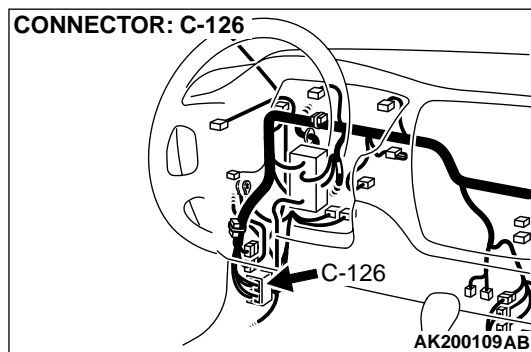
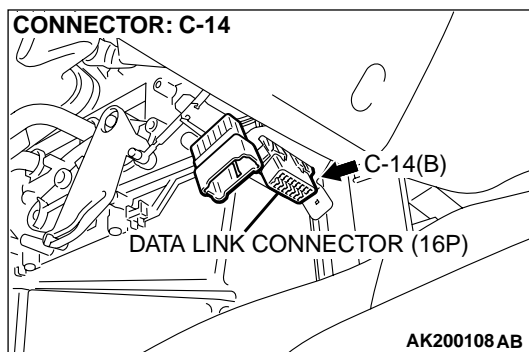
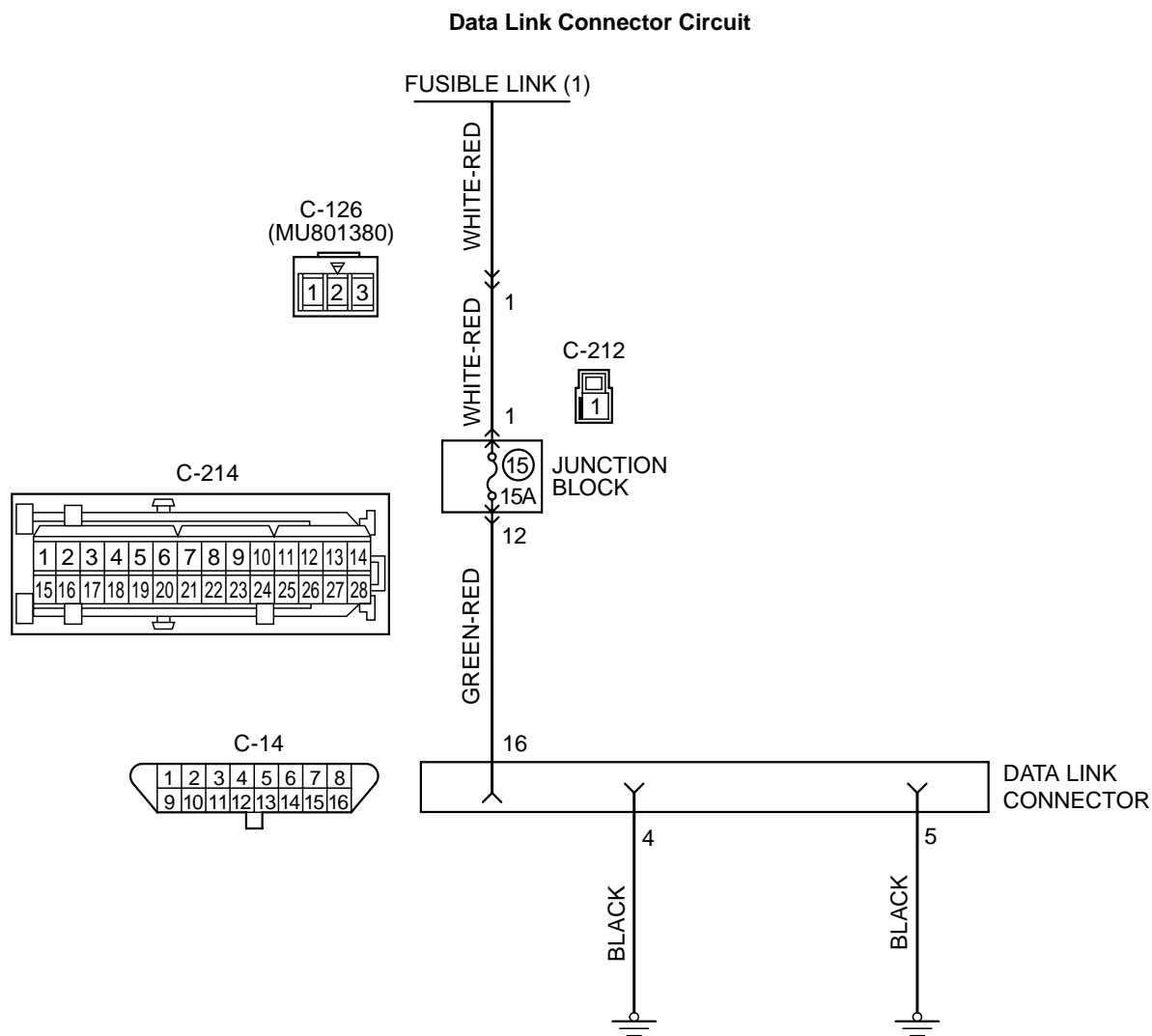
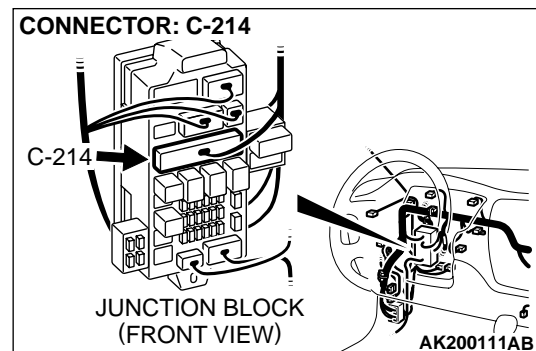
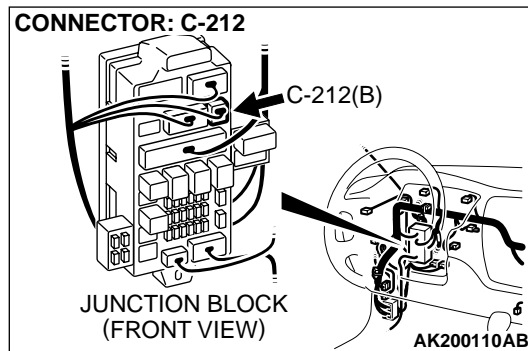

GROUP 13Ad

SYMPTOM PROCEDURES



INSPECTION PROCEDURE 1: Communication with Scan Tool Is Not Possible (Communication with All Systems Is Not Possible)





CIRCUIT OPERATION

- A battery positive voltage is applied on the data link connector power terminal (terminal No. 16). The ground terminals (terminals No. 4, No. 5) are grounded to the vehicle body.

COMMENT

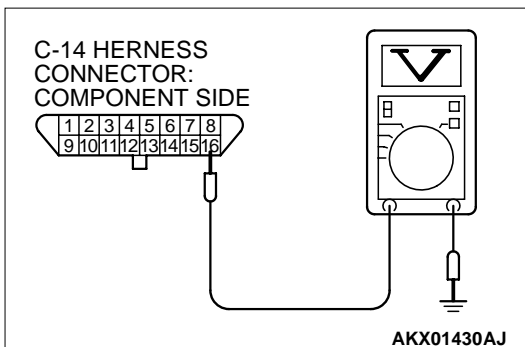
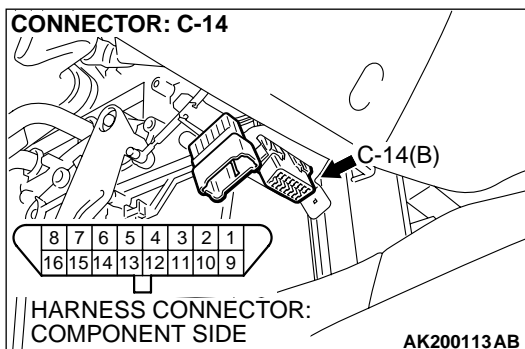
- The cause is probably a defect in power supply system (including ground) for the on-board diagnostic test mode line.

TROUBLESHOOTING HINTS (The most likely causes for this case:)

- Malfunction of the data link connector.
- Damaged harness wire.

DIAGNOSIS

STEP 1. Measure the power supply voltage at data link connector C-14.

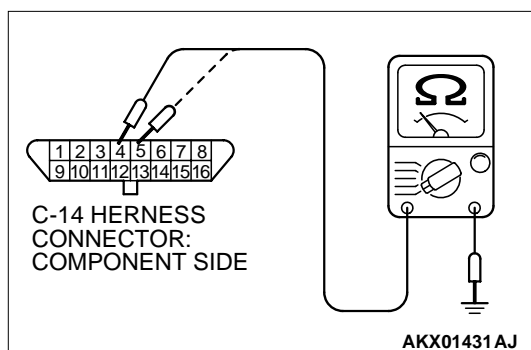
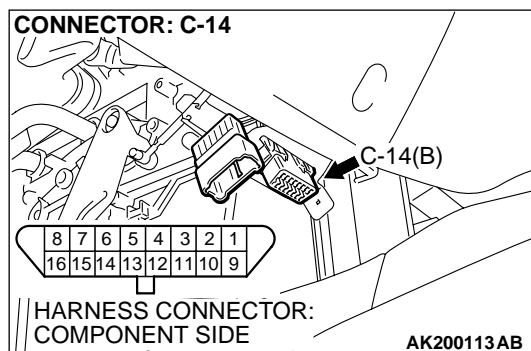


- Measure voltage between terminal No. 16 and ground.
 - Voltage should measure battery positive voltage.

Q: Is battery positive voltage (approximately 12 volts) present?

YES : Go to step 2.

NO : Check harness connectors C-126, C-212 and C-214 at intermediate connector for damage, and repair or replace as required. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). If intermediate connectors are in good condition, repair harness wire between fusible link (1) and data link connector C-14 (terminal No. 16) because of open circuit. Then confirm that the malfunction symptom is eliminated.

STEP 2. Check for continuity at data link connector C-14.

- (1) Check for the continuity between terminals No. 4, No. 5 and ground.
- Should be less than 2 ohms.

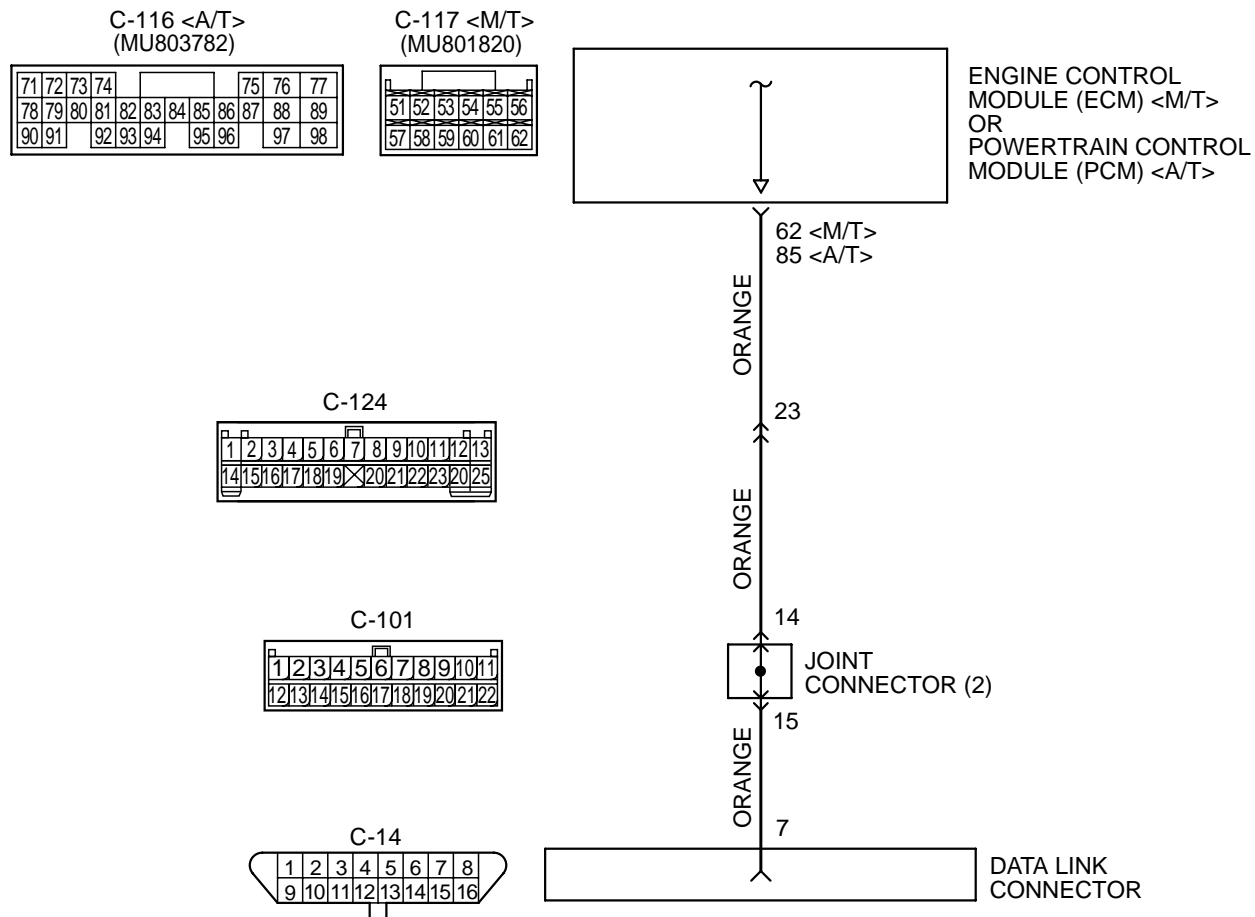
Q: Does continuity exist?

YES : Replace the scan tool. Then confirm that the malfunction symptom is eliminated.

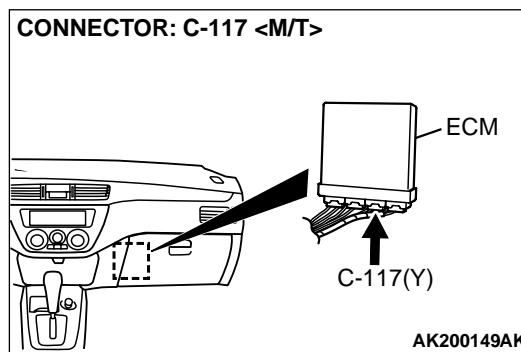
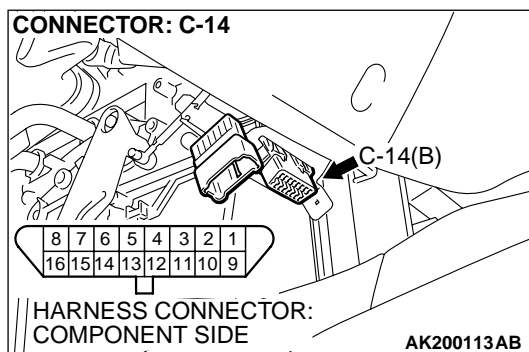
NO : Repair harness wire between data link connector C-14 (terminals No. 4, No. 5) and ground because of open circuit or harness damage. Then confirm that the malfunction symptom is eliminated.

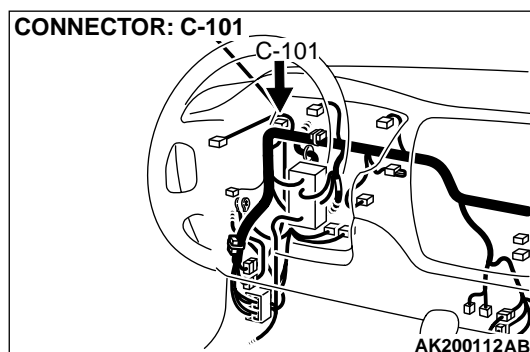
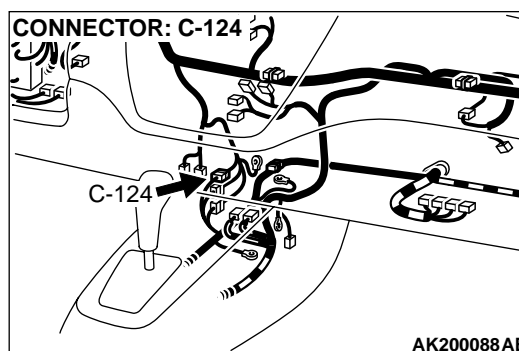
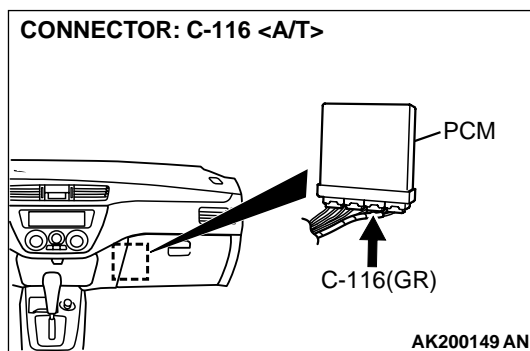
INSPECTION PROCEDURE 2: Communication with Scan Tool Is Not Possible (Communication with ECM or PCM Only Is Not Possible)

Data Link Connector Circuit



AK200446





CIRCUIT OPERATION

- A diagnostic output is made from the ECM (terminal No. 62) <M/T> or PCM (terminal No. 85) <A/T> to the diagnostic output terminal (terminal No. 7) of the data link connector.

COMMENT

- No power supply to ECM <M/T> or PCM <A/T>.
- Defective ground circuit of ECM <M/T> or PCM <A/T>.
- Defective ECM <M/T> or PCM <A/T>.

- Improper communication line between ECM <M/T> or PCM <A/T> and scan tool.

TROUBLESHOOTING HINTS (The most likely causes for this case:)

- Malfunction of ECM <M/T> or PCM <A/T> power supply circuit.
- Malfunction of the ECM <M/T> or PCM <A/T>.
- Open circuit between ECM <M/T> or PCM <A/T> and data link connector.

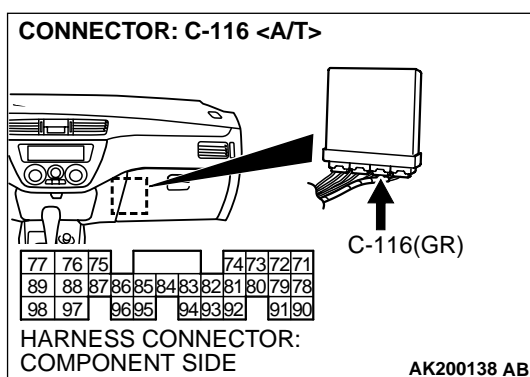
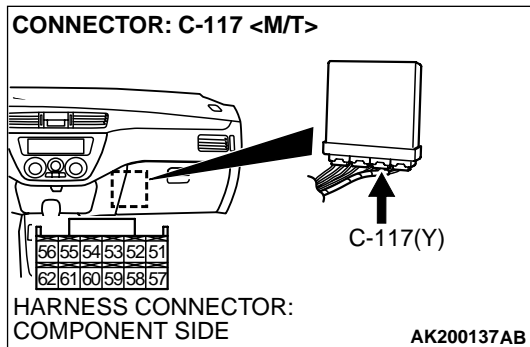
DIAGNOSIS

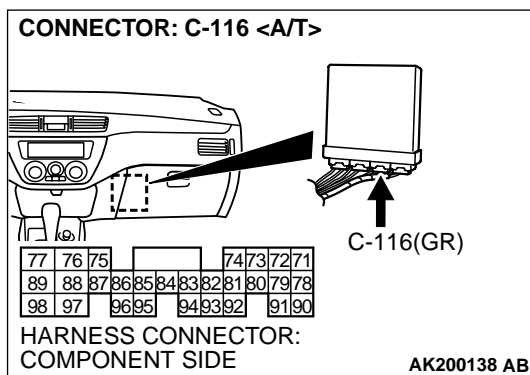
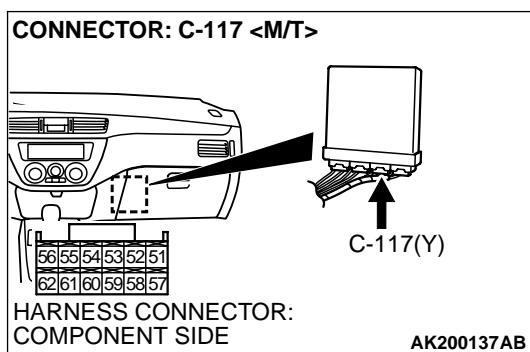
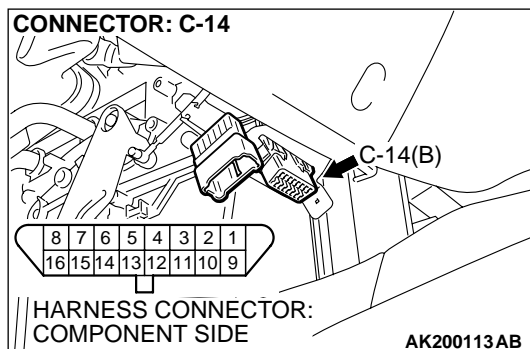
STEP 1. Check connector C-117 at ECM <M/T> or connector C-116 at PCM <A/T> for damage.

Q: Is the connector in good condition?

YES : Go to Step 2.

NO : Repair or replace it. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Then confirm that the malfunction symptom is eliminated.





STEP 2. Check for open circuit, short circuit to ground and harness damage between data link connector C-14 (terminal No. 7) and ECM connector C-117 (terminal No. 62) <M/T> or PCM connector C-116 (terminal No. 85) <A/T>.

NOTE: Check harness after checking intermediate connectors C-101 and C-124. If intermediate connectors are damaged, repair or replace them. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Then check that the malfunction is eliminated.

Q: Is the harness wire in good condition?

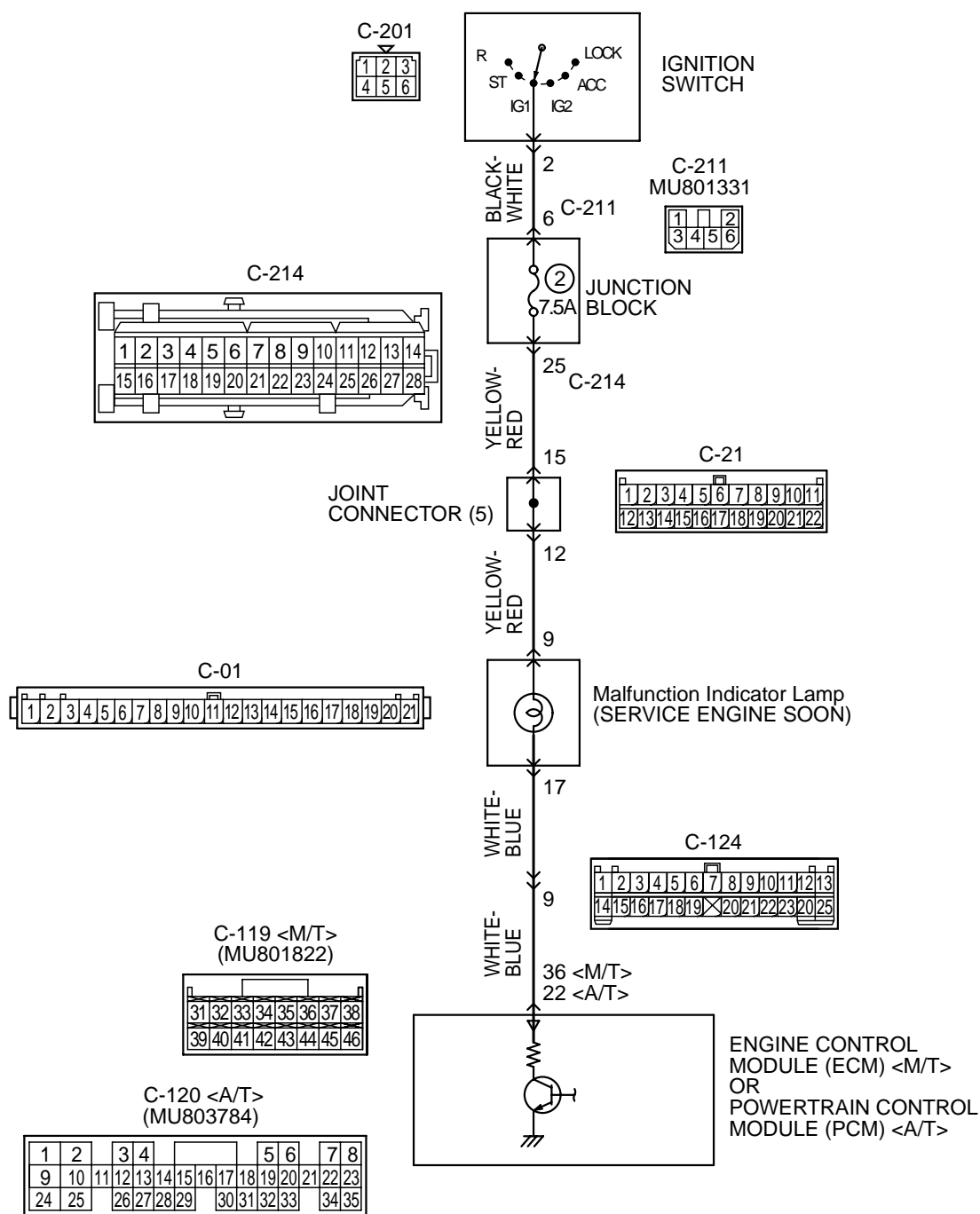
YES : Refer to, INSPECTION PROCEDURE 29 – Power Supply System and Ignition Switch – IG System

[P.13Ad-84.](#)

NO : Repair it. Then confirm that the malfunction symptom is eliminated.

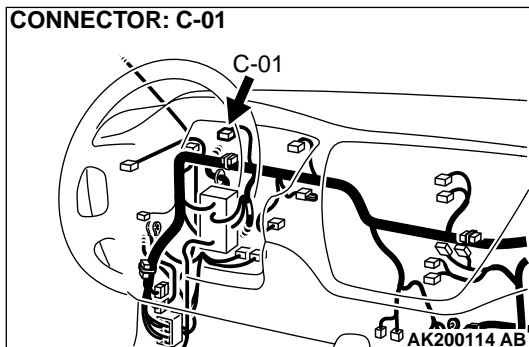
INSPECTION PROCEDURE 3: The Malfunction Indicator Lamp (SERVICE ENGINE SOON) Does Not Illuminate Right after the Ignition Switch Is Turned to the "ON" Position

Malfunction Indicator Lamp (SERVICE ENGINE SOON) Circuit

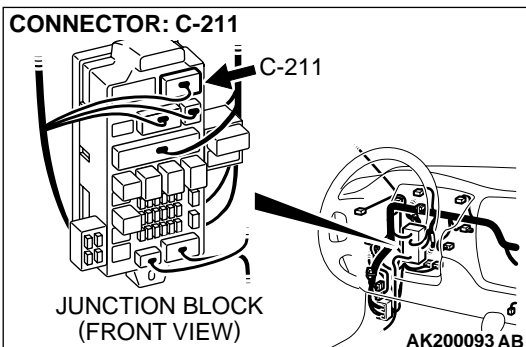


AK200388

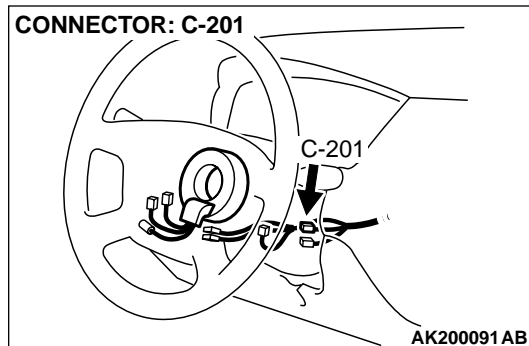
CONNECTOR: C-01



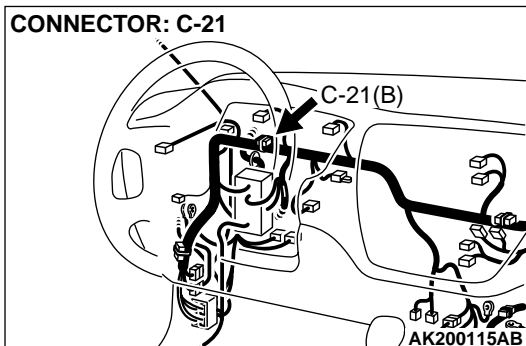
CONNECTOR: C-211



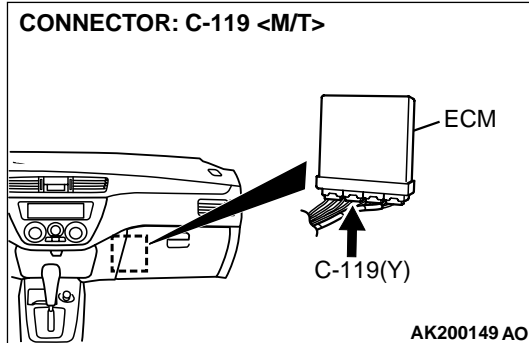
CONNECTOR: C-201



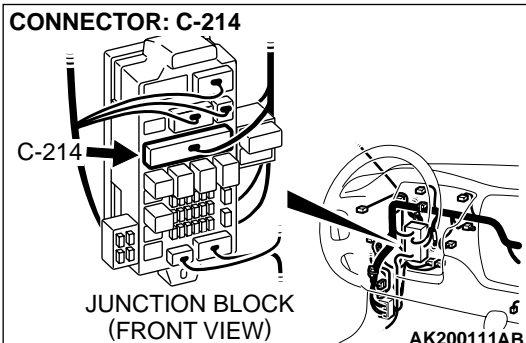
CONNECTOR: C-21



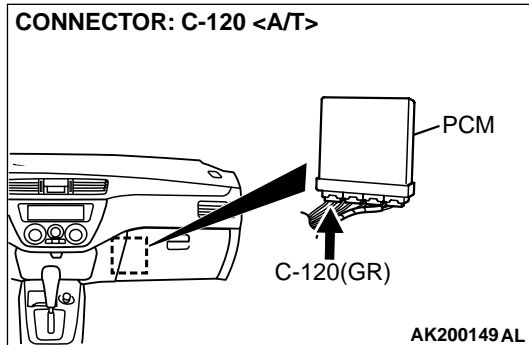
CONNECTOR: C-119 <M/T>



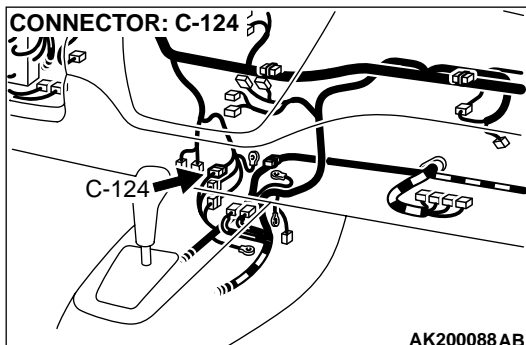
CONNECTOR: C-214



CONNECTOR: C-120 <A/T>



CONNECTOR: C-124



CIRCUIT OPERATION

- The malfunction indicator lamp (SERVICE ENGINE SOON) power is supplied from the ignition switch.
- The ECM <M/T> or PCM <A/T> controls the ground of the malfunction indicator lamp (SERVICE ENGINE SOON) by turning the power transistor in the ECM <M/T> or PCM <A/T> ON and OFF.

COMMENT

- The ECM <M/T> or PCM <A/T> causes the malfunction indicator lamp (SERVICE ENGINE SOON) to illuminate for 5 seconds immediately after the ignition switch is turned to the "ON" position occurred.

TROUBLESHOOTING HINTS (The most likely causes for this case:)

- Burnt-out bulb.

- Defective malfunction indicator lamp (SERVICE ENGINE SOON) circuit.
- Malfunction of the ECM <M/T> or PCM <A/T>.

