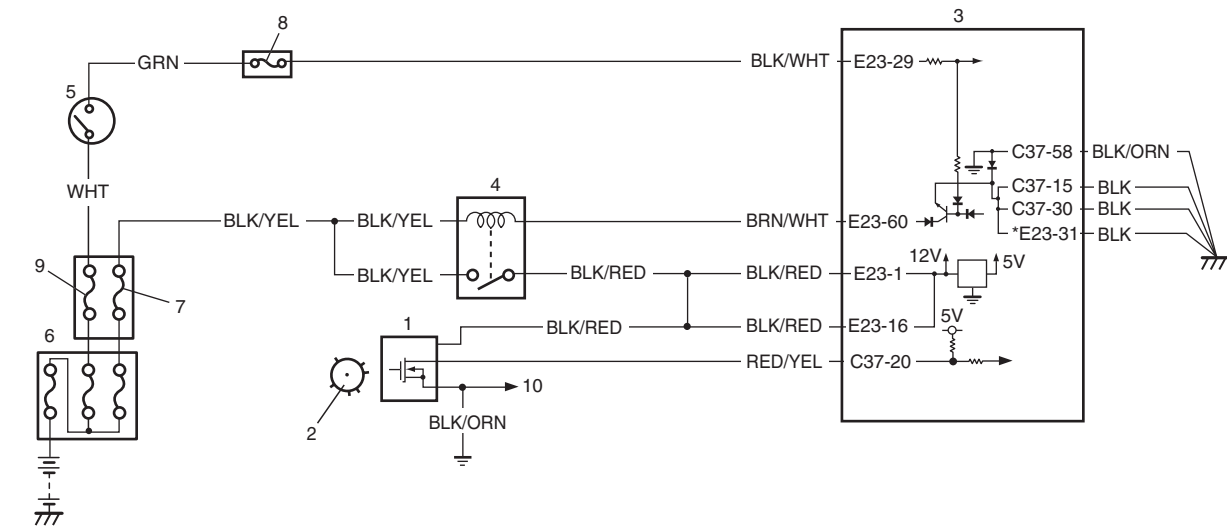
1A-134 Engine General Information and Diagnosis:

Step	Action	Yes	No
5	Ground circuit check 1) Turn ignition switch to OFF position. 2) Measure resistance between "BLK/ORN" wire terminal of CKP sensor connector and engine ground. <i>Is measured resistance value less than 3 Ω?</i>	Go to Step 6.	"BLK/ORN" wire is open or high resistance.
6	<i>Was terminal "B+" voltage in Step 3 within specification?</i>	Go to Step 7.	"BLK/RED" wire is open circuit. If wire and connection are OK, substitute a known-good ECM and recheck.
7	Engine start signal check 1) Check starting motor circuit for opening and short referring to Step 2 of "DTC P0616: Starter Relay Circuit Low: " and Step 3 and 4 of "DTC P0617: Starter Relay Circuit High: ". <i>Is check result satisfactory?</i>	Go to Step 8.	Repair or replace.
8	CKP sensor check 1) Check CKP sensor and sensor plate tooth referring to "Camshaft Position (CMP) Sensor Inspection: in Section 1C". <i>Is check result satisfactory?</i>	Substitute a known-good ECM and recheck.	Replace CKP sensor and/or sensor plate.

DTC P0340: Camshaft Position (CMP) Sensor Circuit

S4RS0B1104041

Wiring Diagram



I4RS0B110030-02

1. CMP sensor	4. Main relay	7. "FI" fuse	10. To CKP sensor
2. Signal rotor	5. Ignition switch	8. "IG COIL" fuse	*: For Automated Manual Transaxle model
3. ECM	6. Main fuse box	9. "IG ACC" fuse	

System Description

The CMP sensor located on the transmission side of cylinder head (for M15 engine model) or timing chain cover (for M13 engine model) consists of the signal generator (magnetic sensor) and signal rotor (intake camshaft portion (for M15 engine model) or exhaust camshaft timing sprocket (for M13 engine model)).

The signal generator generates reference signal through slits in the slit plate which turns together with the camshaft.

Reference signal

The CMP sensor generates 6 pulses of signals each of which has a different waveform length while the camshaft makes one full rotation. Refer to “Inspection of ECM and Its Circuits: ”.

Based on these signals, ECM judges which cylinder piston is in the compression stroke and the engine speed.

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
<ul style="list-style-type: none"> • CMP sensor pulse is less than 20 pulses per crankshaft 8 revolutions • CMP sensor pulse is more than 28 pulses per crankshaft 8 revolutions • CMP sensor pulse is less than 20 pulses between BTDC 155° CA (for M15 engine model) or BTDC 75° CA (for M13 engine model) and BTDC 5° CA with crankshaft 8 revolutions from engine start. (1 driving cycle detection logic) 	<ul style="list-style-type: none"> • CMP sensor circuit open or short • Signal rotor teeth damaged • CMP sensor malfunction, foreign material being attached or improper installation • ECM

DTC Confirmation Procedure

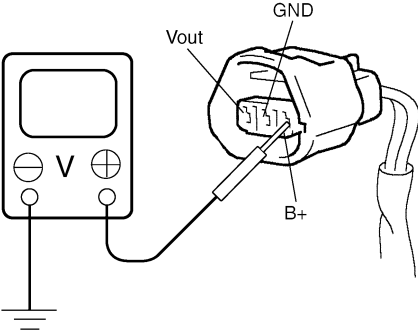
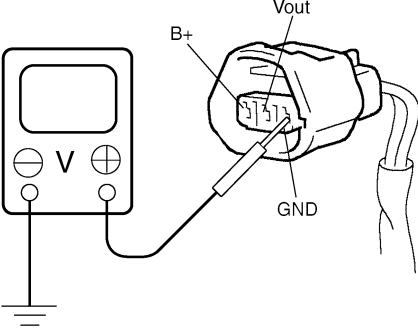
- 1) With ignition switch turned OFF, connect scan tool.
- 2) Turn ON ignition switch and clear DTC using scan tool.
- 3) Crank engine for 5 sec.
- 4) Check DTC and pending DTC.

DTC Troubleshooting

NOTE

- Before performed trouble shooting, be sure to read the “Precautions of ECM Circuit Inspection: ”.
- When measuring circuit voltage, resistance and/or pulse signal at ECM connector, connect the special tool to ECM and/or the ECM connectors referring to “Inspection of ECM and Its Circuits: ”.
- Upon completion of inspection and repair work, perform “DTC Confirmation Procedure” and confirm that the trouble has been corrected.

Step	Action	Yes	No
1	<i>Was “Engine and Emission Control System Check” performed?</i>	Go to Step 2.	Go to “Engine and Emission Control System Check: ”.
2	CMP sensor and connector for proper installation check <i>Is CMP sensor installed properly and connector connected securely?</i>	Go to Step 3.	Correct.

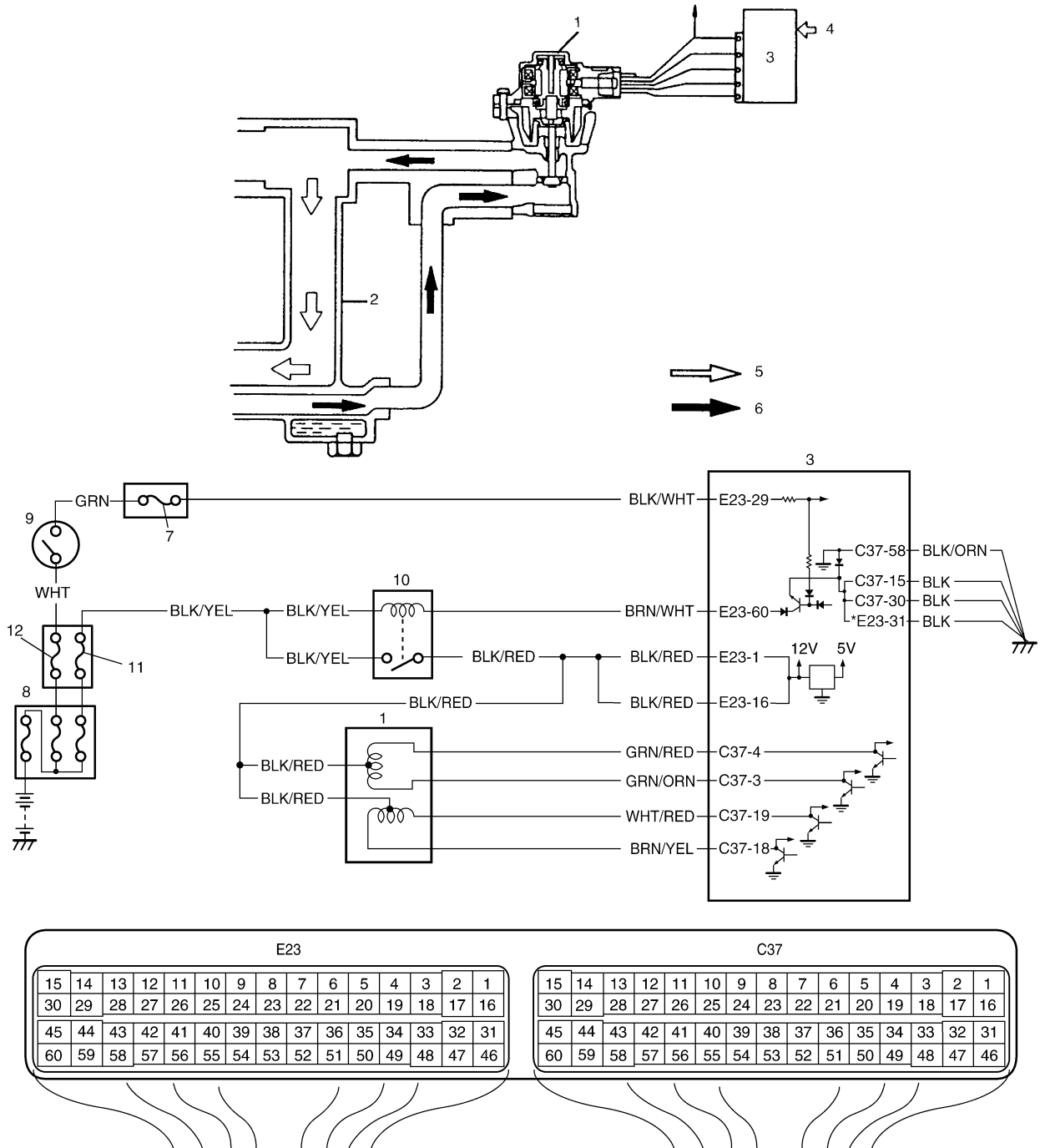
Step	Action	Yes	No
3	<p>Wire harness and connection check</p> <ol style="list-style-type: none"> 1) Disconnect connector from CMP sensor. 2) Check for proper connection to CMP sensor at “BLK/RED”, “RED/YEL” and “BLK/ORN” wire terminals. 3) If OK, turn ON ignition switch and check voltage at “BLK/RED”, “RED/YEL” and “BLK/ORN” wire terminals of disconnected CMP sensor connector. <p>CMP sensor voltage Terminal “B+”: 10 – 14 V Terminal “Vout”: 4 – 5 V Terminal “GND”: 0 V</p> <p>For M13 engine model</p>  <p style="text-align: right; font-size: small;">I4RS0B110031-01</p> <p>For M15 engine model</p>  <p style="text-align: right; font-size: small;">I4RS0B110094-01</p> <p><i>Is check result satisfactory?</i></p>	Go to Step 7.	Go to Step 4.
4	<p><i>Was terminal “Vout” voltage in Step 3 within specification?</i></p>	Go to Step 5.	<p>“RED/YEL” wire is open or shorted to ground / power supply circuit.</p> <p>If wire and connection are OK, substitute a known-good ECM and recheck.</p>
5	<p>Ground circuit check</p> <ol style="list-style-type: none"> 1) Turn ignition switch to OFF position. 2) Measure resistance between “BLK/ORN” wire terminal of CMP sensor connector and engine ground. <p><i>Is measured resistance value less than 3 Ω?</i></p>	Go to Step 6.	“BLK/ORN” wire is open or high resistance circuit.
6	<p><i>Was terminal “B+” voltage in Step 3 within specification?</i></p>	Go to Step 7.	“BLK/RED” wire is open circuit. If wire and connection are OK, substitute a known-good ECM and recheck.

Step	Action	Yes	No
7	<p>CMP sensor check</p> <p>1) Check CMP sensor and signal rotor tooth referring to "Camshaft Position (CMP) Sensor Inspection: in Section 1C".</p> <p><i>Is check result satisfactory?</i></p>	Substitute a known-good ECM and recheck.	Replace CMP sensor and/or intake camshaft (for M15 engine model) or exhaust camshaft (for M13 engine model).

DTC P0401 / P0402: Exhaust Gas Recirculation Flow Insufficient Detected / Excessive Detected

S4RS0B1104042

System and Wiring Diagram



1A-138 Engine General Information and Diagnosis:

1. EGR valve	5. Fresh air	9. Ignition switch	*: For Automated Manual Transaxle model
2. Intake manifold	6. Exhaust gas	10. Main relay	
3. ECM	7. "IG COIL" fuse	11. "FI" fuse	
4. Sensed information	8. Main fuse box	12. "IG ACC" fuse	

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
DTC P0401: Difference in intake manifold absolute pressure between opened EGR valve and closed EGR valve is smaller than specified value. (*2 driving cycle detection logic, monitoring once / 1 driving)	<ul style="list-style-type: none">• EGR valve• EGR passage• MAP sensor• ECM
DTC P0402: Difference in intake manifold absolute pressure between opened EGR valve and closed EGR valve is larger than specified value. (*2 driving cycle detection logic, monitoring once / 1 driving)	

DTC Confirmation Procedure

▲ WARNING

- When performing a road test, select a place where there is no traffic or possibility of a traffic accident and be very careful during testing to avoid occurrence of an accident.
- Road test should be carried out by 2 persons, a driver and a tester, on a level road.

NOTE

Check to make sure that following conditions are satisfied when using this "DTC confirmation procedure".

- Intake air temperature at engine start: $-10\text{ }^{\circ}\text{C}$ ($14\text{ }^{\circ}\text{F}$) to $80\text{ }^{\circ}\text{C}$ ($176\text{ }^{\circ}\text{F}$)
- Intake air temperature: $-10\text{ }^{\circ}\text{C}$ ($14\text{ }^{\circ}\text{F}$) to $70\text{ }^{\circ}\text{C}$ ($158\text{ }^{\circ}\text{F}$)
- Engine coolant temperature: $70\text{ }^{\circ}\text{C}$ ($158\text{ }^{\circ}\text{F}$) to $150\text{ }^{\circ}\text{C}$ ($302\text{ }^{\circ}\text{F}$)
- Altitude (barometric pressure): 2400 m, 8000 ft or less (560 mmHg, 75 kPa or more)

- 1) With ignition switch turned OFF, connect scan tool.
- 2) Turn ON ignition switch and clear DTC using scan tool.
- 3) Start engine and warm up to normal operating temperature.
- 4) Run engine at idle for 10 min.
- 5) Drive vehicle and increase engine speed 3000 rpm in 3rd gear.
- 6) Release accelerator pedal and with engine brake applied, keep vehicle coasting for 5 sec. or more. (Keep fuel cut condition for 5 sec. or more) If fuel cut condition is not kept for 5 sec. or more, coast down a slope in engine speed 1000 – 3000 rpm for 5 sec. or more.
- 7) Stop vehicle and run engine at idle.
- 8) Check DTC and pending DTC by using scan tool.

DTC Troubleshooting

NOTE

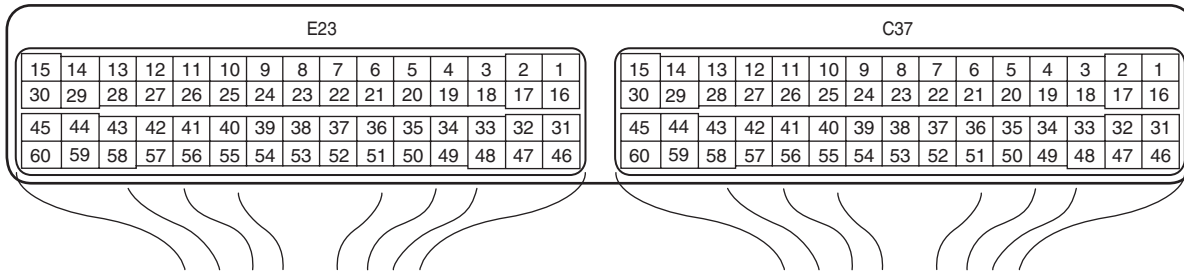
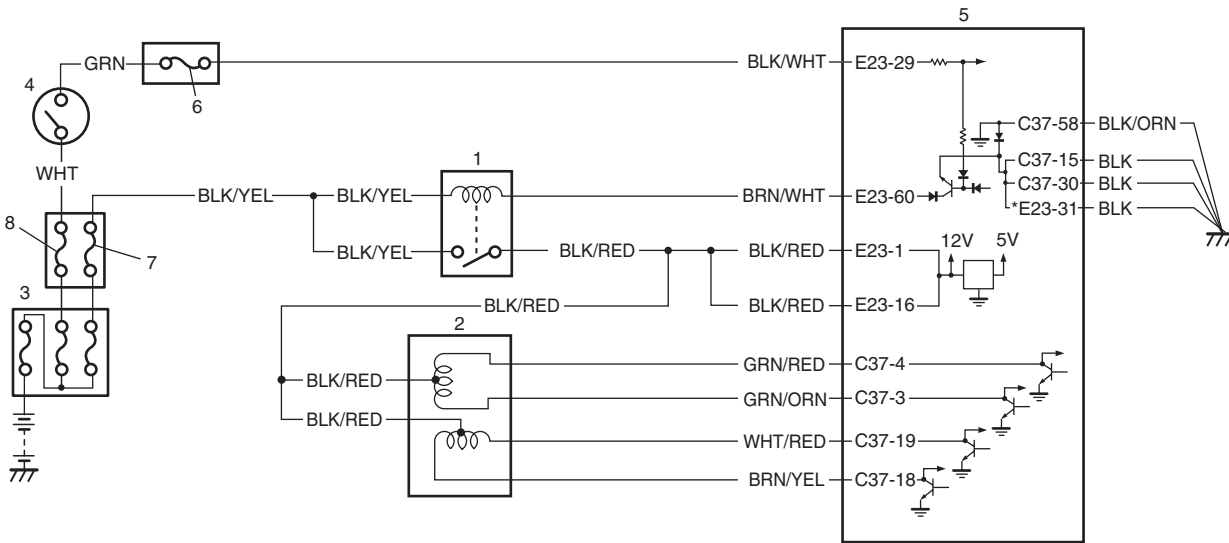
- Before performed trouble shooting, be sure to read the “Precautions of ECM Circuit Inspection: ”.
- When measuring circuit voltage, resistance and/or pulse signal at ECM connector, connect the special tool to ECM and/or the ECM connectors referring to “Inspection of ECM and Its Circuits: ”.
- Upon completion of inspection and repair work, perform “DTC Confirmation Procedure” and confirm that the trouble has been corrected.

Step	Action	Yes	No
1	Was “Engine and Emission Control System Check” performed?	Go to Step 2.	Go to “Engine and Emission Control System Check: ”.
2	Do you have SUZUKI scan tool?	Go to Step 3.	Go to Step 5.
3	EGR valve operation check 1) With ignition switch turned OFF, install SUZUKI scan tool to DTC. 2) Check EGR system referring to “EGR System Inspection: in Section 1B”. <i>Is it in good condition?</i>	Go to Step 4.	Go to Step 5.
4	MAP sensor check 1) Check MAP sensor for performance referring to “Manifold Absolute Pressure (MAP) Sensor Inspection: in Section 1C”. <i>Is check result satisfactory?</i>	Intermittent trouble or faulty ECM. Check for intermittent referring to “Intermittent and Poor Connection Inspection: in Section 00”.	Replace MAP sensor.
5	EGR valve control circuit check 1) Check that EGR valve control circuits are in good condition referring to Step 2 to 5 of “DTC P0403: Exhaust Gas Recirculation Control Circuit: ” <i>Are circuits in good condition?</i>	Go to Step 6.	Repair or replace EGR valve control circuit(s).
6	EGR valve check 1) Check EGR valve referring to “EGR Valve Inspection: in Section 1B”. <i>Is check result satisfactory?</i>	Go to Step 7.	Faulty EGR valve.
7	MAP sensor check 1) Check MAP sensor for performance referring to “Manifold Absolute Pressure (MAP) Sensor Inspection: in Section 1C”. <i>Is check result satisfactory?</i>	EGR passage clogged. If OK, substitute a known-good ECM and recheck.	Replace MAP sensor.

DTC P0403: Exhaust Gas Recirculation Control Circuit

S4RS0B1104043

Wiring Diagram



I4RS0B110033-02

1. Main relay	4. Ignition switch	7. "FI" fuse
2. EGR valve	5. ECM	8. "IG ACC" fuse
3. Main fuse box	6. "IG COIL" fuse	*: For Automated Manual Transaxle model

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
EGR valve output voltage is different from output command with more than one pole out of 4 poles. (1 driving cycle detection logic)	<ul style="list-style-type: none"> EGR valve circuit open EGR valve ECM

DTC Confirmation Procedure

⚠ WARNING

- When performing a road test, select a place where there is no traffic or possibility of a traffic accident and be very careful during testing to avoid occurrence of an accident.
- Road test should be carried out by 2 persons, a driver and a tester, on a level road.

- With ignition switch turned OFF, connect scan tool to DLC.
- Turn ON ignition switch and clear DTC using scan tool.
- Start engine and warm it up to normal operating temperature.
- Drive vehicle in 2000 – 3500 rpm of engine speed.
- Keep above vehicle speed for 1 min. (Throttle valve opening is kept constant in this step.)
- Stop vehicle and check DTC and pending DTC.

DTC Troubleshooting

NOTE

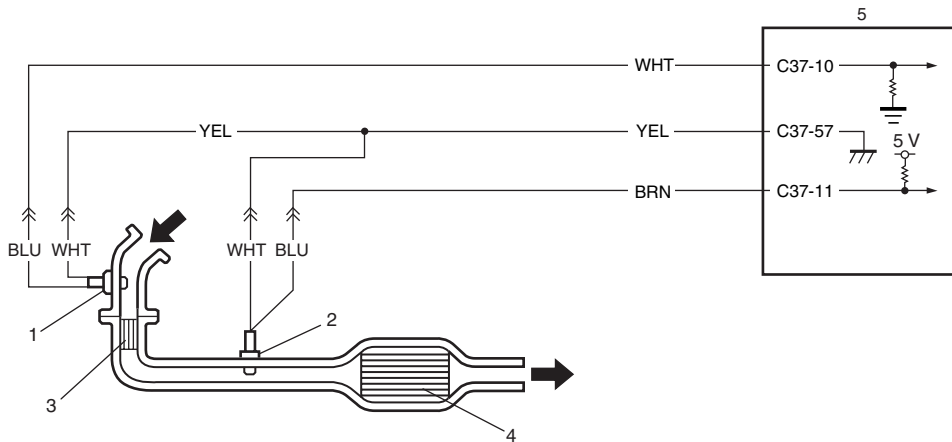
- Before performed trouble shooting, be sure to read the “Precautions of ECM Circuit Inspection: ”.
- When measuring circuit voltage, resistance and/or pulse signal at ECM connector, connect the special tool to ECM and/or the ECM connectors referring to “Inspection of ECM and Its Circuits: ”.
- Upon completion of inspection and repair work, perform “DTC Confirmation Procedure” and confirm that the trouble has been corrected.

Step	Action	Yes	No
1	Was “Engine and Emission Control System Check” performed?	Go to Step 2.	Go to “Engine and Emission Control System Description: ”.
2	EGR valve power supply circuit check 1) Remove air intake pipe. 2) With ignition switch turned OFF, disconnect EGR valve connector. 3) With ignition switch turned ON, measure voltage between “BLK/RED” wire terminal of EGR valve connector and vehicle body ground. <i>Is check voltage 10 – 14 V?</i>	Go to Step 3.	“BLK/RED” wire is open circuit.
3	Wire circuit check 1) Disconnect connectors from ECM with ignition switch turned OFF. 2) Turn ON ignition switch. 3) Measure voltage between engine ground and each “GRN/RED”, “GRN/ORN”, “WHT/RED”, “BRN/YEL” wire terminals of EGR valve connector. <i>Is each voltage 0 V?</i>	Go to Step 4.	Faulty wire(s) are shorted to other circuit. If wires are OK, substitute a known-good ECM and recheck.
4	Wire circuit check 1) With ignition switch turned OFF, measure resistance between engine ground and each “GRN/RED”, “GRN/ORN”, “WHT/RED”, “BRN/YEL” wire terminals of EGR valve connector. <i>Is resistance infinity?</i>	Go to Step 5.	Faulty wire(s) are shorted to ground circuit. If wires are OK, substitute a known-good ECM and recheck.
5	Short circuit check for EGR valve control circuit 1) With ignition turned OFF, measure resistance between each EGR valve control circuit wire (“GRN/RED”, “GRN/ORN”, “WHT/RED” and “BRN/YEL” wire) and each EGR valve control circuit wire. <i>Is each resistance infinity?</i>	Go to Step 6.	Faulty wire(s) are short circuit.
6	EGR valve stepper motor coil circuit check 1) With ignition switch turned OFF, connect EGR valve connector. 2) Measure resistance between “E23-1/16” and each “C37-4”, “C37-3”, “C37-19”, “C37-18” terminals of ECM connector. <i>Is each resistance 20 – 31 Ω at 20 °C, 68 °F?</i>	Faulty ECM. Substitute a known-good ECM and recheck.	Go to Step 7.
7	EGR valve check 1) Check EGR valve resistance referring to “EGR Valve Inspection: in Section 1B”. <i>Is resistance within specified value?</i>	Faulty wire(s) are open or high resistance circuit. If wires are OK, substitute a known-good ECM and recheck.	Faulty EGR valve.

DTC P0420: Catalyst System Efficiency below Threshold

S4RS0B1104044

System and Wiring Diagram



I4RS0A110037-01

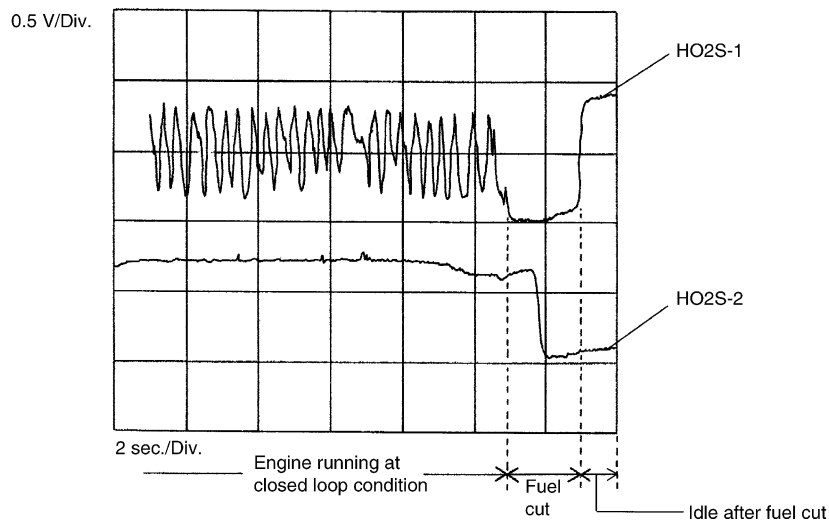
1. HO2S-1	3. Warm up three way catalytic converter	5. ECM
2. HO2S-2	4. Three way catalytic converter	

Circuit Description

ECM monitors oxygen concentration in the exhaust gas which has passed the warm up three way catalytic converter by HO2S-2. When the catalyst is functioning properly, the variation cycle of HO2S-2 output voltage (oxygen concentration) is slower than that of HO2S-1 output voltage because of the amount of oxygen in the exhaust gas which has been stored in warm up three way catalytic converter.

Reference

Oscilloscope waveforms



I2RH01110102-01

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
<ul style="list-style-type: none"> While vehicle running at constant speed under other than high load. Time from rich or lean switching command is output till HO2S-2 output voltage crosses 0.45 V is less than specified value. (*2 driving cycle detection logic, monitoring once / 1 driving) 	<ul style="list-style-type: none"> Exhaust gas leak Warm up three way catalytic converter malfunction HO2S-2 malfunction HO2S-1 malfunction

DTC Confirmation Procedure

▲ WARNING

- When performing a road test, select a place where there is no traffic or possibility of a traffic accident and be very careful during testing to avoid occurrence of an accident.
- Road test should be carried out by 2 persons, a driver and a tester, on a level road.

NOTE

Check to make sure that following conditions are satisfied when using this “DTC Confirmation Procedure”.

- Intake air temp.: -7 °C, 19.4 °F or higher
- Engine coolant temp.: 70 °C, 158 °F or higher
- Altitude (barometric pressure): 2500 m, 8200 ft or less (540 mmHg, 72 kPa or more)

- 1) Connect scan tool to DLC with ignition switch turned OFF.
- 2) Turn ON ignition switch and clear DTC using scan tool.
- 3) Increase vehicle speed to 50 – 60 mph, 80 – 100 km/h. (engine speed: 2500 – 3000 r/min.)
- 4) Keep above vehicle speed for 10 min. or more (Throttle valve opening is kept constant in this step).
- 5) Stop vehicle and check if DTC / pending DTC exists using scan tool. If not, check if catalyst monitoring test has been completed using scan tool. If not in both of above checks (i.e., no DTC / pending DTC and catalyst monitoring test not completed), check vehicle condition (environmental) and repeat Step 3) through 5).

DTC Troubleshooting

NOTE

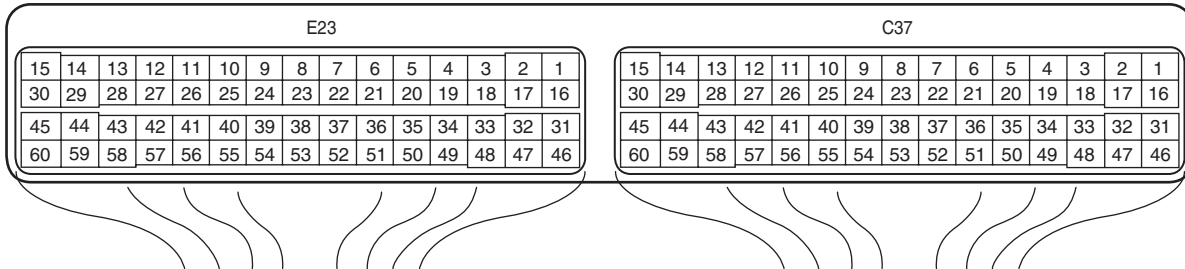
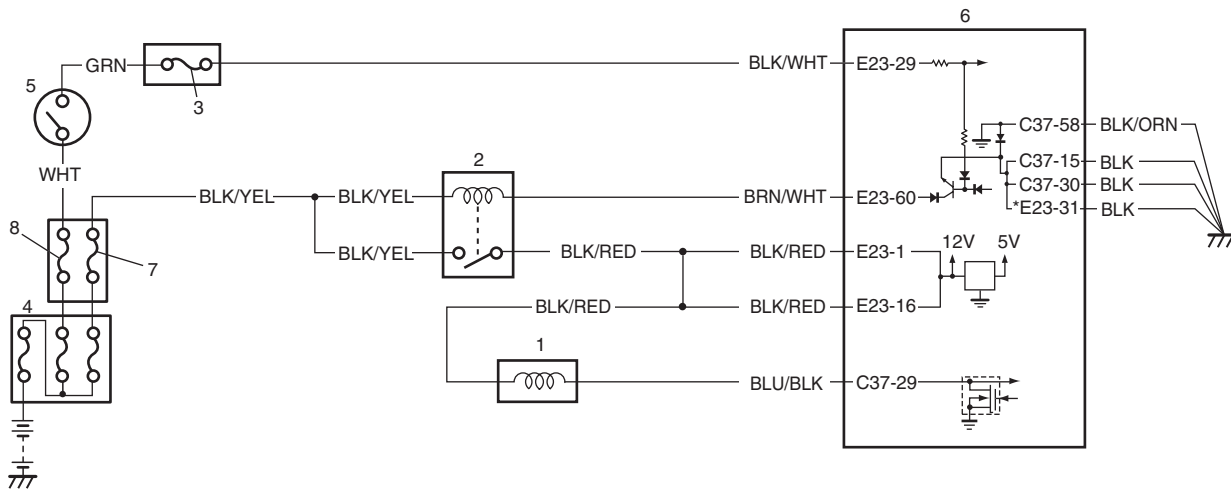
- Before performed trouble shooting, be sure to read the “Precautions of ECM Circuit Inspection: ”.
- When measuring circuit voltage, resistance and/or pulse signal at ECM connector, connect the special tool to ECM and/or the ECM connectors referring to “Inspection of ECM and Its Circuits: ”.
- Upon completion of inspection and repair work, perform “DTC Confirmation Procedure” and confirm that the trouble has been corrected.

Step	Action	Yes	No
1	Was “Engine and Emission Control System Check” performed?	Go to Step 2.	Go to “Engine and Emission Control System Check: ”.
2	Exhaust system visual check 1) Check exhaust system for leaks, damage and loose connection. <i>Is it in good condition?</i>	Go to Step 3.	Repair or replace defective part.
3	HO2S-2 output voltage check 1) Check output voltage of HO2S-2 referring to “DTC P0137 / P0138: O2 Sensor (HO2S) Circuit Low Voltage / High Voltage (Sensor-2): ” and “DTC P0137 / P0138: O2 Sensor (HO2S) Circuit Low Voltage / High Voltage (Sensor-2): ”. <i>Is check result satisfactory?</i>	Replace exhaust manifold (built in warm up three way catalytic converter) and exhaust center pipe (built in three way catalytic converter).	Check “BRN” and / or “YEL” wires for open and short, and connections for poor connection. If wires and connections are OK, replace HO2S-2.

DTC P0443: Evaporative Emission System Purge Control Valve Circuit

S4RS0B1104045

Wiring Diagram



I4RS0B110034-02

1. EVAP canister purge valve	4. Main fuse box	7. "FI" fuse
2. Main relay	5. Ignition switch	8. "IG ACC" fuse
3. "IG COIL" fuse	6. ECM	*: For Automated Manual Transaxle model

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
Monitor signal of EVAP canister purge valve is different from command signal. (Circuit open or short) (2 driving cycle detection logic)	<ul style="list-style-type: none"> EVAP canister purge valve EVAP canister purge valve circuit ECM

DTC Confirmation Procedure

▲ WARNING

- When performing a road test, select a place where there is no traffic or possibility of a traffic accident and be very careful during testing to avoid occurrence of an accident.
- Road test should be carried out by 2 persons, a driver and a tester, on a level road.

- With ignition switch OFF, connect scan tool to DLC.
- Turn ON ignition switch and clear DTC using scan tool.
- Start engine and warm up normal operating temperature.
- Drive vehicle at more than 40 km/h, 25 mph for 5 min. or more.
- Check DTC and pending DTC.

DTC Troubleshooting

▲ WARNING

In order to reduce risk of fire and personal injury, this work must be performed in a well ventilated area and away from any open flames such as gas water heater.

NOTE

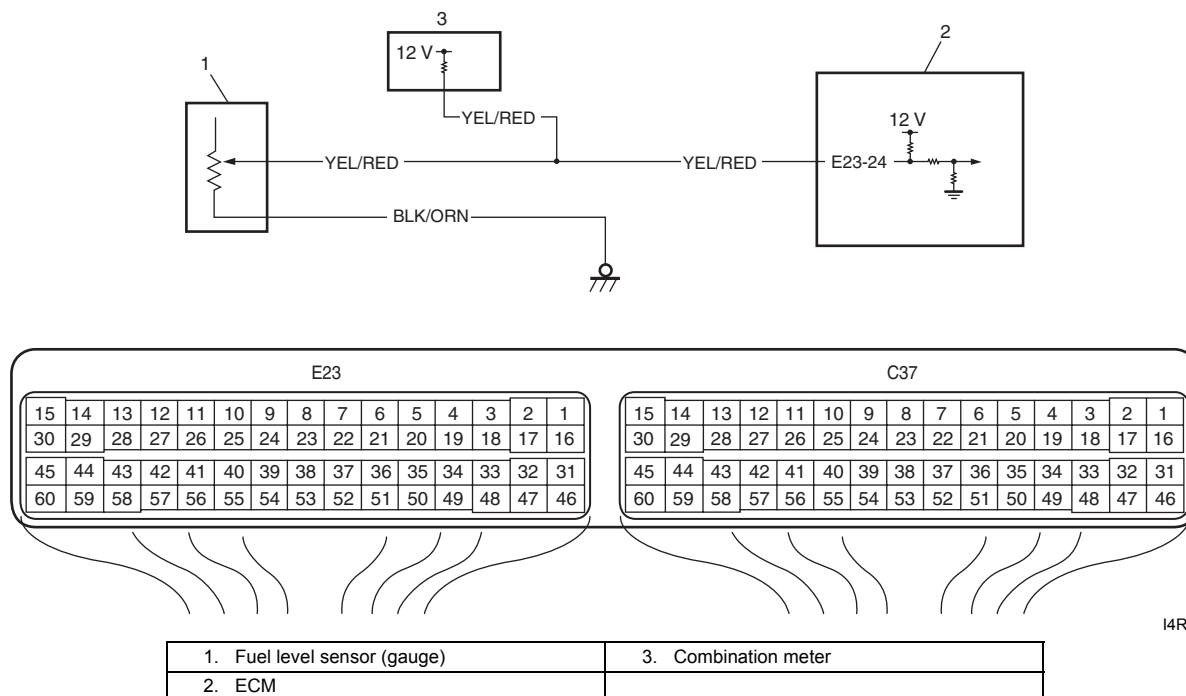
- Before performed trouble shooting, be sure to read the “Precautions of ECM Circuit Inspection: ”.
- When measuring circuit voltage, resistance and/or pulse signal at ECM connector, connect the special tool to ECM and/or the ECM connectors referring to “Inspection of ECM and Its Circuits: ”.
- Upon completion of inspection and repair work, perform “DTC Confirmation Procedure” and confirm that the trouble has been corrected.

Step	Action	Yes	No
1	Was “Engine and Emission Control System Check” performed?	Go to Step 2.	Go to “Engine and Emission Control System Check: ”.
2	EVAP canister purge power supply circuit check 1) Turn OFF ignition switch and disconnect connector from EVAP canister purge valve. 2) Measure voltage between engine ground and “BLK/ RED” wire terminal of EVAP canister purge valve connector with ignition switch turned ON. <i>Is it voltage 10 – 14 V?</i>	Go to Step 3.	“BLK/RED” wire is open circuit.
3	Wire circuit check 1) Disconnect connectors from ECM with ignition switch turned OFF. 2) Measure resistance between “C37-29” terminal of ECM connector and vehicle body ground. <i>Is resistance infinity?</i>	Go to Step 4.	“BLU/BLK” wire is shorted to ground circuit.
4	Wire circuit check 1) Measure voltage between “C37-29” terminal of ECM connector and vehicle body ground with ignition switch turned ON. <i>Is voltage 0 V?</i>	Go to Step 5.	“BLU/BLK” wire is shorted to other circuit.
5	Wire circuit check 1) Connect connector to purge control valve with ignition switch turned OFF. 2) Turn ON ignition switch and measure voltage between “C37-29” terminal of ECM connector and vehicle body ground. <i>Is it voltage 10 – 14 V?</i>	Go to Step 6.	“BLU/BLK” wire is open circuit.
6	EVAP canister purge control valve check 1) Check EVAP canister purge control valve referring to “EVAP Canister Purge Valve Inspection: in Section 1B”. <i>Is it in good condition?</i>	Go to Step 7.	Faulty EVAP canister purge control valve.
7	EVAP canister purge control circuit check 1) With ignition switch turn OFF, measure resistance between “E23-1/16” terminal and “C37-29” terminal of ECM connector. <i>Is resistance below 40 Ω at 20 °C, 68 °F?</i>	Faulty ECM. Substitute a known-good ECM and recheck.	“BLK/RED” and/or “BLU/BLK” wire are high resistance circuit.

DTC P0462 / P0463: Fuel Level Sensor Circuit Low / High

S4RS0B1104047

Wiring Diagram



I4RS0B110035-01

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
<p>P0462: Fuel level sensor voltage is lower than specified value for 3 seconds continuously. (1 driving cycle detection logic but MIL does not light up)</p> <p>P0463: Fuel level sensor voltage is higher than specified value for 3 seconds continuously. (1 driving cycle detection logic but MIL does not light up)</p>	<ul style="list-style-type: none"> • “YEL/RED” circuit malfunction • ECM power and/or ground circuit malfunction • ECM malfunction

DTC Confirmation Procedure

- 1) With ignition switch turned OFF, connect scan tool.
- 2) Turn ON ignition switch and clear DTC using scan tool.
- 3) Start engine and run it for 30 sec. or more.
- 4) Check DTC and pending DTC.

DTC Troubleshooting

NOTE

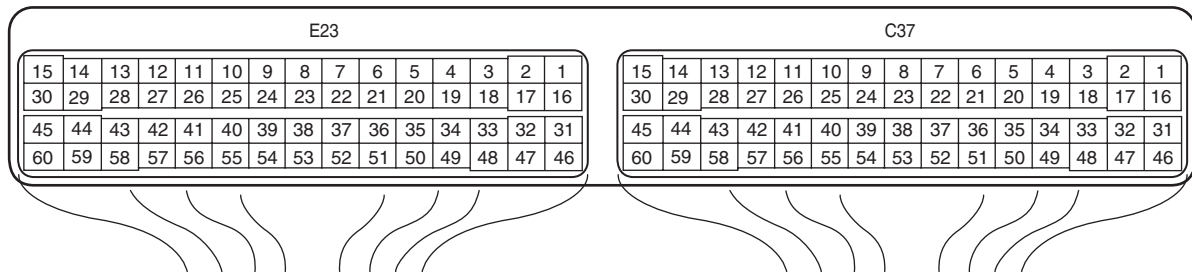
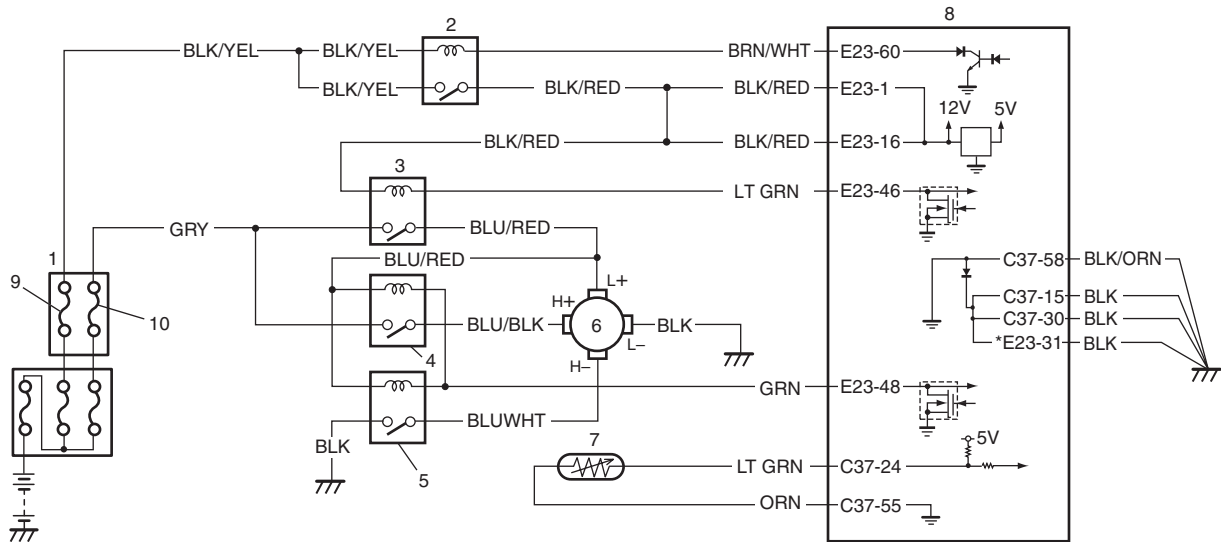
- Before performed trouble shooting, be sure to read the “Precautions of ECM Circuit Inspection: ”.
- When measuring circuit voltage, resistance and/or pulse signal at ECM connector, connect the special tool to ECM and/or the ECM connectors referring to “Inspection of ECM and Its Circuits: ”.
- Upon completion of inspection and repair work, perform “DTC Confirmation Procedure” and confirm that the trouble has been corrected.

Step	Action	Yes	No
1	Was "Engine and Emission Control System Check" performed?	Go to Step 2.	Go to "Engine and Emission Control System Check: ".
2	DTC check 1) Connect scan tool to DLC with ignition switch turned OFF. 2) Turn ON ignition switch. 3) Clear DTC and recheck DTC with scan tool. <i>Is there P0463?</i>	Go to Step 3.	Intermittent trouble. Check for intermittent referring to "Intermittent and Poor Connection Inspection: in Section 00".
3	Wire harness check 1) Check that fuel level sensor signal circuit ("YEL/RED" wire circuit) is in good condition. <i>Is it in good condition?</i>	Go to Step 4.	Repair fuel level sensor signal circuit.
4	ECM power and ground circuit check 1) Check that ECM power and ground circuits are in good condition referring to "ECM Power and Ground Circuit Check: ". <i>Are they in good condition?</i>	Substitute a known-good ECM and recheck.	Repair ECM power and/or ground circuit.

DTC P0480: Fan 1 (Radiator Cooling Fan) Control Circuit

S4RS0B1104048

Wiring Diagram



I4RS0B110036-05

1. Individual circuit fuse box No.1	5. Radiator cooling fan relay No. 3	9. "FI" fuse
2. Main relay	6. Radiator cooling fan motor	10. "RDTR FAN" fuse
3. Radiator cooling fan relay No. 1	7. ECT sensor	*: For Automated Manual Transaxle model
4. Radiator cooling fan relay No. 2	8. ECM	

1A-148 Engine General Information and Diagnosis:

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
Monitor signal of radiator cooling fan relay is different from command signal. (1 driving cycle detection logic)	<ul style="list-style-type: none"> • Radiator cooling fan relay circuit malfunction • Radiator cooling fan relay malfunction • ECM malfunction

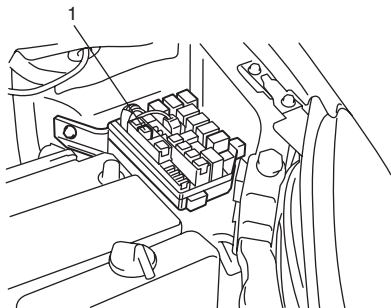
DTC Confirmation Procedure

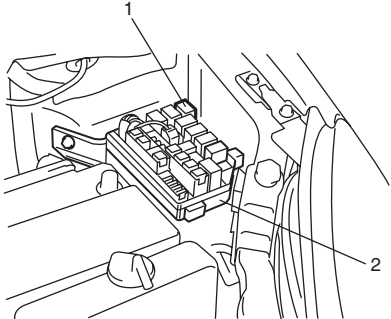
- 1) Turn OFF ignition switch.
- 2) Clear DTC with ignition switch turned ON.
- 3) Run engine at idle speed.
- 4) Check pending DTC in "ON BOARD TEST" or "PENDING DTC" mode and DTC in "DTC" mode.

DTC Troubleshooting

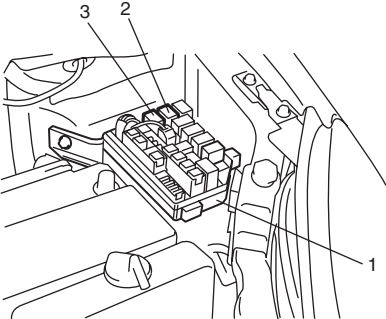
NOTE

- Before performed trouble shooting, be sure to read the "Precautions of ECM Circuit Inspection: ".
- When measuring circuit voltage, resistance and/or pulse signal at ECM connector, connect the special tool to ECM and/or the ECM connectors referring to "Inspection of ECM and Its Circuits: ".
- Upon completion of inspection and repair work, perform "DTC Confirmation Procedure" and confirm that the trouble has been corrected.