DIAGNOSIS
Required Special Tool:

- MB991502: Scan Tool (MUT-II)

STEP 1. Using scan tool MB991502, check data list item 16: Power Supply Voltage.
⚠ CAUTION

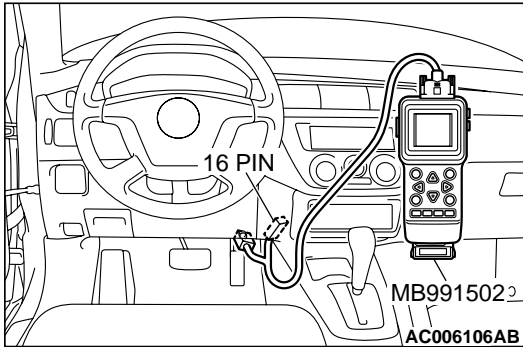
To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

- (1) Connect scan tool MB991502 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991502 to the data reading mode for item 16, Power Supply Voltage.
 - Voltage should measure battery positive voltage.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is battery positive voltage (approximately 12 volts) present?

YES : Go to Step 2.

NO : Refer to INSPECTION PROCEDURE 29 – Power Supply System and Ignition Switch – IG System
[P.13Ad-84.](#)


STEP 2. Check the burned-out bulb.
Q: Is the valve normal?

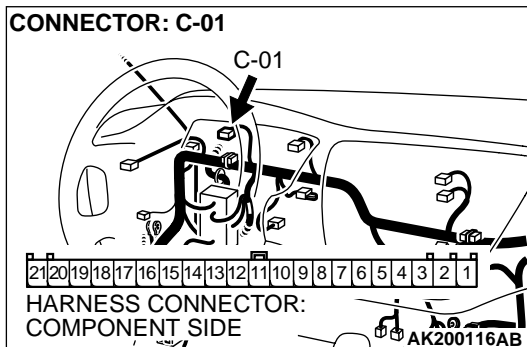
YES : Go to step 3.

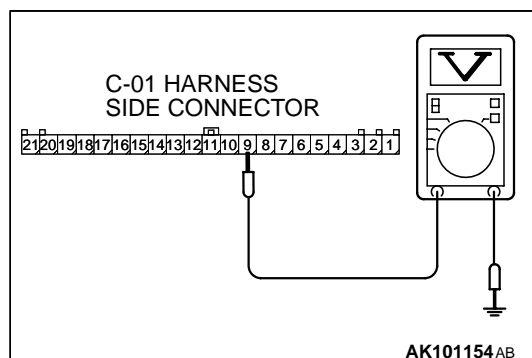
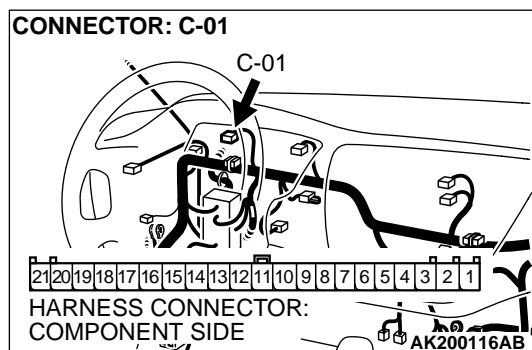
NO : Replace the bulb. Then confirm that the malfunction symptom is eliminated.

STEP 3. Check connector C-01 at the combination meter for damage.
Q: Is the connector in good condition?

YES : Go to step 4.

NO : Repair or replace it. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Then confirm that the malfunction symptom is eliminated.





STEP 4. Measure the power supply voltage at combination meter harness side connector C-01.

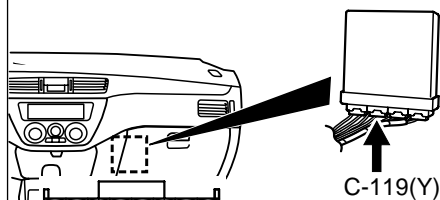
- (1) Disconnect the connector C-01 and measure at the harness side.
- (2) Turn the ignition switch to the "ON" position.

- (3) Measure the voltage between terminal No. 9 and ground.
 - Voltage should measure battery positive voltage.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is battery positive voltage (approximately 12 volts) present?

YES : Go to Step 5.

NO : Check harness connectors C-21, C-211 and C-214 at intermediate connector for damage, and repair or replace as required. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). If intermediate connectors are in good condition, repair harness wire between ignition switch connector C-201 (terminal No. 2) and combination meter connector C-01 (terminal No. 9) because of open circuit. Then confirm that the malfunction symptom is eliminated.

CONNECTOR: C-119 <M/T>

HARNESS CONNECTOR:
COMPONENT SIDE

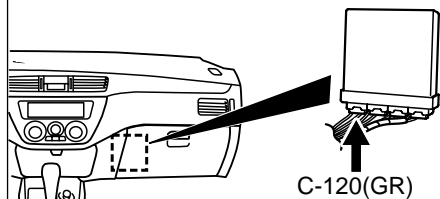
AK200140AB

STEP 5. Check connector C-119 at ECM <M/T> or connector C-120 at PCM <A/T> for damage.

Q: Is the connector in good condition?

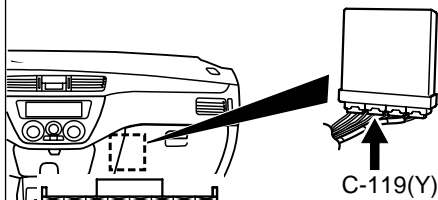
YES : Go to Step 6.

NO : Repair or replace it. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Then confirm that the malfunction symptom is eliminated.

CONNECTOR: C-120 <A/T>

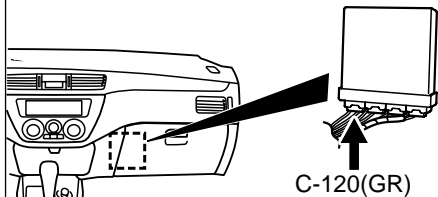
HARNESS CONNECTOR:
COMPONENT SIDE

AK200143AB

CONNECTOR: C-119 <M/T>

HARNESS CONNECTOR:
COMPONENT SIDE

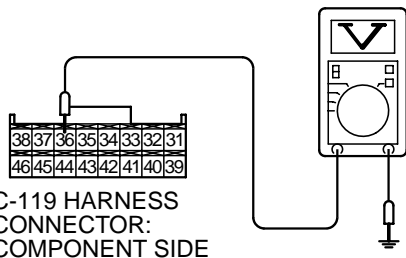
AK200140AB

CONNECTOR: C-120 <A/T>

HARNESS CONNECTOR:
COMPONENT SIDE

AK200143AB

<M/T>

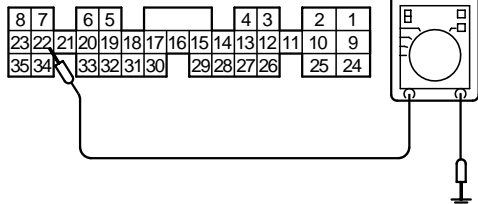


C-119 HARNESS
CONNECTOR:
COMPONENT SIDE

AK000381AF

<A/T>

C-120 HARNESS
CONNECTOR:
COMPONENT SIDE



AK000377AJ

STEP 6. Measure the power supply voltage ECM connector C-119 <M/T> or PCM connector C-120 <A/T>.

- (1) Disconnect the connector C-119 <M/T> or C-120 <A/T> and measure at the harness side.
- (2) Turn the ignition switch to the "ON" position.

- (3) Measure the voltage between terminal No. 36 <M/T> or No. 22 <A/T> and ground.

- Voltage should measure battery positive voltage.

- (4) Turn the ignition switch to the "LOCK" (OFF) position.

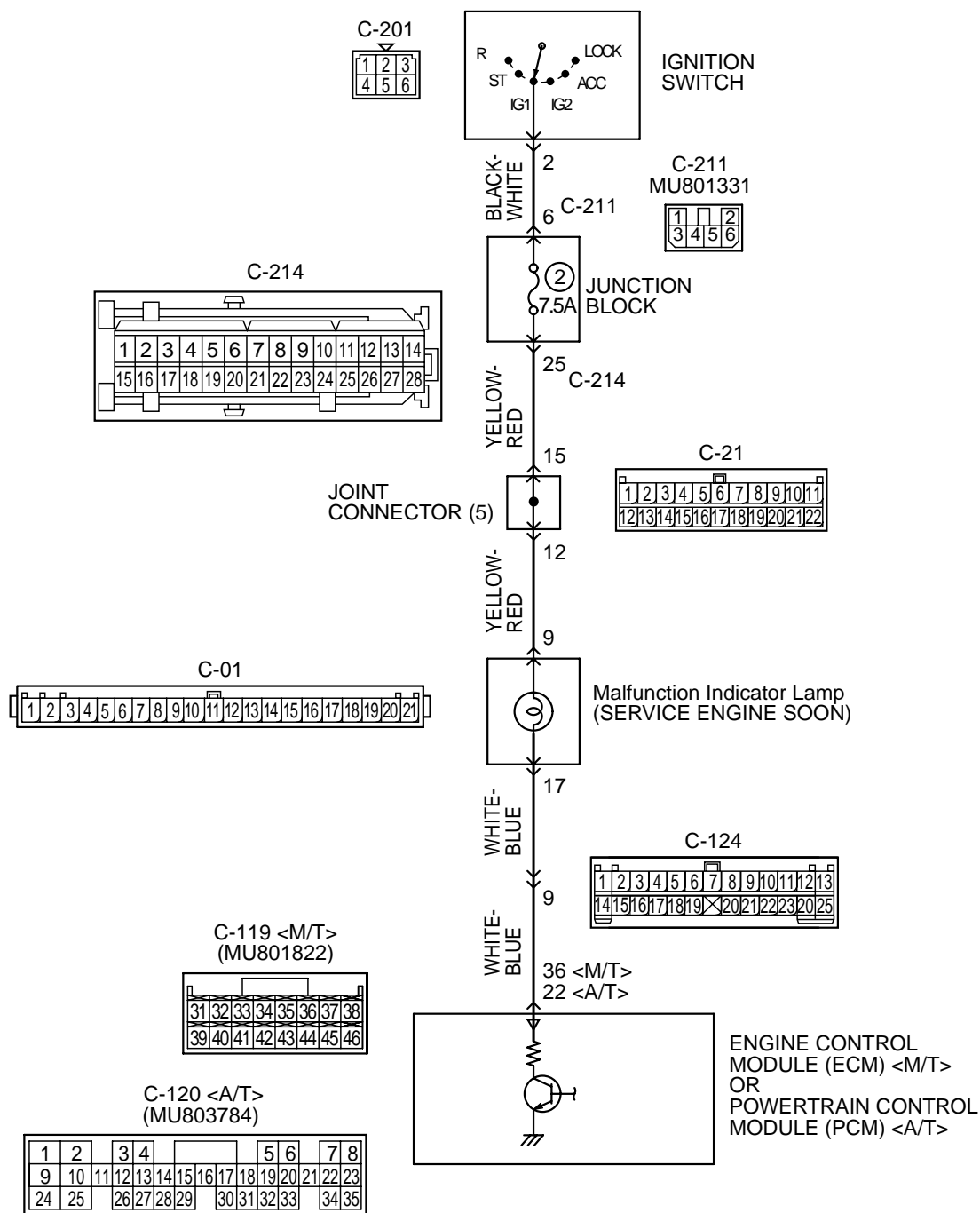
Q: Is battery positive voltage (approximately 12 volts) present?

YES : Replace the ECM or PCM. Then confirm that the malfunction symptom is eliminated.

NO : Check harness connectors C-124 at intermediate connector for damage, and repair or replace as required. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). If intermediate connectors is in good condition, repair harness wire between combination meter connector C-01 (terminal No. 17) and ECM connector C-119 (terminal No. 36) <M/T> or PCM connector C-120 (terminal No. 22) <A/T> because of open circuit. Then confirm that the malfunction symptom is eliminated.

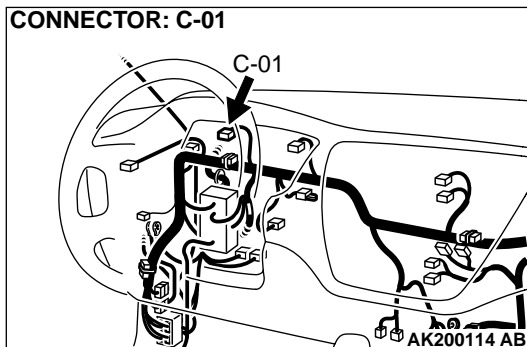
INSPECTION PROCEDURE 4: The Malfunction Indicator Lamp (SERVICE ENGINE SOON) Remains Illuminated and Never Goes Out

Malfunction Indicator Lamp (SERVICE ENGINE SOON) Circuit

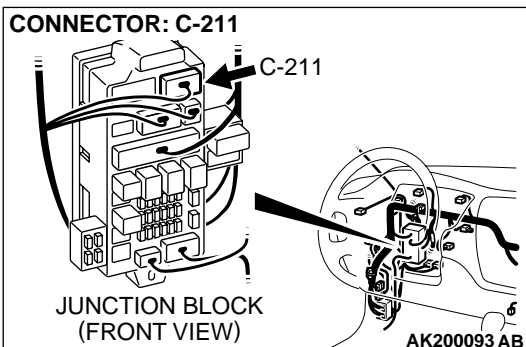


AK200388

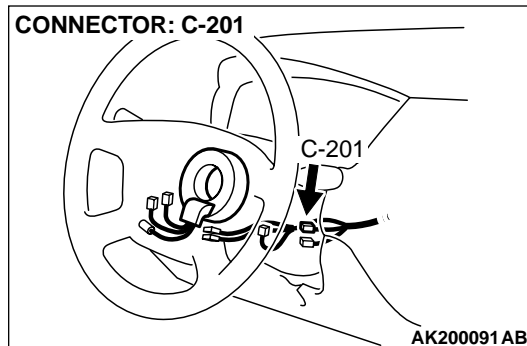
CONNECTOR: C-01



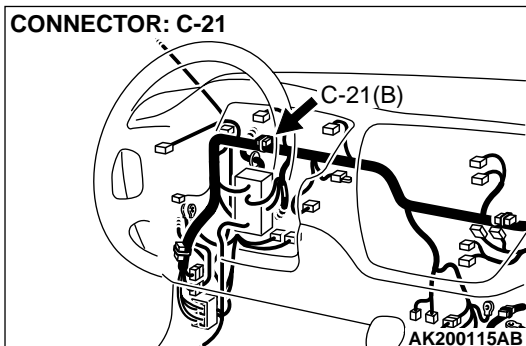
CONNECTOR: C-211



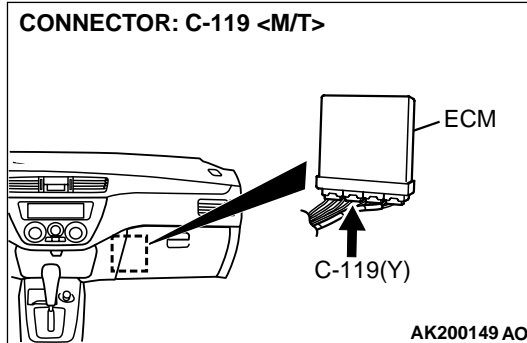
CONNECTOR: C-201



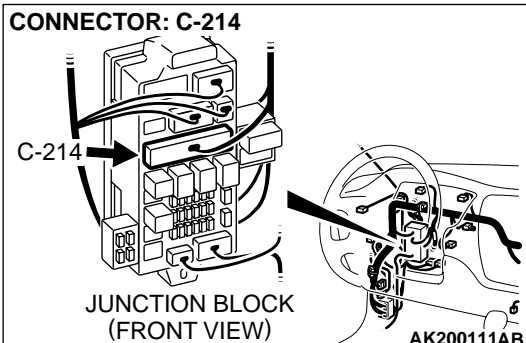
CONNECTOR: C-21



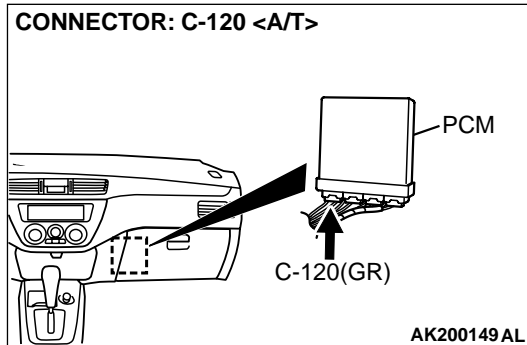
CONNECTOR: C-119 <M/T>



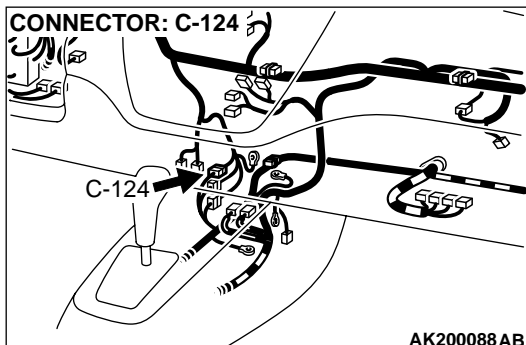
CONNECTOR: C-214



CONNECTOR: C-120 <A/T>



CONNECTOR: C-124



CIRCUIT OPERATION

- The malfunction indicator lamp (SERVICE ENGINE SOON) power is supplied from the ignition switch.
- The ECM <M/T> or PCM <A/T> controls the ground of the malfunction indicator lamp (SERVICE ENGINE SOON) by turning the power transistor in the ECM <M/T> or PCM <A/T> ON and OFF.

COMMENT

- In cases such as the above, the cause is probably that the ECM <M/T> or PCM <A/T> is detecting a problem in a sensor or actuator, or that one of the malfunctions listed at right has probably occurred.

TROUBLESHOOTING HINTS (The most likely causes for this case:)

- Short-circuit between the malfunction indicator lamp (SERVICE ENGINE SOON) and ECM <M/T> or PCM <A/T>.

- Malfunction of the ECM <M/T> or PCM <A/T>.

DIAGNOSIS**Required Special Tool:**

- MB991502: Scan Tool (MUT-II)

STEP 1. Using scan tool MB991502, read the diagnostic trouble code (DTC).**⚠ CAUTION**

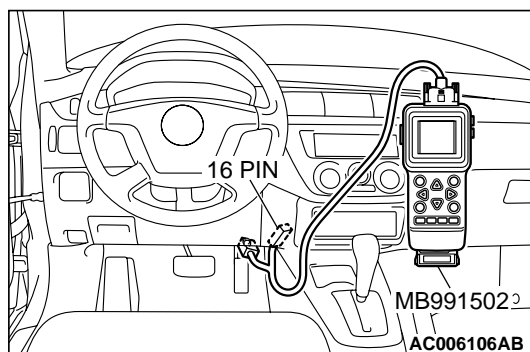
To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

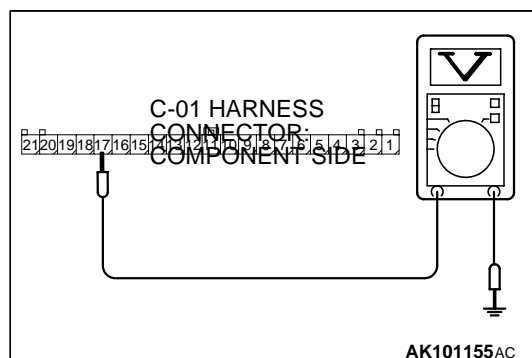
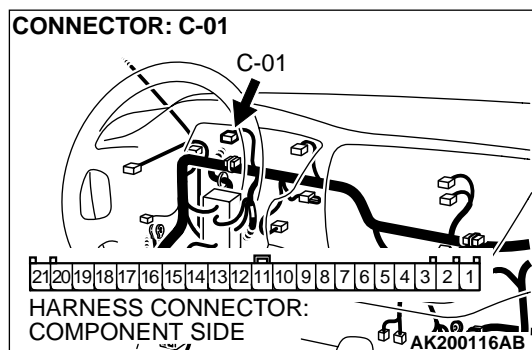
- (1) Connect scan tool MB991502 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Read the DTC.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is DTC set?

YES : Refer to GROUP 13A, Diagnostic Trouble Code Chart
[P.13Ab-19](#).

NO : Go to Step. 2.





STEP 2. Check for continuity at combination meter harness side connector C-01.

(1) Disconnect the connector C-01 and measure at the harness side.

(2) Check for the continuity between terminal No. 17 and ground.

- Should be open loop.

Q: Does continuity exist?

YES : Replace the ECM or PCM. Then confirm that the malfunction symptom is eliminated.

NO : Check harness connectors C-124 at the intermediate connector for damage, and repair or replace as required. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). If intermediate connectors is in good condition, repair harness wire between combination meter connector C-01 (terminal No. 17) and ECM connector C-119 (terminal No. 36) <M/T> or PCM connector C-120 (terminal No. 22) <A/T> because of short circuit to ground. Then confirm that the malfunction symptom is eliminated.

INSPECTION PROCEDURE 5: Cranks, Won't Start

Cranks, Won't Start Circuit

- Refer to, Ignition circuit system [P.13Ad-118](#).

CIRCUIT OPERATION

- Refer to, Ignition circuit system [P.13Ad-118](#).

COMMENT

- In cases such as the above, the cause is probably no spark, fuel delivery, or fuel quality problems. In addition, foreign materials (water, kerosene, etc.) may be mixed with the fuel.

TROUBLESHOOTING HINTS (The most likely causes for this case:)

- Malfunction of the ignition system.
- Malfunction of the fuel pump system.
- Malfunction of the injector system.
- Malfunction of the ECM <M/T> or PCM <A/T>.
- Contaminated fuel.

DIAGNOSIS**Required Special Tool:**

- MB991502: Scan Tool (MUT-II)

STEP 1. Measure the battery positive voltage.

(1) Measure the battery positive voltage during cranking.

- The voltage should remain greater than 8 volts while the engine is cranked.

Q: Does the voltage remain greater than 8 volts while the engine is cranked?

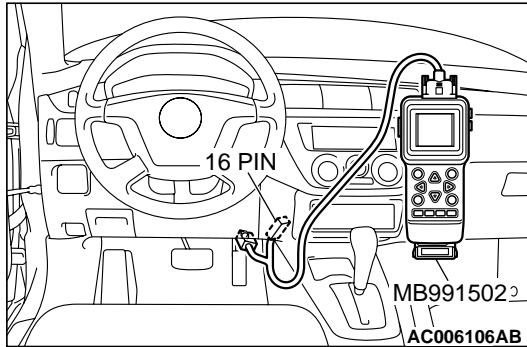
YES : Go to Step 2.

NO : Check the battery. Refer to GROUP 54A, Battery – Battery check [P.54A-4](#). Then confirm that the malfunction symptom is eliminated.

STEP 2. Check the timing belt for breaks.**Q: Is the timing belt good condition?**

YES : Go to Step 3.

NO : Replace timing belt. Then confirm that the malfunction symptom is eliminated.

**STEP 3 Using scan tool MB991502, check data list.****⚠ CAUTION**

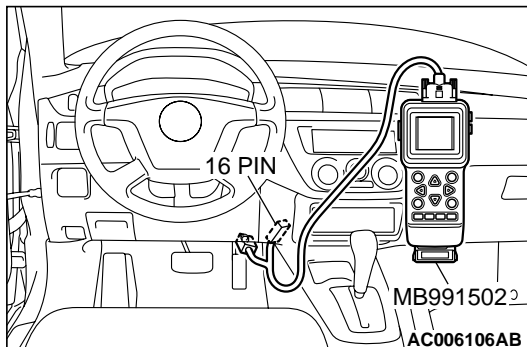
To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

- (1) Connect scan tool MB991502 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Check the following items in the data List. Refer to GROUP 13A, Data List Reference Table [P.13Ab-25](#).
 - a. Item 16: Power Supply Voltage.
 - b. Item 22: Crankshaft Position Sensor.
 - c. Item 21: Engine Coolant Temperature Sensor.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Are they operating properly?

YES : Go to Step 4.

NO : Repair or replace. Then confirm that the malfunction symptom is eliminated.

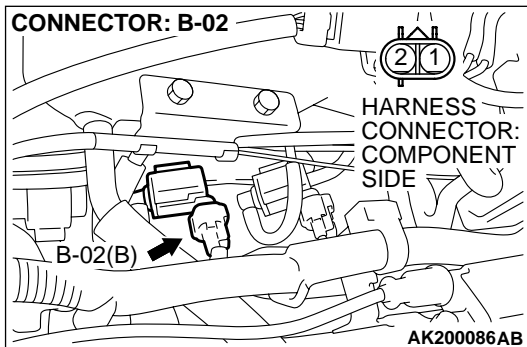
**STEP 4. Using scan tool MB991502, check actuator test.**

- (1) Turn the ignition switch to the "ON" position.
- (2) Check the following items in the actuator test. Refer to GROUP 13A, Actuator Test Reference Table [P.13Ab-34](#).
 - a. Item 07: Fuel pump.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the actuator operating properly?

YES : Go to Step 5.

NO : Repair or replace. Then confirm that the malfunction symptom is eliminated.

**STEP 5. Check the ignition system.**

- (1) Connect the timing light to terminal No. 1 of the ignition coil connector B-16 or B-20, in order.
- (2) Crank the engine.
 - The timing light flashes.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Does the timing light flash?

YES : Go to Step 6.

NO : Refer to INSPECTION PROCEDURE 33 – Ignition Circuit System [P.13Ad-118](#).

STEP 6. Check the ignition timing.

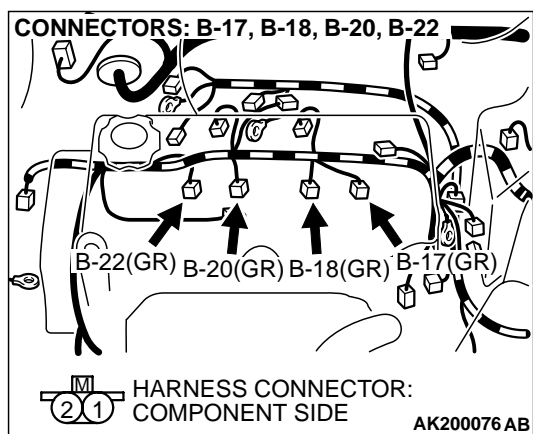
- (1) Check the ignition timing at cranking.

Standard value: 5° BTDC ± 3°

Q: Is the ignition timing normal?

YES : Go to Step 7.

NO : Check that the crankshaft position sensor and timing belt cover are in the correct position. Then confirm that the malfunction symptom is eliminated.

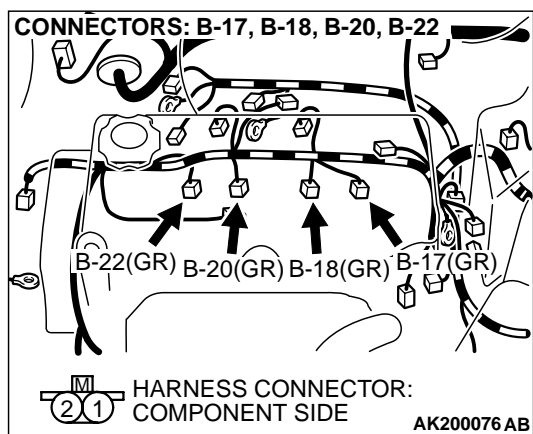


STEP 7. Check harness connectors B-17 or B-18 or B-20 or B-22 at injector for damage.

Q: Is the harness connector in good condition?

YES : Go to Step 8.

NO : Repair or replace it. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Then confirm that the malfunction symptom is eliminated.



STEP 8. Check the injector.

(1) Disconnect the injector connectors B-17, B-18, B-20, B-22.

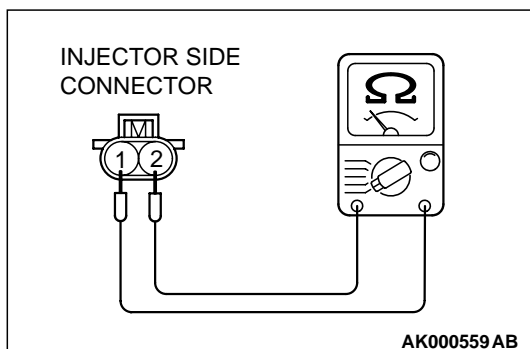
(2) Measure the resistance between each injector side connector terminal No. 1 and No. 2.

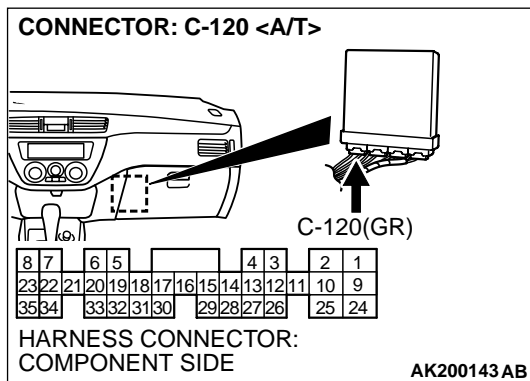
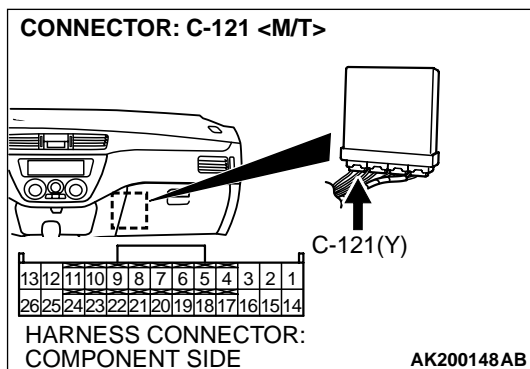
Standard value: 13 – 16 ohms [at 20°C (68°F)]

Q: Is the resistance between 13 and 16 ohms [at 20°C (68°F)]?

YES : Go to Step 9.

NO : Replace the injector. Then confirm that the malfunction symptom is eliminated.



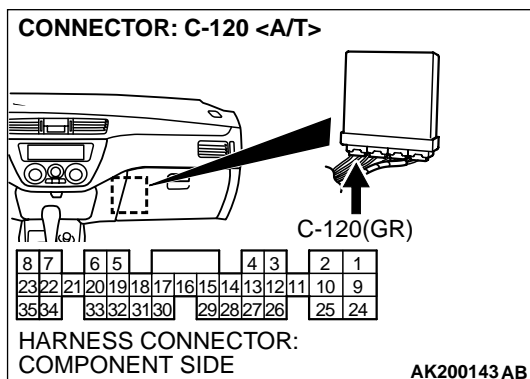
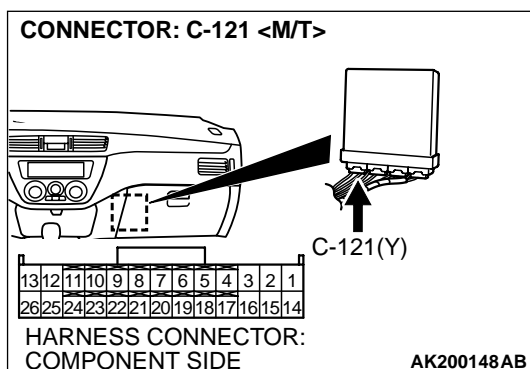
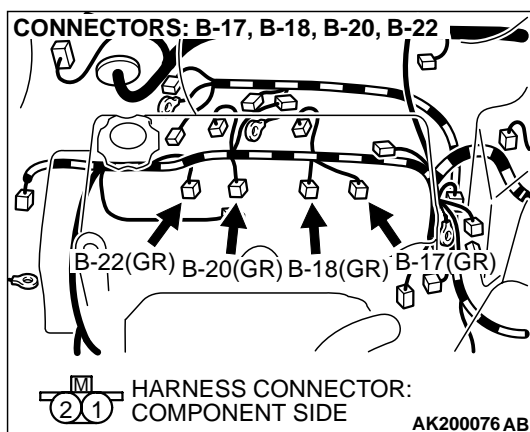


STEP 9. Check connector C-121 at ECM <M/T> or connector C-120 at PCM <A/T> for damage.

Q: Is the connector in good condition?

YES : Go to Step 10.

NO : Repair or replace it. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Then confirm that the malfunction symptom is eliminated.



STEP 10. Check for harness damage between injector connector and ECM <M/T> or PCM <A/T> connector.

- Check the harness wire between injector connector B-22 (terminal No. 2) and ECM connector C-121 (terminal No. 1) <M/T> or PCM connector C-120 (terminal No. 1) <A/T> when checking No.1 cylinder.
- Check the harness wire between injector connector B-20 (terminal No. 2) and ECM connector C-121 (terminal No. 14) <M/T> or PCM connector C-120 (terminal No. 9) <A/T> when checking No.2 cylinder.
- Check the harness wire between injector connector B-18 (terminal No. 2) and ECM connector C-121 (terminal No. 2) <M/T> or PCM connector C-120 (terminal No. 24) <A/T> when checking No.3 cylinder.
- Check the harness wire between injector connector B-17 (terminal No. 2) and ECM connector C-121 (terminal No. 15) <M/T> or PCM connector C-120 (terminal No. 2) <A/T> when checking No.4 cylinder.

Q: Is the harness wire in good condition?

YES : Check the following items, and repair or replace the defective items.

- Check the ignition coil, spark plugs, spark plug cables.
- Check if the injectors are clogged.
- Check if fuel is contaminated.
- Check compression.

Then confirm that the malfunction symptom is eliminated.

NO : Repair it. Then confirm that the malfunction symptom is eliminated.

INSPECTION PROCEDURE 6: Starts Up and Dies

COMMENT

- In such cases as the above, the cause is usually improper air/fuel mixture. It is possible, though less likely, that the spark plugs are generating sparks but the sparks are weak.

TROUBLESHOOTING HINTS (The most likely causes for this case:)

- Malfunction of the ignition system.
- Malfunction of the injector system.
- Contaminated fuel.
- Poor compression.
- Malfunction of the ECM <M/T> or PCM <A/T>.

DIAGNOSIS

Required Special Tool:

- MB991502: Scan Tool (MUT-II)

STEP 1. Measure the battery positive voltage.

- (1) Measure the battery positive voltage during cranking.
 - The voltage should remain greater than 8 volts while the engine is cranked.

Q: Dose the voltage remain greater than 8 volts while the engine is cranked?

YES : Go to Step 2.

NO : Refer to GROUP 8A, Battery – Battery check [P.54A-4](#).

STEP 2. Using scan tool MB991502, read the diagnostic trouble code (DTC).

⚠ CAUTION

To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

- (1) Connect scan tool MB991502 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Read the DTC.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is DTC set?

YES : Refer to GROUP 13A, Diagnostic Trouble Code Chart [P.13Ab-19](#).

NO : Go to Step 3.

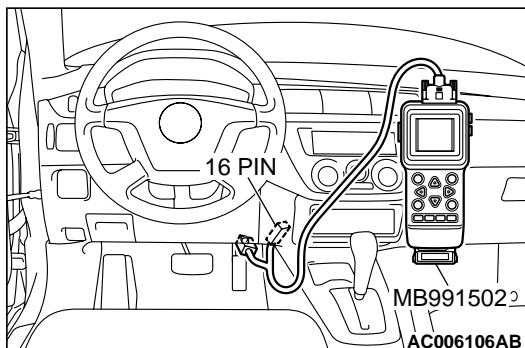
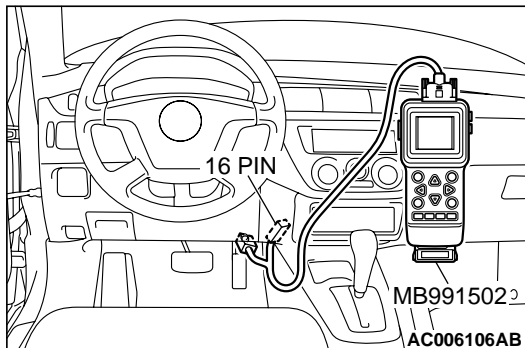
STEP 3. Using scan tool MB991502, check actuator test.

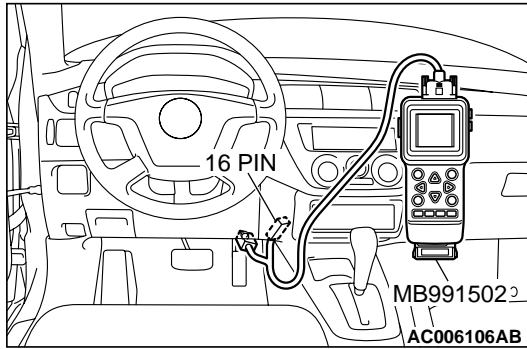
- (1) Turn the ignition switch to the "ON" position.
- (2) Check the following items in the actuator test. Refer to GROUP 13A, Actuator Test Reference Table [P.13Ab-34](#).
 - a. Item 07: Fuel Pump.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the actuator operating properly?

YES : Go to Step 4.

NO : Repair or replace. Then confirm that the malfunction symptom is eliminated.



**STEP 4. Using scan tool MB991502, check data list.**

- (1) Turn the ignition switch to the "ON" position.
- (2) Check the following items in the data list. Refer to GROUP 13A, Data List Reference Table [P.13Ab-25](#).
 - a. Item 21: Engine Coolant Temperature Sensor.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the sensor operating properly?**YES :** Go to Step 5.**NO :** Repair or replace. Then confirm that the malfunction symptom is eliminated.**STEP 5. Check the engine start-ability.**

- (1) Depress the accelerator pedal slightly, and start the engine.

Q: Is the start ability good?**YES :** Go to Step 6.**NO :** Go to Step 7.**STEP 6. Check the idle air control (IAC) motor operation sound.**

- (1) Check that the engine coolant temperature is 20°C (68°F) or below.

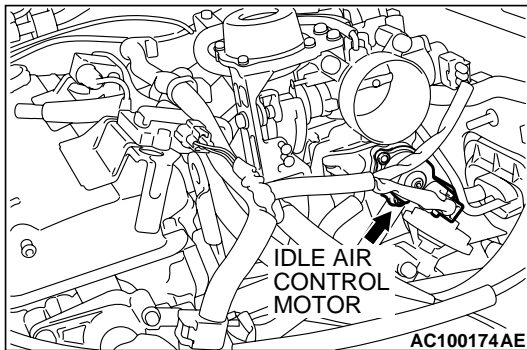
NOTE: If necessary, you can disconnect the engine coolant temperature sensor connector and connect the harness side of the connector to another engine coolant temperature sensor that is at 20°C (68°F) or below.

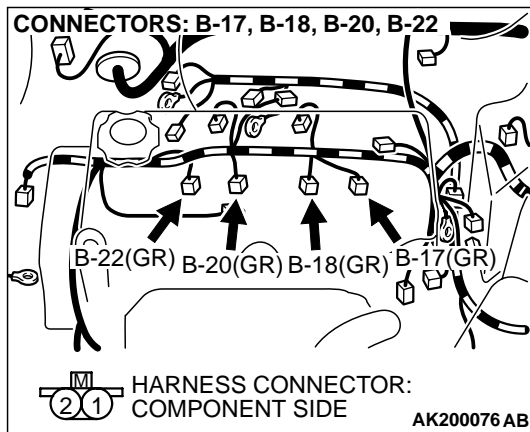
- (2) Check that the operation sound of the IAC motor can be heard after the ignition is switched to the "ON" position (but without starting the engine).

- An operation sound is heard.

Q: Did you hear the operation sound?**YES :** Refer to GROUP 13A, On-vehicle Service – Clean the throttle valve area [P.13Aa-11](#).**NO :** Refer to GROUP 13A, DTC P0506 Idle Control System RPM Lower Than Expected [P.13Ac-490](#), DTC P0507 Idle Control System RPM Higher Than Expected [P.13Ac-502](#).**STEP 7. Check the ignition timing.**

- (1) Check the ignition timing at cranking.

Standard value: 5°BTDC ± 3°**Q: Is the ignition timing normal?****YES :** Go to Step 8.**NO :** Check that the crankshaft position sensor and timing belt cover are in the correct position. Then confirm that the malfunction symptom is eliminated.

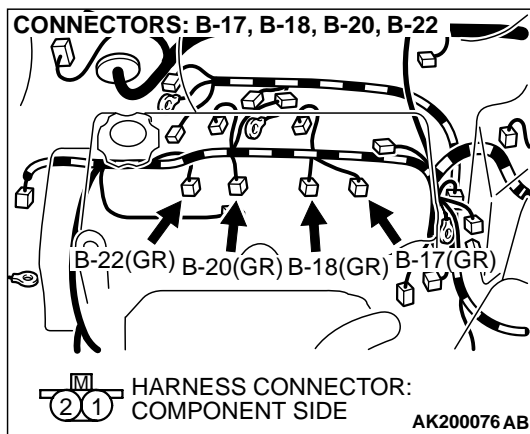


STEP 8. Check harness connectors B-22 or B-20 or B-18 or B-17 at injector for damage.

Q: Is the harness connector in good condition?

YES : Go to Step 9.

NO : Repair or replace it. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Then confirm that the malfunction symptom is eliminated.



STEP 9. Check the injector.

(1) Disconnect the injector connectors B-17, B-18, B-20, B-22.

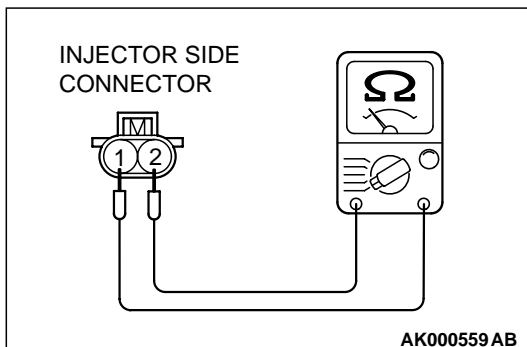
(2) Measure the resistance between each injector side connector terminal No. 1 and No. 2.

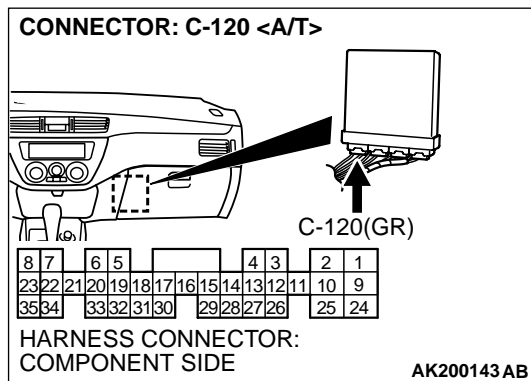
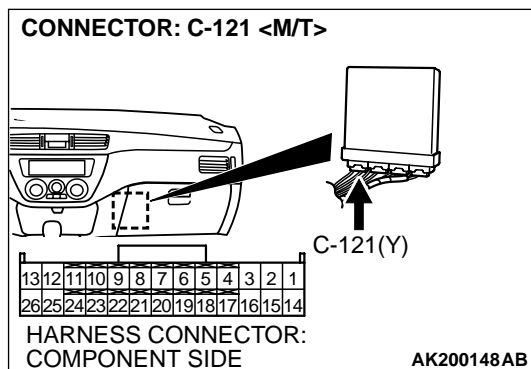
Standard value: 13 – 16 ohms [at 20°C (68°F)]

Q: Is the resistance between 13 and 16 ohms [at 20°C (68°F)]?

YES : Go to Step 10.

NO : Replace the injector. Then confirm that the malfunction symptom is eliminated.



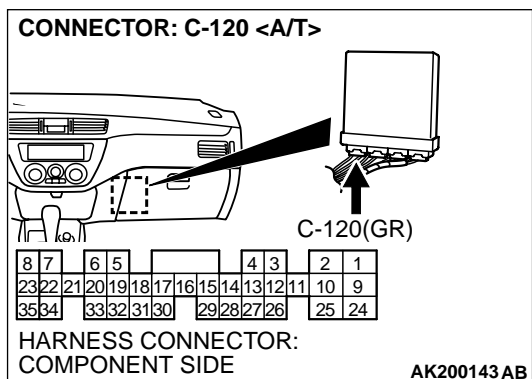
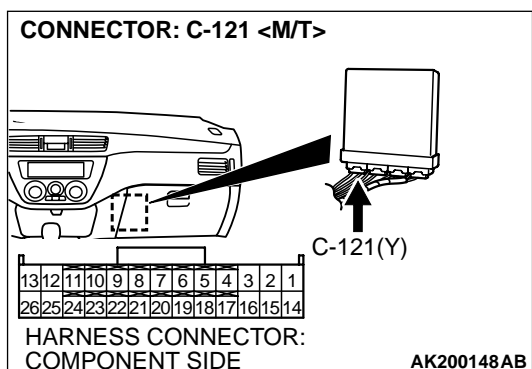
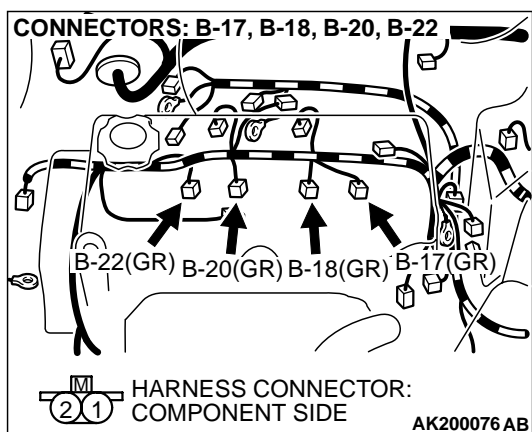


STEP 10. Check connector C-121 at ECM <M/T> or connector C-120 at PCM <A/T> for damage.

Q: Is the connector in good condition?

YES : Go to Step 11.

NO : Repair or replace it. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Then confirm that the malfunction symptom is eliminated.



STEP 11. Check for harness damage between injector connector and ECM <M/T> or PCM <A/T> connector.

- Check the harness wire between injector connector B-22 (terminal No. 2) and ECM connector C-121 (terminal No. 1) <M/T> or PCM connector C-120 (terminal No. 1) <A/T> when checking No. 1 cylinder.
- Check the harness wire between injector connector B-20 (terminal No. 2) and ECM connector C-121 (terminal No. 14) <M/T> or PCM connector C-120 (terminal No. 9) <A/T> when checking No. 2 cylinder.
- Check the harness wire between injector connector B-18 (terminal No. 2) and ECM connector C-121 (terminal No. 2) <M/T> or PCM connector C-120 (terminal No. 24) <A/T> when checking No. 3 cylinder.
- Check the harness wire between injector connector B-17 (terminal No. 2) and ECM connector C-121 (terminal No. 15) <M/T> or PCM connector C-120 (terminal No. 2) <A/T> when checking No. 4 cylinder.

Q: Is the harness wire in good condition?

YES : Check the following items, and repair or replace the defective items.

- Check the ignition coil, spark plugs, spark plug cables.
- Check if the injectors are clogged.
- Check compression pressure.
- Check fuel lines for clogging.
- Check if the foreign materials (water, kerosene, etc.) got into fuel.

Then confirm that the malfunction symptom is eliminated.

NO : Repair it. Then confirm that the malfunction symptom is eliminated.

INSPECTION PROCEDURE 7: Hard Starting

COMMENT

- In cases such as the above, the cause is usually either weak spark, improper air-fuel mixture or low compression.

TROUBLESHOOTING HINTS (The most likely causes for this case:)

- Malfunction of the ignition system.
- Malfunction of the injector system.
- Poor fuel quality. (Contamination)
- Poor compression.

DIAGNOSIS

Required Special Tool:

- MB991502: Scan Tool (MUT-II)

STEP 1. Measure the battery positive voltage.

- (1) Measure the battery positive voltage during cranking.
 - The voltage should remain greater than 8 volts while the engine is cranked.

Q: Dose the voltage remain greater than 8 volts while the engine is cranked?

YES : Go to Step 2.

NO : Refer to GROUP 54A, Batter – Battery check [P.54A-4](#).

STEP 2. Using scan tool MB991502, read the diagnostic trouble code (DTC).**⚠ CAUTION**

To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

- (1) Connect scan tool MB991502 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Read the DTC.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is DTC set?

YES : Refer to GROUP 13A, Diagnostic Trouble Code Chart [P.13Ab-19](#).

NO : Go to Step 3.

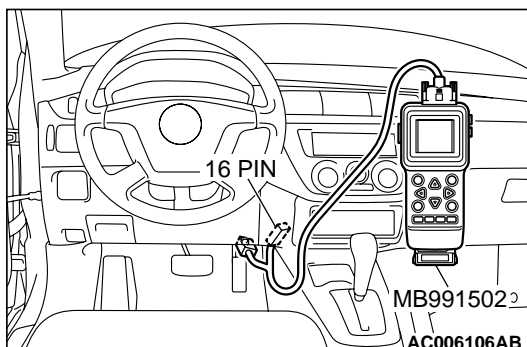
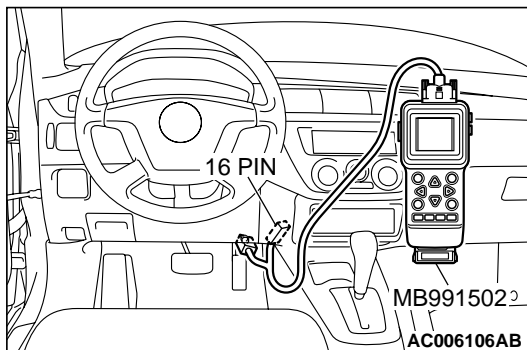
STEP 3. Using scan tool MB991502, check actuator test.

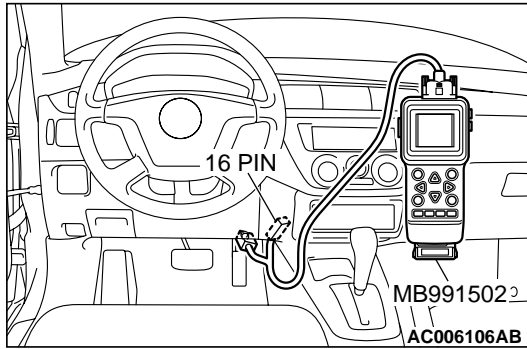
- (1) Turn the ignition switch to the "ON" position.
- (2) Check the following items in the actuator test. Refer to GROUP 13A, Actuator Test Reference Table [P.13Ab-34](#).
 - a. Item 07: Fuel Pump.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the actuator operating properly?

YES : Go to Step 4.

NO : Repair or Replace. Then confirm that the malfunction symptom is eliminated.

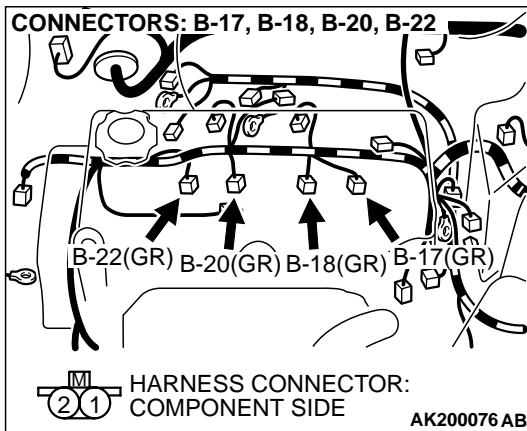


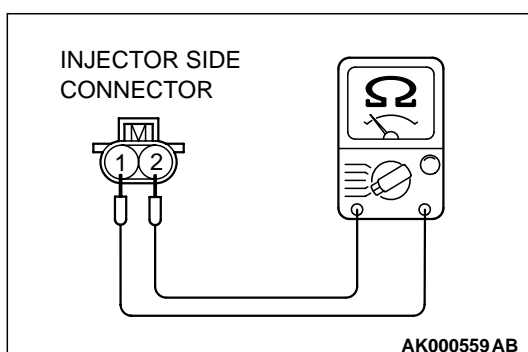
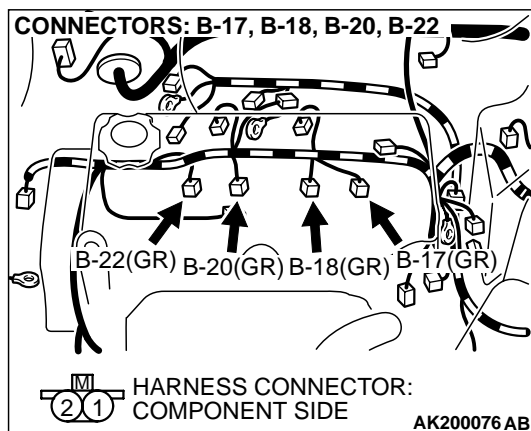
**STEP 4. Using scan tool MB991502, check data list.**

- (1) Turn the ignition switch the "ON" position.
- (2) Check the following items in the data list. Refer to GROUP 13A, Data List Reference Table [P.13Ab-25](#).
 - a. Item 21: Engine Coolant Temperature Sensor.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the sensor operating properly?**YES :** Go to Step 5.**NO :** Repair or Replace. Then confirm that the malfunction symptom is eliminated.**STEP 5. Check the ignition timing.**

- (1) Check the ignition timing at cranking.

Standard value: $5^{\circ}\text{BTDC} \pm 3^{\circ}$ **Q: Is the ignition timing normal?****YES :** Go to Step 6.**NO :** Check that the crankshaft position sensor and timing belt cover are in the correct position. Then confirm that the malfunction symptom is eliminated.**STEP 6. Check harness connectors B-22 or B-20 or B-18 or B-17 at injector for damage.****Q: Is the harness connector in good condition?****YES :** Go to Step 7.**NO :** Repair or replace it. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Then confirm that the malfunction symptom is eliminated.

**STEP 7. Check the injector.**

(1) Disconnect the injector connectors B-17, B-18, B-20, B-22.

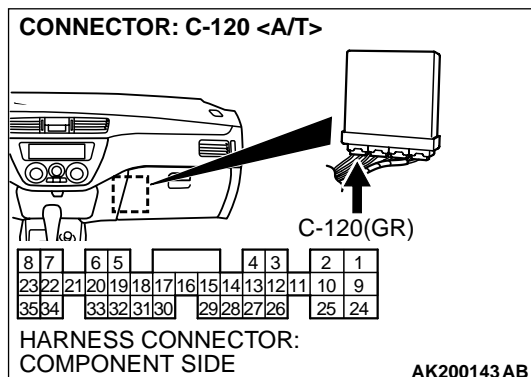
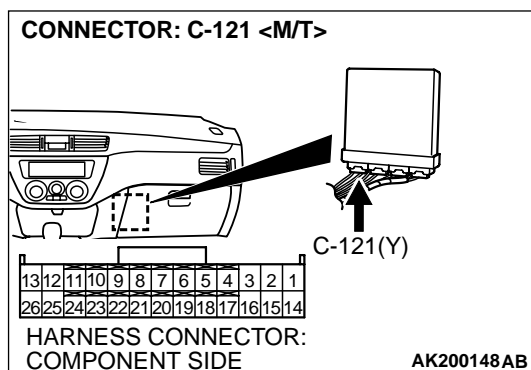
(2) Measure the resistance between each injector side connector terminal No. 1 and No. 2.

Standard value: 13 – 16 ohms [at 20°C (68°F)]

Q: Is the resistance between 13 and 16 ohms [at 20°C (68°F)]?

YES : Go to Step 8.

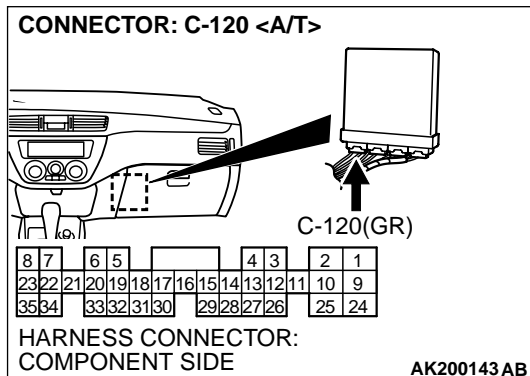
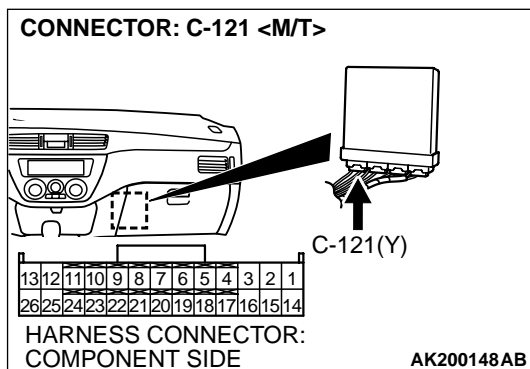
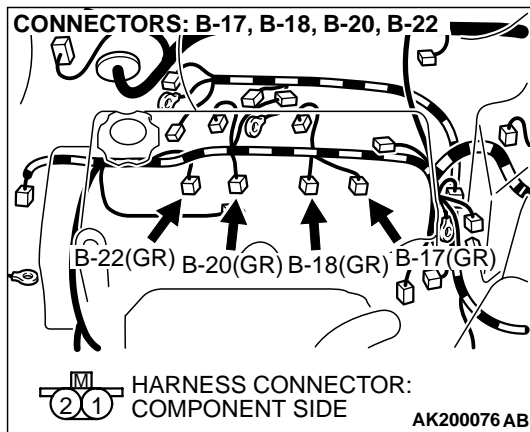
NO : Replace the injector. Then confirm that the malfunction symptom is eliminated.

**STEP 8. Check connector C-121 at ECM <M/T> or connector C-120 at PCM <A/T> for damage.**

Q: Is the connector in good condition?

YES : Go to Step 9.

NO : Repair or replace it. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Then confirm that the malfunction symptom is eliminated.



STEP 9. Check for harness damage between injector connector and ECM <M/T> or PCM <A/T> connector.

- Check the harness wire between injector connector B-22 (terminal No. 2) and ECM connector C-121 (terminal No. 1) <M/T> or PCM connector C-120 (terminal No. 1) <A/T> when checking No. 1 cylinder.
- Check the harness wire between injector connector B-20 (terminal No. 2) and ECM connector C-121 (terminal No. 14) <M/T> or PCM connector C-120 (terminal No. 9) <A/T> when checking No. 2 cylinder.
- Check the harness wire between injector connector B-18 (terminal No. 2) and ECM connector C-121 (terminal No. 2) <M/T> or PCM connector C-120 (terminal No. 24) <A/T> when checking No. 3 cylinder.
- Check the harness wire between injector connector B-17 (terminal No. 2) and ECM connector C-121 (terminal No. 15) <M/T> or PCM connector C-120 (terminal No. 2) <A/T> when checking No. 4 cylinder.

Q: Is the harness wire in good condition?

YES : Check the following items, and repair or replace the defective items.

- Check the ignition coil, spark plugs, spark plug cables.
- Check if the injectors are clogged.
- Check compression pressure.
- Check if the foreign materials (water, kerosene, etc.) got into fuel.

Then confirm that the malfunction symptom is eliminated.

NO : Repair it. Then confirm that the malfunction symptom is eliminated.

INSPECTION PROCEDURE 8: Unstable Idle (Rough Idle, Hunting)

COMMENT

- In cases such as the above, the cause is probably the air/fuel mixture or idle air control motor. Other systems affecting idle quality include the ignition system and compression.

TROUBLESHOOTING HINTS (The most likely causes for this case:)

- Malfunction of the ignition system.

- Malfunction of air/fuel ratio control system.
- Malfunction of the IAC system.
- Malfunction of the evaporative emission purge solenoid system.
- Poor compression pressure.
- Vacuum leak.
- Malfunction of the EGR solenoid system.

DIAGNOSIS**Required Special Tool:**

- MB991502: Scan Tool (MUT-II)

STEP 1. Check if the battery terminal is disconnected.**Q: Has the battery terminal been disconnected lately?**

YES : Start the engine and let it run at idle for approximate 10 minutes after engine warm up. Then, if a malfunction occurs, go to Step 2.

NO : Go to Step 2.

STEP 2. Using scan tool MB991502, read the diagnostic trouble code (DTC).**⚠ CAUTION**

To prevent damage to scan tool MB991502, always turn the ignition switch is to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

- (1) Connect scan tool MB991502 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Read the DTC.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is DTC set?

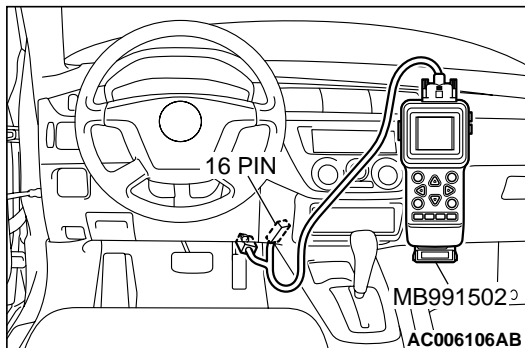
YES : Refer to GROUP 13A, Diagnostic Trouble Code Chart [P.13Ab-19](#).

NO : Go to Step 3.

STEP 3. Check the engine idling state.**Q: Is it hunting remarkably?**

YES : Go to Step 4.

NO : Go to Step 5.



STEP 4. Check the following items.

- (1) Carry out the following cleaning.
 - a. Clean the throttle valve area (Refer to GROUP 13A, On-vehicle Service – Throttle Body Cleaning. [P.13Aa-11](#)).
- (2) After cleaning, confirm that the malfunction symptom is eliminated.

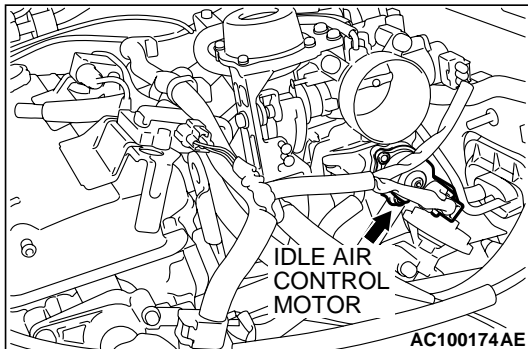
Q: Is the malfunction symptom resolved?

YES : The check is completed.

NO : Check the following items, and repair or replace the defective items.

- a. Broken intake manifold gasket.
- b. Broken air intake hose.
- c. Broken vacuum hose.
- d. Positive crankcase ventilation valve does not operate.

Then confirm that the malfunction symptom is eliminated.

**STEP 5. Check the idle air control (IAC) motor operation sound.**

- (1) Check that the engine coolant temperature is 20°C (68°F) or below.

NOTE: Disconnecting the engine coolant temperature sensor connector and connecting the harness side of the connector to another engine coolant temperature sensor that is at 20°C (68°F) or below is also okay.

- (2) Check the operation sound of the IAC motor can be heard after the ignition is switched to the "ON" position (but without starting the engine).

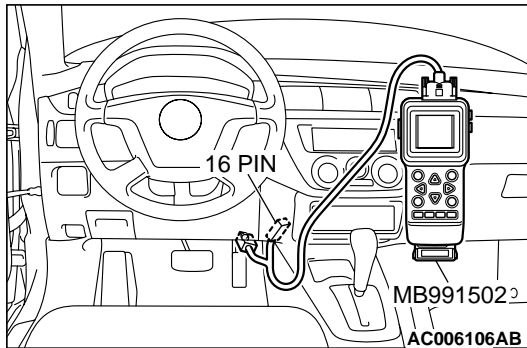
- An operation sound is heard.

- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Did you hear the operation sound?

YES : Go to Step 6.

NO : Refer to GROUP 13A, DTC P0506 – Idle Control System RPM Lower Than Expected [P.13Ac-490](#), DTC P0507 – Idle Control System RPM Higher Than Expected [P.13Ac-502](#).



STEP 6. Using scan tool MB991502, check actuator test items 01, 02, 03, 04: Injector.

⚠ CAUTION

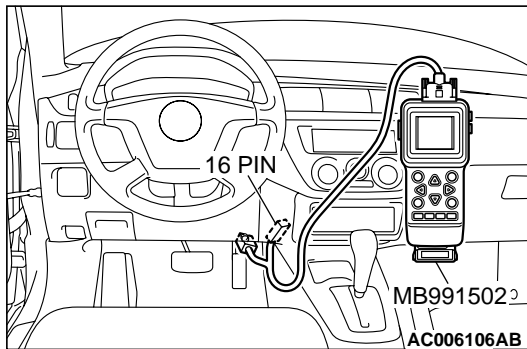
To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

- (1) Connect scan tool MB991502 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Check following items in the actuator test. Refer to GROUP 13A, Actuator Test Reference Table [P.13Ab-34](#).
 - a. Items 01, 02, 03, 04: Injector.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the actuator operating properly?