Step	Action	Yes	No
1	Was "Engine and Emission Control System Check" performed?	Go to Step 2.	Go to "Engine and Emission Control System Check: ".
2	Circuit fuse check 1) Check "RDTR FAN" fuse (1) in individual circuit fuse box No.1 with ignition switch turned OFF.  <small>I4RS0B110037-04</small>	Go to Step 3.	Check for short in circuits connected to this fuse.
	Is "RDTR FAN" fuse in good condition?		

Step	Action	Yes	No
3	<p>Wire circuit check</p> <ol style="list-style-type: none"> 1) Disconnect radiator cooling fan relay No. 1 (1) from individual circuit fuse box No.1 (2) with ignition switch turned OFF. 2) Turn ON ignition switch, measure voltage between each engine ground to “BLK/RED” and “GRY” wire terminal.  <p style="text-align: right; font-size: small;">I4RS0B110038-04</p> <p><i>Is voltage 10 – 14 V?</i></p>	Go to Step 4.	Open wire in “BLK/RED” and/or “GRY” wire are open circuit.
4	<p>Wire circuit check</p> <ol style="list-style-type: none"> 1) Connect radiator cooling fan relay No. 1 to individual circuit fuse box No.1 with ignition switch turned OFF. 2) Remove ECM from its bracket with ECM connectors connected. 3) Turn ON ignition switch, measure voltage between vehicle body ground and “E23-46” terminal of ECM connector when engine coolant temp. is below 97.5 °C, 207.5 °F. <p><i>Is voltage 10 – 14 V?</i></p>	Go to Step 8.	Go to Step 5.
5	<p>Wire circuit check</p> <ol style="list-style-type: none"> 1) Disconnect connectors from ECM with ignition switch turned OFF. 2) Disconnect radiator cooling fan relay No. 1 from individual circuit fuse box No.1. 3) Measure resistance between “E23-46” terminal of ECM connector and vehicle ground. <p><i>Is resistance infinity?</i></p>	Go to Step 6.	“LT GRN” wire is shorted to ground circuit.
6	<p>Wire circuit check</p> <ol style="list-style-type: none"> 1) Turn ON ignition switch. 2) Measure voltage between “E23-46” terminal of ECM connector and vehicle body ground. <p><i>Is voltage 0 V?</i></p>	Go to Step 7.	“LT GRN” wire is shorted to other circuit.
7	<p>Radiator cooling fan relay No. 1 check</p> <ol style="list-style-type: none"> 1) Check radiator cooling fan relay No. 1 referring to “Radiator Cooling Fan Relay Inspection: in Section 1F”. <p><i>Is check result satisfactory?</i></p>	“LT GRN” wire is open circuit.	Replace relay.
8	<p>Radiator cooling fan control No. 1 check</p> <ol style="list-style-type: none"> 1) Run engine until ECT is over 97.5 °C, 207.5 °F. 2) Measure voltage between vehicle body ground and “E23-46” terminal of ECM connector. <p><i>Is voltage lower than 1.5 V?</i></p>	Go to Step 9.	Faulty ECM. Substitute a known-good ECM and recheck.

1A-150 Engine General Information and Diagnosis:

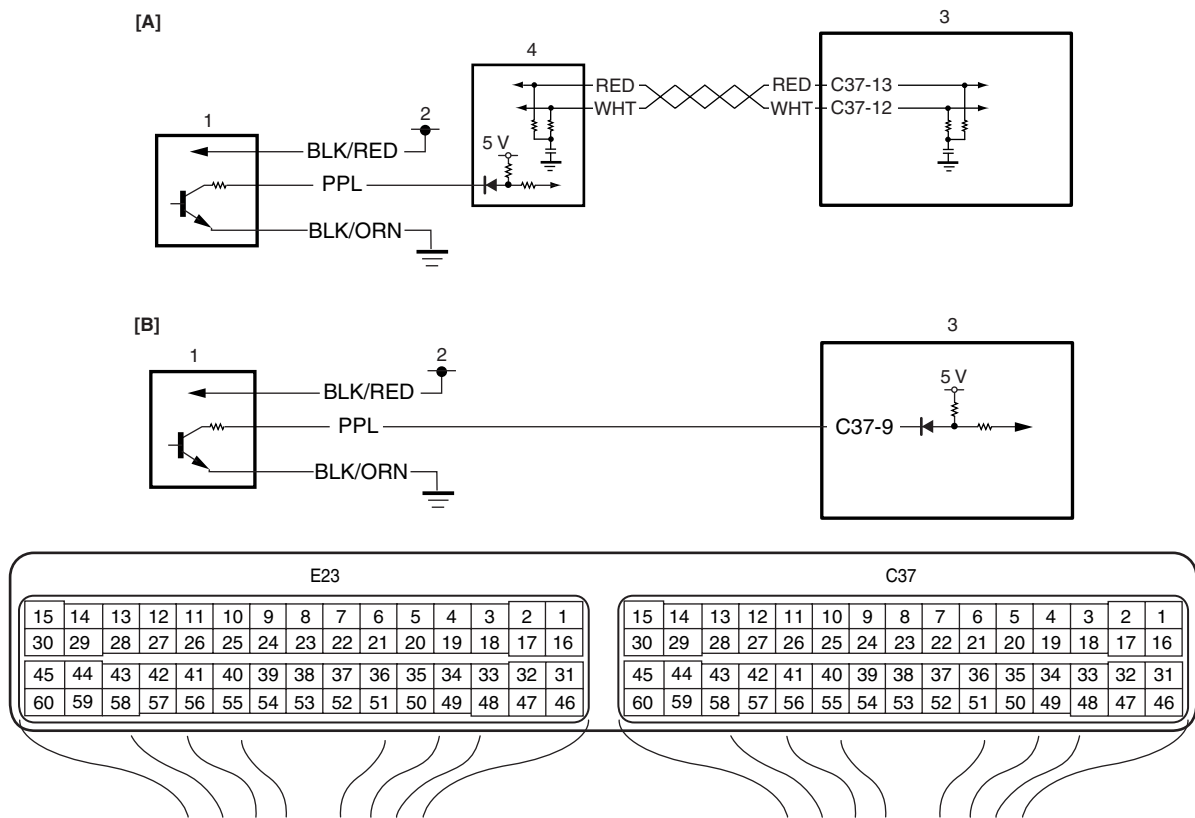
Step	Action	Yes	No
9	<p>Radiator cooling fan control check</p> <ol style="list-style-type: none"> 1) Disconnect radiator cooling fan relay No. 2 (2) and No. 3 (3) from individual circuit fuse box No.1 (1) with ignition switch turned OFF. 2) Run engine until ECT is over 97.5 °C, 207.5 °F. 3) Measure voltage between vehicle body ground and each "BLU/RED" wire terminal of radiator cooling fan control relay No. 2 and No. 3 connectors.  <p style="text-align: right; font-size: small;">I4RS0B110039-04</p> <p><i>Is voltage 10 – 14 V?</i></p>	Go to Step 10.	"BLU/RED" wire is open circuit.
10	<p>Wire circuit check</p> <ol style="list-style-type: none"> 1) Disconnect connectors from ECM with ignition switch turned OFF. 2) Connect radiator cooling fan relay No. 2 to individual circuit fuse box No.1. 3) Using service wire, ground "E23-46" and "E23-60" terminals of ECM connector. 4) Turn ON ignition switch, measure voltage between vehicle body ground and "E23-48" terminal of ECM connector. <p><i>Is voltage 10 – 14 V?</i></p>	Go to Step 11.	Go to Step 12.
11	<p>Wire circuit check</p> <ol style="list-style-type: none"> 1) Disconnect radiator cooling fan relay No. 2 and then connect radiator cooling fan relay No. 3 to individual circuit fuse box No.1 with ignition switch turned OFF. 2) Turn ON ignition switch, measure voltage between vehicle body ground and "E23-48" terminal of ECM connector. <p><i>Is voltage 10 – 14 V?</i></p>	Go to Step 15.	Go to Step 12.
12	<p>Wire circuit check</p> <ol style="list-style-type: none"> 1) Disconnect radiator cooling fan control relay No. 2 and No. 3 from individual circuit fuse box No.1 with ignition switch turned OFF. 2) Measure resistance between "E23-48" terminal of ECM connector and vehicle body ground. <p><i>Is resistance infinity?</i></p>	Go to Step 13.	"GRN" wire is shorted to ground circuit.
13	<p>Wire circuit check</p> <ol style="list-style-type: none"> 1) Turn ON ignition switch. 2) Measure voltage between "E23-48" terminal of ECM connector and vehicle body ground. <p><i>Is voltage 0 V?</i></p>	Go to Step 14.	"GRN" wire is shorted to power supply circuit.

Step	Action	Yes	No
14	Radiator cooling fan relay No. 2 and No. 3 check 1) Check radiator cooling fan relay No. 2 and No. 3 referring to "Radiator Cooling Fan Relay Inspection: in Section 1F". <i>Are relays in good condition?</i>	"GRN" wire is open circuit.	Replace relay.
15	Radiator cooling fan control No. 2 and No. 3 check 1) Connect connectors to ECM with ignition switch turned OFF. 2) Connect radiator cooling fan relay No. 2 to individual circuit fuse box No.1. 3) Run engine until ECT is over 102.5 °C, 216.5 °F. 4) Measure voltage between vehicle body ground and "E23-48" terminal of ECM connector. <i>Is voltage lower than 1.5 V?</i>	Intermittent trouble. Check for intermittent refer to "Intermittent and Poor Connection Inspection: in Section 00". If OK, substitute a known-good ECM and recheck.	Faulty ECM.

DTC P0500: Vehicle Speed Sensor (VSS) Malfunction

S4RS0B1104049

Wiring Diagram



I4RS0A110044-01

[A]: For A/T model	1. VSS	3. ECM
[B]: For M/T or Automated Manual Transaxle model	2. To main relay	4. TCM

1A-152 Engine General Information and Diagnosis:

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
<ul style="list-style-type: none"> Vehicle speed signal is not input while fuel is cut at deceleration for 4 seconds continuously at 3600 rpm or less. Vehicle speed signal is not input even if engine is running with more than 3000 rpm at D-Range for 4 sec. (for A/T model). (2 driving cycle detection logic)	<ul style="list-style-type: none"> "BLK/ORN" circuit open "PPL" or "BLK/RED" circuit open or short VSS malfunction TCM malfunction ECM malfunction

DTC Confirmation Procedure

▲ WARNING

- When performing a road test, select a place where there is no traffic or possibility of a traffic accident and be very careful during testing to avoid occurrence of an accident.
- Road test should be carried out by 2 persons, a driver and a tester.

- With ignition switch turned OFF, connect scan tool.
- Turn ON ignition switch and clear DTC using scan tool.
- Warm up engine to normal operating temperature.
- Drive vehicle at 4000 rpm (engine speed) with 3rd gear (for M/T and Automated Manual Transaxle vehicle) or "3" range (for A/T vehicle).
- Release accelerator pedal and with engine brake applied, keep vehicle coasting for 6 sec. or more (fuel cut condition for 5 sec. or more) and stop vehicle.
- For A/T model, drive vehicle at more than 3000 rpm for 10 sec.
- Check pending DTC and DTC.

DTC Troubleshooting

NOTE

- Before performed trouble shooting, be sure to read the "Precautions of ECM Circuit Inspection: ".
- When measuring circuit voltage, resistance and/or pulse signal at ECM connector, connect the special tool to ECM and/or the ECM connectors referring to "Inspection of ECM and Its Circuits: ".
- Upon completion of inspection and repair work, perform "DTC Confirmation Procedure" and confirm that the trouble has been corrected.

Step	Action	Yes	No
1	Was "Engine and Emission Control System Check" performed?	Go to Step 2.	Go to "Engine and Emission Control System Check: ".
2	Vehicle speed signal check <i>Is vehicle speed displayed on scan tool in Step 4) and 5) of "DTC Confirmation Procedure"?</i>	Intermittent trouble. Check for intermittent referring to "Intermittent and Poor Connection Inspection: in Section 00".	Go to Step 3.
3	Vehicle spec check <i>Is vehicle equipped with A/T?</i>	Go to Step 4.	Go to Step 5.
4	DTC check in TCM 1) Connect scan tool to DLC with ignition switch turned OFF. 2) Check TCM for DTC. <i>Is there DTC P0722 in TCM?</i>	Go to applicable DTC diag. flow.	Substitute a known-good ECM and recheck.

Step	Action	Yes	No
5	<p>Power supply circuit check</p> <ol style="list-style-type: none"> 1) With ignition switch turned OFF, disconnect connector from VSS. 2) Check for proper connection to “BLK/RED”, “PPL” and “BLK/ORN” wire terminals of VSS connector. 3) If wires are OK, turn ON ignition switch, measure voltage between engine ground and “BLK/RED” wire terminal of VSS connector. <p><i>Is voltage 10 – 14 V?</i></p>	Go to Step 6.	“BLK/RED” wire is open circuit.
6	<p>Ground circuit check</p> <ol style="list-style-type: none"> 1) Measure resistance between engine ground and “BLK/ORN” wire terminal of VSS connector with ignition switch turned OFF. <p><i>Is resistance below 5 Ω?</i></p>	Go to Step 7.	“BLK/ORN” wire is open or high resistance circuit.
7	<p>Wire circuit check</p> <ol style="list-style-type: none"> 1) Turn ON ignition switch, measure voltage between engine ground and “PPL” wire terminal of VSS connector. <div data-bbox="415 857 748 1108" style="text-align: center;"> </div> <p style="text-align: right; font-size: small;">I4RS0B110040-01</p> <p><i>Is measured voltage 4 – 5 V?</i></p>	Go to Step 11.	Go to Step 8.
8	<p>ECM voltage check</p> <ol style="list-style-type: none"> 1) Turn OFF ignition switch. 2) Remove ECM from its bracket with ECM connectors connected. 3) Turn ON ignition switch, measure voltage between vehicle body ground and “C37-9” terminal of ECM connector. <p><i>Is measured voltage 4 – 5 V?</i></p>	“PPL” wire is open circuit.	Go to Step 9.
9	<p>Short circuit check</p> <ol style="list-style-type: none"> 1) Disconnect connectors from ECM with ignition switch turned OFF. 2) Turn ON ignition switch, measure voltage between engine ground and “C37-9” terminal of ECM connector. <p><i>Is measured voltage 0 V?</i></p>	Go to Step 10.	“PPL” wire is shorted to power supply circuit.
10	<p>Short circuit check</p> <ol style="list-style-type: none"> 1) Measure resistance between engine ground and “C37-9” terminal of ECM connector with ignition switch turned OFF. <p><i>Is resistance infinity?</i></p>	Go to Step 11.	“PPL” wire is shorted to ground circuit. If wire is OK, substitute a known-good ECM and recheck.

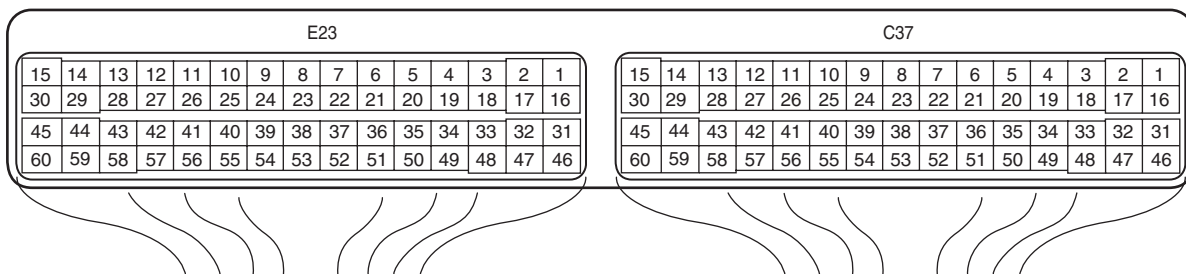
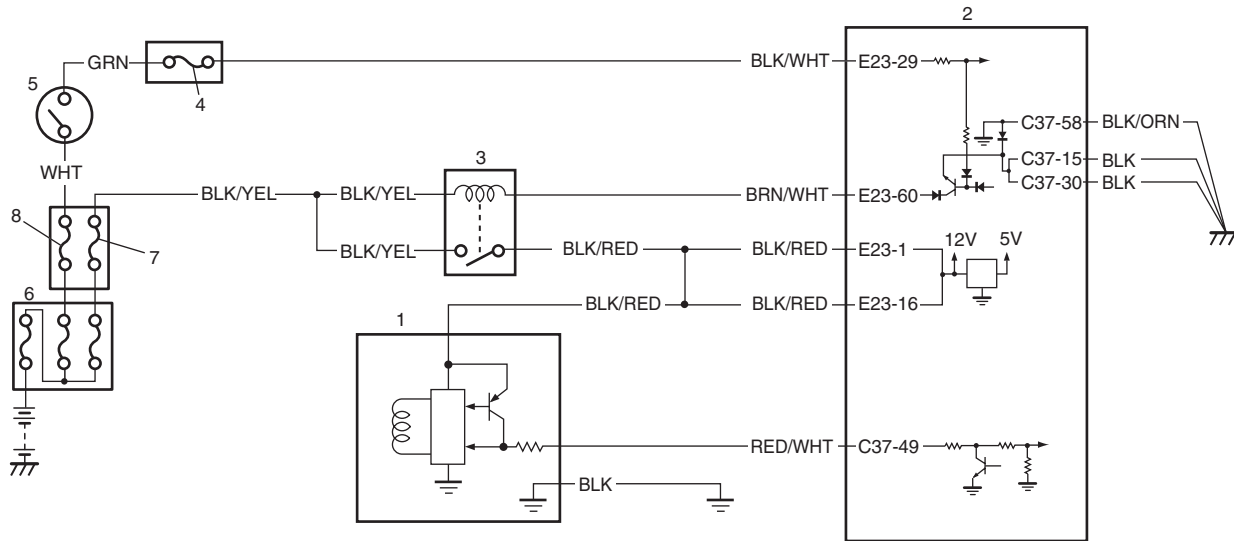
1A-154 Engine General Information and Diagnosis:

Step	Action	Yes	No
11	VSS check 1) Check VSS and signal rotor tooth referring to "Vehicle Speed Sensor (VSS) Inspection (M/T and Automated Manual Transaxle model): in Section 1C". <i>Is check result satisfactory?</i>	Substitute a known-good ECM and recheck.	Replace VSS or signal rotor.

DTC P0505: Idle Air Control System (For A/T and M/T models)

S4RS0B1104050

Wiring Diagram



I4RS0B110041-02

1. IAC valve	4. "IG COIL" fuse	7. "FI" fuse
2. ECM	5. Ignition switch	8. "IG ACC" fuse
3. Main relay	6. Main fuse box	

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
IAC control duty pulse is not detected in its monitor signal. (2 driving cycle detection logic)	<ul style="list-style-type: none"> Idle air control valve and / or its circuit ECM

DTC Confirmation Procedure

- 1) With ignition switch turned OFF, connect scan tool.
- 2) Turn ON ignition switch and clear DTC using scan tool.
- 3) Run engine at idle speed (more than 600 rpm) for 1 min. or more.
- 4) Check DTC and pending DTC.

DTC Troubleshooting

NOTE

- Before performed trouble shooting, be sure to read the “Precautions of ECM Circuit Inspection: ”.
- When measuring circuit voltage, resistance and/or pulse signal at ECM connector, connect the special tool to ECM and/or the ECM connectors referring to “Inspection of ECM and Its Circuits: ”.
- Upon completion of inspection and repair work, perform “DTC Confirmation Procedure” and confirm that the trouble has been corrected.

Step	Action	Yes	No
1	Was “Engine and Emission Control System Check” performed?	Go to Step 2.	Go to “Engine and Emission Control System Check: ”.
2	Idle speed check 1) Check idle speed / idle air control duty referring to “Idle Speed / Idle Air Control (IAC) Duty Inspection (For A/T and M/T Models): ”. <i>Is check result as specified?</i>	Go to Step 3.	Go to Step 4.
3	Idle air control valve operation check 1) Check idle air control valve for operation referring to “Idle Air Control (IAC) Valve Operation Inspection (For A/T and M/T Models): in Section 1C”. <i>Is check result as specified?</i>	Intermittent trouble. Check for intermittent referring to “Intermittent and Poor Connection Inspection: in Section 00”. If OK, substitute a known-good ECM and recheck.	Go to Step 4.
4	Idle air control valve circuit check 1) Disconnect connector from idle air control valve with ignition switch turned OFF. 2) Turn ON ignition switch, measure voltage between “BLK/RED” wire terminal of idle air control valve connector and engine ground. <i>Is voltage 10 – 14 V?</i>	Go to Step 5.	“BLK/RED” wire is open or high resistance circuit.
5	Idle air control valve circuit check 1) Disconnect connectors from ECM with ignition switch turned OFF. 2) Measure resistance between “RED/WHT” wire terminal of idle air control valve connector and “C37-49” terminal of ECM connector. <i>Is resistance 2 Ω or less?</i>	Go to Step 6.	“RED/WHT” wire is open or high resistance circuit.
6	Idle air control valve circuit check 1) Measure resistance between each “C37-49” terminal of ECM connector and vehicle body ground. <i>Is resistance infinity?</i>	Go to Step 7.	“RED/WHT” wire is shorted to ground circuit.
7	Idle air control valve circuit check 1) Connect connectors to ECM. 2) Turn ON ignition switch, measure voltage between “C37-49” terminal of ECM connector and vehicle body ground. <i>Is each voltage 0 V?</i>	Go to Step 8.	“RED/WHT” wire is shorted to power circuit.

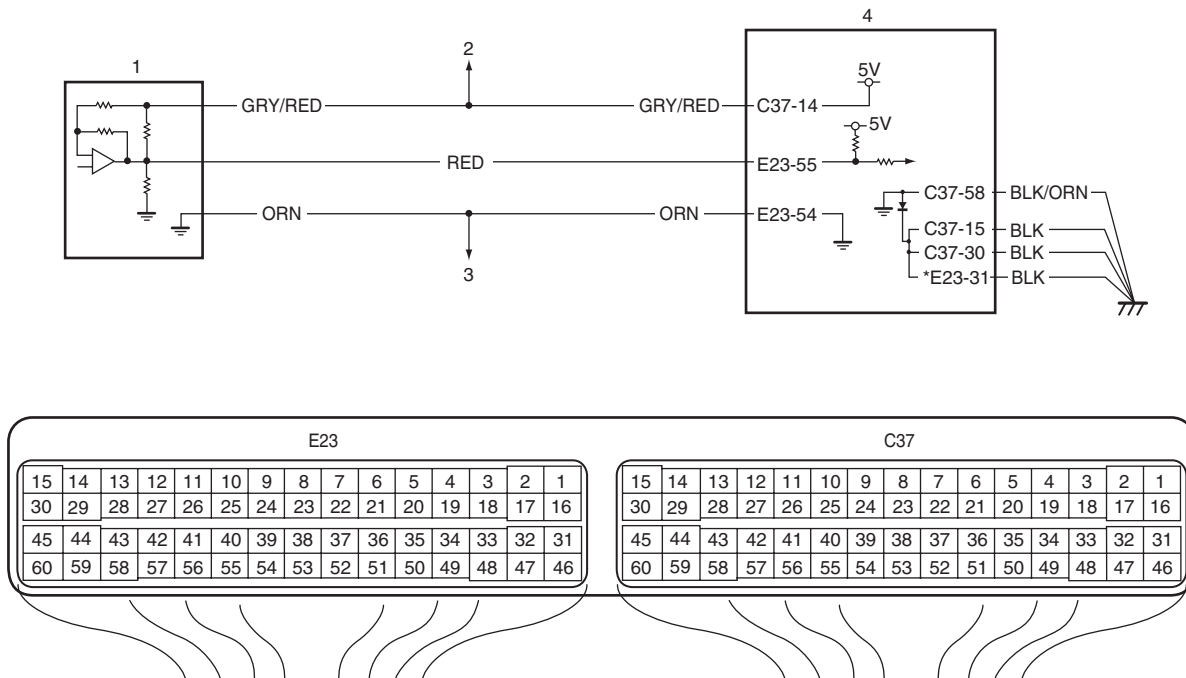
1A-156 Engine General Information and Diagnosis:

Step	Action	Yes	No
8	<p>Idle air control valve circuit check</p> <p>1) Measure resistance between “BLK” wire terminal of idle air control valve connector and vehicle body ground with ignition switch turned OFF.</p> <p><i>Is resistance continuity?</i></p>	Go to Step 9.	“BLK” wire is open circuit.
9	<p>Idle air control valve signal check</p> <p>1) Connect connector to idle air control valve.</p> <p>2) Using oscilloscope, check that idle air control valve duty pulse is outputted referring to “Reference waveform No.19” and “Reference waveform No.20” of “Inspection of ECM and Its Circuits: ”.</p> <p><i>Is duty pulse outputted at “C37-49” terminal of ECM connector?</i></p>	Replace idle air control valve.	Go to Step 10.
10	<p>Idle air control valve circuit check</p> <p>1) Disconnect connectors from ECM with ignition switch turned OFF.</p> <p>2) Using service wire, ground “E23-60” terminal of ECM connector because of main relay turned ON.</p> <p>3) Measure voltage between “C37-49” terminal of ECM connector and vehicle body ground with ignition switch turned ON.</p> <p><i>Is voltage 10 – 14 V?</i></p>	Substitute a known-good ECM and recheck.	Replace idle air control valve.