YES : Go to Step 7.

NO : Refer to GROUP 13A, DTC P0201, P0202, P0203, P0204 – Injector Circuit [P.13Ac-254](#).



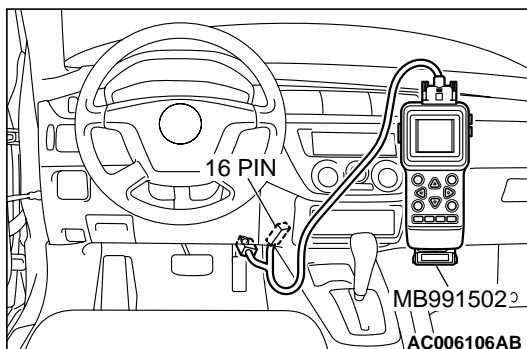
STEP 7. Using scan tool MB991502, check data list.

- (1) Turn the ignition switch to the "ON" position.
- (2) Check the following items in the data list. Refer to GROUP 13A, Data List Reference Table [P.13Ab-25](#).
 - a. Item 13: Intake Air Temperature Sensor.
 - b. Item 25: Barometric Pressure Sensor.
 - c. Item 21: Engine Coolant Temperature Sensor.
 - d. Item 59: Heated Oxygen Sensor (rear).
 - e. Item 11: Heated Oxygen Sensor (front).
 - f. Item 27: Power Steering Pressure Switch.
 - g. Item 28: A/C Switch.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Are they operating properly?

YES : Go to Step 8.

NO : Repair or replace. Then confirm that the malfunction symptom is eliminated.



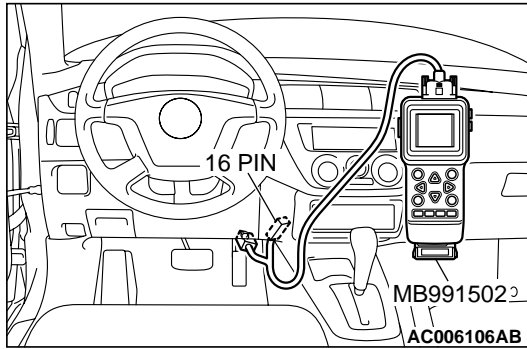
STEP 8. Using scan tool MB991502, check actuator test.

- (1) Turn the ignition switch to the "ON" position.
- (2) Check the following items in the actuator test. Refer to GROUP 13A, Actuator Test Reference Table [P.13Ab-34](#).
 - a. Item 08: Evaporative Emission Purge Solenoid.
 - b. Item 10: EGR Solenoid.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Are they operating properly?

YES : Go to Step 9.

NO : Repair or replace. Then confirm that the malfunction symptom is eliminated.

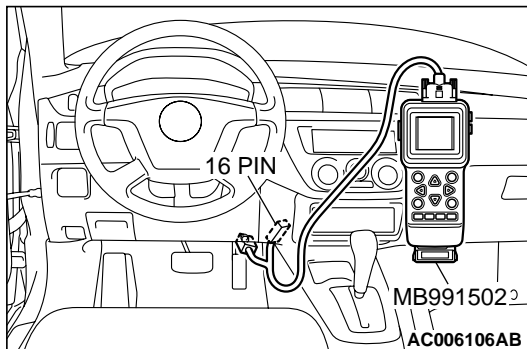
**STEP 9. Using scan tool MB991502, check data list.**

- (1) Turn the ignition switch to the "ON" position.
- (2) Check the following items in the data list. Refer to GROUP 13A, Data List Reference Table [P.13Ab-25](#).
 - a. Item 45: Idle Air Control Motor Position.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the actuator operating properly?

YES : Go to Step 10.

NO : Adjust the basic idle speed. Refer to GROUP 13A, On-vehicle Service – Basic Idle Speed Adjustment [P.13Aa-13](#). After adjusting, confirm.

**STEP 10. Using scan tool MB991502, check data list.**

- (1) Turn the ignition switch to the "ON" position.
- (2) Check the following items of the data list. Refer to, Data List Reference Table [P.13Ab-25](#).
 - a. Item 11: Heated Oxygen Sensor (front).
 - Voltage should fluctuate between 0 – 0.4 volt and 0.6 – 1.0 volt while idling after the engine has been warmed.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the sensor operating properly?

YES : Go to Step 12.

NO : Go to Step 11.

STEP 11. Check the fuel pressure.

Refer to GROUP 13A, On-vehicle Service – Fuel Pressure Test [P.13Aa-14](#).

Q: Is the fuel pressure normal?

YES : Check the following items, and repair or replace the defective items.

a. Vacuum leak.

- Broken intake manifold gasket.
- Broken air intake hose.
- Broken vacuum hose.
- Positive crankcase ventilation valve does not operate.

b. Injector clogged.

Then confirm that the malfunction symptom is eliminated.

NO : Repair or replace. Then confirm that the malfunction symptom is eliminated.

STEP 12. Check the ignition timing.

Refer to GROUP 11A, On-vehicle Service – Ignition Timing
Check [P.11A-5](#).

Q: Is the ignition timing normal?

YES : Check the following items, and repair or replace the defective items.

- Check the ignition coil, spark plugs, spark plug cables.
- Check the purge control system.
- Check compression pressure.
- Check if the foreign materials (water, kerosene, etc.) got into fuel.
- Check the EGR control system.

Then confirm that the malfunction symptom is eliminated.

NO : Check that the crankshaft position sensor and timing belt cover are in the correct position. Then confirm that the malfunction symptom is eliminated.

INSPECTION PROCEDURE 9: Idle Speed Is High (Improper Idle Speed)**COMMENT**

- In such cases as the above, the cause is probably that the intake air volume during idle is too great.

TROUBLESHOOTING HINTS (The most likely causes for this case:)

- Malfunction of the IAC system.
- Malfunction of the throttle body.

DIAGNOSIS**Required Special Tool:**

- MB991502: Scan Tool (MUT-II)

STEP 1. Using scan tool MB991502, read the diagnostic trouble code (DTC).**⚠ CAUTION**

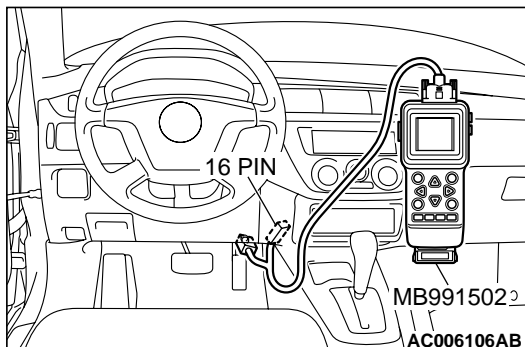
To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

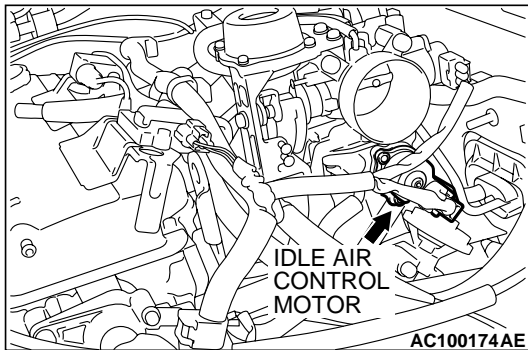
- Connect scan tool MB991502 to the data link connector.
- Turn the ignition switch to the "ON" position.
- Read the DTC.
- Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is DTC set?

YES : Refer to GROUP 13A, Diagnostic Trouble Code Chart
[P.13Ab-19](#).

NO : Go to Step 2.





STEP 2. Check the idle air control (IAC) motor operation sound.

- (1) Check that the engine coolant temperature is 20°C (68°F) or below.

NOTE: Disconnecting the engine coolant temperature sensor connector and connecting the harness side of the connector to another engine coolant temperature sensor that is at 20°C (68°F) or below is also okay.

- (2) Check the operation sound of the IAC motor can be heard after the ignition is switched to the "ON" position (but without starting the engine).

- An operation sound should be heard.

- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Did you hear the operation sound?

YES : Go to Step 3.

NO : Refer to GROUP 13A, DTC P0506 – Idle Control System RPM Lower Than Expected [P.13Ac-490](#), DTC P0507 – Idle Control System RPM Higher Than Expected [P.13Ac-502](#).

STEP 3. Using scan tool MB991502, check data list.

⚠ CAUTION

To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

- (1) Connect scan tool MB991502 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Check the following items in the data list. Refer to GROUP 13A, Data List Reference Table [P.13Ab-25](#).
 - a. Item 21: Engine Coolant Temperature Sensor.
 - b. Item 28: A/C Switch.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Are they operating properly?

YES : Go to Step 4.

NO : Repair or replace. Then confirm that the malfunction symptom is eliminated.

STEP 4. Adjust the basic idle speed.

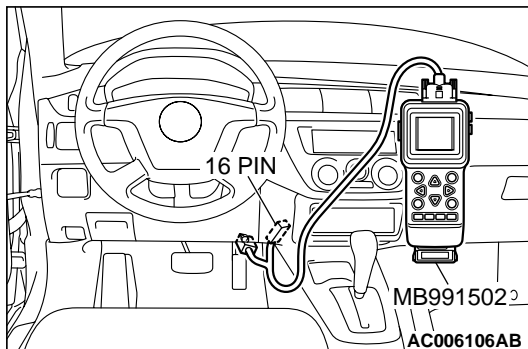
Refer to GROUP 13A, On-vehicle Service – Basic Idle Speed Adjustment for the adjustment procedure [P.13Aa-13](#).

Standard value: 700 ± 50 r/min

Q: Is the Idle speed normal?

YES : Refer to GROUP 13A, On-vehicle Service – Clean the throttle valve area [P.13Aa-11](#).

NO : The check is completed.



INSPECTION PROCEDURE 10: Idle Speed Is Low (Improper Idle Speed)

COMMENT

- In cases such as the above, the cause is probably that the intake air volume during idle is too small.

TROUBLESHOOTING HINTS (The most likely causes for this case:)

- Malfunction of the IAC system.
- Malfunction of the throttle body.

DIAGNOSIS**Required Special Tool:**

- MB991502: Scan Tool (MUT-II)

STEP 1. Using scan tool MB991502, read the diagnostic trouble code (DTC).

⚠ CAUTION

To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

- (1) Connect scan tool MB991502 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Read the DTC.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is DTC set?

YES : Refer to GROUP 13A, Diagnostic Trouble Code Chart [P.13Ab-19](#).

NO : Go to Step 2.

STEP 2. Check the idle air control (IAC) motor operation sound.

- (1) Check that the engine coolant temperature is 20°C (68°F) or below.

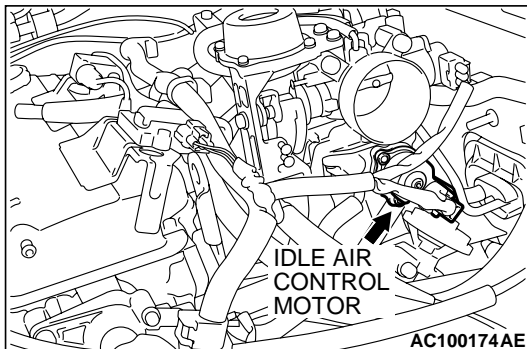
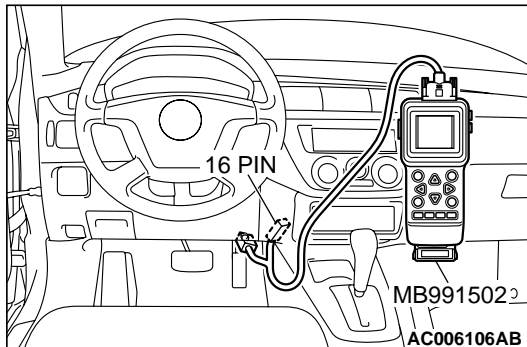
NOTE: If necessary, you can disconnect the engine coolant temperature sensor connector and connect the harness side of the connector to another engine coolant temperature sensor that is at 20°C (68°F) or below.

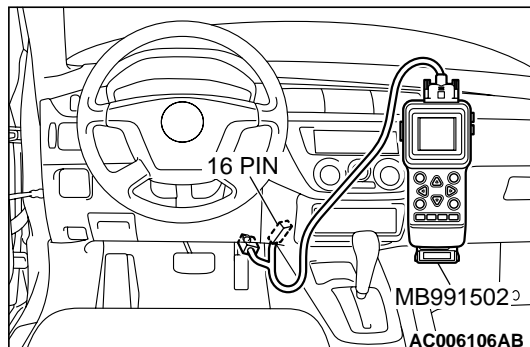
- (2) Check that the operation sound of the IAC motor can be heard after the ignition is switched to the "ON" position (but without starting the engine).
 - An operation sound should be heard.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Did you hear the operation sound?

YES : Go to Step 3.

NO : Refer to GROUP 13A, DTC P0506 – Idle Control System RPM Lower Than Expected [P.13Ac-490](#), DTC P0507 – Idle Control System RPM Higher Than Expected [P.13Ac-502](#).



**STEP 3. Using scan tool MB991502, check data list.****⚠ CAUTION**

To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

- (1) Connect scan tool MB991502 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Check the following items in the data list. Refer to GROUP 13A, Data List Reference Table [P.13Ab-25](#).
 - a. Item 21: Engine Coolant Temperature Sensor.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Are they operating properly?

YES : Go to Step 4.

NO : Repair or replace. Then confirm that the malfunction symptom is eliminated.

STEP 4. Adjust the basic idle speed.

Refer to GROUP 13A, On-vehicle Service – Basic Idle Speed Adjustment for the adjustment procedure [P.13Aa-13](#).

Standard value: 700 ± 50 r/min

Q: Is the idle speed normal?

YES : Refer to GROUP 13A, On-vehicle Service – Clean the throttle valve area [P.13Aa-11](#).

NO : The check is completed.

INSPECTION PROCEDURE 11: When the Engine Is Cold, It Stalls at Idle (Die Out)

COMMENT

- In such cases as the above, the air/fuel mixture may be inappropriate when the engine is cold.

TROUBLESHOOTING HINTS (The most likely causes for this case:)

- Malfunction of the IAC system.
- Malfunction of the throttle body.
- Malfunction of the injector system.
- Malfunction of the ignition system.

DIAGNOSIS**Required Special Tool:**

- MB991502: Scan Tool (MUT-II)

STEP 1. Check if the battery terminal is disconnected.**Q: Has the battery terminal been disconnected lately?**

YES : Start the engine and let it run at idle for approximate 10 minutes after engine warm up. Then, if a malfunction occurs, go to step 2.

NO : Go to Step

STEP 2. Using scan tool MB991502, read the diagnostic trouble code (DTC).**⚠ CAUTION**

To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

- (1) Connect scan tool MB991502 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Read the DTC.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is DTC set?

YES : Refer to GROUP 13A, Diagnostic Trouble Code Chart [P.13Ac-69](#).

NO : Go to Step 3.

STEP 3. Checking by operating the accelerator pedal.**Q: Does the engine stall right after the accelerator pedal is released?**

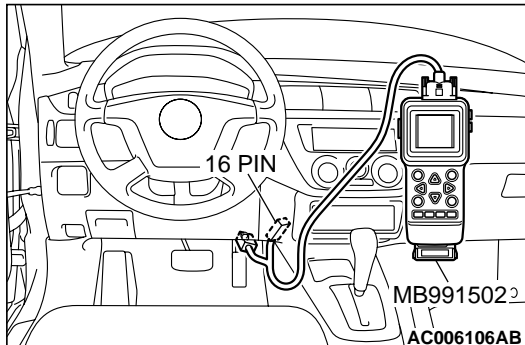
YES : Refer to GROUP 13A, On-vehicle Service – Clean the throttle valve area [P.13Aa-11](#).

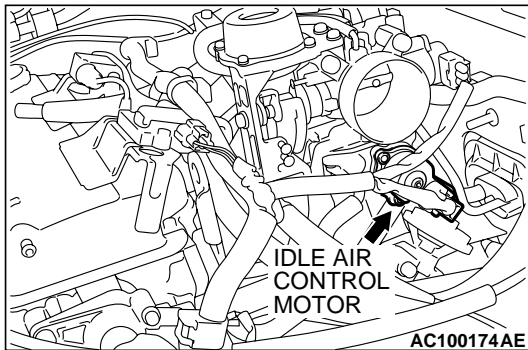
NO : Go to Step 4.

STEP 4. Check the engine idling.**Q: Is the idling good enough after warm up?**

YES : Go to Step 5.

NO : Refer to, INSPECTION PROCEDURE 8 – Unstable Idle (Rough Idle, Hunting) [P.13Ad-33](#).





STEP 5. Check the idle air control (IAC) motor operation sound.

- (1) Check that the engine coolant temperature is 20°C (68°F) or below.

NOTE: If necessary, you can disconnect the engine coolant temperature sensor connector and connect the harness side of the connector to another engine coolant temperature sensor that is at 20°C (68°F) or below.

- (2) Check the operation sound of the IAC motor can be heard after the ignition is switched to the "ON" position (but without starting the engine).

- An operation sound should be heard.

- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Did you hear the operation sound?

YES : Go to Step 6.

NO : Refer to GROUP 13A, DTC P0506 – Idle Control System RPM Lower Than Expected [P.13Ac-490](#), DTC P0507 – Idle Control System RPM Higher Than Expected [P.13Ac-502](#).

STEP 6. Using scan tool MB991502, check actuator test items 01, 02, 03, 04: Injector.

⚠ CAUTION

To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

- (1) Connect scan tool MB991502 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Check following items in the actuator test. Refer to GROUP 13A, Actuator Test Reference Table [P.13Ab-34](#).
 - a. Items 01, 02, 03, 04: Injector.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the actuator operating properly?

YES : Go to Step 7.

NO : Refer to GROUP 13A, DTC P0201, P0202, P0203, P0204 – Injector Circuit [P.13Ac-254](#).

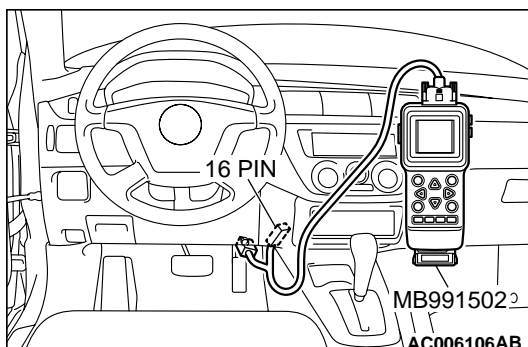
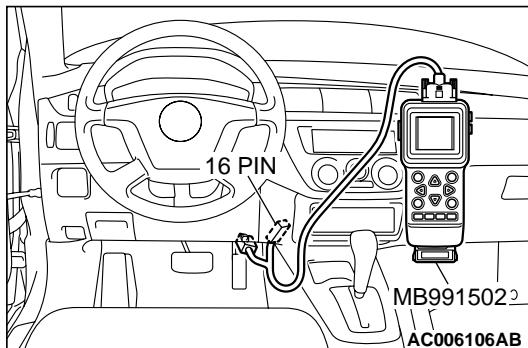
STEP 7. Using scan tool MB991502, check data list.

- (1) Turn the ignition switch to the "ON" position.
- (2) Check the following items in the data list. Refer to GROUP 13A, Data List Reference Table [P.13Ab-25](#).
 - a. Item 21: Engine Coolant Temperature Sensor.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the sensor operating properly?

YES : Go to Step 8.

NO : Repair or replace. Then confirm that the malfunction symptom is eliminated.



STEP 8. Check the fuel pressure.

Refer to GROUP 13A, On-vehicle Service – Fuel Pressure Test [P.13Aa-14](#).

Q: Is the fuel pressure normal?

YES : Go to Step 9.

NO : Repair or replace. Then confirm that the malfunction symptom is eliminated.

STEP 9. Check the ignition timing.

Refer to GROUP 11A, On-vehicle Service – Ignition Timing Check [P.11A-5](#).

Q: Is the ignition timing normal?

YES : Check the following items, and repair or replace the defective items.

- a. Check the ignition coil, spark plugs, spark plug cables.
- b. Check compression pressure.
- c. Check the engine oil viscosity.

Then confirm that the malfunction symptom is eliminated.

NO : Check that the crankshaft position sensor and timing belt cover are in the correct position. Then confirm that the malfunction symptom is eliminated.

INSPECTION PROCEDURE 12: When the Engine Is Hot, It Stalls at Idle (Die Out)

COMMENT

- In cases such as the above, the ignition system, air/fuel mixture, idle air control motor or compression pressure may be faulty. In addition, if the engine suddenly stalls, the cause may also be a loose connector.

TROUBLESHOOTING HINTS (The most likely causes for this case:)

- Malfunction of the ignition system.
- Malfunction of air/fuel ratio control system.
- Malfunction of the IAC system.
- Vacuum leak.
- Improper connector contact.

DIAGNOSIS**Required Special Tool:**

- MB991502: Scan Tool (MUT-II)

STEP 1. Check if the battery terminal is disconnected.**Q: Has the battery terminal been disconnected lately?**

YES : Start the engine and let it run at idle for approximate 10 minutes after engine warm up. Then, if a malfunction occurs, go to step 2.

NO : Go to Step 2.

STEP 2. Using scan tool MB991502, read the diagnostic trouble code (DTC).**⚠ CAUTION**

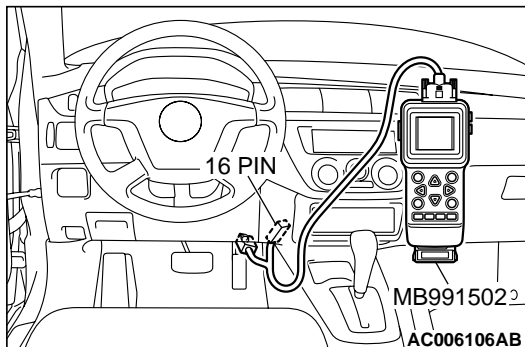
To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

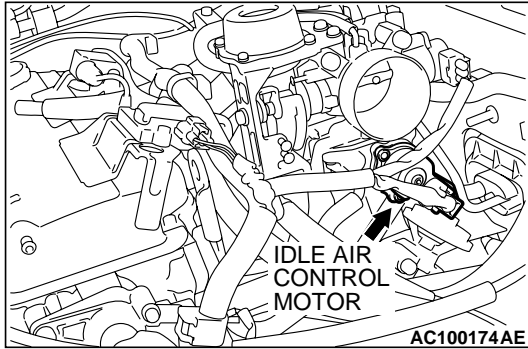
- (1) Connect scan tool MB991502 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Read the DTC.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is DTC set?

YES : Refer to GROUP 13A, Diagnostic Trouble Code Chart [P.13Ab-19](#).

NO : Go to Step 3.





STEP 3. Check the idle air control (IAC) motor operation sound.

- (1) Check that the engine coolant temperature is 20°C (68°F) or below.

NOTE: If necessary, you can disconnect the engine coolant temperature sensor connector and connect the harness side of the connector to another engine coolant temperature sensor that is at 20°C (68°F) or below.

- (2) Check that the operation sound of the IAC motor can be heard after the ignition is switched to the "ON" position (but without starting the engine).

- An operation sound should be heard.

- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Did you hear the operation sound?

YES : Go to Step 4

NO : Refer to GROUP 13A, DTC P0506 – Idle Control System RPM Lower Than Expected [P.13Ac-490](#), DTC P0507 – Idle Control System RPM Higher Than Expected [P.13Ac-502](#).

STEP 4. Using scan tool MB991502, check actuator test items 01, 02, 03, 04: Injector.

⚠ CAUTION

To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

- (1) Connect scan tool MB991502 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Check following items in the actuator test. Refer to GROUP 13A, Actuator Test Reference Table [P.13Ab-34](#).
 - a. Items 01, 02, 03, 04: Injector.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the actuator operating properly?

YES : Go to Step 5.

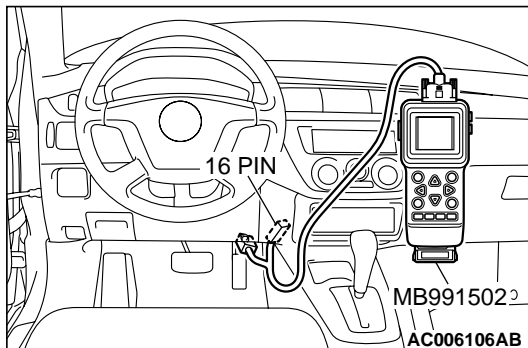
NO : Refer to GROUP 13A, DTC P0201, P0202, P0203, P0204 – Injector Circuit [P.13Ac-254](#).

STEP 5. Checking by operating the accelerator pedal.

Q: Does the engine stall right after the accelerator pedal is released?

YES : Refer to GROUP 13A, Clean the throttle valve area [P.13Aa-11](#).

NO : Go to Step 6.



STEP 6. Engine stall reproduction test.**Q: Is it easy to reproduce the engine stall?****YES :** Go to Step 7.**NO :** Check if the following signals change suddenly by wiggling the circuit harness and connectors.

- Crankshaft position sensor signal.
- Volume air flow sensor signal.
- Injector drive signal.
- Primary and secondary ignition signal.
- Fuel pump drive signal.
- PCM or ECM power supply voltage.

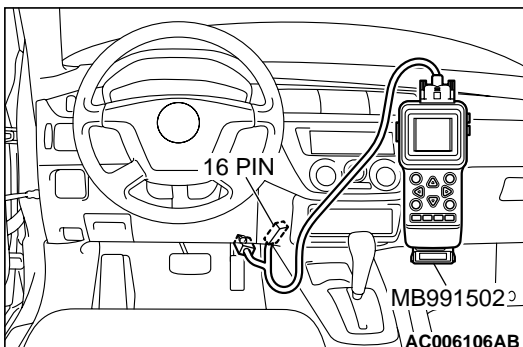
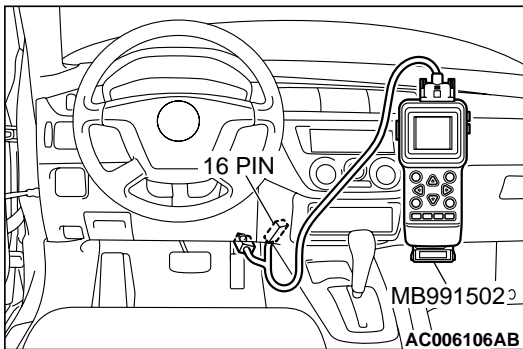
Repair or replace. Then confirm that the malfunction symptom is eliminated.

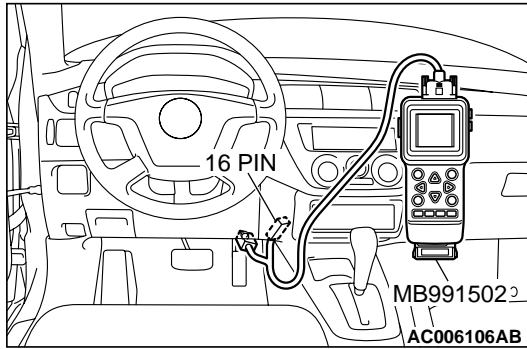
STEP 7. Using scan tool MB991502, check data list.**⚠ CAUTION****To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.**

- Connect scan tool MB991502 to the data link connector.
- Turn the ignition switch to the "ON" position.
- Check the following items in the data list. Refer to GROUP 13A, Data List Reference Table [P.13Ab-25](#).
 - Item 13: Intake Air Temperature Sensor.
 - Item 25: Barometric Pressure Sensor.
 - Item 21: Engine Coolant Temperature Sensor.
 - Item 59: Heated Oxygen Sensor (rear).
 - Item 11: Heated Oxygen Sensor (front).
 - Item 27: Power Steering Pressure Switch.
 - Item 28: A/C Switch.
- Turn the ignition switch to the "LOCK" (OFF) position.

Q: Are they operating properly?**YES :** Go to Step 8.**NO :** Repair or replace. Then confirm that the malfunction symptom is eliminated.**STEP 8. Using scan tool MB991502, check actuator test.**

- Turn the ignition switch to the "ON" position.
- Check the following items in the actuator test. Refer to GROUP 13A, Actuator Test Reference Table [P.13Ab-34](#).
 - Item 10: EGR Solenoid.
- Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the actuator operating properly?**YES :** Go to Step 9.**NO :** Repair or replace. Then confirm that the malfunction symptom is eliminated.

**STEP 9. Using scan tool MB991502, check data list.**

- (1) Turn the ignition switch to the "ON" position.
- (2) Check the following items of the data list. Refer to GROUP 13A, Data List Reference Table [P.13Ab-25](#).
 - a. Item 11: Heated Oxygen Sensor (front).
 - Fluctuates between 0 – 0.4 volt and 0.6 – 1.0 volt while idling after the engine has been warmed.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the sensor operating properly?**YES** : Go to Step 12.**NO** : Go to Step 10.**STEP 10. Check the fuel pressure.**Refer to GROUP 13A, Fuel Pressure Test [P.13Aa-14](#).**Q: Is the fuel pressure normal?****YES** : Go to Step 11.**NO** : Repair or replace. Then confirm that the malfunction symptom is eliminated.**STEP 11. Using scan tool MB991502, check data list.****⚠ CAUTION**

To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

- (1) Connect scan tool MB991502 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Check the following items in the data list. Refer to GROUP 13A, Data List Reference Table [P.13Ab-25](#).
 - a. Item 45: Idle Air Control Motor Position.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the actuator operating properly?**YES** : Check the following items, and repair or replace the defective items.

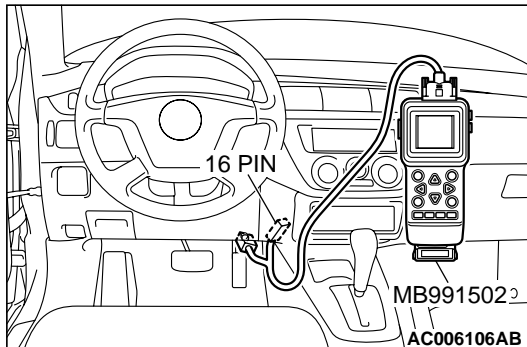
a. Vacuum leak.

- Broken intake manifold gasket.
- Broken air intake hose.
- Broken vacuum hose.
- Positive crankcase ventilation valve does not operate.

b. Injector clogged.

Then confirm that the malfunction symptom is eliminated.

NO : Adjusting the basic idle speed. Refer to GROUP 13A, On-vehicle Service – Basic Idle Speed Adjustment [P.13Aa-13](#).



STEP 12. Check the ignition timing.

Refer to GROUP 11A, On-vehicle Service – Ignition Timing
Check [P.11A-5](#).

Q: Is the ignition timing normal?

YES : Check the following items, and repair or replace the defective items.

- Check the ignition coil, spark plugs, spark plug cables.
- Check if the injectors are clogged.
- Check compression pressure.
- Check if the foreign materials (water, kerosene, etc.) got into fuel.

Then confirm that the malfunction symptom is eliminated.

NO : Check that the crankshaft position sensor and timing cover are in the correct position. Then confirm that the malfunction symptom is eliminated.

INSPECTION PROCEDURE 13: The Engine Stalls when Accelerating (Pass Out)**COMMENT**

- In case such as the above, the cause is probably misfiring due to a weak spark, or an inappropriate air/fuel mixture when the accelerator pedal.

TROUBLESHOOTING HINTS (The most likely causes for this case:)

- Vacuum leak.
- Malfunction of the ignition system.

DIAGNOSIS**Required Special Tool:**

- MB991502: Scan Tool (MUT-II)

STEP 1. Using scan tool MB991502, read the diagnostic trouble code (DTC).**⚠ CAUTION**

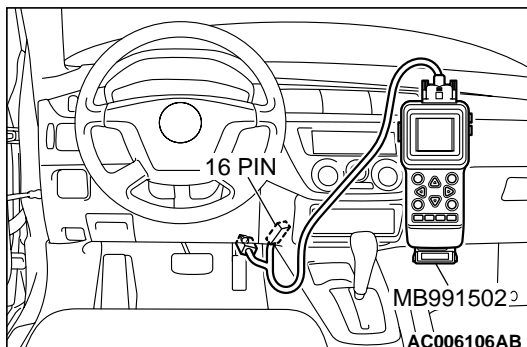
To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

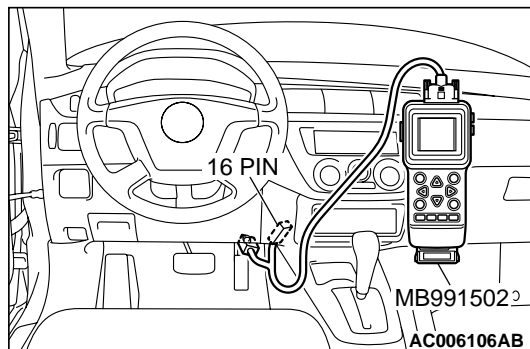
- Connect scan tool MB991502 to the data link connector.
- Turn the ignition switch to the "ON" position.
- Read the DTC.
- Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is DTC set?

YES : Refer to GROUP 13A, Diagnostic Trouble Code Chart
[P.13Ab-19](#).

NO : Go to Step 2.



**STEP 2. Using scan tool MB991502, check actuator test.**

- (1) Turn the ignition switch to the "ON" position.
- (2) Check the following items in the actuator test. Refer to GROUP 13A, Actuator Test Reference Table [P.13Ab-34](#).
 - a. Item 10: EGR Solenoid.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the actuator operating properly?

YES : Check the following items, and repair or replace the defective items.

- a. Check the ignition coil, spark plugs, spark plug cables.
- b. Check for vacuum leaks.
 - Broken intake manifold gasket.
 - Broken or disconnected vacuum hose.
 - Improper operation of the PCV valve.
 - Broken air intake hose.

Then confirm that the malfunction symptom is eliminated.

NO : Repair or replace. Then confirm that the malfunction symptom is eliminated.

INSPECTION PROCEDURE 14: The Engine Stalls when Decelerating

COMMENT

- The intake air volume may be insufficient due to a defective idle air control motor system.

TROUBLESHOOTING HINTS (The most likely causes for this case:)

- Malfunction of the IAC system.

DIAGNOSIS**Required Special Tool:**

- MB991502: Scan Tool (MUT-II)

STEP 1. Check if the battery terminal is disconnected.**Q: Has the battery terminal been disconnected lately?**

YES : Start the engine and let it run at idle for approximate 10 minutes after engine warm up. Then if a malfunction occurs, go to step 2.

NO : Go to Step 2.

STEP 2. Using scan tool MB991502, read the diagnostic trouble code (DTC).**⚠ CAUTION**

To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

- (1) Connect scan tool MB991502 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Read the DTC.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC is output?

YES : Refer to GROUP 13A, Diagnostic Trouble Code Chart [P.13Ab-19](#).

NO : Go to Step 3.

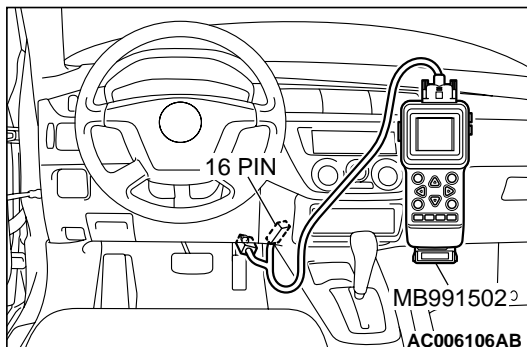
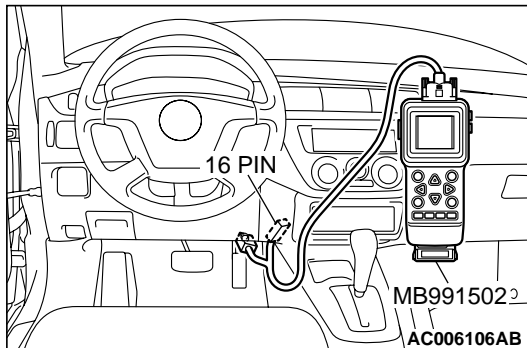
STEP 3. Using scan tool MB991502, check data list.

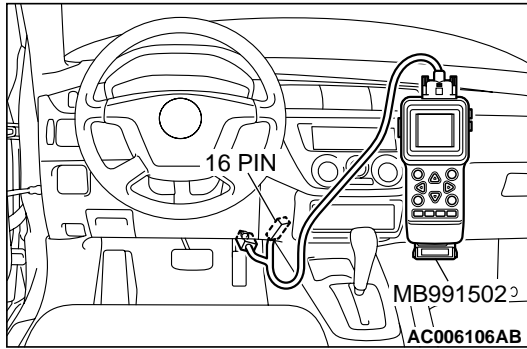
- (1) Turn the ignition switch to the "ON" position.
- (2) Check the following items in the data list. Refer to GROUP 13A, Data List Reference Table [P.13Ab-25](#).
 - a. Item 14: Throttle Position Sensor.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the sensor operating properly?

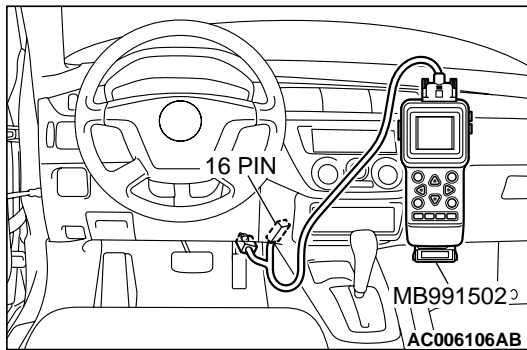
YES : Go to Step 4.

NO : Repair or replace. Then confirm that the malfunction symptom is eliminated.



**STEP 4. Using scan tool MB991502, check actuator test.**

- (1) Turn the ignition switch to the "ON" position.
- (2) Check the following items in the actuator test. Refer to GROUP 13A, Actuator Test Reference Table [P.13Ab-34](#).
 - a. Item 10: EGR Solenoid.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the actuator operating properly?**YES :** Go to Step 5.**NO :** Repair or replace. Then confirm that the malfunction symptom is eliminated.**STEP 5. Using scan tool MB991502, check data list item 45: Idle Air Control Position.**

- (1) Start the engine and run at idle.
- (2) Set scan tool MB991502 to the data reading mode for item 45, Idle Air Control Position.
 - a. The idle air control motor should drop to the 0 – 2 position during deceleration (from 1,000 r/min or more).
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the actuator operation properly?**YES :** Check the following items, and repair, replace or clean the defective sections.

- a. Check the ignition coil, spark plugs, spark plug cables.
- b. Check the throttle valve area. (Refer to GROUP 13A, On-vehicle Service – Throttle Body Cleaning [P.13Aa-11](#).)

Then confirm that the malfunction symptom is eliminated.

NO : Refer to, DTC P0500 – Vehicle Speed Sensor <M/T> [P.13Ac-480](#) or refer to GROUP 23A, Automatic Transaxle Diagnosis – Diagnostic Trouble Code Procedures – DTC 23 Output Shaft Speed Sensor System <A/T> [P.23Ab-26](#).

INSPECTION PROCEDURE 15: Hesitation, Sag or Stumble

COMMENT

- In cases such as the above, the ignition system, air/fuel mixture or compression pressure may be defective.

TROUBLESHOOTING HINTS (The most likely causes for this case:)

- Malfunction of the ignition system.
- Malfunction of air/fuel ratio control system.
- Malfunction of the fuel supply system.
- Malfunction of the EGR solenoid system.
- Poor compression pressure.

DIAGNOSIS

Required Special Tool:

- MB991502: Scan Tool (MUT-II)

STEP 1. Using scan tool MB991502, read the diagnostic trouble code (DTC).

CAUTION

To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

- (1) Connect scan tool MB991502 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Read the DTC.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is DTC set?

YES : Refer to GROUP 13A, Diagnostic Trouble Code Chart [P.13Ab-19](#).

NO : Go to Step 2.

STEP 2. Using scan tool MB991502, check actuator test items 01, 02, 03, 04: Injector.

- (1) Check following items in the actuator test. Refer to GROUP 13A, Actuator Test Reference Table [P.13Ab-34](#).
 - a. Items 01, 02, 03, 04: Injector.
- (2) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the actuator operating properly?

YES : Go to Step 3.

NO : Refer to GROUP 13A, DTC P0201, P0202, P0203, P0204 – Injector Circuit [P.13Ac-254](#).

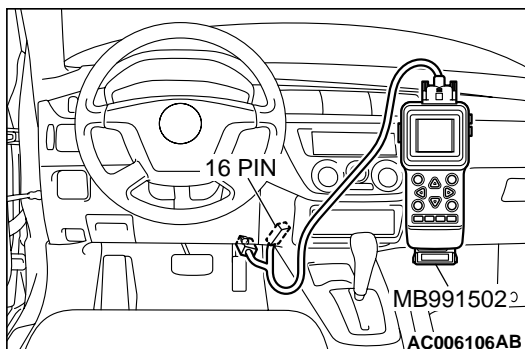
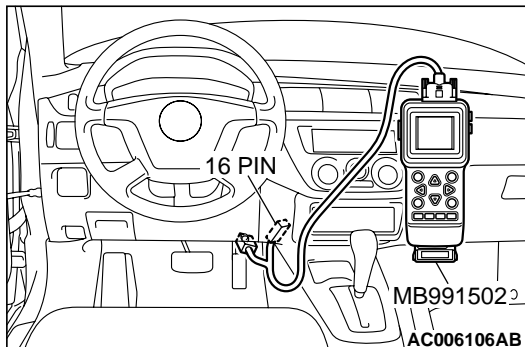
STEP 3. Check the ignition timing.

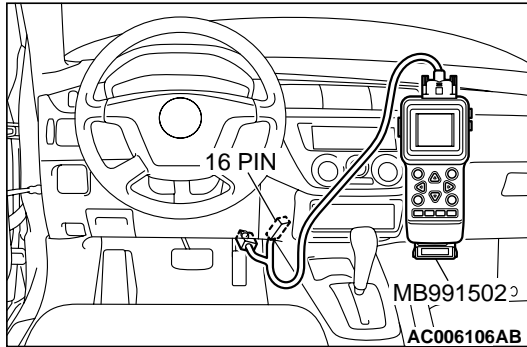
- (1) Refer to GROUP 11A, On-vehicle Service – Ignition Timing Check [P.11A-5](#).

Q: Is the ignition timing normal?

YES : Go to Step 4.

NO : Check that the crankshaft position sensor and timing belt cover are in the correct position. Then confirm that the malfunction symptom is eliminated.



**STEP 4. Using scan tool MB991502, check data list.****⚠ CAUTION**

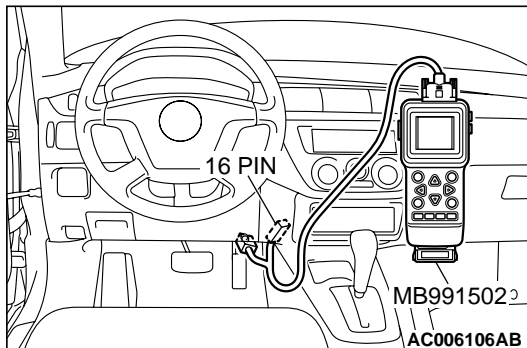
To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

- (1) Connect scan tool MB991502 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Check the following items in the data list. Refer to GROUP 13A, Data List Reference Table [P.13Ab-25](#).
 - a. Item 13: Intake Air Temperature Sensor.
 - b. Item 25: Barometric pressure Sensor.
 - c. Item 21: Engine Coolant Temperature Sensor.
 - d. Item 14: Throttle Position Sensor.
 - e. Item 59: Heated Oxygen Sensor (rear).
 - f. Item 11: Heated Oxygen Sensor (front).
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Are they operating properly?

YES : Go to Step 5.

NO : Repair or replace. Then confirm that the malfunction symptom is eliminated.

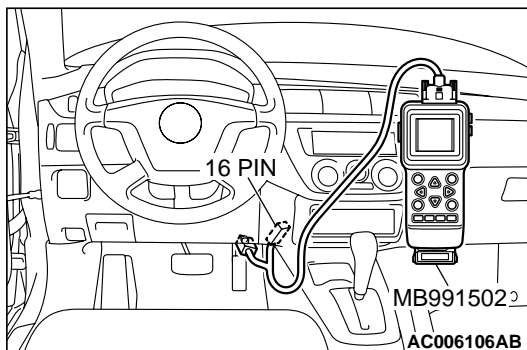
**STEP 5. Using scan tool MB991502, check actuator test.**

- (1) Turn the ignition switch to the "ON" position.
- (2) Check the following items in the actuator test. Refer to GROUP 13A, Actuator Test Reference Table [P.13Ab-34](#).
 - a. Item 10: EGR Solenoid.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the actuator operating properly?

YES : Go to Step 6.

NO : Repair or replace. Then confirm that the malfunction symptom is eliminated.

**STEP 6. Using scan tool MB991502, check data list.**

- (1) Turn the ignition switch to the "ON" position.
- (2) Check the following items of data list. Refer to GROUP 13A, Data List Reference Table [P.13Ab-25](#).
 - a. Item 11: Heated Oxygen Sensor (front).
 - Voltage should fluctuate between 0 – 0.4 volt and 0.6 – 1.0 volt while idling after the engine has warmed-up.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the sensor operating properly?

YES : Go to Step 8.

NO : Go to Step 7.

STEP 7. Check the fuel pressure.

Refer to GROUP 13A, On-vehicle Service – Fuel Pressure Test [P.13Aa-14](#).

Q: Is the fuel pressure normal?

YES : Check the following items, and repair or replace the defective items.

a. Vacuum leak.

- Broken intake manifold gasket.
- Broken air intake hose.
- Broken vacuum hose.
- Positive crankcase ventilation valve does not operate.

b. Injector clogged.

Then confirm that the malfunction symptom is eliminated.

NO : Repair or replace. Then confirm that the malfunction symptom is eliminated.

STEP 8. Check the fuel pressure.

Refer to, Fuel Pressure Test [P.13Aa-14](#).

Q: Is the fuel pressure normal?

YES : Check the following items, and repair or replace the defective items.

a. Check the ignition coil, spark plugs, spark plug cables.

b. Check the EGR system.

c. Check compression pressure.

d. Check the fuel filter or fuel line for clogging.

Then confirm that the malfunction symptom is eliminated.

NO : Repair or replace. Then confirm that the malfunction symptom is eliminated.

INSPECTION PROCEDURE 16: Acceleration Shock

COMMENT

- There may be an ignition leak accompanying the increase in the spark plug demand voltage during acceleration.

TROUBLESHOOTING HINTS (The most likely causes for this case:)

- Malfunction of the ignition system.

DIAGNOSIS**Required Special Tool:**

- MB991502: Scan Tool (MUT-II)

STEP 1. Using scan tool MB991502, read the diagnostic trouble code (DTC).

⚠ CAUTION

To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

- (1) Connect scan tool MB991502 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Read the DTC.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

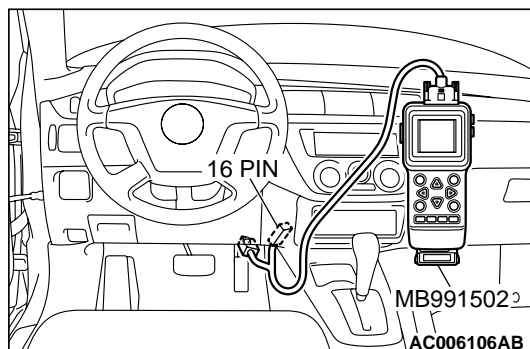
Q: Is DTC set?

YES : Refer to GROUP 13A, Diagnostic Trouble Code Chart [P.13Ab-19](#).

NO : Check the following items, and repair or replace the defective items.

- a. Check the ignition coil, spark plugs, spark plug cables.
- b. Check for occurrence of ignition leak.

Then confirm that the malfunction symptom is eliminated.



INSPECTION PROCEDURE 17: Deceleration Shock

COMMENT

- There may be a sudden change in air flow through the IAC, causing the vehicle to decelerate rapidly for an instant.

TROUBLESHOOTING HINTS (The most likely causes for this case:)

- Malfunction of the IAC system.

DIAGNOSIS**Required Special Tool:**

- MB991502: Scan Tool (MUT-II)

STEP 1. Using scan tool MB991502, read the diagnostic trouble code (DTC).**⚠ CAUTION**

To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

- (1) Connect scan tool MB991502 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Read the DTC.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is DTC set?

YES : Refer to GROUP 13A, Diagnostic Trouble Code Chart [P.13Ab-19](#).

NO : Go To Step 2.

STEP 2. Check the idle air control (IAC) motor operation sound.

- (1) Check that the engine coolant temperature is 20°C (68°F) or below.

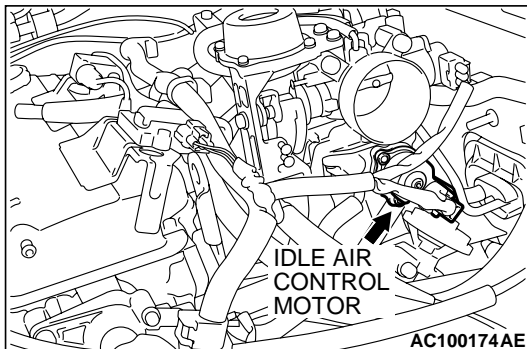
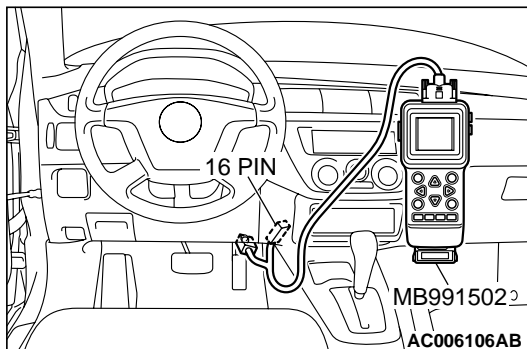
NOTE: If necessary, you can disconnect the engine coolant temperature sensor connector and connect the harness side of the connector to another engine coolant temperature sensor that is at 20°C (68°F) or below.

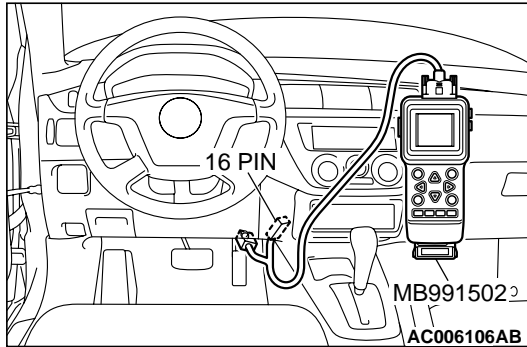
- (2) Check the operation sound of the IAC motor can be heard after the ignition is switched to the "ON" position (but without starting the engine).
 - An operation sound should heard.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Did you hear the operation sound?

YES : Go to Step 3.

NO : Refer to GROUP 13A, DTC P0506 – Idle Control System RPM Lower Than Expected [P.13Ac-490](#), DTC P0507 – Idle Control System RPM Higher Than Expected [P.13Ac-502](#).



**STEP 3. Using scan tool MB991502, check data list.****⚠ CAUTION**

To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

- (1) Connect scan tool MB991502 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Check the following items in the data list. Refer to GROUP 13A, Data List Reference Table [P.13Ab-25](#).
 - a. Item 14: Throttle Position Sensor.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the sensor operating properly?

YES : Refer to GROUP 13A, On-vehicle Service – Clean the throttle valve area [P.13Aa-11](#).

NO : Repair or replace. Then confirm that the malfunction symptom is eliminated.

INSPECTION PROCEDURE 18: Poor Acceleration**COMMENT**

- Defective ignition system, abnormal air/fuel ratio, poor compression pressure, etc. are suspected.

TROUBLESHOOTING HINTS (The most likely causes for this case:)

- Malfunction of the ignition system.
- Malfunction of air/fuel ratio control system.
- Malfunction of the fuel supply system.
- Poor compression pressure.
- Clogged exhaust system.

DIAGNOSIS**Required Special Tool:**

- MB991502: Scan Tool (MUT-II)

STEP 1. Using scan tool MB991502, read the diagnostic trouble code (DTC).**⚠ CAUTION**

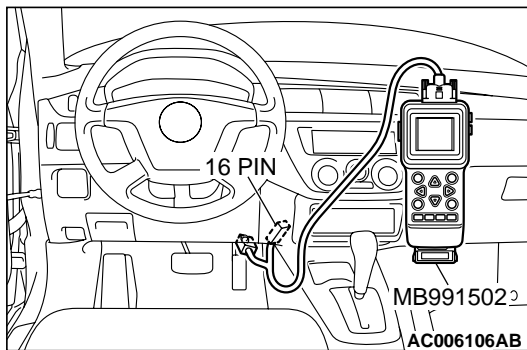
To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

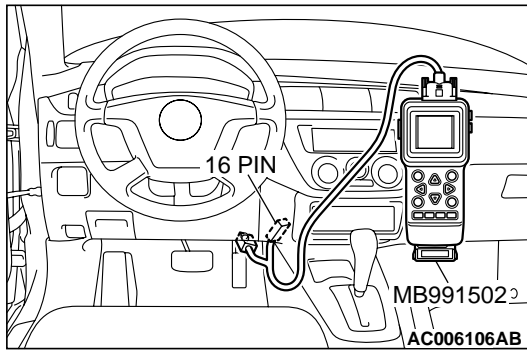
- (1) Connect scan tool MB991502 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Read the DTC.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is DTC set?

YES : Refer to GROUP 13A, Diagnostic Trouble Code Chart [P.13Ab-19](#).

NO : Go to Step 2.





STEP 2. Using scan tool MB991502, check actuator test items 01, 02, 03, 04: Injector.

- (1) Turn the ignition switch to the "ON" position.
- (2) Check following items in the actuator test. Refer to GROUP 13A, Actuator Test Table [P.13Ab-34](#).
 - a. Items 01, 02, 03, 04: Injector.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the actuator operating properly?

YES : Go to Step 3.

NO : Refer to GROUP 13A, DTC P0201, P0202, P0203, P0204 – Injector Circuit [P.13Ac-254](#).

STEP 3. Check the ignition timing.

Refer to GROUP 11A, On-vehicle Service – Ignition Timing Check [P.11A-5](#).

Q: Is the ignition timing normal?

YES : Go to Step 4.

NO : Check that the crankshaft position sensor and timing belt cover are in the correct position. Then confirm that the malfunction symptom is eliminated.

STEP 4. Using scan tool MB991502, check data list.

⚠ CAUTION

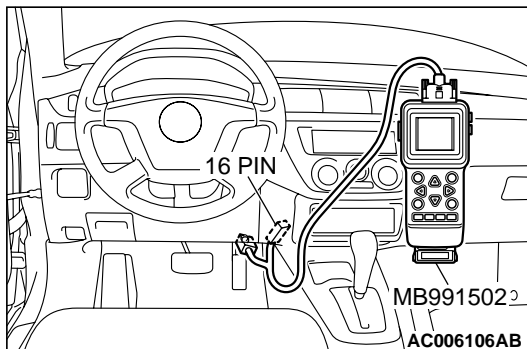
To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

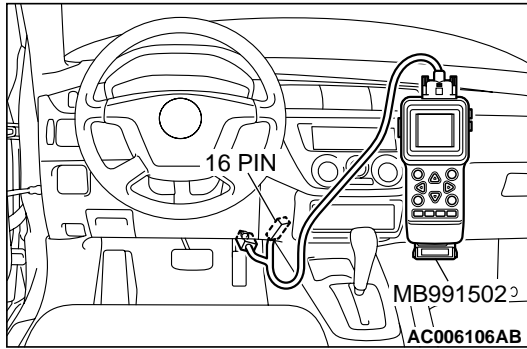
- (1) Connect scan tool MB991502 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Check the following items in the data list. Refer to GROUP 13A, Data List Reference Table [P.13Ab-25](#).
 - a. Item 13: Intake Air Temperature Sensor.
 - b. Item 25: Barometric Pressure Sensor.
 - c. Item 21: Engine Coolant Temperature Sensor.
 - d. Item 14: Throttle Position Sensor.
 - e. Item 59: Heated Oxygen Sensor (rear).
 - f. Item 11: Heated Oxygen Sensor (front).
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Are they operating properly?

YES : Go to Step 5.

NO : Repair or replace. Then confirm that the malfunction symptom is eliminated.



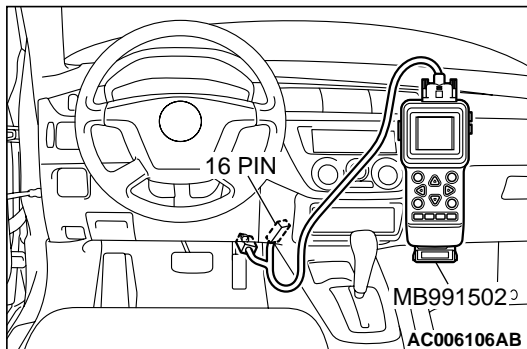
**STEP 5. Using scan tool MB991502, check actuator test.**

- (1) Turn the ignition switch to the "ON" position.
- (2) Check the following items in the actuator test. Refer to GROUP 13A, Actuator Test Reference Table [P.13Ab-34](#).
 - a. Item 10: EGR Solenoid.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Are they operating properly?

YES : Go to Step 6.

NO : Repair or replace. Then confirm that the malfunction symptom is eliminated.

**STEP 6. Using scan tool MB991502, check data list.**

- (1) Turn the ignition switch to the "ON" position.
- (2) Check the following items of data list. Refer to GROUP 13A, Data List Reference Table [P.13Ab-25](#).
 - a. Item 11: Heated Oxygen Sensor (front).
 - Voltage should fluctuate between 0 – 0.4 volt and 0.6 – 1.0 volt while idling after the engine has been warmed.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the sensor operating properly?

YES : Go to Step 8.

NO : Go to Step 7.

STEP 7. Check the fuel pressure.

Refer to GROUP 13A, On-vehicle Service – Fuel Pressure Test [P.13Aa-14](#).

Q: Is the fuel pressure normal?

YES : Check the following items, and repair or replace the defective items.

a. Vacuum leak.

- Broken intake manifold gasket.
- Broken air intake hose.
- Broken vacuum hose.
- Positive crankcase ventilation valve does not operate.

b. Injector clogged.

Then confirm that the malfunction symptom is eliminated.

NO : Repair or replace. Then confirm that the malfunction symptom is eliminated.

STEP 8. Check the fuel pressure.

Refer to GROUP 13A, On-vehicle Service – Fuel Pressure Test [P.13Aa-14](#).

Q: Is the fuel pressure normal?

YES : Check the following items, and repair or replace the defective items.

- Check the ignition coil, spark plugs, spark plug cables.
- Check compression pressure.
- Check the fuel filter or fuel line for clogging.
- Broken air intake hose.
- Clogged air cleaner.
- Clogged exhaust system.

Then confirm that the malfunction symptom is eliminated.

NO : Repair or replace. Then confirm that the malfunction symptom is eliminated.

INSPECTION PROCEDURE 19: Surge**COMMENT**

- Defective ignition system, abnormal air/fuel ratio, etc. are suspected.

TROUBLESHOOTING HINTS (The most likely causes for this case:)

- Malfunction of the ignition system.
- Malfunction of air/fuel ratio control system.
- Malfunction of the EGR solenoid system.

DIAGNOSIS**Required Special Tool:**

- MB991502: Scan Tool (MUT-II)

STEP 1. Using scan tool MB991502, read the diagnostic trouble code (DTC).**⚠ CAUTION**

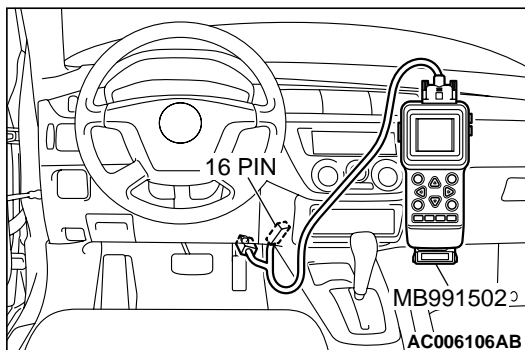
To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

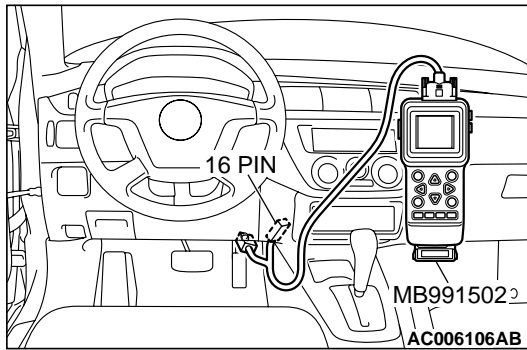
- Connect scan tool MB991502 to the data link connector.
- Turn the ignition switch to the "ON" position.
- Read the DTC.
- Turn the ignition switch to the "ON" position.

Q: Is DTC set?

YES : Refer to GROUP 13A, Diagnostic Trouble Code Chart [P.13Ab-19](#).

NO : Go to Step 2.





STEP 2. Using scan tool MB991502, check actuator test items 01, 02, 03, 04: Injector.

- (1) Turn the ignition switch to the "ON" position.
- (2) Check following items in the actuator test. Refer to GROUP 13A, Actuator Test Reference Table [P.13Ab-34](#).
 - a. Items 01, 02, 03, 04: Injector.
- (3) Turn the ignition switch to the "ON" position.

Q: Is the actuator operating properly?

YES : Go to Step 3.

NO : Refer to GROUP 13A, DTC P0201, P0202, P0203, P0204 – Injector Circuit [P.13Ac-254](#).

STEP 3. Check the ignition timing.

Refer to GROUP 11A, On-vehicle Service – Ignition Timing Check [P.11A-5](#).

Q: Is the ignition timing normal?

YES : Go to Step 4.

NO : Check that the crankshaft position sensor and timing belt cover are in the correct position. Then confirm that the malfunction symptom is eliminated.

STEP 4. Using scan tool MB991502, check data list.

⚠ CAUTION

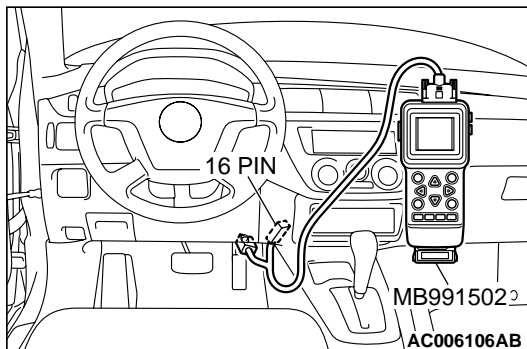
To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

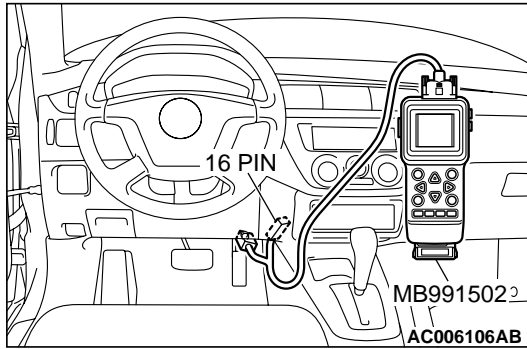
- (1) Connect scan tool MB991502 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Check the following items in the data list. Refer to GROUP 13A, Data List Reference Table [P.13Ab-25](#).
 - a. Item 13: Intake Air Temperature Sensor.
 - b. Item 25: Barometric pressure Sensor.
 - c. Item 21: Engine Coolant Temperature Sensor.
 - d. Item 14: Throttle Position Sensor.
 - e. Item 59: Heated Oxygen Sensor (rear).
 - f. Item 11: Heated Oxygen Sensor (front).
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Are they operating properly?