DTC P0532: A/C Refrigerant Pressure Sensor Circuit Low

S4RS0B1104051

Wiring Diagram



I4RS0B110042-02

1. A/C refrigerant pressure sensor	3. To other sensors	*: For Automated Manual Transaxle model
2. To TP sensor and MAP sensor	4. ECM	

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
A/C refrigerant pressure sensor signal voltage is less than 0.15 V for 0.5 sec. continuously. (1 driving detection logic but MIL does not light up)	<ul style="list-style-type: none"> • A/C refrigerant pressure sensor circuit • A/C refrigerant pressure sensor • TP sensor • MAP sensor • ECM

DTC Confirmation Procedure

- 1) Connect scan tool to DLC with ignition switch turned OFF.
- 2) Turn ON ignition switch and clear DTC using scan tool.
- 3) Check DTC and pending DTC.

Troubleshooting

NOTE

- Before performed trouble shooting, be sure to read the “Precautions of ECM Circuit Inspection: ”.
- When measuring circuit voltage, resistance and/or pulse signal at ECM connector, connect the special tool to ECM and/or the ECM connectors referring to “Inspection of ECM and Its Circuits: ”.
- Upon completion of inspection and repair work, perform “DTC Confirmation Procedure” and confirm that the trouble has been corrected.

Step	Action	Yes	No
1	Was “Engine and Emission Control System Check” performed?	Go to Step 2.	Go to “Engine and Emission Control System Check: ”.
2	<p>A/C refrigerant pressure sensor power supply circuit check</p> <p>1) Disconnect connector from A/C refrigerant pressure sensor with ignition switch turned OFF.</p> <p>2) Check for proper connection of A/C refrigerant pressure sensor at “GRY/RED”, “RED” and “ORN” wire terminals.</p> <p>3) Turn ON ignition switch, measure voltage between engine ground and “GRY/RED” wire terminal of A/C refrigerant pressure sensor connector.</p> <p><i>Is voltage 4 – 6 V?</i></p>	Go to Step 5.	Go to Step 3.
3	<p>A/C refrigerant pressure sensor power supply circuit check</p> <p>1) Disconnect connectors from TP sensor and MAP sensor with ignition switch turned OFF.</p> <p>2) Turn ON ignition switch, measure voltage between engine ground and “GRY/RED” wire terminal of A/C refrigerant pressure sensor connector.</p> <p><i>Is voltage 4 – 6 V?</i></p>	Faulty TP sensor and/or MAP sensor.	Go to Step 4.
4	<p>A/C refrigerant pressure sensor power supply circuit check</p> <p>1) Disconnect connectors from ECM with ignition switch turned OFF.</p> <p>2) Measure resistance between engine ground and “C37-14” terminal of ECM connector.</p> <p><i>Is resistance infinity?</i></p>	Go to Step 6.	“GRY/RED” wire is shorted to ground circuit.

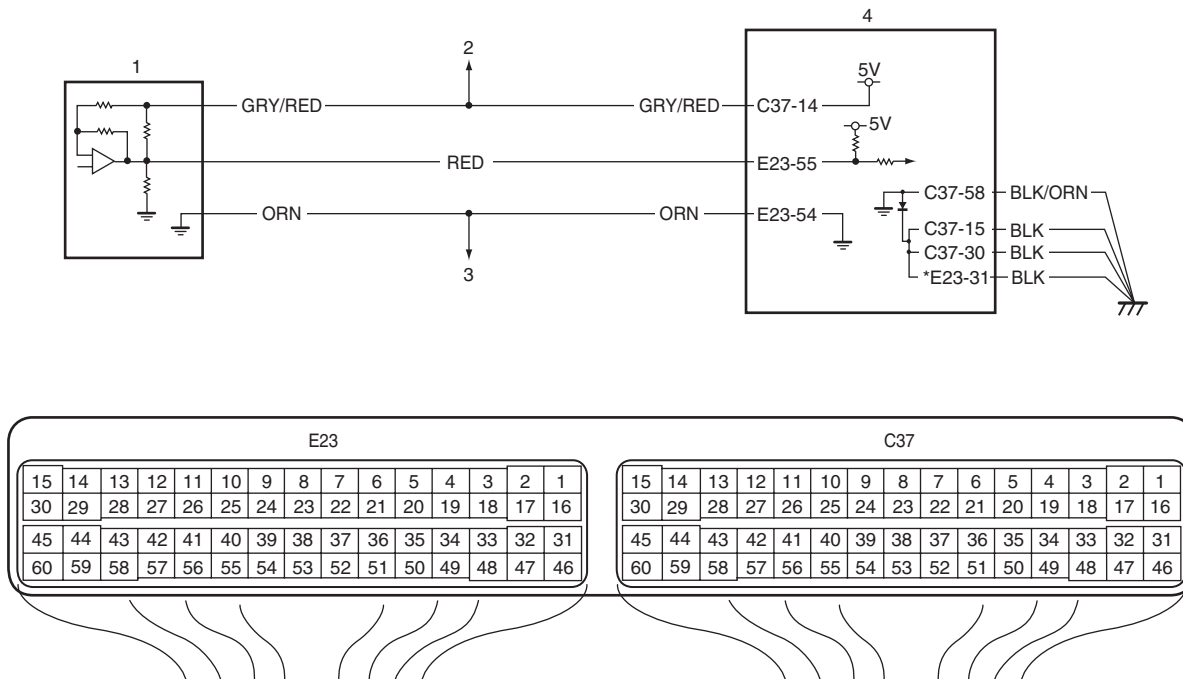
1A-158 Engine General Information and Diagnosis:

Step	Action	Yes	No
5	A/C refrigerant pressure sensor signal circuit check 1) Connect connectors to ECM. 2) Turn ON ignition switch, measure voltage between engine ground and "RED" wire terminal of A/C refrigerant pressure sensor connector. <i>Is voltage 4 – 6 V?</i>	Go to Step 7.	Go to Step 6.
6	A/C refrigerant pressure sensor signal circuit check 1) Disconnect connectors from ECM with ignition switch turned OFF. 2) Measure resistance between engine ground and "E23-55" terminal of ECM connector. <i>Is resistance infinity?</i>	Go to Step 7.	"RED" wire is shorted to ground circuit.
7	A/C refrigerant pressure sensor check 1) Check A/C refrigerant pressure sensor referring to "A/C Refrigerant Pressure Sensor and Its Circuit Inspection: in Section 7B" <i>Is it in good condition?</i>	Substitute a known-good ECM and recheck.	Faulty A/C refrigerant pressure sensor.

DTC P0533: A/C Refrigerant Pressure Sensor Circuit High

S4RS0B1104052

Wiring Diagram



I4RS0B110042-02

1. A/C refrigerant pressure sensor	3. To other sensors	*: For Automated Manual Transaxle model
2. To TP sensor and MAP sensor	4. ECM	

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
A/C refrigerant pressure sensor signal voltage is higher than 4.93 V for 0.5 sec. continuously. (1 driving detection logic but MIL does not light up)	<ul style="list-style-type: none"> A/C refrigerant pressure sensor circuit A/C refrigerant pressure sensor TP sensor MAP sensor ECM

DTC Confirmation Procedure

- 1) Connect scan tool to DLC with ignition switch turned OFF.
- 2) Turn ON ignition switch and clear DTC using scan tool.
- 3) Check DTC and pending DTC.

Troubleshooting

NOTE

- Before performed trouble shooting, be sure to read the “Precautions of ECM Circuit Inspection: ”.
- When measuring circuit voltage, resistance and/or pulse signal at ECM connector, connect the special tool to ECM and/or the ECM connectors referring to “Inspection of ECM and Its Circuits: ”.
- Upon completion of inspection and repair work, perform “DTC Confirmation Procedure” and confirm that the trouble has been corrected.

Step	Action	Yes	No
1	Was “Engine and Emission Control System Check” performed?	Go to Step 2.	Go to “Engine and Emission Control System Check: ”
2	A/C refrigerant pressure sensor power supply circuit check 1) Disconnect connector from A/C refrigerant pressure sensor with ignition switch turned OFF. 2) Check for proper connection of A/C refrigerant pressure sensor at “GRY/RED”, “RED” and “ORN” wire terminals. 3) Turn ON ignition switch, measure voltage between engine ground and “GRY/RED” wire terminal of A/C refrigerant pressure sensor connector. Is voltage 4 – 6 V?	Go to Step 4.	Go to Step 3.
3	A/C refrigerant pressure sensor power supply circuit check 1) Disconnect connectors from TP sensor and MAP sensor with ignition switch turned OFF. 2) Turn ON ignition switch, measure voltage between engine ground and “GRY/RED” wire terminal of A/C refrigerant pressure sensor connector. Is voltage 4 – 6 V?	Faulty TP sensor and/or MAP sensor.	“GRY/RED” wire is open or shorted to power circuit.
4	A/C refrigerant pressure sensor signal circuit check 1) Turn ON ignition switch, measure voltage between engine ground and “RED” wire terminal of A/C refrigerant pressure sensor connector. Is voltage 4 – 6 V?	Go to Step 6.	Go to Step 5.
5	A/C refrigerant pressure sensor signal circuit check 1) Disconnect connectors from ECM with ignition switch turned OFF. 2) Measure resistance between “RED” wire terminal of A/C refrigerant pressure sensor connector and “E23-55” terminal of ECM connector. Is resistance below 2 Ω?	“RED” wire is shorted to power supply circuit.	“RED” wire is open or high resistance circuit.
6	A/C refrigerant pressure sensor ground circuit check 1) Turn OFF ignition switch, measure resistance between engine ground and “ORN” wire terminal of A/C refrigerant pressure sensor connector. Is resistance below 5 Ω?	Go to Step 8.	Go to Step 7.

1A-160 Engine General Information and Diagnosis:

Step	Action	Yes	No
7	ECM ground circuit check 1) Remove ECM from its bracket with ECM connectors connected. 2) Measure resistance between engine ground and "E23-54" terminal of ECM connector. <i>Is resistance below 5 Ω?</i>	"ORN" wire is open or high resistance circuit.	ECM grounds "C37-58", "C37-15", "C37-30" and/or "E23-31" (for Automated Manual Transaxle model) is open or high resistance circuit.
8	A/C refrigerant pressure sensor check 1) Check A/C refrigerant pressure sensor referring to "A/C Refrigerant Pressure Sensor and Its Circuit Inspection: in Section 7B" <i>Is it good condition?</i>	Substitute a known-good ECM and recheck.	Faulty A/C refrigerant pressure sensor.

DTC P0601 / P0602 / P0607: Internal Control Module Memory Check Sum Error / Control Module Programming Error / Control Module Performance (For Automated Manual Transaxle Model)

S4RS0B1104053

System Description

Internal control module is installed in ECM.

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
DTC P0601: Data write error or check sum error (1 driving cycle detection logic) DTC P0602: Data programming error (1 driving cycle detection logic) DTC P0607: Data programming error (1 driving cycle detection logic)	ECM

DTC Confirmation Procedure

- 1) Connect scan tool to DLC with ignition switch turned OFF.
- 2) Turn ON ignition switch and clear DTC, pending DTC and freeze frame data by using scan tool.
- 3) Start engine and run it at idle if possible.
- 4) Check DTC and pending DTC by using scan tool.

DTC Troubleshooting

NOTE

- Before performed trouble shooting, be sure to read the "Precautions of ECM Circuit Inspection: ".
- When measuring circuit voltage, resistance and/or pulse signal at ECM connector, connect the special tool to ECM and/or the ECM connectors referring to "Inspection of ECM and Its Circuits: ".
- Upon completion of inspection and repair work, perform "DTC Confirmation Procedure" and confirm that the trouble has been corrected.

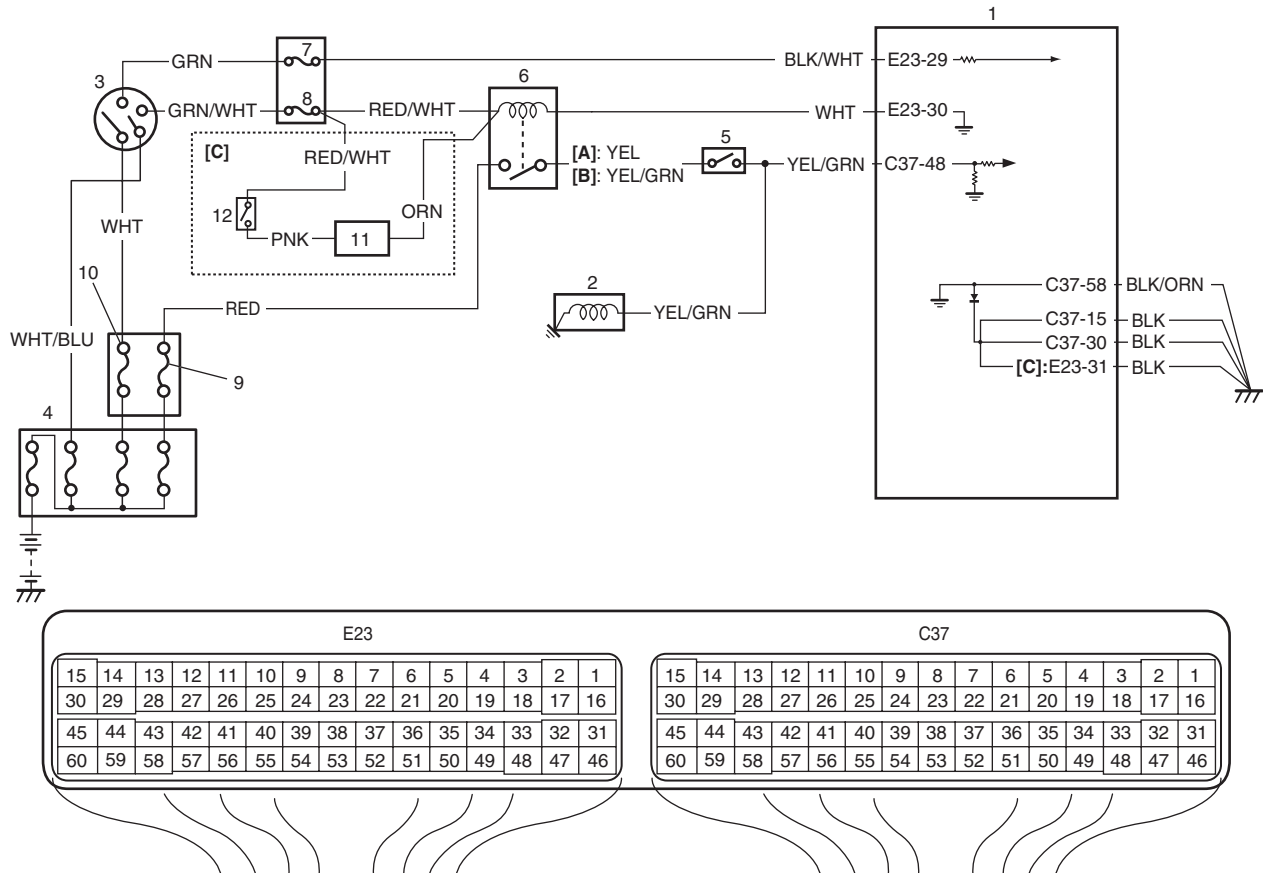
Step	Action	Yes	No
1	DTC recheck 1) Clear DTC referring to "DTC Clearance: ". 2) Turn OFF ignition switch. 3) Turn ON ignition switch and check DTC. <i>Is DTC P0601 or P0607 still indicated?</i>	Go to Step 2.	Intermittent trouble. Check for intermittent referring to "Intermittent and Poor Connection Inspection: in Section 00"

Step	Action	Yes	No
2	<p>ECM power and ground circuit check</p> <p>1) Check that ECM power supply circuit and ECM ground circuit is in good condition referring to "ECM Power and Ground Circuit Check: ".</p> <p><i>Are check results OK?</i></p>	Substitute a known-good ECM and recheck.	Repair ECM power or ground circuit.

DTC P0616: Starter Relay Circuit Low

S4RS0B1104054

Wiring Diagram



I4RS0B110043-03

[A]: For A/T model	3. Ignition switch	8. "ST SIG" fuse
[B]: For M/T model	4. Main fuse box	9. "ST MOT" fuse
[C]: For Automated Manual Transaxle model	5. Transmission range switch (for A/T model)	10. "IG ACC" fuse
1. ECM	6. Starting motor control relay	11. TCM (for Automated Manual Transaxle model)
2. Starter motor	7. "IG COIL" fuse	12. Neutral start switch

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
Engine starts even though vehicle is at stop and engine starter signal is low voltage. (2 driving cycle detection logic)	<ul style="list-style-type: none"> Engine starter signal circuit ECM

DTC Confirmation Procedure

- 1) With ignition switch turned OFF, connect scan tool.
- 2) Turn ON ignition switch and clear DTC using scan tool.
- 3) Start engine.
- 4) Check DTC and pending DTC.

DTC Troubleshooting

NOTE

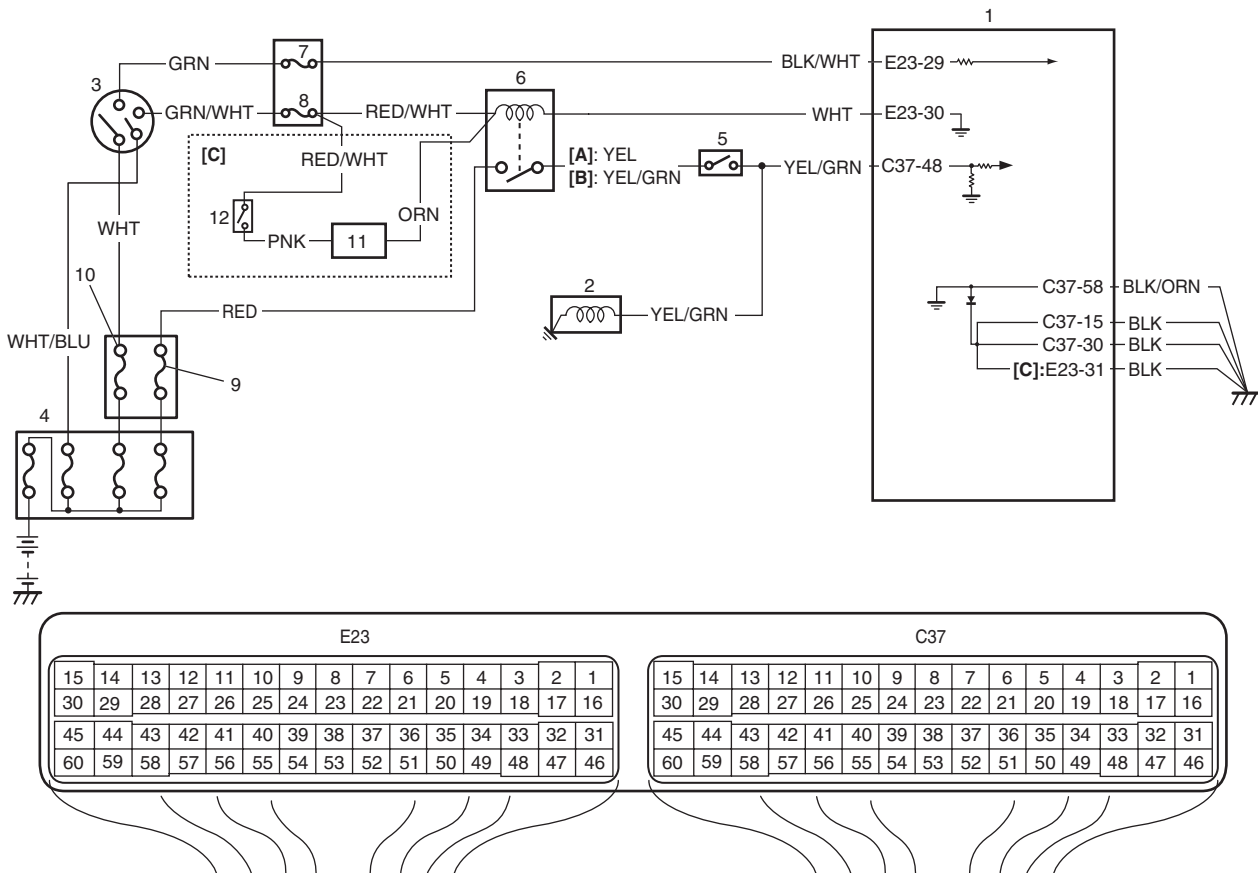
- Before performed trouble shooting, be sure to read the “Precautions of ECM Circuit Inspection: ”.
- When measuring circuit voltage, resistance and/or pulse signal at ECM connector, connect the special tool to ECM and/or the ECM connectors referring to “Inspection of ECM and Its Circuits: ”.
- Upon completion of inspection and repair work, perform “DTC Confirmation Procedure” and confirm that the trouble has been corrected.

Step	Action	Yes	No
1	Was “Engine and Emission Control System Check” performed?	Go to Step 2.	Go to “Engine and Emission Control System Check: ”.
2	<p>Signal circuit check</p> <p>1) Turn OFF ignition switch.</p> <p>2) Remove ECM from its bracket with ECM connectors connected.</p> <p>3) Measure voltage at terminal “C37-48” of ECM connector, under following condition.</p> <p>Voltage at terminal “C37-48” of ECM connector While engine cranking: 6 – 14 V After starting engine: 0 – 1 V</p> <p><i>Is each voltage within specified range?</i></p>	<p>Poor “C37-48” connection or intermittent trouble.</p> <p>Check for intermittent referring to “Intermittent and Poor Connection Inspection: in Section 00”.</p> <p>If wire and connections are OK, substitute a known-good ECM and recheck.</p>	<p>“YEL/GRN” wire is open or high resistance circuit.</p>

DTC P0617: Starter Relay Circuit High

S4RS0B1104055

Wiring Diagram



[A]: For A/T model	3. Ignition switch	8. "ST SIG" fuse
[B]: For M/T model	4. Main fuse box	9. "ST MOT" fuse
[C]: For Automated Manual Transaxle model	5. Transmission range switch (for A/T model)	10. "IG ACC" fuse
1. ECM	6. Starting motor control relay	11. TCM (for Automated Manual Transaxle model)
2. Starter motor	7. "IG COIL" fuse	12. Neutral start switch

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
Engine starter signal is high voltage for 180 seconds continuously while engine is running. (2 driving cycle detection logic)	<ul style="list-style-type: none"> • Engine starter signal circuit • ECM

DTC Confirmation Procedure

- 1) With ignition switch turned OFF, connect scan tool.
- 2) Turn ON ignition switch and clear DTC using scan tool.
- 3) Start engine and run it at idle for 3 min. or more.
- 4) Check DTC and pending DTC.

DTC Troubleshooting

NOTE

- Before performed trouble shooting, be sure to read the "Precautions of ECM Circuit Inspection: ".
- When measuring circuit voltage, resistance and/or pulse signal at ECM connector, connect the special tool to ECM and/or the ECM connectors referring to "Inspection of ECM and Its Circuits: ".
- Upon completion of inspection and repair work, perform "DTC Confirmation Procedure" and confirm that the trouble has been corrected.

Step	Action	Yes	No
1	Was "Engine and Emission Control System Check" performed?	Go to Step 2.	Go to "Engine and Emission Control System Check: ".
2	<p>Starter signal check</p> <ol style="list-style-type: none"> 1) Turn OFF ignition switch. 2) Remove ECM from its bracket with ECM connectors connected. 3) Start engine, measure voltage between "C37-48" terminal of ECM connector and vehicle body ground. <p>Is voltage 0 – 1 V?</p>	Intermittent trouble. Check for intermittent referring to "Intermittent and Poor Connection Inspection: in Section 00". If OK, substitute a known-good ECM and recheck.	Go to Step 3.
3	<p>Wire circuit check</p> <ol style="list-style-type: none"> 1) Disconnect starting motor control relay in individual circuit fuse box No.1 with ignition switch turned OFF. 2) Check for proper connection to starting motor control relay at "RED/WHT" (for A/T and M/T models), "ORN" (for Automated Manual Transaxle model), "RED", "WHT", "YEL" (for A/T model) and "YEL/GRN" (for M/T or Automated Manual Transaxle model) wire terminals. 3) Disconnect connector from starting motor. 4) Measure voltage between "C37-48" terminal of ECM connector and vehicle body ground with ignition switch turned ON. <p>Is voltage 0 – 1 V?</p>	Go to Step 4.	<p>For A/T model, "YEL" or "YEL/GRN" wire is shorted to power circuit.</p> <p>For M/T or Automated Manual Transaxle model, "YEL/GRN" wire is shorted to power circuit.</p> <p>If wires are OK, substitute a known good ECM and recheck.</p>

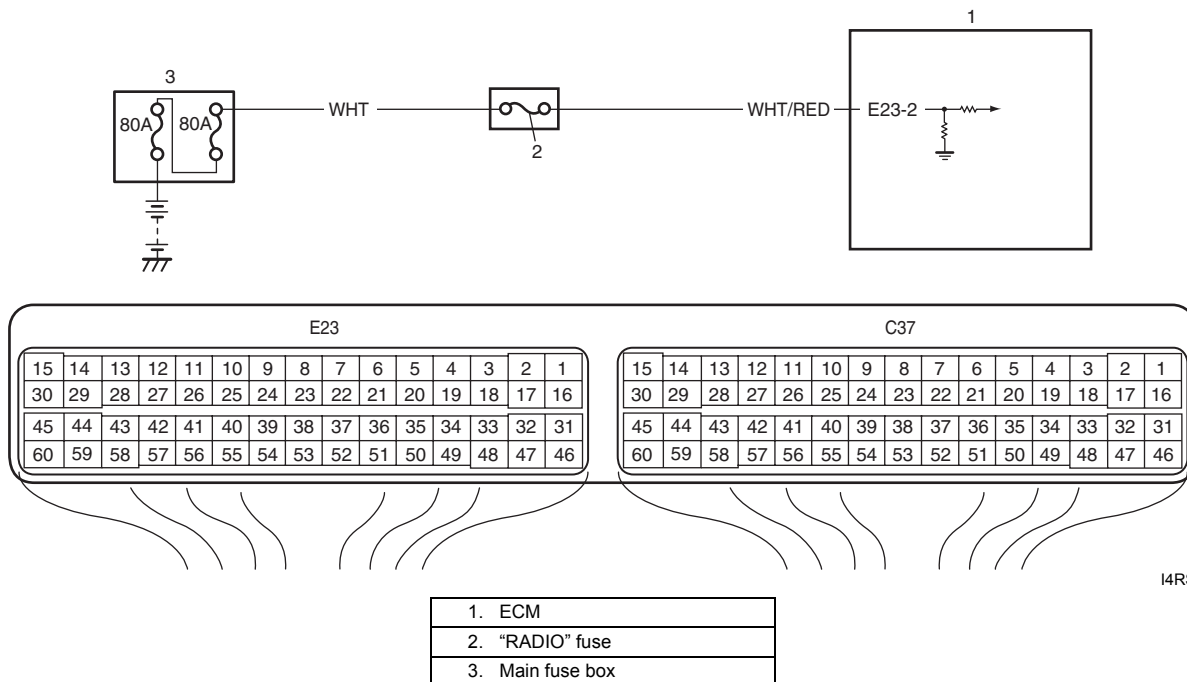
1A-164 Engine General Information and Diagnosis:

Step	Action	Yes	No
4	<p>Wire circuit check</p> <p>1) Measure voltage between “RED/WHT” (for A/T and M/T models), “ORN” (for Automated Manual Transaxle model) wire terminal of starting motor control relay connector and vehicle body ground with ignition switch turned ON.</p> <p><i>Is voltage 0 – 1 V?</i></p>	Check starting motor control relay. If OK, substitute a known-good ECM and recheck.	<p>Faulty ignition switch, check ignition switch referring to “Ignition Switch Inspection: in Section 9C”.</p> <p>If ignition switch is OK, check for short circuit between ignition switch and starting motor control relay to power circuit.</p>

DTC P1510: ECM Back-Up Power Supply Malfunction

S4RS0B1104056

Wiring Diagram



I4RS0B110044-01

Circuit Description

Battery voltage is supplied so that DTC memory, values for engine control learned by ECM, etc. are kept in ECM even when the ignition switch is turned OFF.

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
Back-up power circuit voltage is less than 70% battery voltage for 5 seconds continuously while engine is running. (1 driving cycle detection logic)	Battery voltage supply circuit

DTC Confirmation Procedure

- 1) Connect scan tool to DLC with ignition switch turned OFF.
- 2) Turn ON ignition switch and clear DTC using scan tool and run engine at idle speed for 1 min.
- 3) Check DTC and pending DTC.

DTC Troubleshooting

NOTE

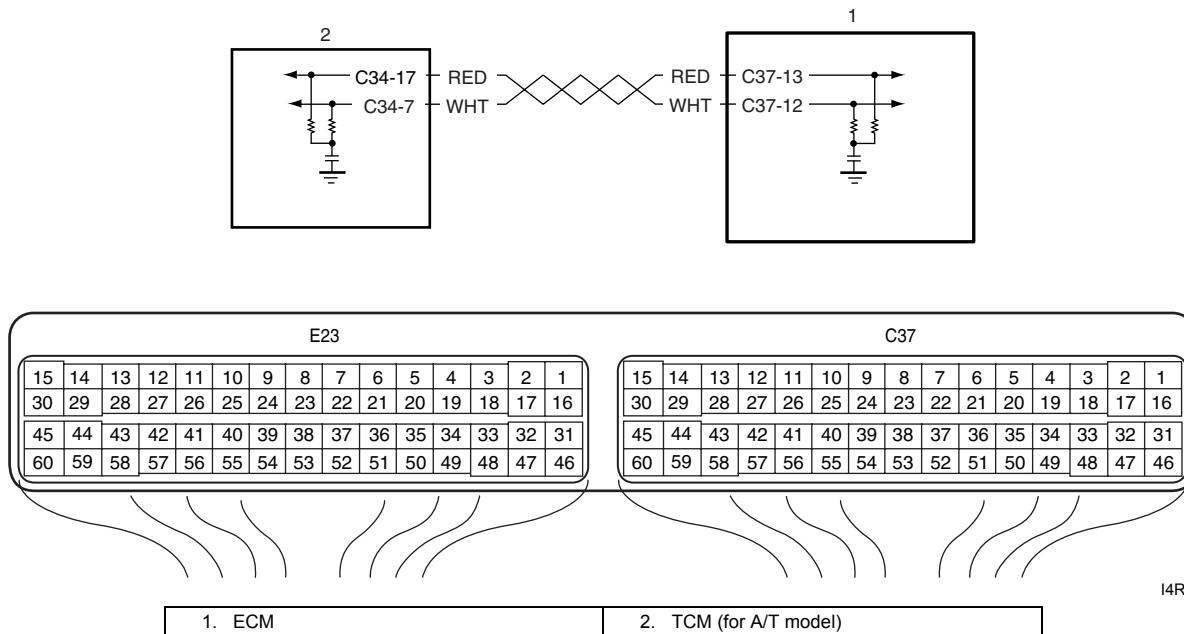
- Before performed trouble shooting, be sure to read the “Precautions of ECM Circuit Inspection: ”.
- When measuring circuit voltage, resistance and/or pulse signal at ECM connector, connect the special tool to ECM and/or the ECM connectors referring to “Inspection of ECM and Its Circuits: ”.
- Upon completion of inspection and repair work, perform “DTC Confirmation Procedure” and confirm that the trouble has been corrected.

Step	Action	Yes	No
1	Was “Engine and Emission Control System Check” performed?	Go to Step 2.	Go to “Engine and Emission Control System Check: ”.
2	Battery voltage supply circuit check 1) Turn OFF ignition switch. 2) Remove ECM from its bracket with ECM connectors connected. 3) With engine running, measure voltage between “E23-2” terminal of ECM connector and engine ground. <i>Is voltage 10 – 14 V?</i>	Poor “E23-2” connection or intermittent trouble. Check for intermittent referring to “Intermittent and Poor Connection Inspection: in Section 00”. If wire and connections are OK, substitute a known-good ECM and recheck.	“RADIO” fuse blown, “WHT” or “WHT/RED” wire is circuit open or short circuit.

DTC P1603: TCM Trouble Code Detected

S4RS0B1104057

Wiring Diagram



I4RS0A110053-01

DTC Detecting Condition

When ECM receives a trouble code from TCM, which indicates that some problem occurred in sensor circuits and its calculated values used for operations such as idle speed control, engine power control, and so on by TCM, ECM sets DTC P1603. (TCM outputs the trouble code to ECM when TCM can not compute the engine control signal due to malfunctions of sensor circuits used for gear shift control.)

DTC Troubleshooting

NOTE

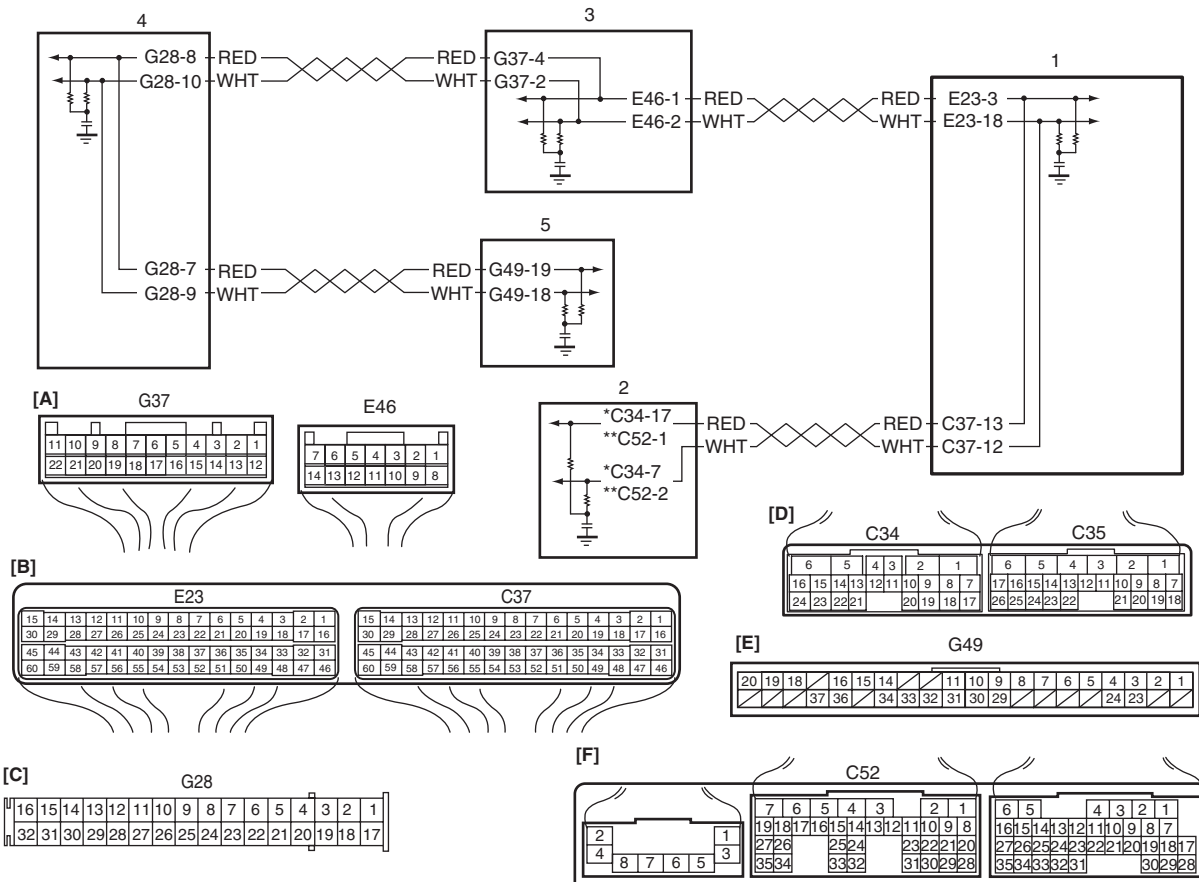
- Before performed trouble shooting, be sure to read the “Precautions of ECM Circuit Inspection: ”.
- When measuring circuit voltage, resistance and/or pulse signal at ECM connector, connect the special tool to ECM and/or the ECM connectors referring to “Inspection of ECM and Its Circuits: ”.
- Upon completion of inspection and repair work, perform “DTC Confirmation Procedure” and confirm that the trouble has been corrected.

Step	Action	Yes	No
1	Was “Engine and Emission Control System Check” performed?	Go to Step 2.	Go to “Engine and Emission Control System Check: ”.
2	DTC check 1) Check DTC of TCM referring to “DTC Check: in Section 5A”. Is there any DTC(s)?	Go to applicable DTC diag. flow.	Substitute a known-good ECM and recheck.

DTC P1674: CAN Communication (Bus Off Error)

S4RS0B1104058

Wiring Diagram



I4RS0B110045-10

[A]: BCM connector (viewed from harness side)	[F]: TCM connector (for Automated Manual Transaxle model) (viewed from harness side)	5. Keyless start control module (if equipped with keyless start control system)
[B]: ECM connector (viewed from harness side)	1. ECM	*: A/T vehicle
[C]: Combination meter connector (viewed from harness side)	2. TCM (for A/T or Automated Manual Transaxle model)	** : Automated Manual Transaxle vehicle
[D]: TCM connector (for A/T model) (viewed from harness side)	3. BCM	

[E]: Keyless start control module connector (if equipped with keyless start control system) (viewed from harness side)	4. Combination meter	
--	----------------------	--

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
Transmission error that is inconsistent between transmission data and transmission monitor (CAN bus monitor) data is detected more than 7 times continuously. (1 driving detection logic)	<ul style="list-style-type: none"> • ECM • BCM • TCM (for A/T or Automated Manual Transaxle model) • Keyless start control module (if equipped with keyless start control system) • Combination meter • CAN communication line circuit

DTC Confirmation Procedure

- 1) Connect scan tool to DLC with ignition switch turned OFF.
- 2) Turn ON ignition switch and clear DTC by using scan tool.
- 3) Start engine and run it for 1 min. or more.
- 4) Check DTC and pending DTC.

Troubleshooting

NOTE

- Before performed trouble shooting, be sure to read the “Precautions of ECM Circuit Inspection: ”.
- When measuring circuit voltage, resistance and/or pulse signal at ECM connector, connect the special tool to ECM and/or the ECM connectors referring to “Inspection of ECM and Its Circuits: ”.
- Upon completion of inspection and repair work, perform “DTC Confirmation Procedure” and confirm that the trouble has been corrected.

Step	Action	Yes	No
1	Was “Engine and Emission Control System Check” performed?	Go to Step 2.	Go to “Engine and Emission Control System Check: ”.
2	<p>DTC check</p> <p>1) Connect scan tool to DLC with ignition switch turned OFF.</p> <p>2) Check ECM, TCM (for A/T or Automated Manual Transaxle model) and BCM for DTC.</p> <p><i>Is there any DTC(s) (other than DTC P1674, P1675, P1676, P1678 in ECM, DTC P1774, P1775, P1777, P1778 in TCM (for A/T or Automated Manual Transaxle model), DTC U1073, U1001, U1100, U1101 in BCM, P1618 in immobilizer control module and DTC No.31 / 33 in keyless start control module (if equipped with keyless start control system))?</i></p>	Go to applicable DTC diag. flow.	Go to Step 3.

1A-168 Engine General Information and Diagnosis:

Step	Action	Yes	No
3	<p>ECM, TCM (for A/T or Automated Manual Transaxle model), BCM, combination meter and keyless start control module (if equipped with keyless start control system) connectors check</p> <p>1) Check for proper connection at each ECM, TCM (for A/T or Automated Manual Transaxle model), BCM, combination meter and keyless start control module (if equipped with keyless start control system) connector terminals with ignition switch turned OFF.</p> <p>2) If connections are OK, recheck ECM for DTC with engine running.</p> <p><i>Is there DTC P1674?</i></p>	Go to Step 4.	Intermittent trouble. Check for intermittent referring to "Intermittent and Poor Connection Inspection: in Section 00".
4	<p>ECM power and ground circuit check</p> <p>1) Check ECM power and ground circuit referring to "ECM Power and Ground Circuit Check: ".</p> <p><i>Are they in good condition?</i></p>	Go to Step 5.	Repair ECM power and/or ground circuits.
5	<p>DTC check in BCM, TCM (for A/T or Automated Manual Transaxle model) and keyless start control module (if equipped with keyless start control system) (bus off)</p> <p>1) Check DTC(s) in TCM (for A/T or Automated Manual Transaxle model) and BCM.</p> <p><i>Is there DTC(s) P1774 in TCM (for A/T or Automated Manual Transaxle model), U1073 in BCM and/or DTC No.33 in keyless start control module (if equipped with keyless start control system)?</i></p>	Go to Step 6.	Go to Step 7.
6	<p>DTC check in ECM (bus off)</p> <p>1) Disconnect connectors from ECM with ignition switch turned OFF.</p> <p>2) Check TCM (for A/T or Automated Manual Transaxle model) and BCM for DTC(s).</p> <p><i>Is there DTC(s) P1774 in TCM (for A/T or Automated Manual Transaxle model), U1073 in BCM and/or DTC No.33 in keyless start control module (if equipped with keyless start control system)?</i></p>	Go to Step 7.	Substitute a known-good ECM and recheck.
7	<p>DTC check in ECM</p> <p>1) Connect connectors to ECM and disconnect connectors from TCM (for A/T or Automated Manual Transaxle model) with ignition switch turned OFF.</p> <p>2) Check ECM for DTC.</p> <p><i>Is there DTC P1674?</i></p>	Go to Step 8.	Substitute a known-good TCM (for A/T or Automated Manual Transaxle model) and recheck.
8	<p>DTC check in ECM</p> <p>1) Disconnect connector from keyless start control module (if equipped with keyless start control system) with ignition switch turned OFF.</p> <p>2) Check ECM for DTC.</p> <p><i>Is there DTC P1674?</i></p>	Go to Step 8.	Substitute a known-good keyless start control module and recheck.
9	<p>DTC check in ECM</p> <p>1) Disconnect connector from combination meter with ignition switch turned OFF.</p> <p>2) Check ECM for DTC.</p> <p><i>Is there DTC P1674?</i></p>	Go to Step 10.	Substitute a known-good combination meter or keyless start control module (if equipped with keyless start control system) and recheck.

Step	Action	Yes	No
10	<p>CAN communication line circuit insulation check</p> <p>1) Disconnect connectors from BCM with ignition switch turned OFF.</p> <p>2) Measure resistance between “G37-2” and “G37-4” terminals of BCM connector.</p> <p><i>Is resistance infinity?</i></p>	Go to Step 11.	Repair insulation of CAN communication line circuit referring to “Precaution for CAN Communication System: in Section 00”.
11	<p>CAN communication line circuit insulation check (if equipped with keyless start control system)</p> <p>1) Disconnect connector from keyless start control module with ignition switch turned OFF.</p> <p>2) Measure resistance between “G49-18” and “G49-19” terminals of keyless start control module connector.</p> <p><i>Is resistance infinity?</i></p>	Go to Step 12.	Repair insulation of CAN communication line circuit referring to “Precaution for CAN Communication System: in Section 00”.
12	<p>CAN communication line circuit insulation check</p> <p>1) Disconnect connectors from ECM with ignition switch turned OFF.</p> <p>2) Measure resistance between “E23-3” and “E23-18” terminals of ECM connector.</p> <p><i>Is resistance infinity?</i></p>	Go to Step 13.	Repair insulation of CAN communication line circuit referring to “Precaution for CAN Communication System: in Section 00”.
13	<p>CAN communication line circuit insulation check (for A/T model)</p> <p>1) Measure resistance between “C37-13” and “C37-12” terminals of ECM connector.</p> <p><i>Is resistance infinity?</i></p>	Go to Step 14.	Repair insulation of CAN communication line circuit referring to “Precaution for CAN Communication System: in Section 00”.

1A-170 Engine General Information and Diagnosis:

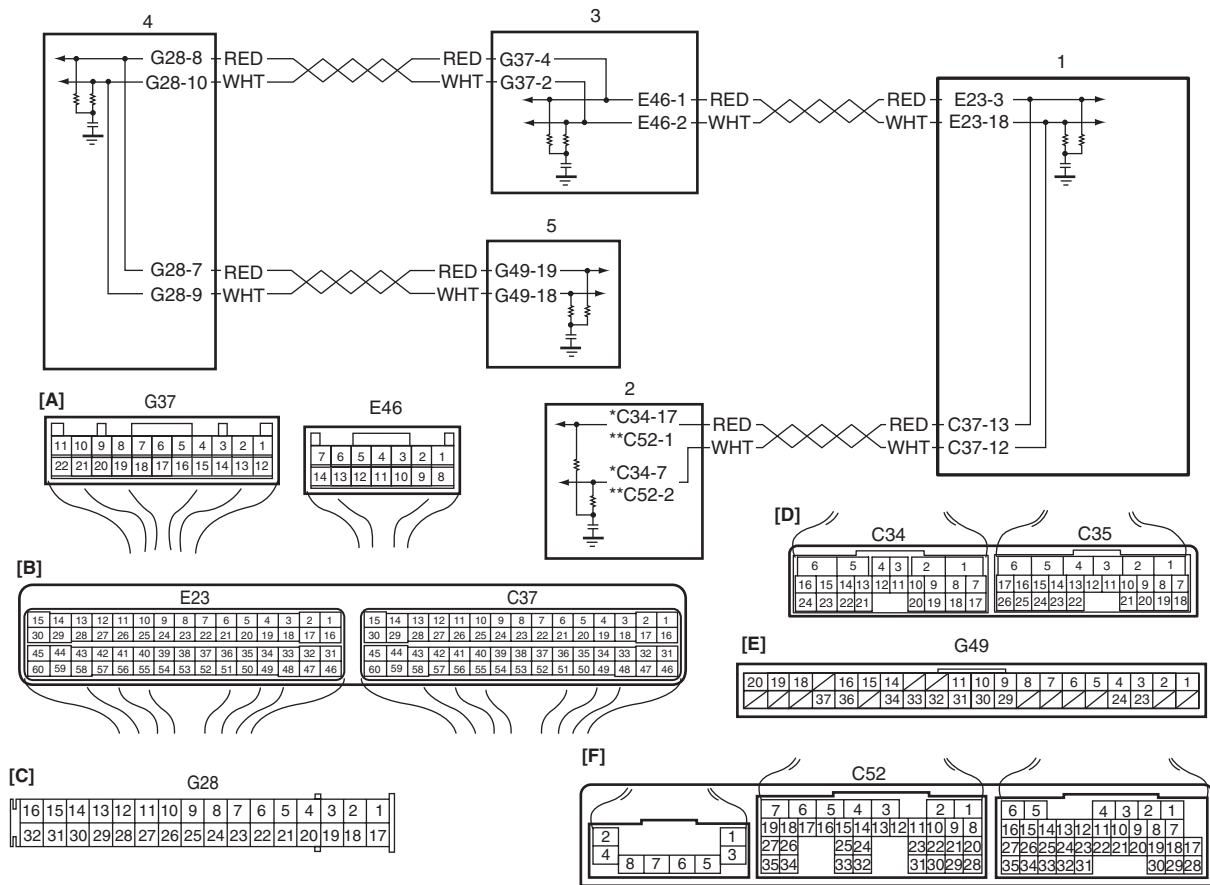
Step	Action	Yes	No
14	<p>CAN communication line circuit continuity check</p> <p>1) Measure resistance at following connector terminals.</p> <ul style="list-style-type: none"> • Between “E23-3” terminal of ECM connector and “E46-1” terminal of BCM connector • Between “E23-18” terminal of ECM connector and “E46-2” terminal of BCM connector • Between “C37-13” terminal of ECM connector and “C34-17” terminal of TCM (A/T) connector (for A/T model) or “C52-1” terminal of TCM (Automated Manual Transaxle) connector (for Automated Manual Transaxle model) • Between “C37-12” terminal of ECM connector and “C34-7” terminal of TCM (A/T) connector (for A/T model) or “C52-2” terminal of TCM (Automated Manual Transaxle) connector (for Automated Manual Transaxle model) • Between “G37-4” terminal of BCM connector and “G28-8” terminal of combination meter connector • Between “G37-2” terminal of BCM connector and “G28-10” terminal of combination meter connector • Between “G28-7” terminal of combination meter connector and “G49-19” terminal of keyless start control module connector (if equipped with keyless start control system) • Between “G28-9” terminal of combination meter connector and “G49-18” terminal of keyless start control module connector (if equipped with keyless start control system) <p><i>Is each resistance below 1 Ω?</i></p>	Go to Step 15.	Repair open or high resistance of CAN communication line circuit referring to “Precaution for CAN Communication System: in Section 00”.
15	<p>CAN communication line circuit ground short check</p> <p>1) Measure resistance at following connector terminals.</p> <ul style="list-style-type: none"> • Between “E23-3” terminal of ECM connector and vehicle body ground • Between “E23-18” terminal of ECM connector and vehicle body ground • Between “C37-13” terminal of ECM connector and vehicle body ground (for A/T model or Automated Manual Transaxle model) • Between “C37-12” terminal of ECM connector and vehicle body ground (for A/T model or Automated Manual Transaxle model) • Between “G37-4” terminal of BCM connector and vehicle body ground • Between “G37-2” terminal of BCM connector and vehicle body ground • Between “G49-19” terminal of keyless start control module connector and vehicle body ground (if equipped with keyless start control system) • Between “G49-18” terminal of keyless start control module connector and vehicle body ground (if equipped with keyless start control system) <p><i>Is each resistance infinity?</i></p>	Go to Step 16.	Repair short to ground of CAN communication line circuit referring to “Precaution for CAN Communication System: in Section 00”.