YES : Go to Step 5.

NO : Repair or replace. Then confirm that the malfunction symptom is eliminated.



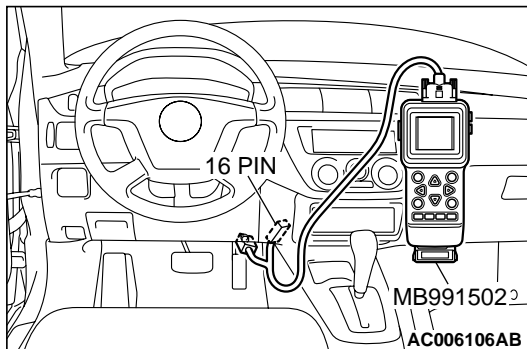
**STEP 5. Using scan tool MB991502, check actuator test.**

- (1) Turn the ignition switch to the "ON" position.
- (2) Check the following items in the actuator test. Refer to GROUP 13A, Actuator Test Reference Table [P.13Ab-34](#).
 - a. Item 10: EGR Solenoid.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the actuator operating properly?

YES : Go to Step 6.

NO : Repair or replace. Then confirm that the malfunction symptom is eliminated.

**STEP 6. Using scan tool MB991502, check data list.**

- (1) Turn the ignition switch to the "ON" position.
- (2) Check the following items of data list. Refer to GROUP 13A, Data List Reference Table [P.13Ab-25](#).
 - a. Item 11: Heated Oxygen Sensor (front).
 - Voltage should fluctuate between 0 – 0.4 volt and 0.6 – 1.0 volt while idling after the engine has been warmed.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the sensor operating properly?

YES : Go to Step 8.

NO : Go to Step 7.

STEP 7. Check the fuel pressure.

Refer to GROUP 13A, On-vehicle Service – Fuel Pressure Test [P.13Aa-14](#).

Q: Is the fuel pressure normal?

YES : Check the following items, and repair or replace the defective items.

a. Vacuum leak.

- Broken intake manifold gasket.
- Broken air intake hose.
- Broken vacuum hose.
- Positive crankcase ventilation valve does not operate.

b. Injector clogged.

Then confirm that the malfunction symptom is eliminated.

NO : Repair or replace. Then confirm that the malfunction symptom is eliminated.

STEP 8. Check the fuel pressure.

Refer to GROUP 13A, On-vehicle Service – Fuel Pressure Test [P.13Aa-14](#).

Q: Is the fuel pressure normal?

YES : Check the following items, and repair or replace the defective items.

- Check the ignition coil, spark plugs, spark plug cables.
- Check the EGR system.

Then confirm that the malfunction symptom is eliminated.

NO : Repair or replace. Then confirm that the malfunction symptom is eliminated.

INSPECTION PROCEDURE 20: Knocking**COMMENT**

- In case such as the above, the cause is probably that the detonation control is defective or the heat value of the spark plug is inappropriate.

TROUBLESHOOTING HINTS (The most likely causes for this case:)

- Defective knock sensor.
- Incorrect heat value of the spark plug.

DIAGNOSIS**Required Special Tool:**

- MB991502: Scan Tool (MUT-II)

STEP 1. Using the scan tool MB991502, read the diagnostic trouble code (DTC).**⚠ CAUTION**

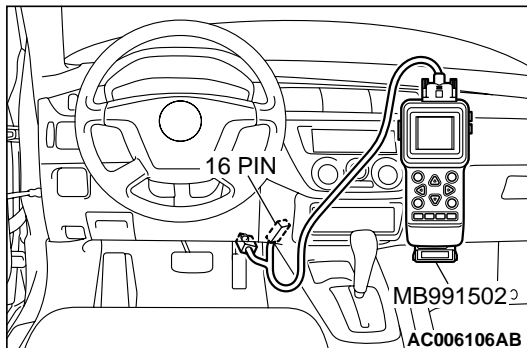
To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

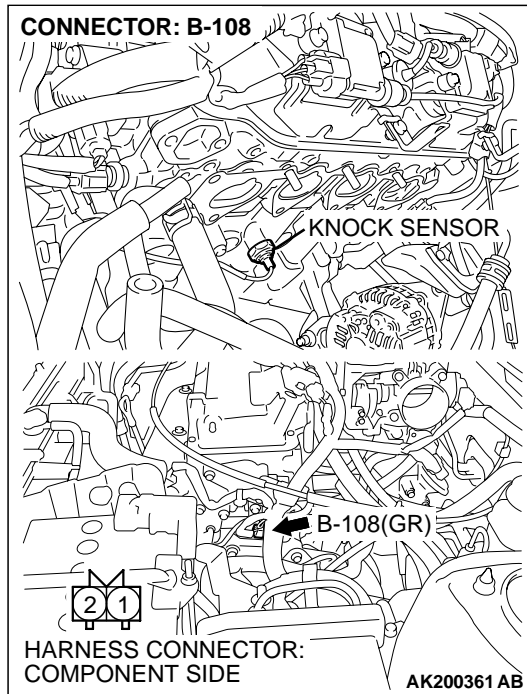
- Connect scan tool MB991502 to the data link connector.
- Turn the ignition switch to the "ON" position.
- Read the DTC.
- Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is DTC set?

YES : Refer to, Diagnostic Trouble Code Chart [P.13Ab-19](#).

NO : Go to Step 2.



**STEP 2. Check the ignition timing.**

(1) The ignition timing should retard more when knock sensor connector B-108 is disconnected than when it is connected.

Q: When the knock sensor connector B-108 was disconnected, was the ignition timing delayed?

YES : Check the following items, and repair or replace the defective items.

- Check the spark plugs.
- Fuel quality, octane level.
- Check if the foreign materials (water, kerosene, etc.) got into fuel.

Then confirm that the malfunction symptom is eliminated.

NO : Refer to, DTC P0325 – Knock Sensor Circuit [P.13Ac-274](#).

INSPECTION PROCEDURE 21: Dieseling (Run-on)**COMMENT**

- Fuel leakage from injectors is suspected, or carbon build up.

TROUBLESHOOTING HINTS (The most likely causes for this case:)

- Fuel leakage from injectors.

DIAGNOSIS**STEP 1. Check the injectors for fuel leakage.**

Replace the leaking injector. Then confirm that the malfunction symptom is eliminated.

INSPECTION PROCEDURE 22: Too High CO and HC Concentration when Idling**COMMENT**

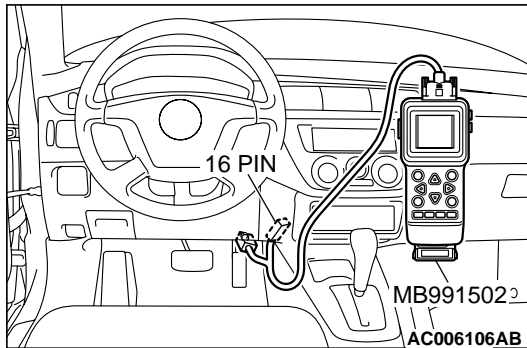
- Abnormal air/fuel ratio is suspected.

TROUBLESHOOTING HINTS (The most likely causes for this case:)

- Malfunction of air/fuel ratio control system.
- Deteriorated catalyst.

DIAGNOSIS**Required Special Tool:**

- MB991502: Scan Tool (MUT-II)



STEP 1. Using scan tool MB991502, read the diagnostic trouble code (DTC).

⚠ CAUTION

To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

- (1) Connect scan tool MB991502 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Read the DTC.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is DTC set?

YES : Refer to GROUP 13A, Diagnostic Trouble Code Chart [P.13Ab-19](#).

NO : Go to Step 2.

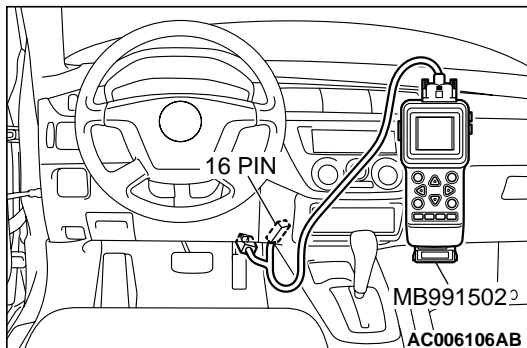
STEP 2. Check the ignition timing.

Refer to GROUP 11A, On-vehicle Service – Ignition Timing Check [P.11A-5](#).

Q: Is the ignition timing normal?

YES : Go to Step 3.

NO : Check that the crankshaft position sensor and timing belt cover are in the correct position. Then confirm that the malfunction symptom is eliminated.



STEP 3. Using scan tool MB991502, check data list.

⚠ CAUTION

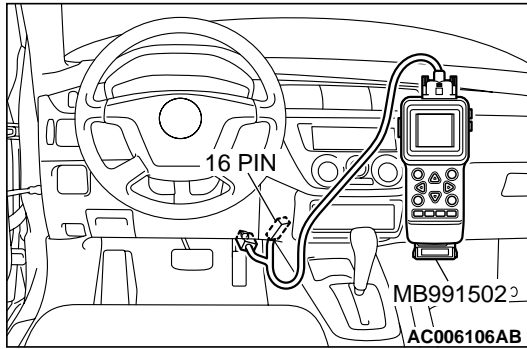
To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

- (1) Connect scan tool MB991502 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Check the following items in the data list. Refer to GROUP 13A, Data List Reference Table [P.13Ab-25](#).
 - a. Item 21: Engine Coolant Temperature Sensor.
 - b. Item 13: Intake Air Temperature Sensor.
 - c. Item 25: Barometric pressure Sensor.
 - d. Item 59: Heated Oxygen Sensor (rear).
 - e. Item 11: Heated Oxygen Sensor (front).
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Are they operating properly?

YES : Go to Step 4.

NO : Repair or replace. Then confirm that the malfunction symptom is eliminated.

**STEP 4. Using scan tool MB991502, check data list.**

- (1) Turn the ignition switch to the "ON" position.
- (2) Check the following items of the data list. Refer to GROUP 13A, Data List Reference Table [P.13Ab-25](#).
 - a. Item 11: Heated Oxygen Sensor (front).
 - Voltage should fluctuate between 0 – 0.4 volt and 0.6 – 1.0 volt while idling after the engine has been warmed.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the sensor operating properly?

YES : Replace the heated oxygen sensor (front). Then confirm that the malfunction symptom is eliminated. If not resolved, go to step 6.

NO : Go to Step 5.

STEP 5. Check the fuel pressure.

Refer to GROUP 13A, On-vehicle Service – Fuel Pressure Test [P.13Aa-14](#).

Q: Is the fuel pressure normal?

YES : Go to Step 6.

NO : Repair or replace. Then confirm that the malfunction symptom is eliminated.

STEP 6. Check the following items.

- (1) Check the following items, and repair or replace the defective items.
 - a. Check the injectors for fuel leakage.
 - b. Check the ignition coil, spark plugs, spark plug cables.
 - c. Check compression pressure.
 - d. Check the positive crank case ventilation system.
 - e. Check the evaporative emission control system.
 - f. Check the EGR system.
- (2) Then check the malfunction symptom.

Q: Is the malfunction symptom is eliminated.

YES : The check is completed.

NO : Replace the catalytic converter. Then confirm that the malfunction symptom is eliminated.

INSPECTION PROCEDURE 23: Transient, Mass Emission Tailpipe Test Failure

COMMENT

- The test is failed when the air/fuel ratio is not controlled to the ideal air/fuel ratio. This occurs due to the feedback control by heated oxygen sensor signals, insufficient EGR flow rate, or deteriorated catalyst.

NOTE: If the three-way catalyst temperature is low when checking the exhaust gas, the three-way catalyst cannot sufficiently clean the emissions. Warm up the engine sufficiently before checking the exhaust, and check immediately.

TROUBLESHOOTING HINTS (The most likely causes for this case:)

- Malfunction of air/fuel ratio control system.
- Malfunction of the EGR system.
- Deteriorated catalyst.

DIAGNOSIS**Required Special Tool:**

- MB991502: Scan Tool (MUT-II)

STEP 1. Check the exhaust gas with the engine at normal operating temperature.

Q: After enough warm up, was the exhaust gas checked enough?

YES : Go to Step 2.

NO : Check it again after enough warm up.

STEP 2. Check the following items.

(1) Check the following items.

- a. Check all vacuum hoses and connectors.
- b. Check electrical wires and connectors for obvious problems.
- c. Check the exhaust system for missing or damaged parts.

Q: Are they normal?

YES : Go to Step 3.

NO : Repair or replace. Then confirm that the malfunction symptom is eliminated.

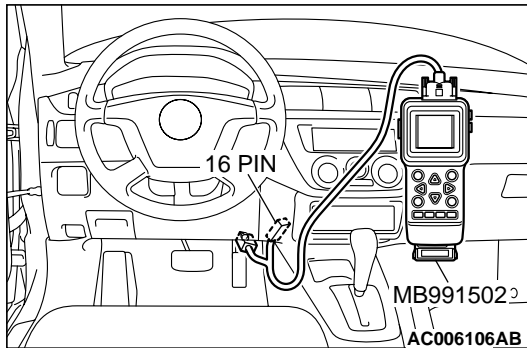
STEP 3. Check the drive ability.

(1) Check if the malfunction symptom described on the symptom chart is occurring.

Q: Is the drive-ability normal?

YES : Go to Step 4.

NO : Refer to GROUP 13A, Trouble Symptom Chart [P.13Ab-22](#).



STEP 4. Using scan tool MB991502, read the diagnostic trouble code (DTC).

⚠ CAUTION

To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

- (1) Connect scan tool MB991502 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Read the DTC.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is DTC set?

YES : Refer to GROUP 13A, Diagnostic Trouble Code Chart [P.13Ab-19](#).

NO : Go to Step 5.

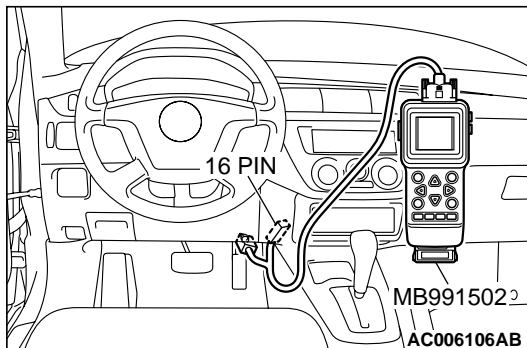
STEP 5. Check the ignition timing.

Refer to GROUP 11A, On-vehicle Service – Ignition Timing Check [P.11A-5](#).

Q: Is the ignition timing normal?

YES : Go to Step 6.

NO : Check that the crankshaft position sensor and timing belt cover are in the correct position. Then confirm that the malfunction symptom is eliminated.



STEP 6. Using scan tool MB991502, check data list.

⚠ CAUTION

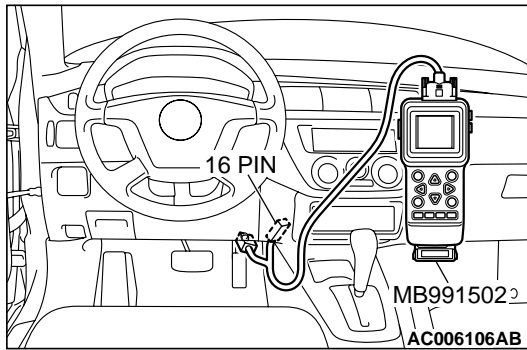
To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

- (1) Connect scan tool MB991502 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Check the following items in the data list. Refer to GROUP 13A, Data List Reference Table [P.13Ab-25](#).
 - a. Item 21: Engine Coolant Temperature Sensor.
 - b. Item 13: Intake Air Temperature Sensor.
 - c. Item 25: Barometric pressure Sensor.
 - d. Item 59: Heated Oxygen Sensor (rear).
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the sensor operating properly?

YES : Go to Step 7.

NO : Repair or replace. Then confirm that the malfunction symptom is eliminated.



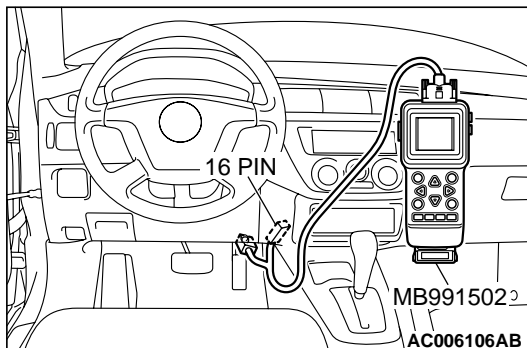
STEP 7. Using scan tool MB991502, check data list item 11: heated oxygen sensor (front).

- (1) Start the engine and run at idle.
- (2) Set scan tool MB991502 to the data reading mode for item 11, Heated Oxygen Sensor (front).
 - Warm up the engine. When the engine is decelerated suddenly from 4,000 r/min, the output voltage should increase from 200 mV or less to 600 – 1,000 mV in a few seconds.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the sensor operating properly?

YES : Go to Step 8.

NO : Refer to GROUP 13A, DTC P0130 – Heated Oxygen Sensor Circuit (sensor 1) [P.13Ac-138](#), DTC P0131 – Heated Oxygen Sensor Low Voltage (sensor 1) [P.13Ac-151](#), DTC P0132 – Heated Oxygen Sensor Circuit High Voltage (sensor 1) [P.13Ac-156](#), DTC P0133 – Heated Oxygen Sensor Circuit Slow Response (sensor 1) [P.13Ac-160](#), DTC P0134 – Heated Oxygen Sensor Circuit No Activity Detected (sensor 1) [P.13Ac-163](#).



STEP 8. Using scan tool MB991502, check data list item 11: Heated oxygen sensor (front).

- (1) Start the engine and run at idle.
- (2) Set scan tool MB991502 to the data reading mode for item 11, Heated Oxygen Sensor (front).
 - Voltage should fluctuate between 0 – 0.4 volt and 0.6 – 1.0 volt while after the engine has been warmed.
- (3) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the sensor operating properly?

YES : Go to Step 9.

NO : Go to Step 11.

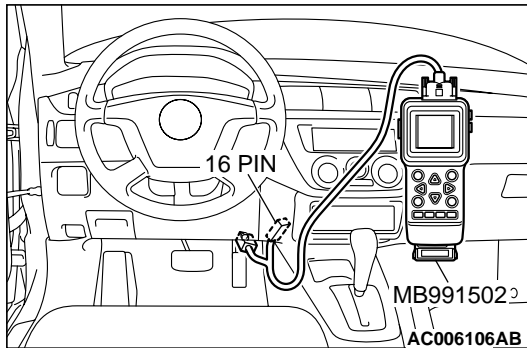
STEP 9. Check the EGR system.

Refer to GROUP 17, Emission Control System – EGR System Check [P.17-117](#).

Q: Is the EGR system normal?

YES : Go to Step 10.

NO : Repair or replace. Then confirm that the malfunction symptom is eliminated.



STEP 10. Using scan tool MB991502, check data list item 59: Heated oxygen sensor (rear).

⚠ CAUTION

To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

- (1) Connect scan tool MB991502 to the data link connector.
- (2) Start the engine and run at idle.
- (3) Set scan tool MB991502 to the data reading mode for item 59, Heated Oxygen Sensor (rear).
 - Average voltage should measure 0.6 volts or less, when idling.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the sensor operating properly?

YES : Go to Step 12.

NO : Replace the heated oxygen sensor (front). Then confirm that the malfunction symptom is eliminated.

STEP 11. Check the fuel pressure.

Refer to GROUP 13A, On-vehicle Service – Fuel Pressure Test [P.13Aa-14](#).

Q: Is the fuel pressure normal?

YES : Go to Step 12.

NO : Repair or replace. Then confirm that the malfunction symptom is eliminated.

STEP 12. Check the following items.

- (1) Check the following items, and repair or replace the defective items.
 - a. Check the injectors for fuel leakage.
 - b. Check the ignition coil, spark plugs, spark plug cables.
 - c. Check compression pressure.
 - d. Check the positive crankcase ventilation system.
 - e. Check the evaporative emission control system.
- (2) Then check the malfunction symptom.

Q: Is the malfunction symptom is eliminated?

YES : The check is completed.

NO : Replace the catalytic converter. Then confirm that the malfunction symptom is eliminated.

INSPECTION PROCEDURE 24: Purge Flow Test of the Evaporative Emission Canister Failure

COMMENT

- The test fails when the purge line or purge port is clogged or if the evaporative emission purge solenoid fails.

TROUBLESHOOTING HINTS (The most likely causes for this case:)

- Purge line or purge port is clogged.
- Malfunction of the evaporative emission purge solenoid.
- Evaporative emission canister is clogged.

DIAGNOSIS**Required Special Tool:**

- MB991502: Scan Tool (MUT-II)

STEP 1. Using scan tool MB991502, read the diagnostic trouble code (DTC).**⚠ CAUTION**

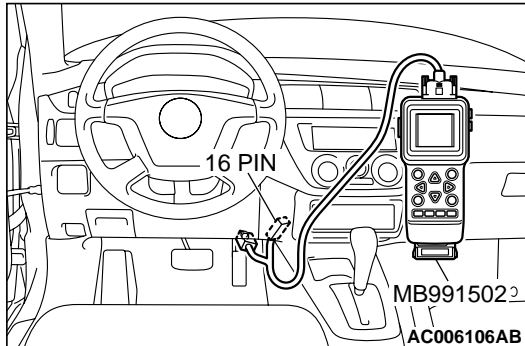
To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

- (1) Connect scan tool MB991502 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Read the DTC.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is DTC set?

YES : Refer to GROUP 13A, Diagnostic Trouble Code Chart [P.13Ab-19](#).

NO : Refer to GROUP 17, Emission Control System – Purge Control System Check (Purge Flow Check) [P.17-113](#).



INSPECTION PROCEDURE 25: Pressure Test of the Evaporative System Failure

COMMENT

- The test fails if there is a leak from the fuel tank or vapor line.

TROUBLESHOOTING HINTS (The most likely causes for this case:)

- Loose fuel tank filler tube cap.
- Broken seal in fuel tank, vapor line evaporative emission canister.

DIAGNOSIS

STEP 1. Check the evaporative emission purge solenoid
Refer to GROUP 17, Emission Control System – Evaporative Emission Purge Solenoid Check [P.17-114](#).

Q: Is the evaporative emission purge solenoid normal?

YES : Go to Step 2.

NO : Repair or replace. Then confirm that the malfunction symptom is eliminated.

STEP 2. Check the evaporative emission ventilation solenoid.

Refer to GROUP 17, Emission Control System – Evaporative Emission Ventilation Solenoid Check [P.17-114](#).

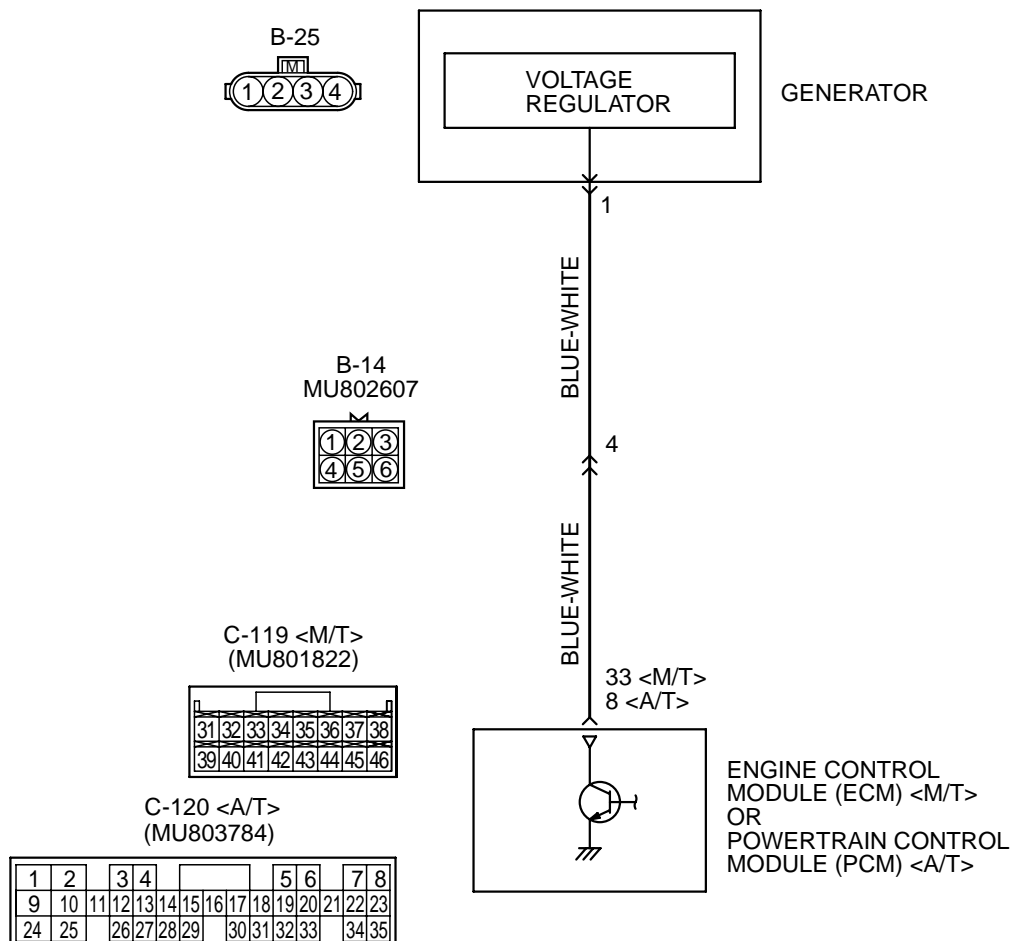
Q: Is the evaporative emission ventilation solenoid normal?

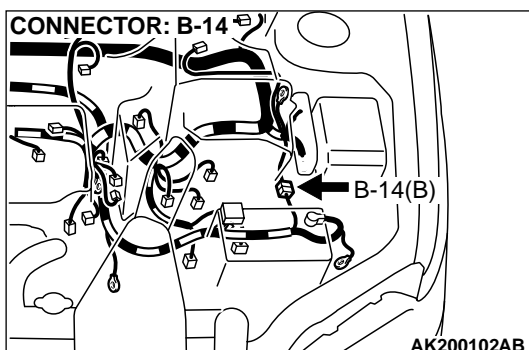
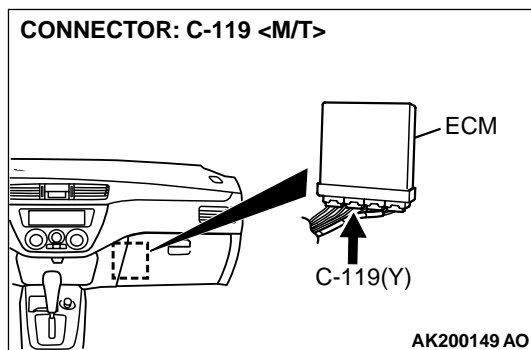
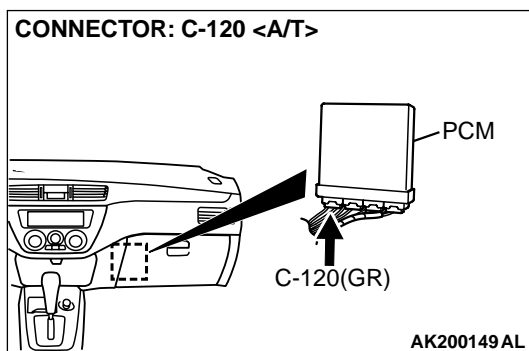
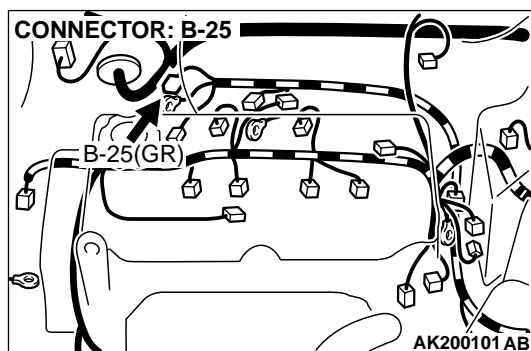
YES : Check the following items, and repair or replace the defective items.

- Check for leaks from the vapor line or evaporative emission canister.
- Check for leaks from the fuel tank.

Then confirm that the malfunction symptom is eliminated.

NO : Repair or replace. Then confirm that the malfunction symptom is eliminated.

INSPECTION PROCEDURE 26: Generator Output Voltage Is Low (approximately 12.3 volts)**Generator Circuit**



CIRCUIT OPERATION

- The EMC <M/T> or PCM <A/T> controls generator output current by duty-controlling continuity between the generator G terminal (terminal 1) and ground.

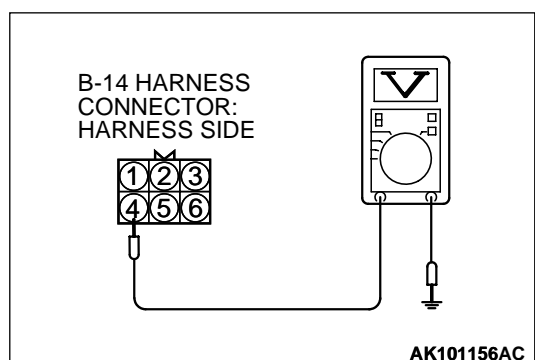
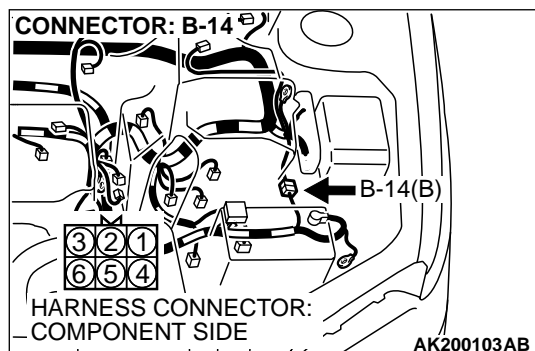
TROUBLESHOOTING HINTS (The most likely causes for this charging system:)

- Malfunction of the charging system.
- Short circuit in the harness between generator G terminal and ECM <M/T> or PCM <A/T>.
- ECM <M/T> or PCM <A/T> failed.

DIAGNOSIS

STEP 1. Measure the voltage at generator intermediate connector B-14 by backprobing.

- (1) Do not disconnect the connector B-14.
- (2) Start the engine and run at idle.



- (3) Measure the voltage between terminal No. 4 and ground by backprobing.
 - a. Engine: warming up
 - b. Radiator fan: stopped
 - c. Headlight switch: OFF to ON
 - d. Rear defogger switch: OFF to ON
 - e. Stoplight switch: OFF to ON
 - Voltage rises by 0.2 – 3.5 volts.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the measured voltage between 0.2 and 3.5 volts?

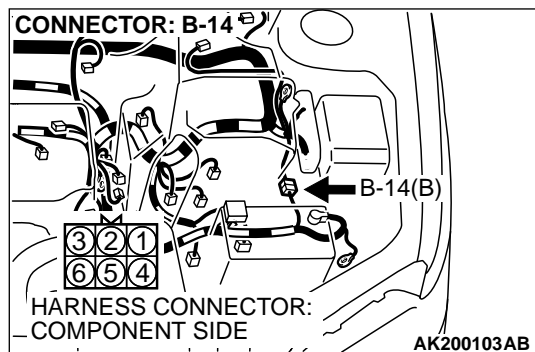
YES : Replace the generator. Then confirm that the malfunction symptom is eliminated.

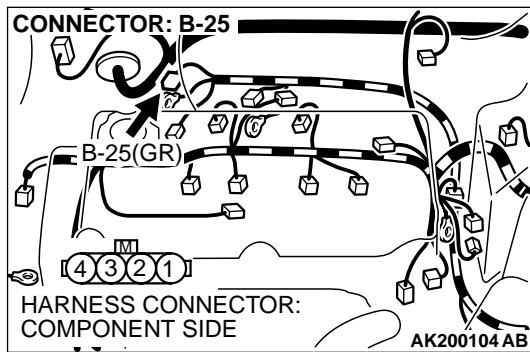
NO : Go to Step 2.

STEP 2. Check connector B-14 at generator intermediate connector for damage.**Q: Is the connector in good condition?**

YES : Go to Step 3.

NO : Repair or replace it. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Then confirm that the malfunction symptom is eliminated.



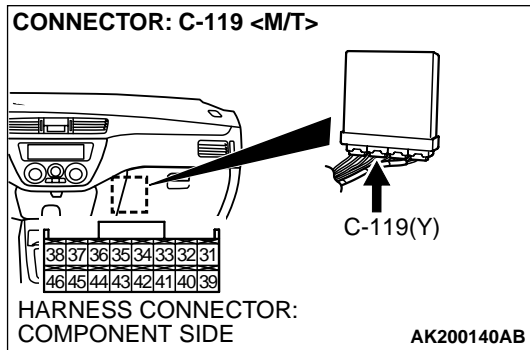


STEP 3. Check connector B-25 at generator connector for damage.

Q: Is the connector in good condition?

YES : Go to Step 4

NO : Repair or replace it. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Then confirm that the malfunction symptom is eliminated.

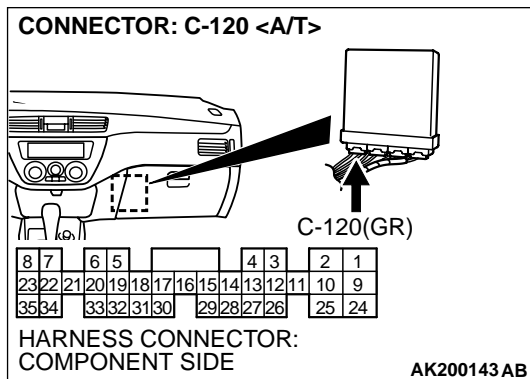


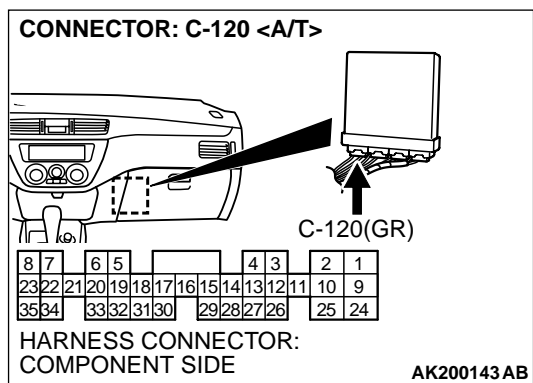
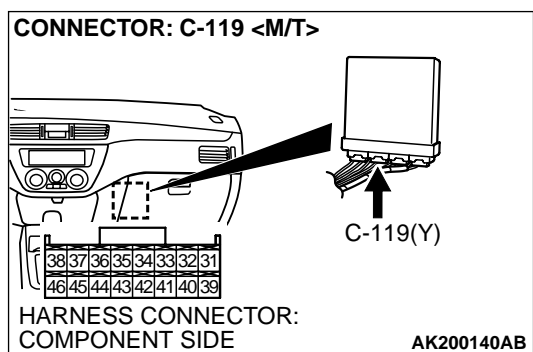
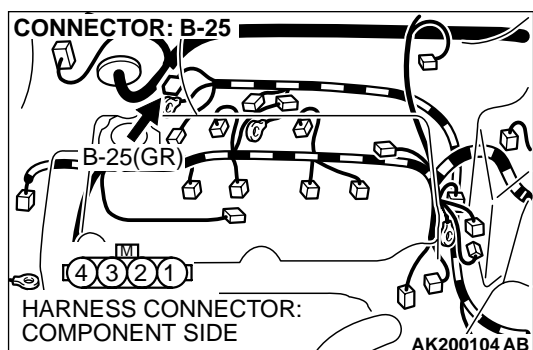
STEP 4. Check connector C-119 at ECM <M/T> or connector C-120 at PCM <A/T> for damage.

Q: Is the connector in good condition?

YES : Go to Step 5.

NO : Repair or replace it. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Then confirm that the malfunction symptom is eliminated.





STEP 5. Check for open circuit and short circuit to ground and harness damage between generator connector B-25 (terminal No. 1) and ECM connector C-119 (terminal No. 33) <M/T> or PCM connector C-120 (terminal No. 8) <A/T>.

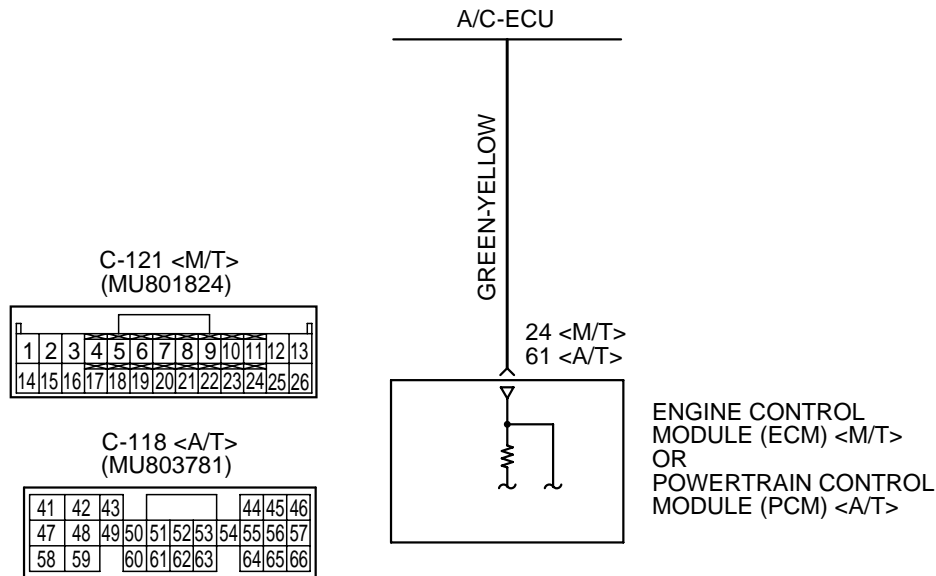
Q: Is the harness wire in good condition?

YES : Replace the ECM or PCM. Then confirm that the malfunction symptom is eliminated.

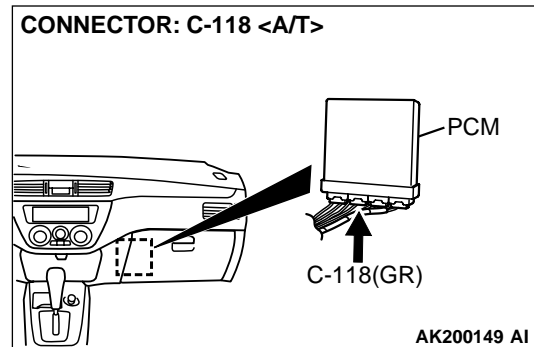
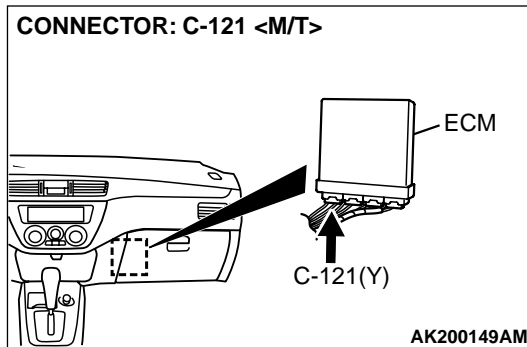
NO : Repair it. Then confirm that the malfunction symptom is eliminated.

INSPECTION PROCEDURE 27: Incorrect Idle Speed when the A/C Is Operating (A/C Switch 2 Signal)

A/C Switch 2 Signal Circuit



AK100110



CIRCUIT OPERATION

- The ECM <M/T> or PCM <A/T> increases the engine idle speed by driving the IAC motor when the automatic compressor-ECU sends a "A/C on" signal to the module.
- The A/C-ECU detects how the air conditioning is applying load to the engine, and converts the information to a voltage signal (High voltage = low load, Low voltage = high load). This voltage signal is called "A/C switch 2 signal". The ECM

<M/T> or PCM <A/T> receives this A/C switch 2 signal from the automatic compressor controller through terminal No. 24 <M/T> or terminal No. 61 <A/T>, and determines the idle-up speed according to the high or low air conditioning load.

TROUBLESHOOTING HINTS (The most likely causes for this code to be set are:)

- Malfunction of the A/C control system.
- Open or shorted circuit, or improper connector contact.
- ECM <M/T> or PCM <A/T> failed.

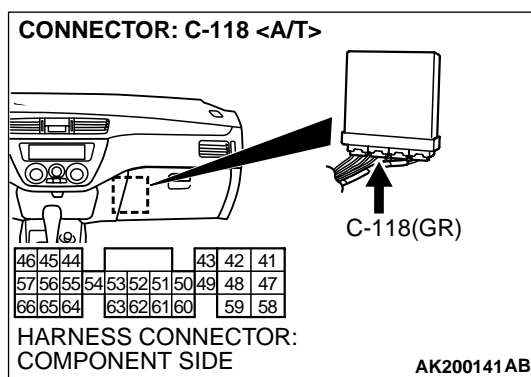
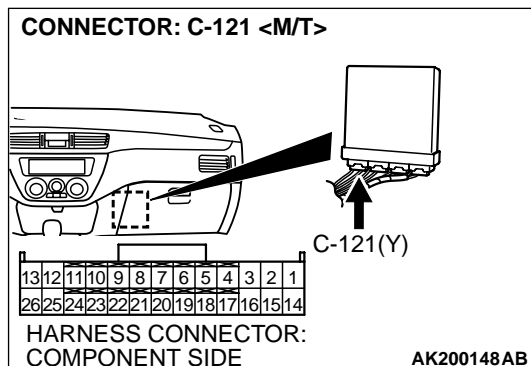
DIAGNOSIS

STEP 1. Check connector C-121 at ECM <M/T> or connector C-118 at PCM <A/T> for damage.

Q: Is the connector in good condition?

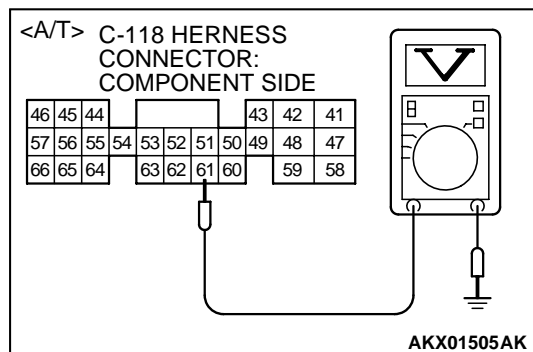
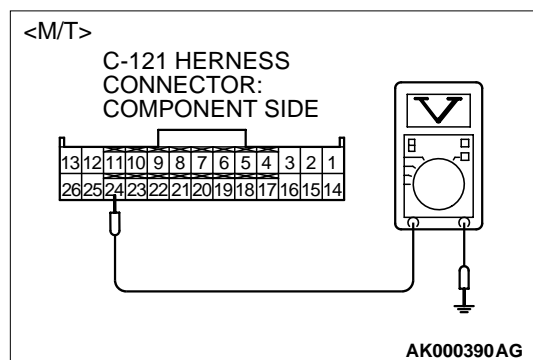
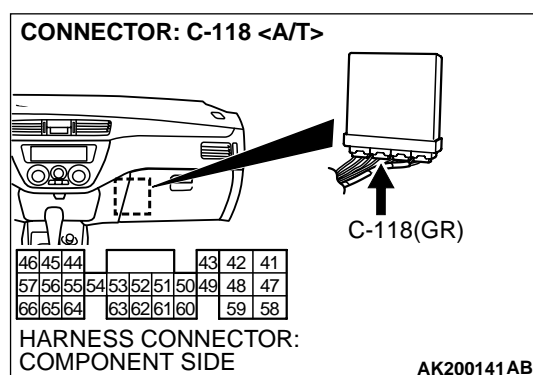
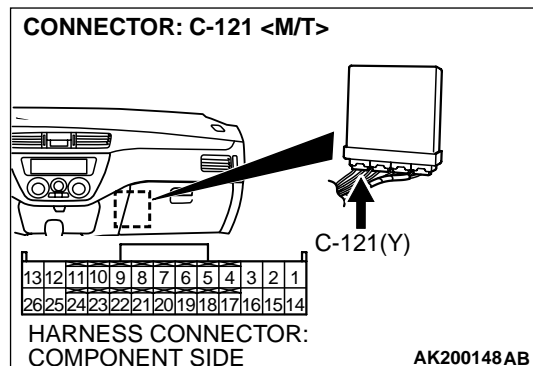
YES : Go to Step 2.

NO : Repair or replace it. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Then confirm that the malfunction symptom is eliminated.



STEP 2. Measure the output voltage at ECM harness side connector C-121 <M/T> or PCM harness side connector C-118 <A/T>.

- (1) Disconnect the connector C-121 <M/T> or C-118 <A/T> and measure at the harness side.
- (2) Start the engine and run at idle.
- (3) Turn the A/C switch "ON".



- (4) Measure the voltage between terminal No. 24 <M/T> or No. 61 <A/T> and ground.

- If atmospheric air temperature is 15°C (59°F) or less, the voltage should measure 1 volt or less.
- If atmospheric air temperature is 18°C (65.4°F) more, the voltage should measure battery positive voltage.

- (5) Turn the A/C switch "OFF".

- (6) Turn the ignition switch to the "LOCK" (OFF) position.

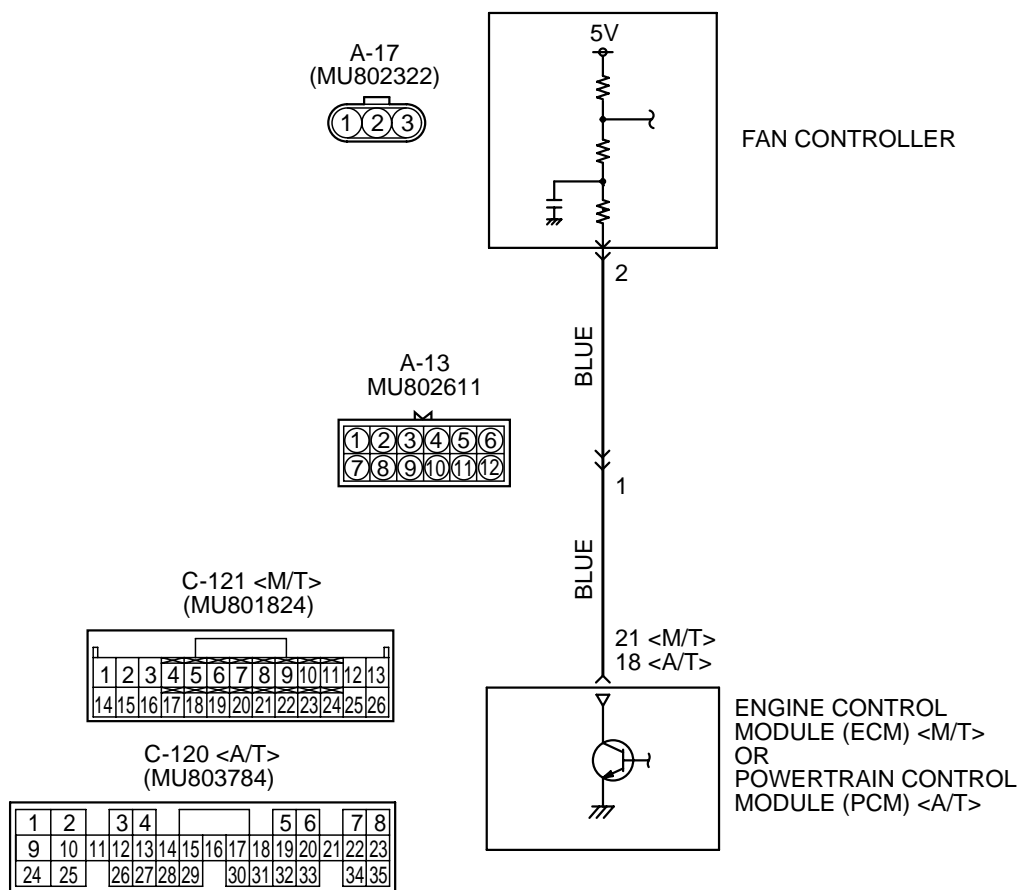
Q: Is the measured voltage within the specified range?

YES : Replace the ECM or PCM. Then confirm that the malfunction symptom is eliminated.

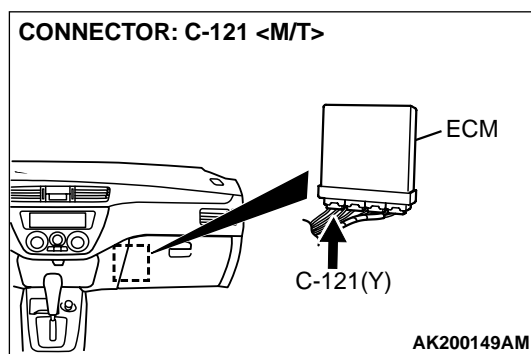
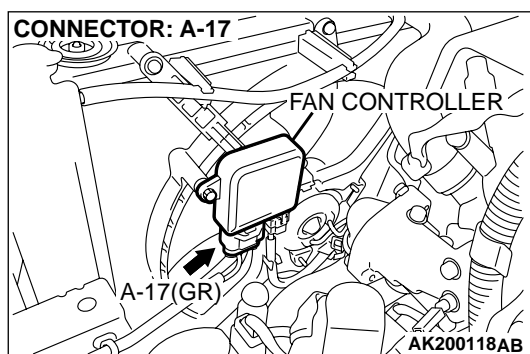
NO : Refer to GROUP 55A, Heater, Air Conditioning And Ventilation – Manual A/C Diagnosis – Symptom Chart P.55-5.

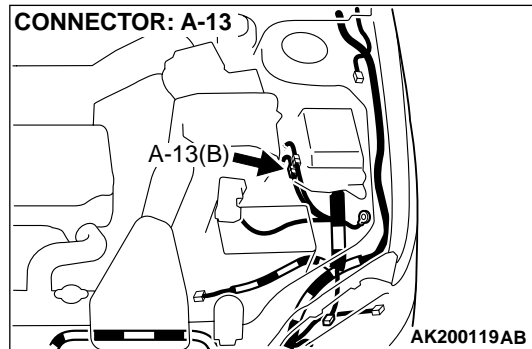
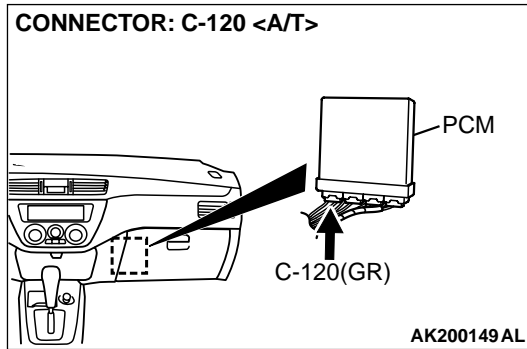
INSPECTION PROCEDURE 28: Fans (Radiator Fan and A/C Condenser Fan) are Inoperative

Radiator Fan, A/C Condenser Fan Circuit



AK100042





CIRCUIT OPERATION

- The ECM <M/T> or PCM <A/T> sends a duty signal to the fan controller according to engine coolant temperature, vehicle speed, and the condition of the A/C switch. (The closer the average voltage at the terminal comes to five volts, the higher the fan speed becomes.)

TROUBLESHOOTING HINTS (The most likely causes for this code to be set are:)

- Malfunction of the fan motor relay.
- Malfunction of the fan motor.
- Malfunction of the fan controller.
- Improper connector contact, open or short-circuited harness wire.
- ECM <M/T> or PCM <A/T> failed.

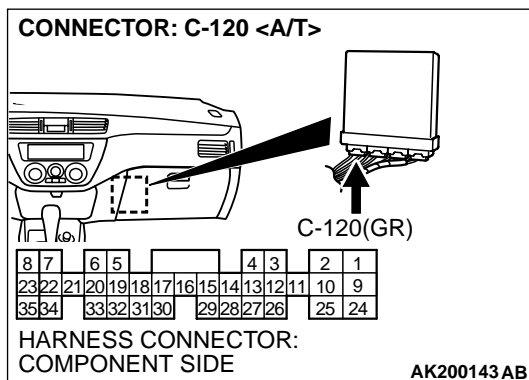
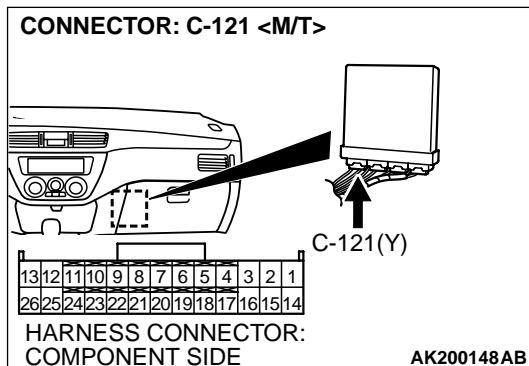
DIAGNOSIS

STEP 1. Check connector C-121 at ECM <M/T> or connector C-120 at PCM <A/T> for damage.

Q: Is the connector in good condition?

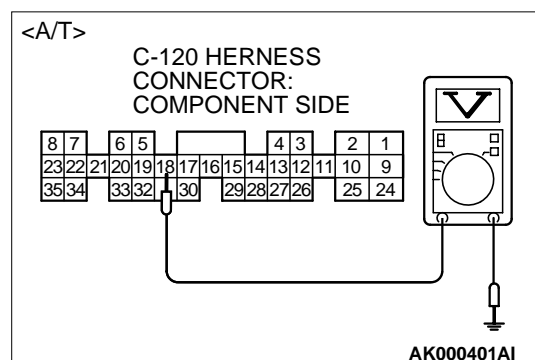
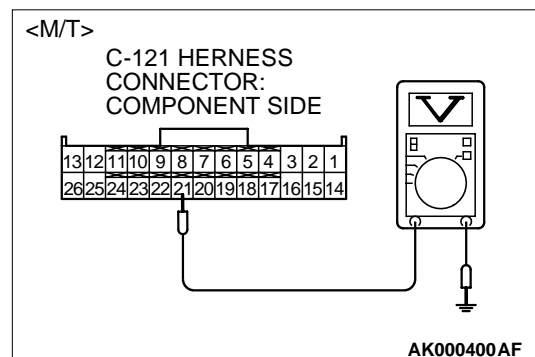
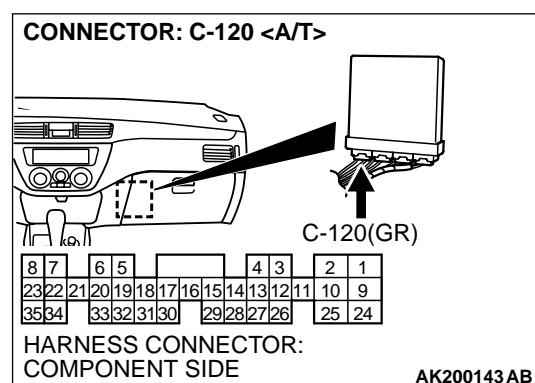
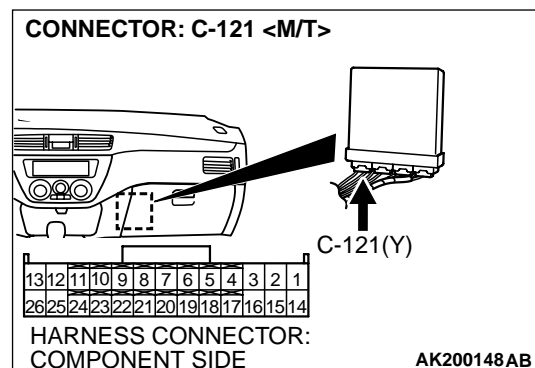
YES : Go to Step 2.

NO : Repair or replace it. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Then confirm that the malfunction symptom is eliminated.



STEP 2. Check the output voltage at ECM harness side connector C-121 <M/T> or PCM harness side connector C-120 <A/T>.

- (1) Disconnect the connector C-121 <M/T> or C-120 <A/T> and measure at the harness side.
- (2) Turn the ignition switch to the "ON" position.



- (3) Measure the voltage between terminal No. 21 <M/T> or No. 18 <A/T> and ground.

- Voltage should measure between 4.8 and 5.2 volts. (Fan rotates at high speed.)

- (4) Connect a jumper cable between terminal No. 21 <M/T> or No. 18 <A/T> and ground.

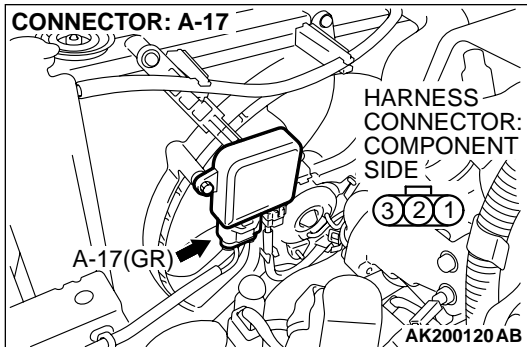
- The fan should stop.

- (5) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the voltage and fan condition normal?

YES : Replace the ECM or PCM. Then confirm that the malfunction symptom is eliminated.

NO : Go to Step 3.



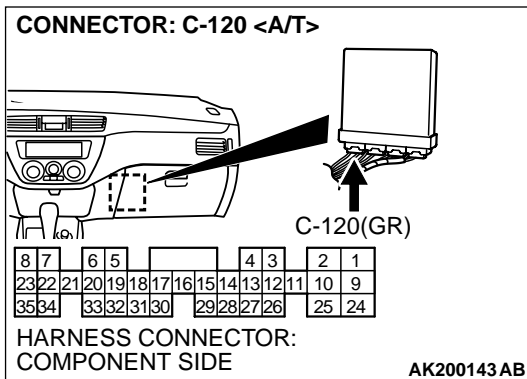
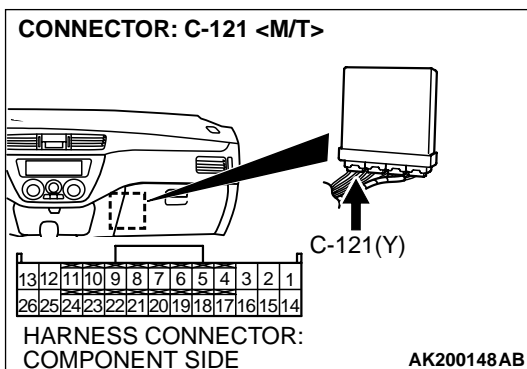
STEP 3. Check for open circuit and short circuit to ground and harness damage between fan controller A-17 (terminal No. 2) and ECM connector C-121 (terminal No. 21) <M/T> or PCM connector C-120 (terminal No. 18) <A/T>.

NOTE: Check harness after checking intermediate connector A-09. If intermediate connector is damaged, repair or replace them. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Then confirm that the malfunction symptom is eliminated.

Q: Is the harness wire in good condition?

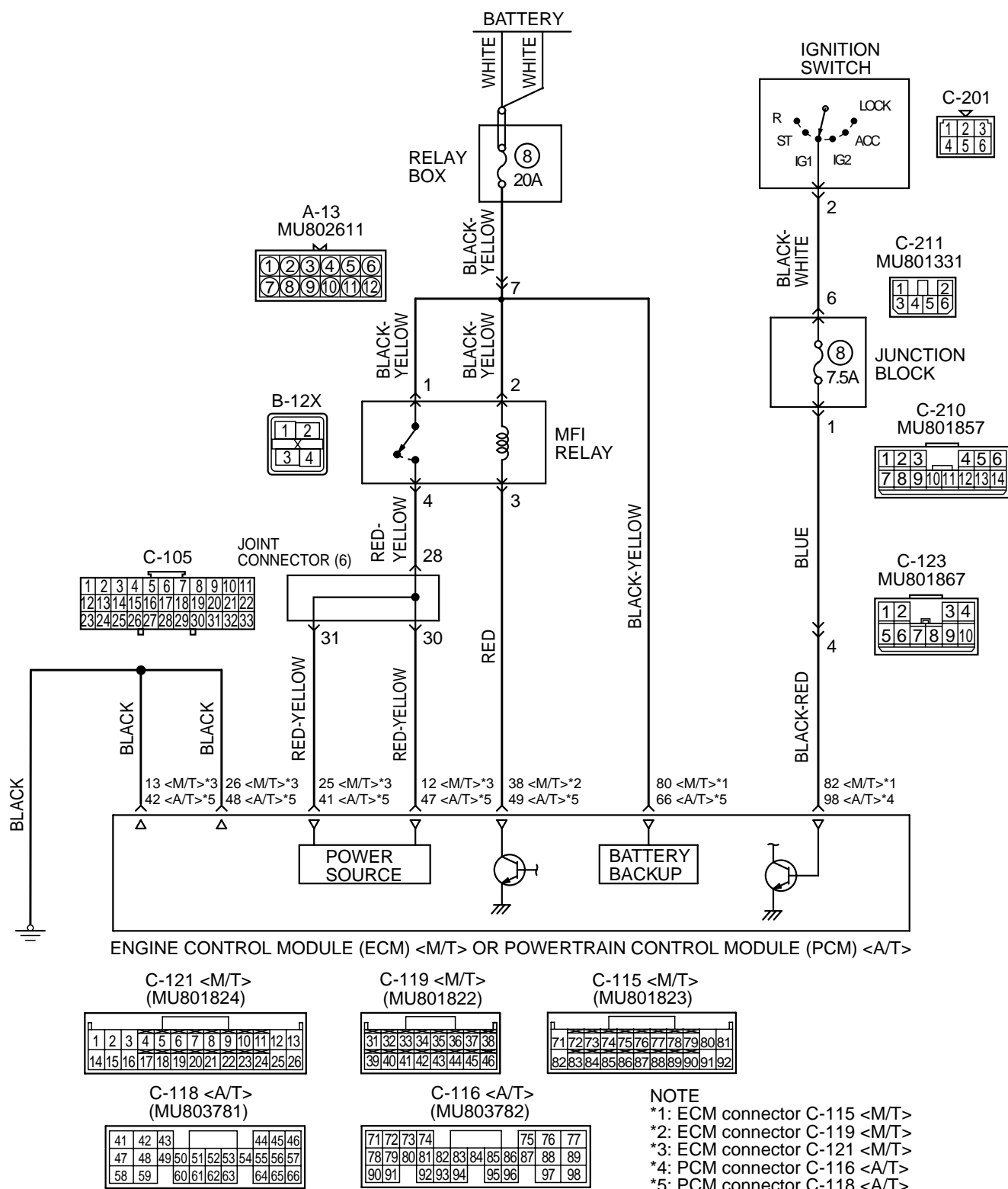
YES : Refer to GROUP 14, Engine Cooling Diagnosis – Symptom Chart [P.14-4](#).

NO : Repair it. Then confirm that the malfunction symptom is eliminated.