Step	Action	Yes	No
16	<p>Check for short circuit of CAN communication line to power circuit</p> <p>1) Measure voltage at following connector terminals with ignition switch turned ON.</p> <ul style="list-style-type: none"> • Between “E23-3” terminal of ECM connector and vehicle body ground • Between “E23-18” terminal of ECM connector and vehicle body ground • Between “C37-13” terminal of ECM connector and vehicle body ground (for A/T model or Automated Manual Transaxle model) • Between “C37-12” terminal of ECM connector and vehicle body ground (for A/T model or Automated Manual Transaxle model) • Between “G37-4” terminal of BCM connector and vehicle body ground • Between “G37-2” terminal of BCM connector and vehicle body ground • Between “G49-19” terminal of keyless start control module connector and vehicle body ground (if equipped with keyless start control system) • Between “G49-18” terminal of keyless start control module connector and vehicle body ground (if equipped with keyless start control system) <p><i>Is each voltage 0 – 1 V?</i></p>	<p>Substitute a known-good BCM (included in junction block assembly) and recheck. If DTC is still detected, substitute a known-good ECM and recheck.</p>	<p>Repair short to power supply of CAN communication line circuit referring to “Precaution for CAN Communication System: in Section 00”.</p>

DTC P1675: CAN Communication (Transmission Error)

S4RS0B1104059

Wiring Diagram



I4RS0B110045-10

[A]: BCM connector (viewed from harness side)	[F]: TCM connector (for Automated Manual Transaxle model) (viewed from harness side)	5. Keyless start control module (if equipped with keyless start control system)
[B]: ECM connector (viewed from harness side)	1. ECM	*: A/T vehicle
[C]: Combination meter connector (viewed from harness side)	2. TCM (for A/T or Automated Manual Transaxle model)	** : Automated Manual Transaxle vehicle
[D]: TCM connector (for A/T model) (viewed from harness side)	3. BCM	
[E]: Keyless start control module connector (if equipped with keyless start control system) (viewed from harness side)	4. Combination meter	

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
Transmission error of communication data for ECM is detected for longer than specified time continuously. (1 driving detection logic)	<ul style="list-style-type: none"> ECM BCM TCM (for A/T or Automated Manual Transaxle model) Keyless start control module (if equipped with keyless start control system) Combination meter CAN communication line circuit

DTC Confirmation Procedure

- 1) Connect scan tool to DLC with ignition switch turned OFF.
- 2) Turn ON ignition switch and clear DTC by using scan tool.
- 3) Start engine and run it for 1 min. or more.
- 4) Check DTC and pending DTC.

Troubleshooting

NOTE

- Before performed trouble shooting, be sure to read the “Precautions of ECM Circuit Inspection: ”.
- When measuring circuit voltage, resistance and/or pulse signal at ECM connector, connect the special tool to ECM and/or the ECM connectors referring to “Inspection of ECM and Its Circuits: ”.
- Upon completion of inspection and repair work, perform “DTC Confirmation Procedure” and confirm that the trouble has been corrected.

Step	Action	Yes	No
1	Was “Engine and Emission Control System Check” performed?	Go to Step 2.	Go to “Engine and Emission Control System Check: ”
2	<p>DTC check</p> <p>1) Connect scan tool to DLC with ignition switch turned OFF.</p> <p>2) Check ECM, TCM (for A/T or Automated Manual Transaxle model) and BCM for DTC.</p> <p><i>Is there any DTC(s) (other than DTC P1674, P1675, P1676, P1678 in ECM, DTC P1774, P1775, P1777, P1778 in TCM (for A/T or Automated Manual Transaxle model), DTC U1073, U1001, U1100, U1101 in BCM, P1618 in immobilizer control module and DTC No.31 / 33 in keyless start control module (if equipped with keyless start control system))?</i></p>	Go to applicable DTC diag. flow.	Go to Step 3.
3	<p>CAN communication error check for ECM</p> <p>1) Check ECM for DTC.</p> <p><i>Is there DTC P1674?</i></p>	Go to “DTC P1674: CAN Communication (Bus Off Error): ”	Go to Step 4.
4	<p>CAN communication error check for BCM, TCM (for A/T or Automated Manual Transaxle model) and keyless start control module (if equipped with keyless start control system)</p> <p>1) Check BCM, TCM (for A/T or Automated Manual Transaxle model) and keyless start control module (if equipped with keyless start control system) for DTC(s).</p> <p><i>Are there DTC U1073 in BCM, DTC P1774 in TCM (for A/T or Automated Manual Transaxle model) and DTC No.33 in keyless start control module (if equipped with keyless start control system)?</i></p>	Go to applicable DTC diag. flow.	Go to Step 5.
5	<p>ECM, TCM (for A/T or Automated Manual Transaxle model), BCM, combination meter and keyless start control module (if equipped with keyless start control system) connectors check</p> <p>1) Check for proper connection at each ECM, TCM (for A/T model), BCM, combination meter and keyless start control module (if equipped with keyless start control system) connector terminals with ignition switch turned OFF.</p> <p>2) If connections are OK, recheck ECM for DTC with engine running.</p> <p><i>Is there DTC P1675?</i></p>	Go to Step 6.	Intermittent trouble. Check for intermittent referring to “Intermittent and Poor Connection Inspection: in Section 00”
6	<p>ECM power and ground circuit check</p> <p>1) Check ECM power and ground circuits referring to “ECM Power and Ground Circuit Check: ”.</p> <p><i>Are they in good condition?</i></p>	Go to Step 7.	Repair ECM power and/or ground circuits.

1A-174 Engine General Information and Diagnosis:

Step	Action	Yes	No
7	DTC check in ECM 1) Check ECM for DTC(s). <i>Are there DTCs P1676 and P1678?</i>	Go to Step 8.	Go to Step 10.
8	DTC check in TCM (for A/T or Automated Manual Transaxle model) and BCM 1) Check TCM (for A/T or Automated Manual Transaxle model) and BCM for DTC(s). <i>Are there DTCs P1777, P1778 in TCM (for A/T and Automated Manual Transaxle models) and DTCs U1100, U1101 in BCM?</i>	Go to Step 10.	Go to Step 9.
9	Combination meter operation check 1) Check combination meter operation for seat belt warning lamp (fastening and unfastening driver side seat belt) and shift position indicator lamp (for A/T model or Automated Manual Transaxle model) with ignition switch turned ON. <i>Are they OK?</i>	Substitute a known-good ECM and recheck.	Substitute a known-good BCM (included in junction block assembly), TCM (for A/T or Automated Manual Transaxle model) and recheck.
10	CAN communication line circuit continuity check 1) Disconnect connectors from ECM, BCM, TCM (for A/T or Automated Manual Transaxle model), combination meter and keyless start control module (if equipped with keyless start control system) with ignition switch turned OFF. 2) Measure resistance at following connector terminals. <ul style="list-style-type: none"> • Between "E23-3" terminal of ECM connector and "E46-1" terminal of BCM connector • Between "E23-18" terminal of ECM connector and "E46-2" terminal of BCM connector • Between "C37-13" terminal of ECM connector and "C34-17" terminal of TCM (A/T) connector (for A/T model) or "C52-1" terminal of TCM (Automated Manual Transaxle) connector (for Automated Manual Transaxle model) • Between "C37-12" terminal of ECM connector and "C34-7" terminal of TCM (A/T) connector (for A/T model) or "C52-2" terminal of TCM (Automated Manual Transaxle) connector (for Automated Manual Transaxle model) • Between "G37-4" terminal of BCM connector and "G28-8" terminal of combination meter connector • Between "G37-2" terminal of BCM connector and "G28-10" terminal of combination meter connector • Between "G28-7" terminal of combination meter connector and "G49-19" terminal of keyless start control module connector (if equipped with keyless start control system) • Between "G28-9" terminal of combination meter connector and "G49-18" terminal of keyless start control module connector (if equipped with keyless start control system) <i>Is each resistance below 1 Ω?</i>	Go to Step 11.	Repair open or high resistance of CAN communication line circuit referring to "Precaution for CAN Communication System: in Section 00".

Step	Action	Yes	No
11	<p>CAN communication line circuit insulation check</p> <p>1) Measure resistance at following connector terminals.</p> <ul style="list-style-type: none"> • Between “E23-3” and “E23-18” terminals of ECM connector • Between “C37-13” and “C37-12” terminals of ECM connector (for A/T model or Automated Manual Transaxle model) • Between “G37-4” and “G37-2” terminals of BCM connector • Between “G28-7” and “G28-9” terminals of combination meter connector (if equipped with keyless start control system) <p><i>Is each resistance infinity?</i></p>	Go to Step 12.	Repair insulation of CAN communication line circuit referring to “Precaution for CAN Communication System: in Section 00”.
12	<p>CAN communication line circuit ground short check</p> <p>1) Measure resistance at following connector terminals.</p> <ul style="list-style-type: none"> • Between “E23-3” terminal of ECM connector and vehicle body ground • Between “E23-18” terminal of ECM connector and vehicle body ground • Between “C37-13” terminal of ECM connector and vehicle body ground (for A/T model or Automated Manual Transaxle model) • Between “C37-12” terminal of ECM connector and vehicle body ground (for A/T model or Automated Manual Transaxle model) • Between “G37-4” terminal of BCM connector and vehicle body ground • Between “G37-2” terminal of BCM connector and vehicle body ground • Between “G49-19” terminal of keyless start control module connector and vehicle body ground (if equipped with keyless start control system) • Between “G49-18” terminal of keyless start control module connector and vehicle body ground (if equipped with keyless start control system) <p><i>Is each resistance infinity?</i></p>	Go to Step 13.	Repair short to ground of CAN communication line circuit referring to “Precaution for CAN Communication System: in Section 00”.

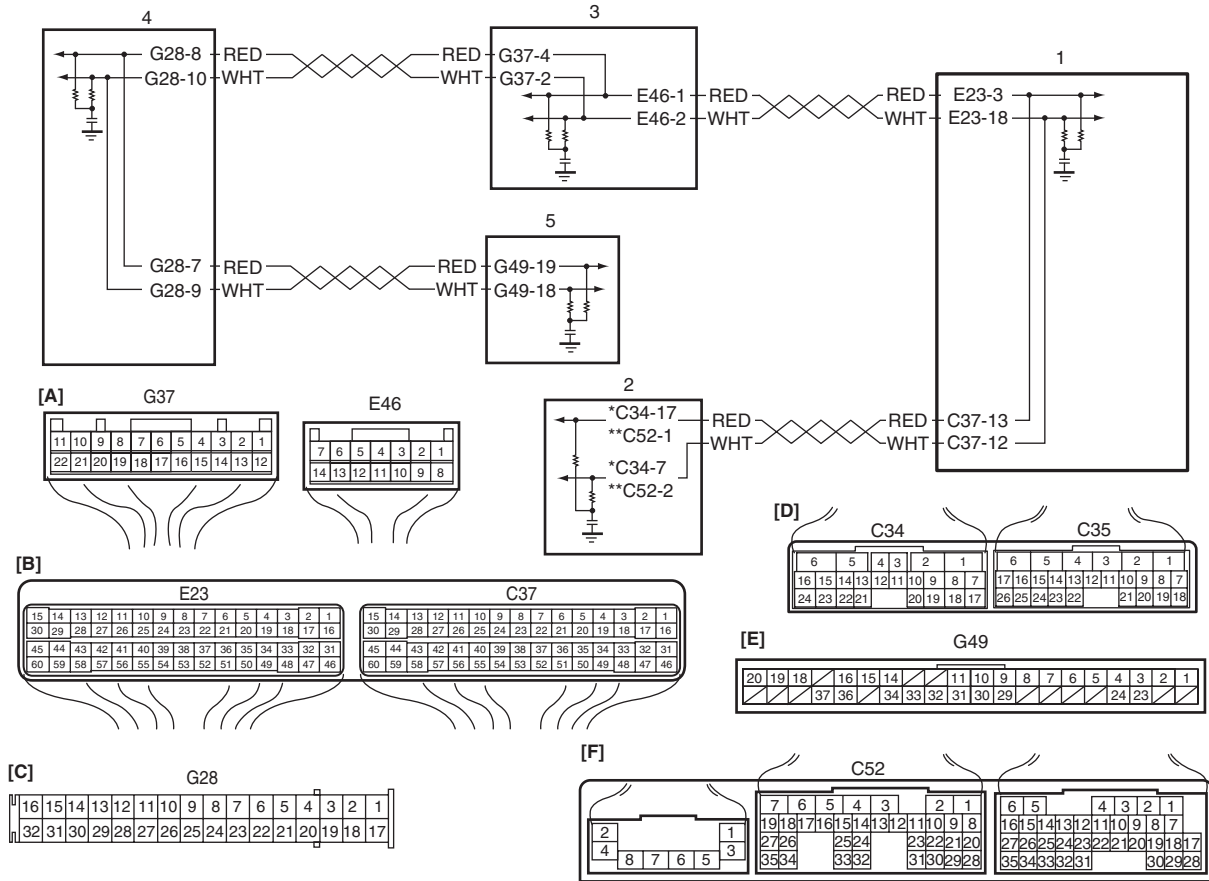
1A-176 Engine General Information and Diagnosis:

Step	Action	Yes	No
13	<p>Check for short circuit of CAN communication line to power circuit</p> <p>1) Measure voltage at following connector terminals with ignition switch turned ON.</p> <ul style="list-style-type: none">• Between “E23-3” terminal of ECM connector and vehicle body ground• Between “E23-18” terminal of ECM connector and vehicle body ground• Between “C37-13” terminal of ECM connector and vehicle body ground (for A/T model or Automated Manual Transaxle model)• Between “C37-12” terminal of ECM connector and vehicle body ground (for A/T model or Automated Manual Transaxle model)• Between “G37-4” terminal of BCM connector and vehicle body ground• Between “G37-2” terminal of BCM connector and vehicle body ground• Between “G49-19” terminal of keyless start control module connector and vehicle body ground (if equipped with keyless start control system)• Between “G49-18” terminal of keyless start control module connector and vehicle body ground (if equipped with keyless start control system) <p><i>Is each voltage 0 – 1 V?</i></p>	Substitute a known-good ECM and recheck.	Repair short to power supply of CAN communication line circuit referring to “Precaution for CAN Communication System: in Section 00”.

DTC P1676: CAN Communication (Reception Error for TCM (for A/T or Automated Manual Transaxle model))

S4RS0B1104060

Wiring Diagram



14RS0B110045-10

[A]: BCM connector (viewed from harness side)	[F]: TCM connector (for Automated Manual Transaxle model) (viewed from harness side)	5. Keyless start control module (if equipped with keyless start control system)
[B]: ECM connector (viewed from harness side)	1. ECM	*: A/T vehicle
[C]: Combination meter connector (viewed from harness side)	2. TCM (for A/T or Automated Manual Transaxle model)	** : Automated Manual Transaxle vehicle
[D]: TCM connector (for A/T model) (viewed from harness side)	3. BCM	
[E]: Keyless start control module connector (if equipped with keyless start control system) (viewed from harness side)	4. Combination meter	

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
Reception error of communication data for TCM or Automated Manual Transaxle control module is detected for longer than specified time continuously. (1 driving detection logic)	<ul style="list-style-type: none"> ECM TCM (for A/T or Automated Manual Transaxle model) CAN communication line circuit

DTC Confirmation Procedure

- 1) Connect scan tool to DLC with ignition switch turned OFF.
- 2) Turn ON ignition switch and clear DTC by using scan tool.
- 3) Start engine and run it for 1 min. or more.
- 4) Check DTC and pending DTC.

Troubleshooting

NOTE

- Before performed trouble shooting, be sure to read the “Precautions of ECM Circuit Inspection: ”.
- When measuring circuit voltage, resistance and/or pulse signal at ECM connector, connect the special tool to ECM and/or the ECM connectors referring to “Inspection of ECM and Its Circuits: ”.
- Upon completion of inspection and repair work, perform “DTC Confirmation Procedure” and confirm that the trouble has been corrected.

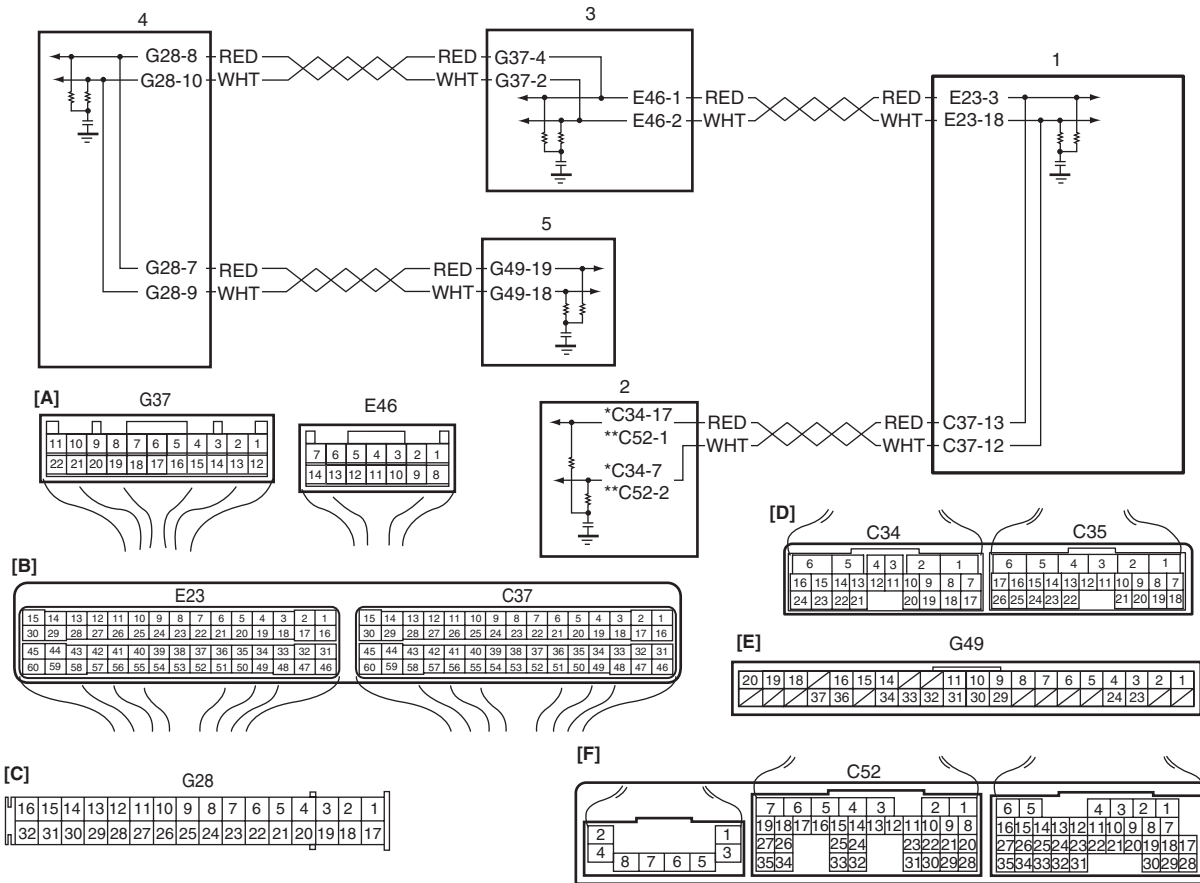
Step	Action	Yes	No
1	Was “Engine and Emission Control System Check” performed?	Go to Step 2.	Go to “Engine and Emission Control System Check: ”.
2	<p>DTC check</p> <p>1) Connect scan tool to DLC with ignition switch turned OFF.</p> <p>2) Check ECM, TCM (for A/T or Automated Manual Transaxle model) and BCM for DTC.</p> <p><i>Is there any DTC(s) (other than DTC P1674, P1675, P1676, P1678 in ECM, DTC P1774, P1775, P1777, P1778 in TCM (for A/T or Automated Manual Transaxle model) and DTC U1073, U1001, U1100, U1101 in BCM)?</i></p>	Go to applicable DTC diag. flow.	Go to Step 3.
3	<p>Check CAN communication error for ECM</p> <p>1) Check ECM for DTC.</p> <p><i>Is there DTC P1674?</i></p>	Go to “DTC P1674: CAN Communication (Bus Off Error): ”.	Go to Step 4.
4	<p>ECM and TCM (for A/T or Automated Manual Transaxle model) connector check</p> <p>1) Check for proper connection at each ECM and TCM (for A/T or Automated Manual Transaxle model) connector terminals with ignition switch turned OFF.</p> <p>2) If connections are OK, recheck ECM for DTC with engine running.</p> <p><i>Is there DTC P1676?</i></p>	Go to Step 5.	Intermittent trouble. Check for intermittent referring to “Intermittent and Poor Connection Inspection: in Section 00”.
5	<p>ECM power and ground circuit check</p> <p>1) Check ECM power and ground circuits referring to “ECM Power and Ground Circuit Check: ”.</p> <p><i>Are they in good condition?</i></p>	Go to Step 6.	Repair ECM power and/or ground circuits.
6	<p>DTC check in TCM (for A/T or Automated Manual Transaxle model)</p> <p>1) Check DTC P1774 in TCM (for A/T or Automated Manual Transaxle model).</p> <p><i>Is it indicated?</i></p>	Go to “DTC P1774: Control Module Communication Bus Off: in Section 5A” for A/T or “DTC P1774: Control Module Communication Bus Off: in Section 5D” for Automated Manual Transaxle.	Go to Step 7.
7	<p>DTC check in BCM</p> <p>1) Check DTC U1101 in BCM.</p> <p><i>Is it indicated?</i></p>	Go to “DTC U1101 (No. 1101): Lost communication with TCM: in Section 10B”.	Go to Step 8

Step	Action	Yes	No
8	<p>CAN communication line circuit continuity check</p> <p>1) Disconnect connectors from ECM and TCM (for A/T or Automated Manual Transaxle model) with ignition switch turned OFF.</p> <p>2) Measure resistance at following connector terminals.</p> <ul style="list-style-type: none"> • Between “C37-13” terminal of ECM connector and “C34-17” terminal of TCM (A/T) connector or “C52-1” terminal of TCM (Automated Manual Transaxle) connector • Between “C37-12” terminal of ECM connector and “C34-7” terminal of TCM (A/T) connector or “C52-2” terminal of TCM (Automated Manual Transaxle) connector <p><i>Is each resistance below 1 Ω?</i></p>	Go to Step 9.	Repair open or high resistance of CAN communication line circuit referring to “Precaution for CAN Communication System: in Section 00”.
9	<p>CAN communication line circuit insulation check</p> <p>1) Measure resistance between “C37-13” and “C37-12” terminals of ECM connector.</p> <p><i>Is resistance infinity?</i></p>	Go to Step 10.	Repair insulation of CAN communication line circuit referring to “Precaution for CAN Communication System: in Section 00”.
10	<p>CAN communication line circuit ground short check</p> <p>1) Measure resistance at following connector terminals.</p> <ul style="list-style-type: none"> • Between “C37-13” terminal of ECM connector and vehicle body ground • Between “C37-12” terminal of ECM connector and vehicle body ground <p><i>Is each resistance infinity?</i></p>	Go to Step 11.	Repair short to ground of CAN communication line circuit referring to “Precaution for CAN Communication System: in Section 00”.
11	<p>Check for short circuit of CAN communication line to power circuit</p> <p>1) Measure voltage at following connector terminals with ignition switch turned ON.</p> <ul style="list-style-type: none"> • Between “C37-13” terminal of ECM connector and vehicle body ground • Between “C37-12” terminal of ECM connector and vehicle body ground <p><i>Is each voltage 0 – 1 V?</i></p>	Go to Step 12.	Repair short to power supply of CAN communication line circuit referring to “Precaution for CAN Communication System: in Section 00”.
12	<p>ECM circuit check</p> <p>1) Disconnect connectors from BCM with ignition switch turned OFF.</p> <p>2) Connect connectors to ECM.</p> <p>3) Measure resistance at following connector terminals.</p> <ul style="list-style-type: none"> • Between “E23-3” and “C37-13” terminals of ECM connectors • Between “E23-18” and “C37-12” terminals of ECM connectors <p><i>Is resistance below 1 Ω?</i></p>	Substitute a known-good TCM (for A/T or Automated Manual Transaxle model) and recheck.	Substitute a known-good ECM and recheck.

DTC P1678: CAN Communication (Reception Error for BCM)

S4RS0B1104061

Wiring Diagram



I4RS0B110045-10

[A]: BCM connector (viewed from harness side)	[F]: TCM connector (for Automated Manual Transaxle model) (viewed from harness side)	5. Keyless start control module (if equipped with keyless start control system)
[B]: ECM connector (viewed from harness side)	1. ECM	*: A/T vehicle
[C]: Combination meter connector (viewed from harness side)	2. TCM (for A/T or Automated Manual Transaxle model)	** : Automated Manual Transaxle vehicle
[D]: TCM connector (for A/T model) (viewed from harness side)	3. BCM	
[E]: Keyless start control module connector (if equipped with keyless start control system) (viewed from harness side)	4. Combination meter	

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
Reception error of communication data for BCM is detected for longer than specified time continuously. (1 driving detection logic but MIL does not light up)	<ul style="list-style-type: none"> ECM BCM CAN communication line circuit

DTC Confirmation Procedure

- 1) Connect scan tool to DLC with ignition switch turned OFF.
- 2) Turn ON ignition switch and clear DTC by using scan tool.
- 3) Start engine and run it for 1 min. or more.
- 4) Check DTC and pending DTC.

Troubleshooting

NOTE

- Before performed trouble shooting, be sure to read the “Precautions of ECM Circuit Inspection: ”.
- When measuring circuit voltage, resistance and/or pulse signal at ECM connector, connect the special tool to ECM and/or the ECM connectors referring to “Inspection of ECM and Its Circuits: ”.
- Upon completion of inspection and repair work, perform “DTC Confirmation Procedure” and confirm that the trouble has been corrected.

Step	Action	Yes	No
1	Was “Engine and Emission Control System Check” performed?	Go to Step 2.	Go to “Engine and Emission Control System Check: ”.
2	<p>DTC check</p> <p>1) Connect scan tool to DLC with ignition switch turned OFF.</p> <p>2) Check ECM, TCM (for A/T or Automated Manual Transaxle model) and BCM for DTC.</p> <p><i>Is there any DTC(s) (other than DTC P1674, P1675, P1676, P1678 in ECM, DTC P1774, P1775, P1777, P1778 in TCM (for A/T or Automated Manual Transaxle model) and DTC U1073, U1001, U1100, U1101 in BCM)?</i></p>	Go to applicable DTC diag. flow.	Go to Step 3.
3	<p>CAN communication error check for ECM</p> <p>1) Check ECM for DTC.</p> <p><i>Is there DTC P1674?</i></p>	Go to “DTC P1674: CAN Communication (Bus Off Error): ”.	Go to Step 4.
4	<p>ECM, TCM (for A/T or Automated Manual Transaxle model) and BCM connector check</p> <p>1) Check for proper connection at each ECM, TCM (for A/T or Automated Manual Transaxle model) and BCM connector terminals with ignition switch turned OFF.</p> <p>2) If connections are OK, recheck ECM for DTC with engine running.</p> <p><i>Is there DTC P1678?</i></p>	Go to Step 5.	Intermittent trouble. Check for intermittent referring to “Intermittent and Poor Connection Inspection: in Section 00”.
5	<p>ECM power and ground circuit check</p> <p>1) Check ECM power and ground circuits referring to “ECM Power and Ground Circuit Check: ”.</p> <p><i>Are they in good condition?</i></p>	Go to Step 6.	Repair ECM power and/or ground circuits.
6	<p>DTC check in BCM</p> <p>1) Check DTC U1073 in BCM.</p> <p><i>Is it indicated?</i></p>	Go to “DTC U1073 (No. 1073): Control Module Communication Bus Off: in Section 10B”.	Go to Step 7.
7	<p>CAN communication line circuit continuity check</p> <p>1) Disconnect connectors from ECM and BCM with ignition switch turned OFF.</p> <p>2) Measure resistance at following connector terminals.</p> <ul style="list-style-type: none"> • Between “E23-3” terminal of ECM connector and “E46-1” terminal of BCM connector • Between “E23-18” terminal of ECM connector and “E46-2” terminal of BCM connector <p><i>Is each resistance below 1 Ω?</i></p>	Go to Step 8.	Repair open or high resistance of CAN communication line circuit referring to “Precaution for CAN Communication System: in Section 00”.

1A-182 Engine General Information and Diagnosis:

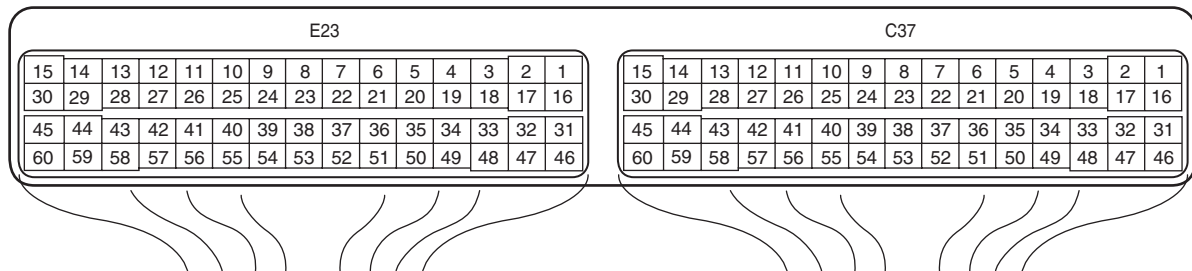
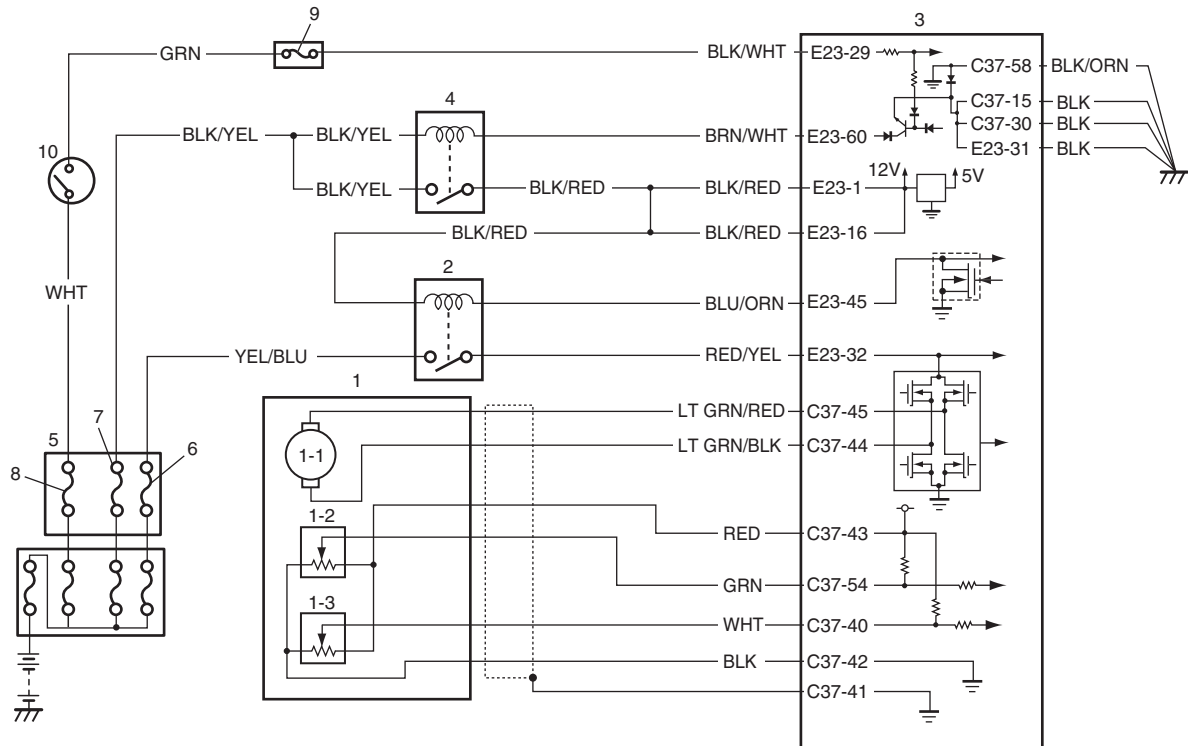
Step	Action	Yes	No
8	CAN communication line circuit insulation check 1) Measure resistance between “E23-3” and “E23-18” terminals of ECM connector. <i>Is resistance infinity?</i>	Go to Step 9.	Repair insulation of CAN communication line circuit referring to “Precaution for CAN Communication System: in Section 00”.
9	CAN communication line circuit ground short check 1) Measure resistance at following connector terminals. <ul style="list-style-type: none"> • Between “E23-3” terminal of ECM connector and vehicle body ground • Between “E23-18” terminal of ECM connector and vehicle body ground <i>Is each resistance infinity?</i>	Go to Step 10.	Repair short to ground of CAN communication line circuit referring to “Precaution for CAN Communication System: in Section 00”.
10	Check for short circuit of CAN communication line to power circuit 1) Measure voltage at following connector terminals with ignition switch turned ON. <ul style="list-style-type: none"> • Between “E23-3” terminal of ECM connector and vehicle body ground • Between “E23-18” terminal of ECM connector and vehicle body ground <i>Is each voltage 0 – 1 V?</i>	Go to Step 11.	Repair short to power supply of CAN communication line circuit referring to “Precaution for CAN Communication System: in Section 00”.
11	Vehicle spec check <i>Is vehicle equipped with A/T or Automated Manual Transaxle?</i>	Go to Step 12.	Go to Step 14.
12	DTC check in TCM (for A/T or Automated Manual Transaxle model) 1) Connect connectors to ECM and BCM with ignition switch turned OFF. 2) Check DTC P1778 in TCM (for A/T or Automated Manual Transaxle model). <i>Is it indicated?</i>	Go to Step 13.	Substitute a known-good ECM and recheck.
13	ECM circuit check 1) Disconnect connectors from BCM and TCM (for A/T or Automated Manual Transaxle model) with ignition switch turned OFF. 2) Measure resistance at following connector terminals. <ul style="list-style-type: none"> • Between “E23-3” and “C37-13” terminals of ECM connector • Between “E23-18” and “C37-12” terminals of ECM connector <i>Is resistance below 1 Ω?</i>	Substitute a known-good BCM (included in junction block assembly) and recheck.	Substitute a known-good ECM and recheck.
14	Combination meter operation check 1) Check combination meter operation for seat belt warning lamp by fastening and unfastening driver side seat belt with ignition switch turned ON. <i>Is it check result satisfactory?</i>	Go to Step 15.	Substitute a known-good BCM (included in junction block assembly) and recheck.

Step	Action	Yes	No
15	<p>BCM circuit check</p> <ol style="list-style-type: none"> 1) Disconnect connectors from combination meter with ignition switch turned OFF. 2) Connect connectors to BCM. 3) Measure resistance at following connector terminals. <ul style="list-style-type: none"> • Between "E46-1" and "G37-2" terminals of BCM connector • Between "E46-2" and "G37-2" terminals of BCM connector <p><i>Is resistance below 1 Ω?</i></p>	Substitute a known-good ECM and recheck.	Substitute a known-good BCM (included in junction block assembly) and recheck.

DTC P2101: Throttle Actuator Control Motor Circuit Range / Performance (For Automated Manual Transaxle Model)

S4RS0B1104077

Wiring Diagram



I4RS0B110021-02

1. Electric throttle body assembly	3. ECM	8. "IG ACC" fuse
1-1. Throttle actuator	4. Main relay	9. "IG COIL" fuse
1-2. Throttle position sensor (main)	5. Individual circuit fuse box No.1	10. Ignition switch
1-3. Throttle position sensor (sub)	6. "TH MOT" fuse	
2. Throttle actuator control relay	7. "FI" fuse	

1A-184 Engine General Information and Diagnosis:

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
Monitor signal of throttle actuator output (duty output) is inconsistent with throttle actuator control command. (1 driving detection logic)	<ul style="list-style-type: none"> • Throttle actuator circuit • Electric throttle body assembly • ECM

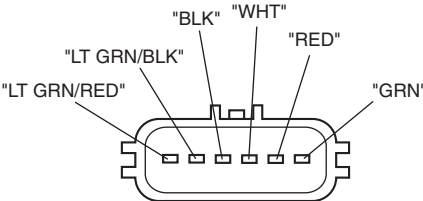
DTC Confirmation Procedure

- 1) With ignition switch turned OFF, connect scan tool.
- 2) Turn ON ignition switch and clear DTC using scan tool.
- 3) Keep the accelerator pedal at idle position for 2 seconds.
- 4) Keep the accelerator pedal at fully depressed position for 2 seconds.
- 5) Repeat Step 3) and 4) for 3 times.
- 6) Check DTC.

DTC Troubleshooting

NOTE

- Before performed trouble shooting, be sure to read the "Precautions of ECM Circuit Inspection: ".
- When measuring circuit voltage, resistance and/or pulse signal at ECM connector, connect the special tool to ECM and/or the ECM connectors referring to "Inspection of ECM and Its Circuits: ".
- Upon completion of inspection and repair work, perform "DTC Confirmation Procedure" and confirm that the trouble has been corrected.

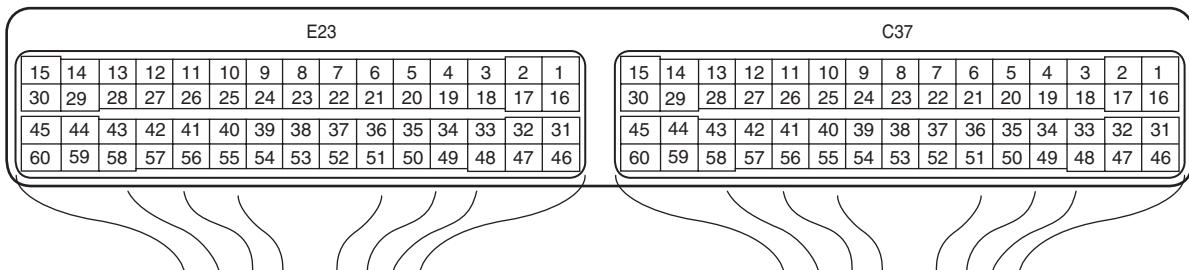
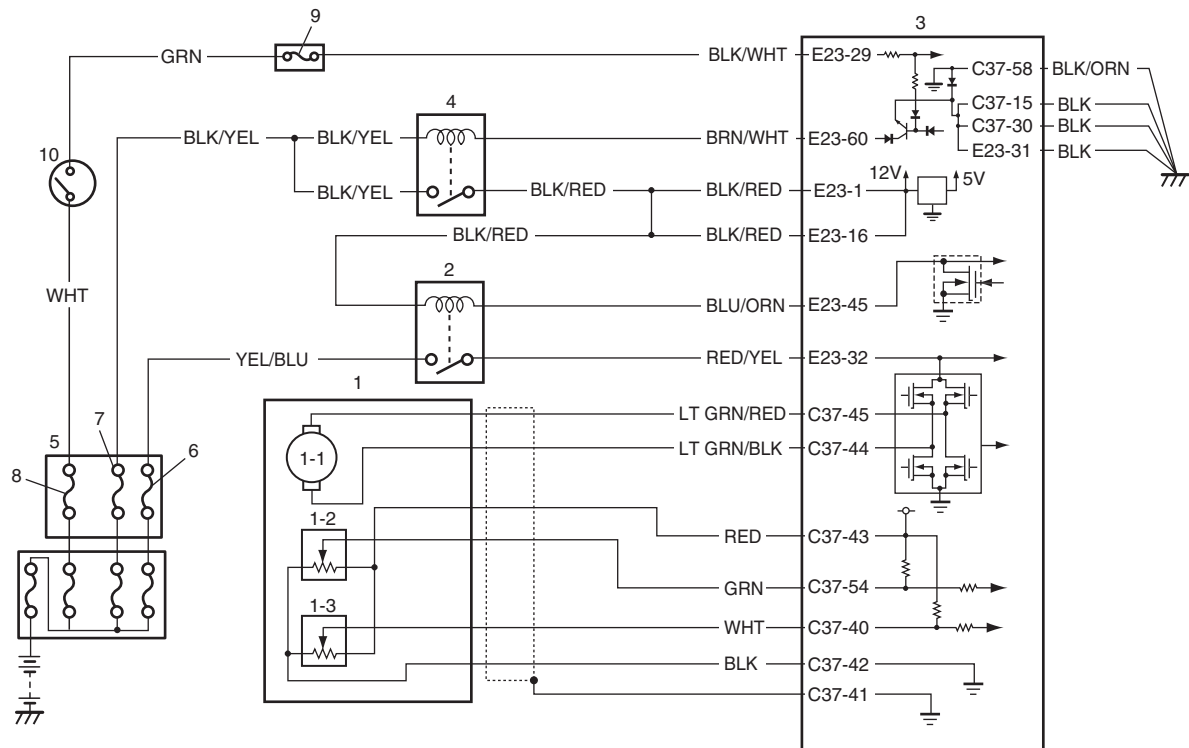
Step	Action	Yes	No
1	Was "Engine and Emission Control System Check" performed?	Go to Step 2.	Go to "Engine and Emission Control System Check: ".
2	<p>Throttle actuator circuit check</p> <ol style="list-style-type: none"> 1) Disconnect connectors from electric throttle body assembly and ECM with ignition switch turned OFF. 2) Check for proper connection of electric throttle body assembly and ECM connectors at "LT GRN/RED" wire, "LT GRN/BLK" wire, "C37-45" and "C37-44" terminals.  <p style="text-align: right; font-size: small;">I4RSOB110022-02</p> <ol style="list-style-type: none"> 3) Turn ON ignition switch. 4) Measure voltage between "LT GRN/RED" wire terminal of electric throttle body assembly connector and engine ground, between "LT GRN/BLK" wire terminal of electric throttle body assembly connector and engine ground. <p><i>Is voltage 0 V?</i></p>	Go to Step 3.	"LT GRN/RED" wire and/or "LT GRN/BLK" wire is shorted to power circuit.

Step	Action	Yes	No
3	Throttle actuator circuit check 1) Turn OFF ignition switch. 2) Measure resistance between "LT GRN/RED" wire terminal of electric throttle body assembly connector and engine ground, between "LT GRN/BLK" wire terminal of electric throttle body assembly connector and engine ground. <i>Is resistance infinity?</i>	Go to Step 4.	"LT GRN/RED" wire and/or "LT GRN/BLK" wire is shorted to ground circuit.
4	Throttle actuator circuit check 1) Check throttle actuator referring to "Throttle Actuator Performance Check" under "Electric Throttle Body Assembly On-Vehicle Inspection (For Automated Manual Transaxle Model): in Section 1C". <i>Is check result satisfactory?</i>	Substitute a known-good ECM and recheck.	Replace electric throttle body assembly.

DTC P2102: Throttle Actuator Control Motor Circuit Low (For Automated Manual Transaxle Model)

S4RS0B1104078

Wiring Diagram



1A-186 Engine General Information and Diagnosis:

1. Electric throttle body assembly	3. ECM	8. "IG ACC" fuse
1-1. Throttle actuator	4. Main relay	9. "IG COIL" fuse
1-2. Throttle position sensor (main)	5. Individual circuit fuse box No.1	10. Ignition switch
1-3. Throttle position sensor (sub)	6. "TH MOT" fuse	
2. Throttle actuator control relay	7. "FI" fuse	

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
Power supply voltage of throttle actuator control circuit is less than 5 V for specified time even if throttle actuator control relay is turned on. (1 driving detection logic)	<ul style="list-style-type: none"> • Throttle actuator control relay circuit • Throttle actuator control relay • ECM

DTC Confirmation Procedure

- 1) With ignition switch turned OFF, connect scan tool.
- 2) Turn ON ignition switch and clear DTC using scan tool.
- 3) Start engine and run it for 1 min. or more.
- 4) Check DTC.

DTC Troubleshooting

NOTE

- Before performed trouble shooting, be sure to read the "Precautions of ECM Circuit Inspection: ".
- When measuring circuit voltage, resistance and/or pulse signal at ECM connector, connect the special tool to ECM and/or the ECM connectors referring to "Inspection of ECM and Its Circuits: ".
- Upon completion of inspection and repair work, perform "DTC Confirmation Procedure" and confirm that the trouble has been corrected.

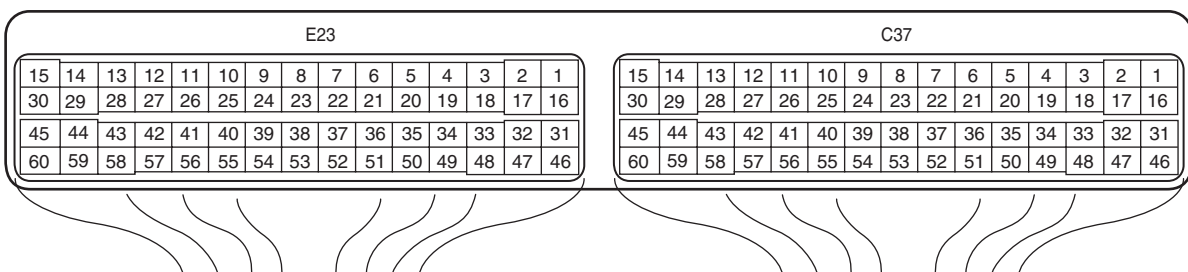
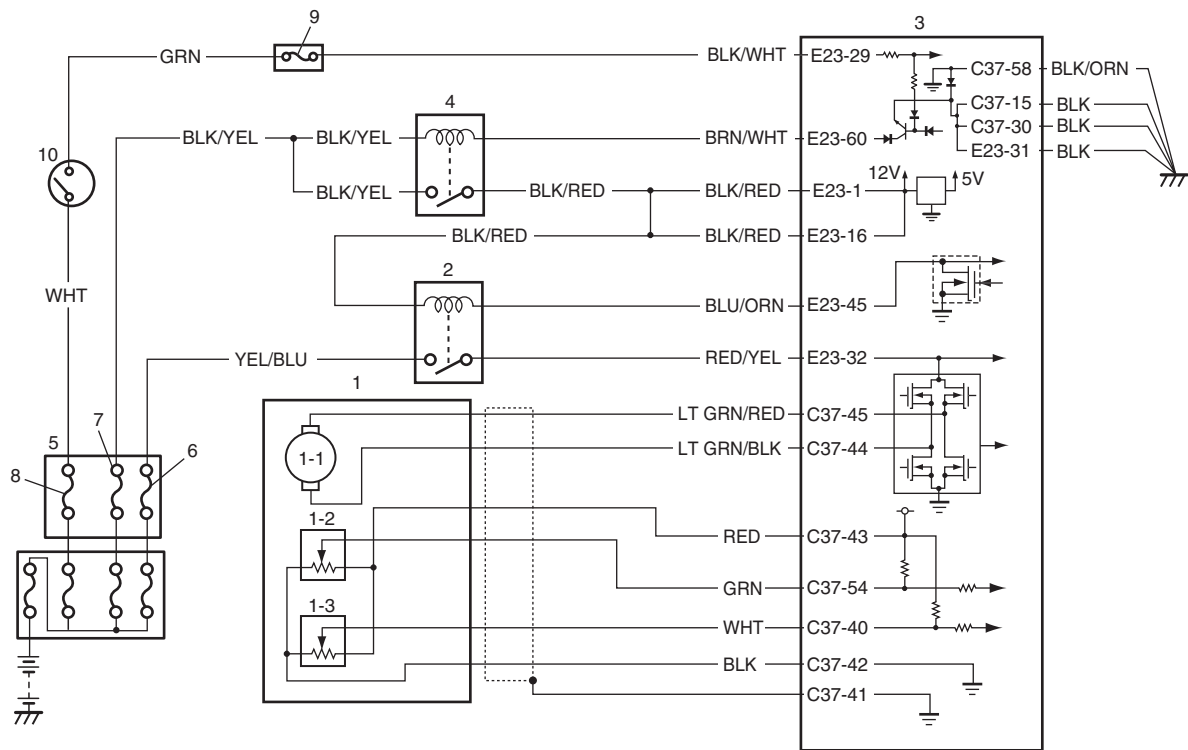
Step	Action	Yes	No
1	Was "Engine and Emission Control System Check" performed?	Go to Step 2.	Go to "Engine and Emission Control System Check: "
2	Throttle actuator control relay circuit check 1) Remove ECM from its bracket with ECM connectors connected. 2) Check for proper connection of ECM connector at "E23-45" and "E23-32" terminals. 3) Turn ON ignition switch. 4) Measure voltage between "E23-32" terminal of ECM connector and engine ground. <i>Is voltage 10 – 14 V?</i>	Intermittent trouble. Check for intermittent referring to "Intermittent and Poor Connection Inspection: in Section 00".	Go to Step 3.
3	Is "TH MOT" fuse in good condition?	Go to Step 4	Replace fuse and check for short in circuits connected to this fuse.
4	Throttle actuator control relay circuit check 1) Remove throttle actuator control relay from individual circuit fuse box No.1 with ignition switch turned OFF. 2) Check for proper connection to throttle actuator control relay at "BLK/RED", "YEL/BLU", "BLU/ORN" and "RED/YEL" wire terminals. 3) Measure voltage between engine ground and each "BLK/RED", "YEL/BLU" wire terminal with ignition switch turned ON. <i>Is each voltage 10 – 14 V?</i>	Go to Step 5	"BLK/RED" wire and/or "YEL/BLU" wire is open or high resistance.

Step	Action	Yes	No
5	<p>Throttle actuator control relay circuit check</p> <p>1) Disconnect connectors from ECM with ignition switch turned OFF.</p> <p>2) Measure resistance at following connector terminals.</p> <ul style="list-style-type: none"> Between "BLU/ORN" wire terminal of throttle actuator control relay connector and "E23-45" terminal of ECM connector Between "RED/YEL" wire terminal of throttle actuator control relay connector and "E23-32" terminal of ECM connector <p><i>Is each resistance below 5 Ω?</i></p>	Go to Step 6.	"BLU/ORN" wire and/or "RED/YEL" wire is open or high resistance.
6	<p>Throttle actuator control relay check</p> <p>1) Check throttle actuator control relay referring to "Main Relay, Fuel Pump Relay, Starting Motor Control Relay and Throttle Actuator Control Relay Inspection: in Section 1C".</p> <p><i>Is it in good condition?</i></p>	Substitute a known-good ECM and recheck.	Replace throttle actuator control relay.

DTC P2103: Throttle Actuator Control Motor Circuit High (For Automated Manual Transaxle Model)

S4RS0B1104079

Wiring Diagram



1A-188 Engine General Information and Diagnosis:

1. Electric throttle body assembly	3. ECM	8. "IG ACC" fuse
1-1. Throttle actuator	4. Main relay	9. "IG COIL" fuse
1-2. Throttle position sensor (main)	5. Individual circuit fuse box No.1	10. Ignition switch
1-3. Throttle position sensor (sub)	6. "TH MOT" fuse	
2. Throttle actuator control relay	7. "FI" fuse	

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
Power supply voltage of throttle actuator control circuit is more than 5 V for specified time even if throttle actuator control relay is turned off. (1 driving detection logic)	<ul style="list-style-type: none"> • Throttle actuator control relay circuit • Throttle actuator control relay • ECM

DTC Confirmation Procedure

- 1) With ignition switch turned OFF, connect scan tool.
- 2) Turn ON ignition switch and clear DTC using scan tool.
- 3) Ignition switch turned OFF for 20 sec. or more.
- 4) Turn ON ignition switch and check DTC.

DTC Troubleshooting

NOTE

- Before performed trouble shooting, be sure to read the "Precautions of ECM Circuit Inspection: ".
- When measuring circuit voltage, resistance and/or pulse signal at ECM connector, connect the special tool to ECM and/or the ECM connectors referring to "Inspection of ECM and Its Circuits: ".
- Upon completion of inspection and repair work, perform "DTC Confirmation Procedure" and confirm that the trouble has been corrected.

Step	Action	Yes	No
1	Was "Engine and Emission Control System Check" performed?	Go to Step 2.	Go to "Engine and Emission Control System Check: ".
2	Throttle actuator control relay circuit check 1) Remove throttle actuator control relay from individual circuit fuse box No.1 with ignition switch turned OFF. 2) Check for proper connection to throttle actuator control relay at "BLK/RED", "YEL/BLU", "BLU/ORN" and "RED/YEL" wire terminals. 3) Turn ON ignition switch. 4) Measure voltage between engine ground and "E23-32" terminal of ECM connector. <i>Is voltage 0 V?</i>	Go to Step 3.	"RED/YEL" wire is shorted to other circuit.
3	Throttle actuator control relay circuit check 1) Disconnect connectors from ECM with ignition switch turned OFF. 2) Measure resistance between engine ground and "E23-45" terminal of ECM connector. <i>Is resistance infinity?</i>	Go to Step 4.	"BLU/ORN" wire is shorted to ground circuit.
4	Throttle actuator control relay check 1) Check throttle actuator control relay referring to "Main Relay, Fuel Pump Relay, Starting Motor Control Relay and Throttle Actuator Control Relay Inspection: in Section 1C". <i>Is it in good condition?</i>	Substitute a known-good ECM and recheck.	Replace throttle actuator control relay.

DTC P2111 / P2112: Throttle Actuator Control System - Stuck Open / Closed (For Automated Manual Transaxle Model)

S4RS0B1104080

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
<p>P2111: Throttle valve default opening is greater than 8° from complementary closed position when diagnosing throttle valve at ignition switch turned OFF. (1 driving detection logic)</p> <p>P2112: Throttle valve default opening is smaller than 8° from complementary closed position when diagnosing throttle valve at ignition switch turned OFF. (1 driving detection logic)</p>	<ul style="list-style-type: none"> • Electric throttle body assembly • ECM

DTC Confirmation Procedure

- 1) With ignition switch turned OFF, connect scan tool.
- 2) Turn ON ignition switch and clear DTC using scan tool.
- 3) Ignition switch turned OFF for 20 sec. or more.
- 4) Turn ON ignition switch and check DTC.

DTC Troubleshooting

NOTE

- Before performed trouble shooting, be sure to read the “Precautions of ECM Circuit Inspection: ”.
- When measuring circuit voltage, resistance and/or pulse signal at ECM connector, connect the special tool to ECM and/or the ECM connectors referring to “Inspection of ECM and Its Circuits: ”.
- Upon completion of inspection and repair work, perform “DTC Confirmation Procedure” and confirm that the trouble has been corrected.

Step	Action	Yes	No
1	Was “Engine and Emission Control System Check” performed?	Go to Step 2.	Go to “Engine and Emission Control System Check: ”.
2	<p>Throttle valve visual check</p> <p>1) Check that there isn’t any foreign matter caught between throttle valve and throttle body housing referring to “Throttle Valve Visual Check” under “Electric Throttle Body Assembly On-Vehicle Inspection (For Automated Manual Transaxle Model): in Section 1C”.</p> <p><i>Is it in good condition?</i></p>	Go to Step 3.	Take it out after removing throttle body and clean inside of throttle body thoroughly.
3	<p>Throttle valve operation check</p> <p>1) Check operation of throttle valve referring to “Throttle Valve Operation Check” under “Electric Throttle Body Assembly On-Vehicle Inspection (For Automated Manual Transaxle Model): in Section 1C”.</p> <p><i>Is check result satisfactory?</i></p>	Go to Step 4.	Replace electric throttle body assembly.
4	<p>Throttle actuator operation check</p> <p>1) Check operation of throttle actuator referring to “Throttle Actuator Operation Check” under “Electric Throttle Body Assembly On-Vehicle Inspection (For Automated Manual Transaxle Model): in Section 1C”.</p> <p><i>Is check result satisfactory?</i></p>	Go to Step 5.	Replace electric throttle body assembly.

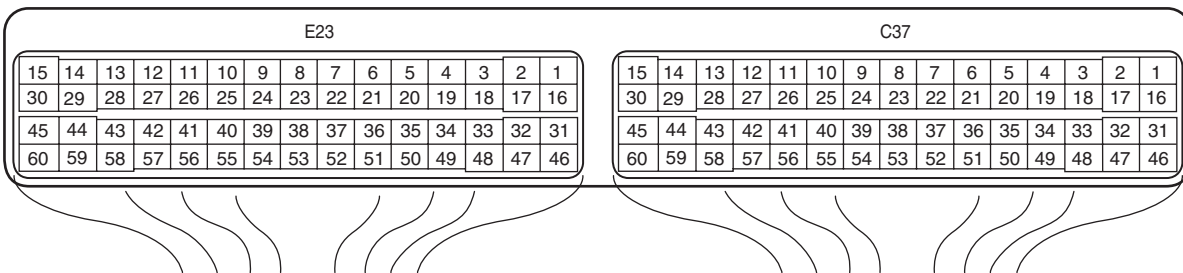
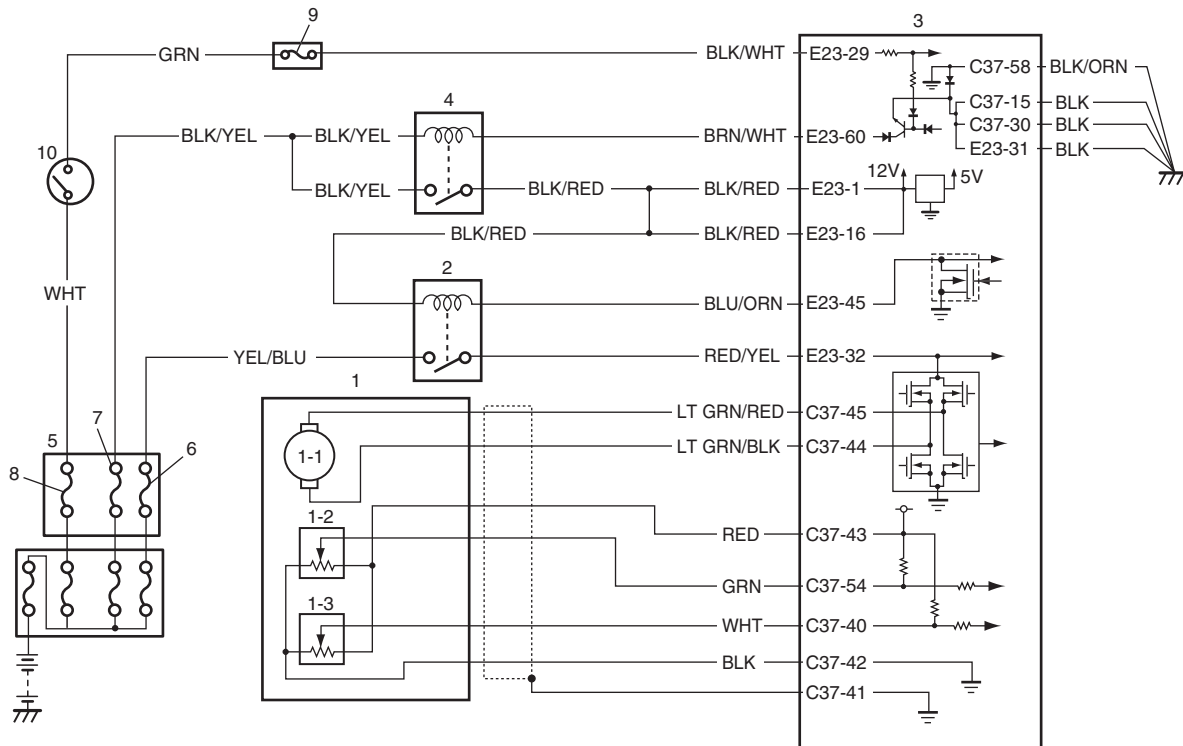
1A-190 Engine General Information and Diagnosis:

Step	Action	Yes	No
5	<p>Throttle position sensor performance check</p> <p>1) Check performance of throttle position sensor referring to "Throttle Position Sensor Performance Check" under "Electric Throttle Body Assembly On-Vehicle Inspection (For Automated Manual Transaxle Model): in Section 1C".</p> <p><i>Is check result satisfactory?</i></p>	Substitute a known-good ECM and recheck.	Replace electric throttle body assembly.

DTC P2119: Throttle Actuator Control Throttle Body Range / Performance (For Automated Manual Transaxle Model)

S4RS0B1104081

Wiring Diagram



I4RS0B110021-02

1. Electric throttle body assembly	3. ECM	8. "IG ACC" fuse
1-1. Throttle actuator	4. Main relay	9. "IG COIL" fuse
1-2. Throttle position sensor (main)	5. Individual circuit fuse box No.1	10. Ignition switch
1-3. Throttle position sensor (sub)	6. "TH MOT" fuse	
2. Throttle actuator control relay	7. "FI" fuse	

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
Difference between the measured (actual) throttle valve opening angle and the target throttle valve opening angle which is calculated based on accelerator pedal opening angle and engine condition is more than specification for specified time continuously. (1 driving detection logic)	<ul style="list-style-type: none"> • Throttle actuator circuit • Electric throttle body assembly • ECM

DTC Confirmation Procedure

- 1) With ignition switch turned OFF, connect scan tool.
- 2) Turn ON ignition switch and clear DTC using scan tool.
- 3) Keep the accelerator pedal at idle position for 2 seconds.
- 4) Keep the accelerator pedal at fully depressed position for 2 seconds.
- 5) Repeat Step 3) and 4) for 3 times.
- 6) Check DTC.

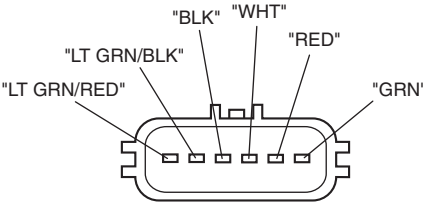
DTC Troubleshooting

NOTE

- Before performed trouble shooting, be sure to read the “Precautions of ECM Circuit Inspection: ”.
- When measuring circuit voltage, resistance and/or pulse signal at ECM connector, connect the special tool to ECM and/or the ECM connectors referring to “Inspection of ECM and Its Circuits: ”.
- Upon completion of inspection and repair work, perform “DTC Confirmation Procedure” and confirm that the trouble has been corrected.

Step	Action	Yes	No
1	Was “Engine and Emission Control System Check” performed?	Go to Step 2.	Go to “Engine and Emission Control System Check: ”.
2	<p>Electric throttle body assembly system check</p> <p>1) Connect scan tool to DLC with ignition switch turned OFF.</p> <p>2) Turn ON ignition switch, check each voltage of “TP Sensor 1 Volt” and “TP Sensor 2 Volt” displayed on scan tool when accelerator pedal is idle position and fully depressed.</p> <p><i>Is displayed each TP sensor value as described voltage in “Scan Tool Data: ”?</i></p>	Intermittent trouble. Check for intermittent referring to “Intermittent and Poor Connection Inspection: in Section 00”.	Go to Step 3.

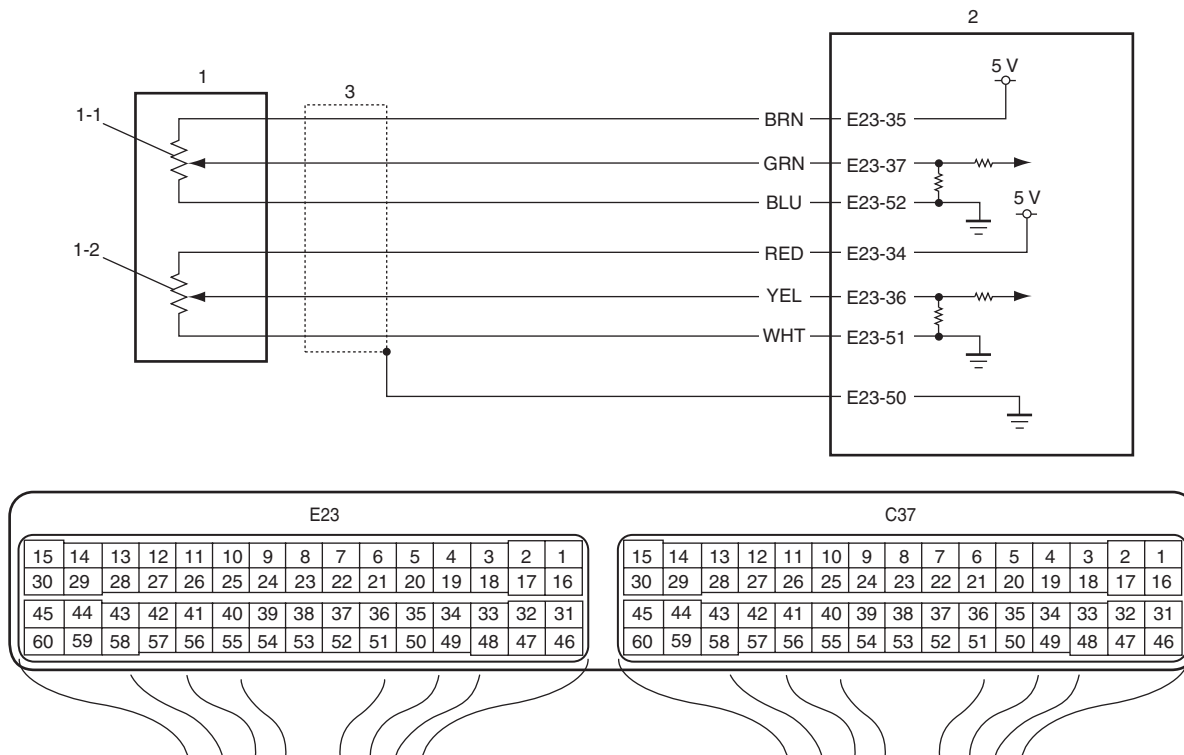
1A-192 Engine General Information and Diagnosis:

Step	Action	Yes	No
3	<p>Throttle actuator circuit check</p> <ol style="list-style-type: none"> 1) Disconnect connector from electric throttle body assembly with ignition switch turned OFF. 2) Check for proper connection to electric throttle body assembly at "LT GRN/RED" and "LT GRN/BLK" wire terminals.  <p style="text-align: right; font-size: small;">I4RS0B110022-02</p> <ol style="list-style-type: none"> 3) Disconnect connectors from ECM. 4) Check for proper connection to ECM at "C37-45" and "C37-44" terminals. 5) Measure resistance at following connector terminals. <ul style="list-style-type: none"> • Between "LT GRN/RED" wire terminal of electric throttle body assembly connector and "C37-45" terminal of ECM connector • Between "LT GRN/BLK" wire terminal of electric throttle body assembly connector and "C37-44" terminal of ECM connector <p><i>Is each resistance below 5 Ω?</i></p>	Go to Step 4.	"LT GRN/RED" wire and/or "LT GRN/BLK" wire is open or high resistance.
4	<p>Electric throttle body assembly check</p> <ol style="list-style-type: none"> 1) Check electric throttle body assembly referring to "Electric Throttle Body Assembly and Its Circuit Check" under "Electric Throttle Body Assembly On-Vehicle Inspection (For Automated Manual Transaxle Model): in Section 1C". <p><i>Is check result satisfactory?</i></p>	Substitute a known-good ECM and recheck.	Replace electric throttle body assembly.

DTC P2122: Pedal Position Sensor (Main) Circuit Low Input (For Automated Manual Transaxle Model)

S4RS0B1104082

Wiring Diagram



I4RS0B110047-01

1. Accelerator pedal position (APP) sensor assembly	1-2. Accelerator pedal position (APP) sensor (sub)	3. Ground of accelerator pedal position (APP) sensor for shield wire
1-1. Accelerator pedal position (APP) sensor (main)	2. ECM	

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
Output voltage of accelerator pedal position sensor (main) is less than specified value for 0.2 seconds continuously. (1 driving detection logic)	<ul style="list-style-type: none"> Accelerator pedal position (APP) sensor (main) circuit Accelerator pedal position (APP) sensor assembly ECM Incorrect mounting of accelerator pedal position (APP) sensor assembly

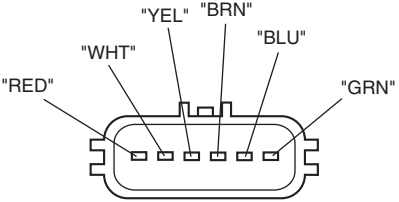
DTC Confirmation Procedure

- 1) With ignition switch turned OFF, connect scan tool.
- 2) Turn ON ignition switch and clear DTC using scan tool.
- 3) Keep the accelerator pedal at idle position for 2 seconds.
- 4) Keep the accelerator pedal at fully depressed position for 2 seconds.
- 5) Repeat Step 3) and 4) for 3 times.
- 6) Check DTC.

DTC Troubleshooting

NOTE

- Before performed trouble shooting, be sure to read the “Precautions of ECM Circuit Inspection: ”.
- When measuring circuit voltage, resistance and/or pulse signal at ECM connector, connect the special tool to ECM and/or the ECM connectors referring to “Inspection of ECM and Its Circuits: ”.
- Upon completion of inspection and repair work, perform “DTC Confirmation Procedure” and confirm that the trouble has been corrected.

Step	Action	Yes	No
1	Was “Engine and Emission Control System Check” performed?	Go to Step 2.	Go to “Engine and Emission Control System Check: ”
2	<p>Accelerator pedal position (APP) sensor assembly mounting check</p> <p>1) Check that accelerator pedal position (APP) sensor assembly has been mounted to vehicle body properly (no pinched floor carpet, etc).</p> <p><i>Is it OK?</i></p>	Go to Step 3.	Reinstall accelerator pedal position (APP) sensor assembly properly referring to “Accelerator Pedal Position (APP) Sensor Assembly Removal and Installation (For Automated Manual Transaxle Model): in Section 1C”.
3	<p>Accelerator pedal position sensor (main) and its circuit check</p> <p>1) Connect scan tool to DLC with ignition switch turned OFF.</p> <p>2) Turn ON ignition switch, check “APP Sensor 1 Volt” displayed on scan tool.</p> <p><i>Is displayed voltage below 0.384 V?</i></p>	Go to Step 4.	Intermittent trouble. Check for intermittent referring to “Intermittent and Poor Connection Inspection: in Section 00”.
4	<p>ECM voltage check</p> <p>1) Disconnect connector from accelerator pedal position (APP) sensor assembly with ignition switch turned OFF.</p> <p>2) Check for proper connection to accelerator pedal position (APP) sensor assembly at “BRN”, “GRN” and “BLU” wire terminals.</p> <div style="text-align: center;">  <p>I4RS0B110048-01</p> </div> <p>3) If OK, measure voltage between “BRN” wire terminal of accelerator pedal position (APP) sensor assembly connector and vehicle body ground with ignition switch turned ON.</p> <p><i>Is voltage 4 – 6 V?</i></p>	Go to Step 7.	Go to Step 5.