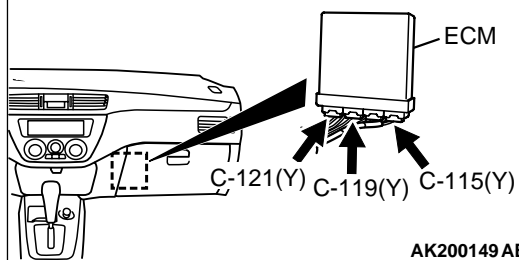
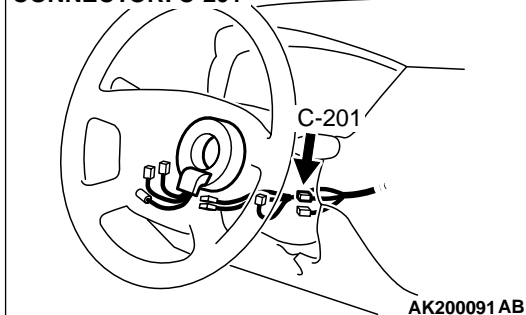
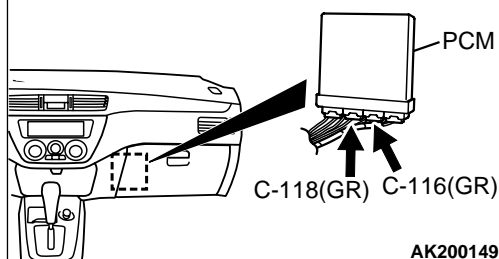
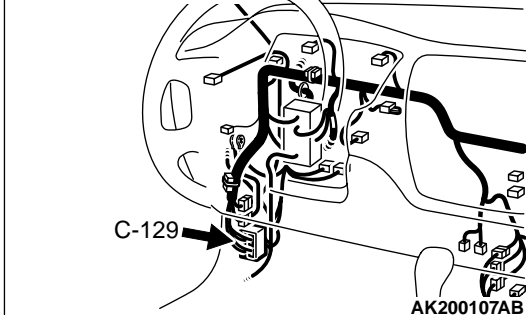
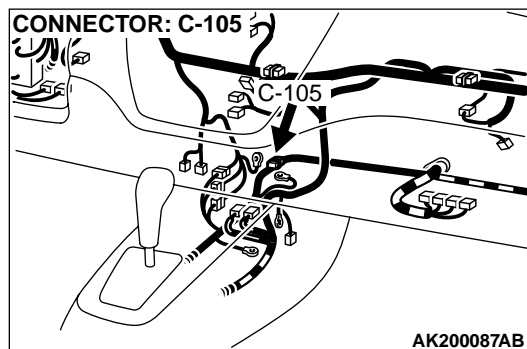
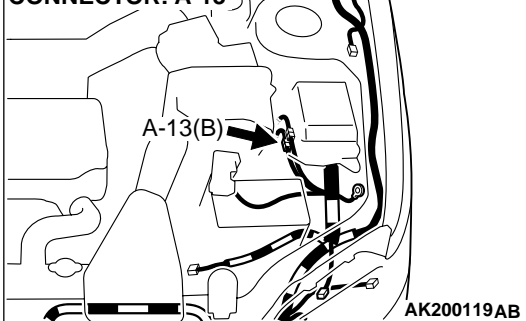
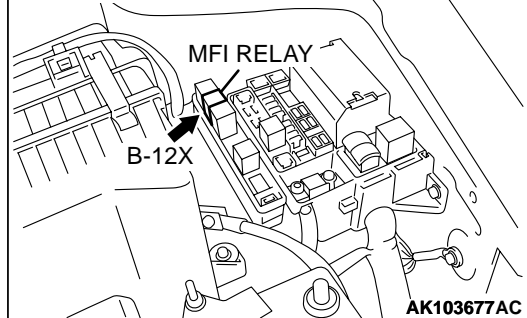
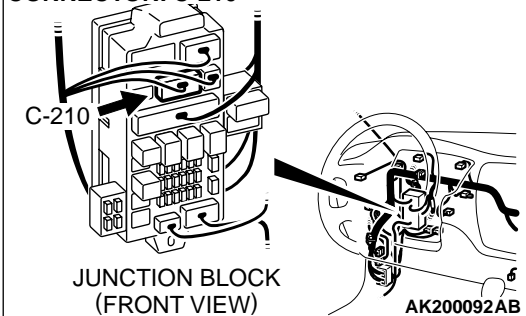
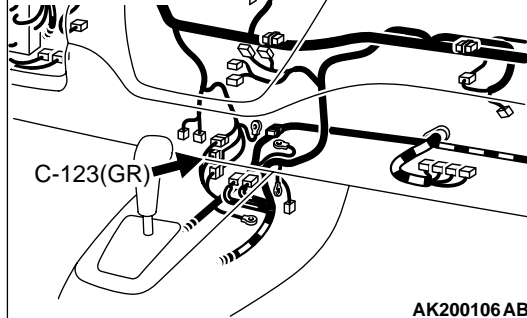
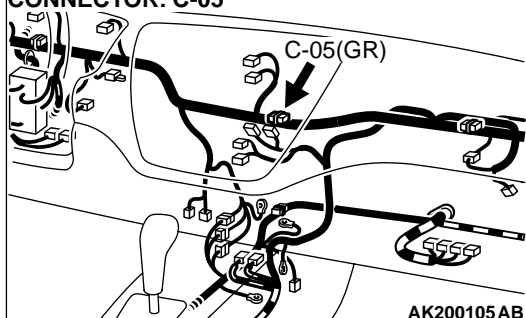


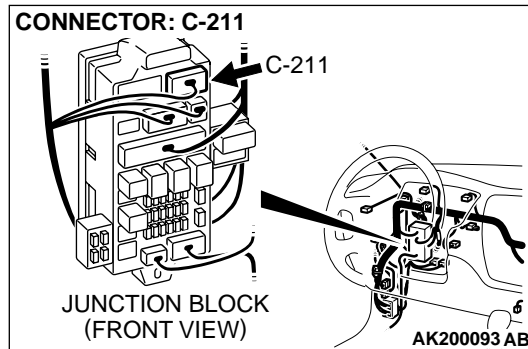
INSPECTION PROCEDURE 29: Power Supply System and Ignition Switch-IG System.

Power Supply and Ignition Switch-IG Circuit



AK200389

CONNECTORS: C-115, C-119, C-121 <M/T>**CONNECTOR: C-201****CONNECTORS: C-116, C-118 <A/T>****CONNECTOR: C-129****CONNECTOR: C-105****CONNECTOR: A-13****CONNECTOR: B-12X****CONNECTOR: C-210****CONNECTOR: C-123****CONNECTOR: C-05**



CIRCUIT OPERATION

- Battery positive voltage is applied to the MFI relay (terminals No. 1, No. 2).
- When the ignition switch is turned to the "ON" position, the battery positive voltage is applied to the ECM (terminal No. 82) <M/T> or PCM (terminal No. 98) <A/T>. When the battery positive voltage is applied, the ECM <M/T> or PCM <A/T> turns the power transistor in the ECM <M/T> or PCM <A/T> "ON" and grounds the MFI relay coil. With this, the MFI relay turns "ON" and the battery positive voltage is supplied to the ECM (terminals No. 12, No. 25) <M/T> or PCM (terminals No. 41, No. 47) <A/T> from the MFI relay (terminal No. 4).

- Battery positive voltage is constantly supplied to the ECM (terminal No. 80) <M/T> or PCM (terminal No. 66) <A/T> as the backup power.
- The ECM (terminals No. 13, No. 26) <M/T> or PCM (terminals No. 42, No. 48) <A/T> is grounded to the vehicle body.

TROUBLESHOOTING HINTS (The most likely causes for this code to be set are:)

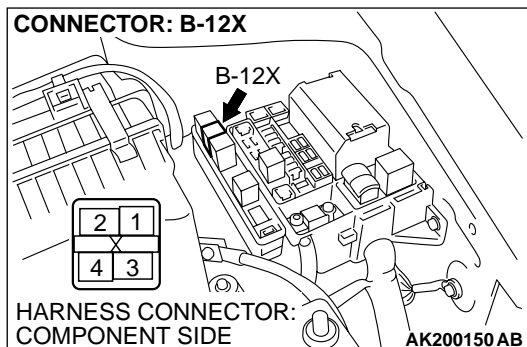
- Malfunction of the ignition switch.
- Malfunction of the MFI relay.
- Improper connector contact, open circuit or short-circuited harness wire.
- Disconnected ECM <M/T> or PCM <A/T> ground wire.
- Malfunction of the ECM <M/T> or PCM <A/T>.

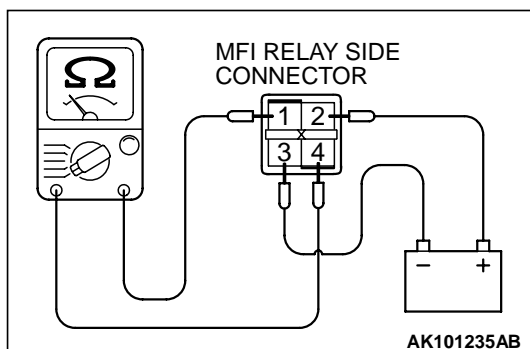
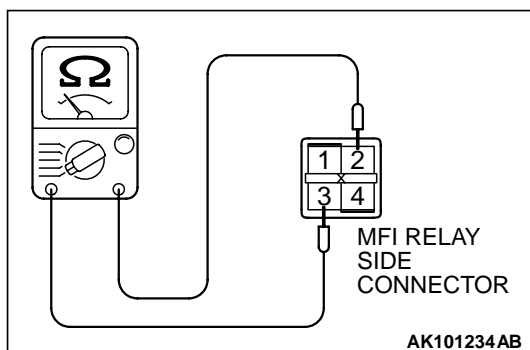
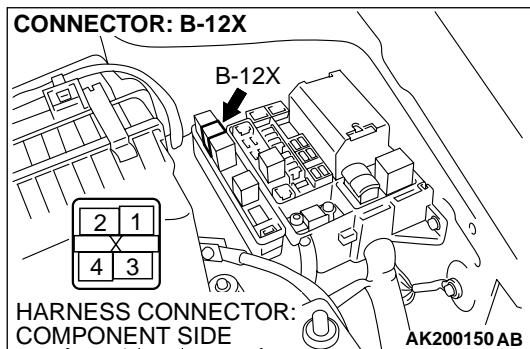
DIAGNOSIS

STEP 1. Check connector B-12X at MFI relay for damage.
Q: Is the connector in good condition?

YES : Go to Step 2.

NO : Repair or replace it. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Then confirm that the malfunction symptom is eliminated.



**STEP 2. Check the MFI relay.**

(1) Remove the MFI relay.

(2) Check for continuity between the MFI relay terminals No. 2 and No. 3.

- There should be continuity. (approximately 70 ohms)

(3) Use jumper wires to connect MFI relay terminal No. 2 to the positive battery terminal and terminal No. 3 to the negative battery terminal.

(4) Check for continuity between the MFI relay terminals No. 1 and No. 4 while connecting and disconnecting the jumper wire at the negative battery terminal.

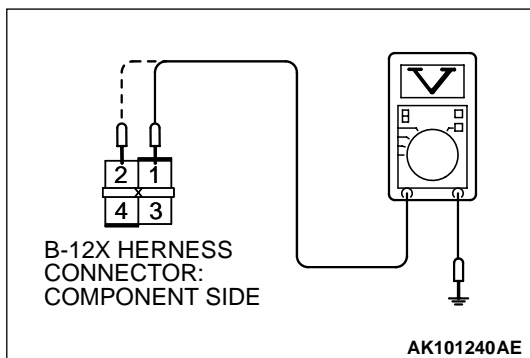
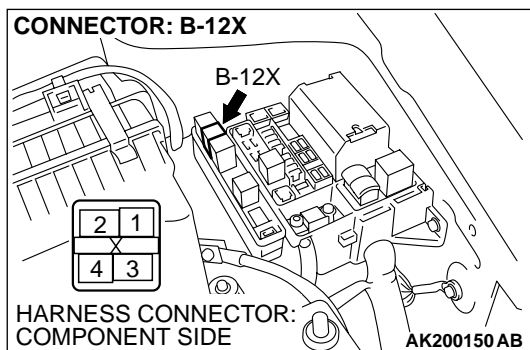
- Should be less than 2 ohms. (Negative battery terminal connected)
- Should be open loop. (Negative battery terminal disconnected)

(5) Install the MFI relay.

Q: Is the measured voltage within the specified range?

YES : Go to Step 3.

NO : Replace the MFI relay. Then confirm that the malfunction symptom is eliminated.



STEP 3. Measure the power supply voltage at MFI relay harness side connector B-12X.

(1) Disconnect the connector B-12X and measure at the harness side.

(2) Measure the voltage between terminals No. 1, No. 2 and ground.

- Voltage should measure battery positive voltage.

Q: Is battery positive voltage (approximately 12 volts) present?

YES : Go to Step 4.

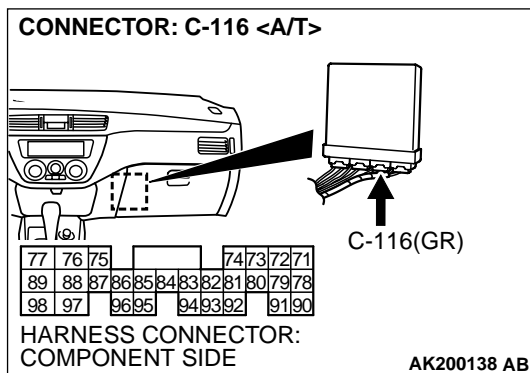
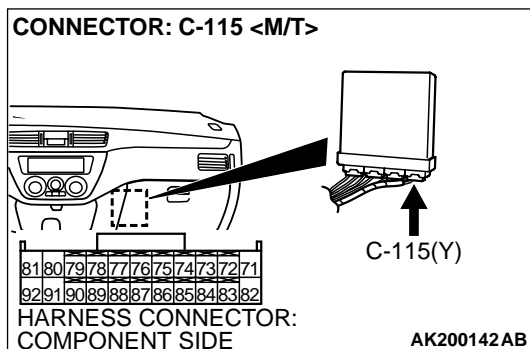
NO : Check harness connector A-13 at intermediate connector for damage, and repair or replace as required. Refer to, GROUP 00E, Harness Connector Inspection [P.00E-2](#). If intermediate connector is in good condition, repair harness wire between dedicated fuse (3) and MFI relay connector B-12X (terminals No. 1, No. 2) because of open circuit. Then confirm that the malfunction symptom is eliminated.

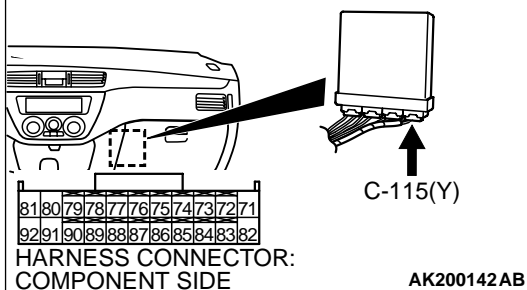
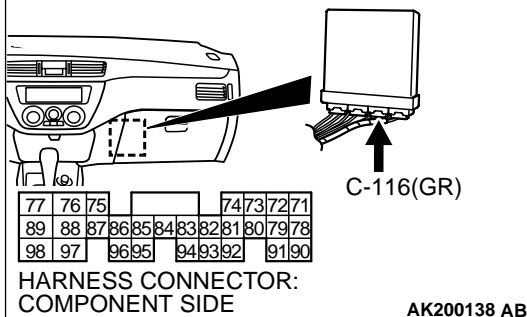
STEP 4. Check connector C-115 at ECM <M/T> or connector C-116 at PCM <A/T> for damage.

Q: Is the connector in good condition?

YES : Go to Step 5.

NO : Repair or replace it. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Then confirm that the malfunction symptom is eliminated.

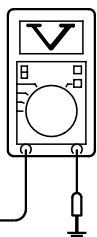


CONNECTOR: C-115 <M/T>**CONNECTOR: C-116 <A/T>**

<M/T>

C-115 HARNESS
CONNECTOR:
COMPONENT SIDE

81	80	79	78	77	76	75	74	73	72	71
92	91	90	89	88	87	86	85	84	83	82

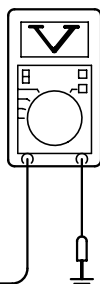


AK000402 AF

<A/T>

C-116 HARNESS
CONNECTOR:
COMPONENT SIDE

77	76	75					74	73	72	71	
89	88	87	86	85	84	83	82	81	80	79	78
98	97		96	95		94	93	92		91	90



AKX01435 AK

STEP 5. Measure the ignition switch-IG signal voltage at ECM harness side connector C-115 <M/T> or PCM harness side connector C-116 <A/T>.

- (1) Disconnect the connector C-115 <M/T> or C-116 <A/T> and measure at the harness side.
- (2) Turn the ignition switch to the "ON" position.

- (3) Measure the voltage between terminal No. 82 <M/T> or No. 98 <A/T> and ground.

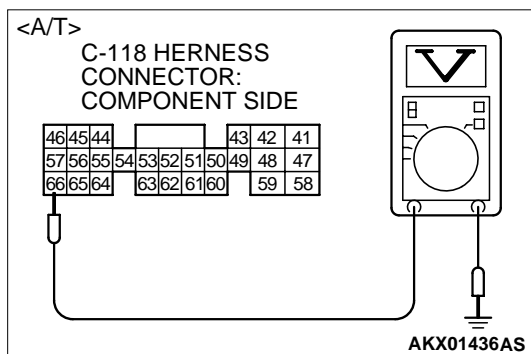
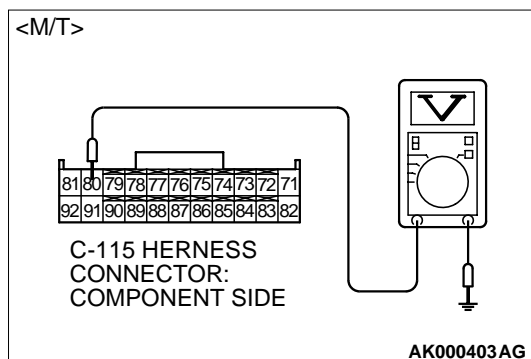
- Voltage should measure battery positive voltage.

- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is battery positive voltage (approximately 12 volts) present?

YES : Go to Step 6.

NO : Check harness connector C-123, C-210 and C-211 at intermediate connector for damage, and repair or replace as required. Refer to, GROUP 00E, Harness Connector Inspection [P.00E-2](#). If intermediate connectors are in good condition, repair harness wire between ignition switch connector C-201 (terminal No. 2) and ECM connector C-115 (terminal No. 82) <M/T> or PCM connector C-116 (terminal No. 98) <A/T> because of open circuit. Then confirm that the malfunction symptom is eliminated.



STEP 6. Measure the backup power supply voltage at ECM harness side connector C-115 <M/T> or PCM harness side connector C-118 <A/T>.

- (1) Disconnect the connector C-115 <M/T> or C-118 <A/T> and measure at the harness side.
- (2) Measure the voltage between terminal No. 80 <M/T> or No. 66 <A/T> and ground.
 - Voltage should measure battery positive voltage.

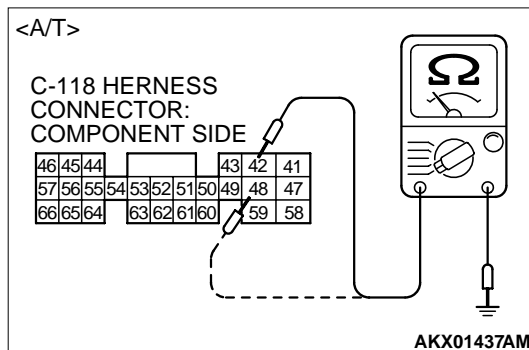
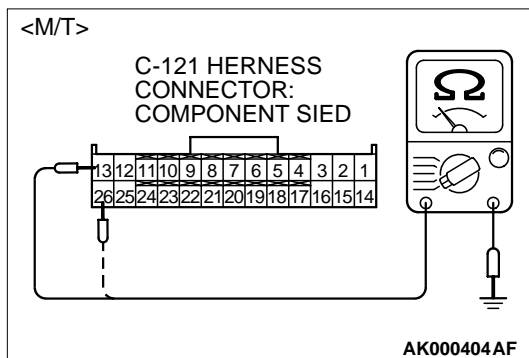
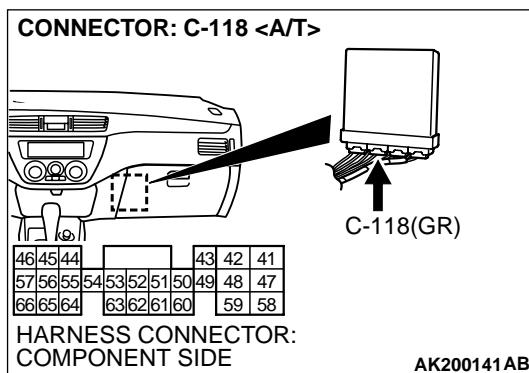
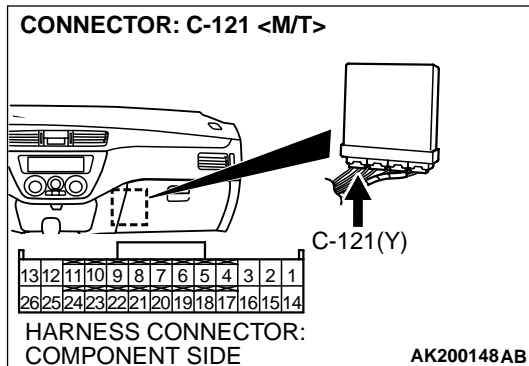
Q: Is battery positive voltage (approximately 12 volts) present?

YES : Go to Step 7.

NO : Check harness connector A-13 at intermediate connector for damage, and repair or replace as required. Refer to, GROUP 00E, Harness Connector Inspection [P.00E-2](#). If intermediate connectors are in good condition, repair harness wire between dedicated fuse (4) and ECM connector C-115 (terminal No. 80) <M/T> or PCM connector C-118 (terminal No. 66) <A/T> because of open circuit. Then confirm that the malfunction symptom is eliminated.

STEP 7. Check for continuity at ECM harness side connector C-121 <M/T> or PCM harness side connector C-118 <A/T>.

- (1) Disconnect the connector C-121 <M/T> or C-118 <A/T> and measure at the harness side.



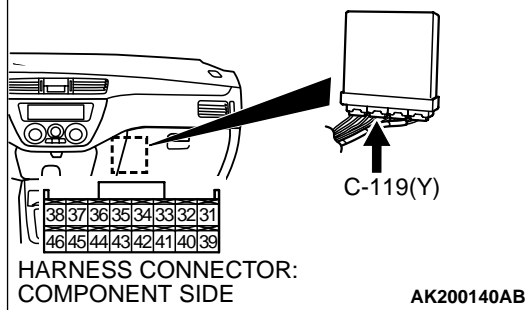
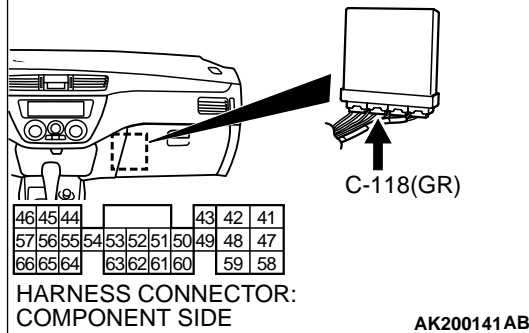
- (2) Check for the continuity between terminals (No. 13, No. 26) <M/T> or (No. 42, No. 48) <A/T> and ground.

- Should be less than 2 ohms.

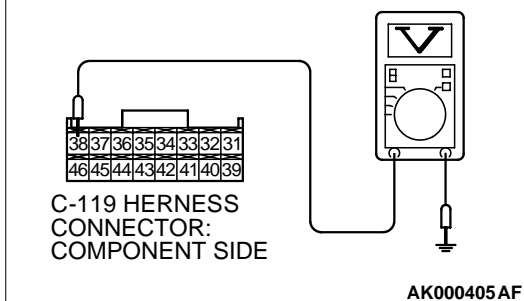
Q: Does continuity exist?

YES : Go to Step 8.

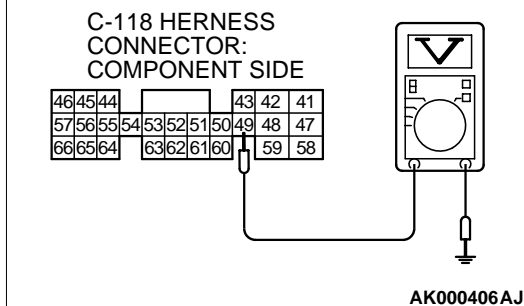
NO : Repair harness wire between ECM connector C-121 (terminals No. 13, No. 26) <M/T> or PCM connector C-118 (terminals No. 42, No. 48) <A/T> and ground because of open circuit. Then confirm that the malfunction symptom is eliminated.

CONNECTOR: C-119 <M/T>**CONNECTOR: C-118 <A/T>**

<M/T>



<A/T>



STEP 8. Measure the power supply voltage at ECM harness side connector C-119 <M/T> or PCM harness side connector C-118 <A/T>.

(1) Disconnect the connector C-119 <M/T> or C-118 <A/T> and measure at the harness side.

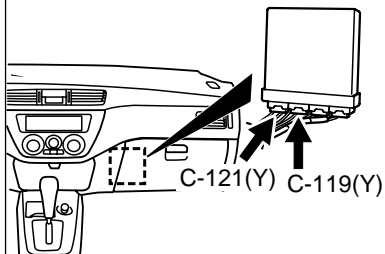
(2) Measure the voltage between terminal No. 38 <M/T> or No. 49 <A/T> and ground.

- Voltage should measure battery positive voltage.

Q: Is battery positive voltage (approximately 12 volts) present?

YES : Go to Step 9.

NO : Repair harness wire between MFI relay connector B-12X (terminal No. 3) and ECM connector C-119 (terminal No. 38) <M/T> or PCM connector C-118 (terminal No. 49) <A/T> because of open circuit. Then confirm that the malfunction symptom is eliminated.

CONNECTORS: C-119, C-121 <M/T>

38	37	36	35	34	33	32	31
46	45	44	43	42	41	40	39

C-119 HARNESS CONNECTOR:
COMPONENT SIDE

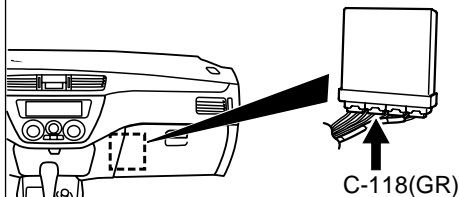
13	12	11	10	9	8	7	6	5	4	3	2	1
26	25	24	23	22	21	20	19	18	17	16	15	14

C-121 HARNESS CONNECTOR:
COMPONENT SIDE

AK200136AB

STEP 9. Measure the power supply voltage at ECM harness side connector C-121, C-119 <M/T> or PCM harness side connector C-118 <A/T>.

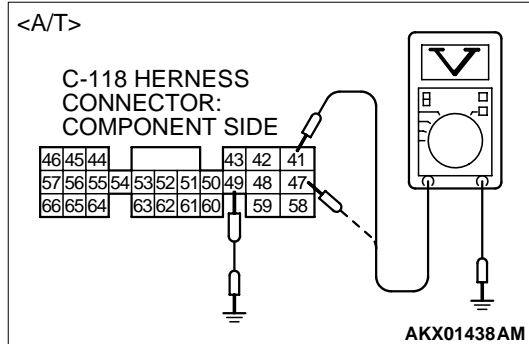
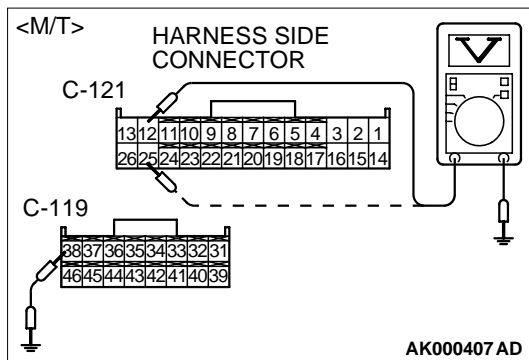
(1) Disconnect the connectors C-121, C-119 <M/T> or C-118 <A/T> and measure at the harness side.

CONNECTOR: C-118 <A/T>

46	45	44						43	42	41
57	56	55	54	53	52	51	50	49	48	47
66	65	64		63	62	61	60		59	58

HARNESS CONNECTOR:
COMPONENT SIDE

AK200141AB



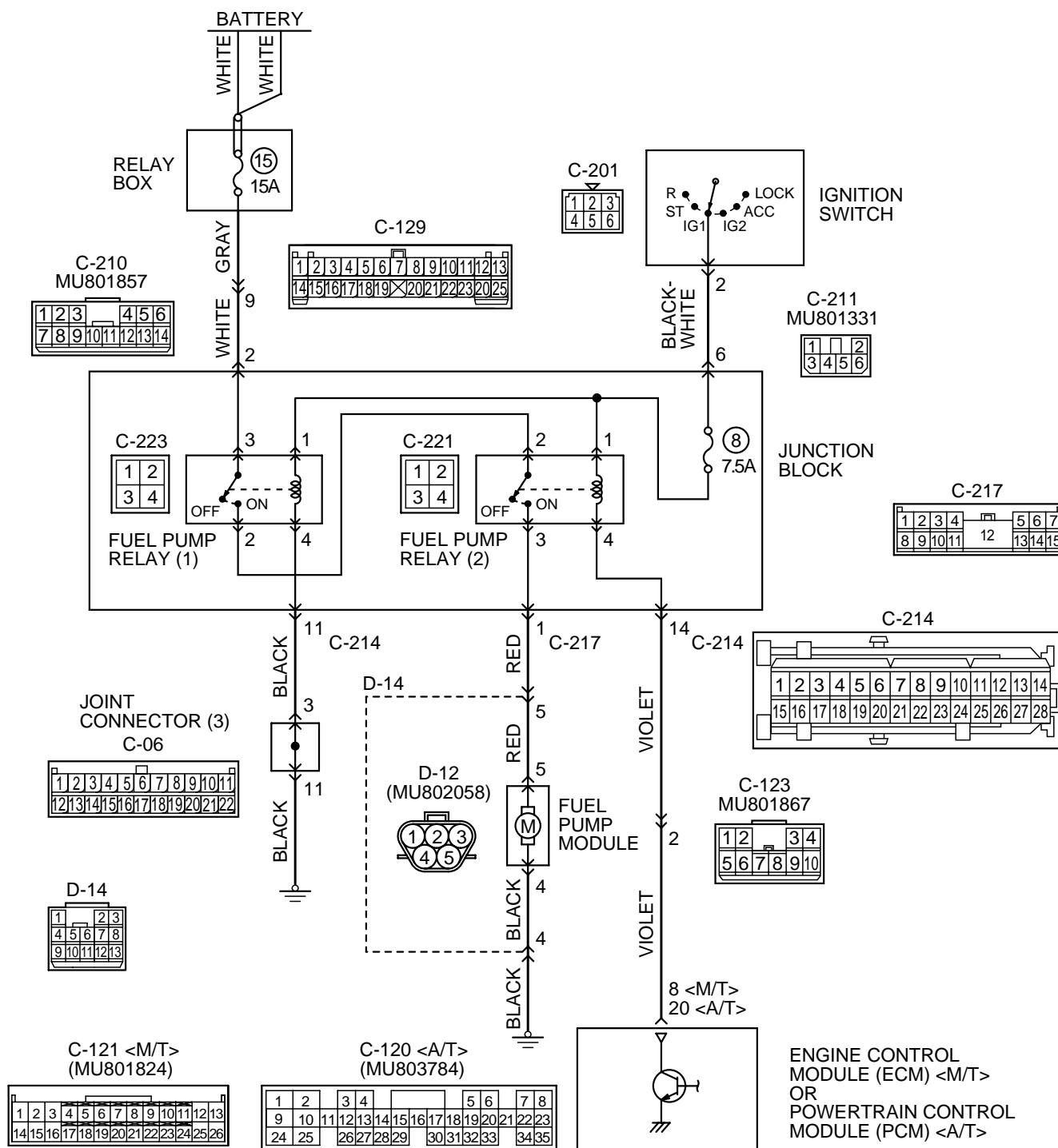
- (2) Using a jumper wire, connect terminal No. 38 <M/T> or No. 49 <A/T> to ground.
- (3) Measure the voltage between terminals (No. 12, No. 25) <M/T> or (No. 41, No. 47) <A/T> and ground.
 - Voltage should measure battery positive voltage.

Q: Is battery positive voltage (approximately 12 volts) present?

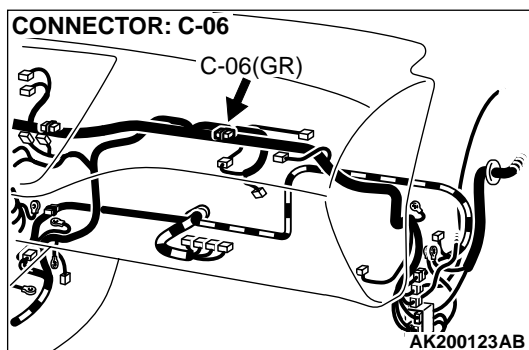
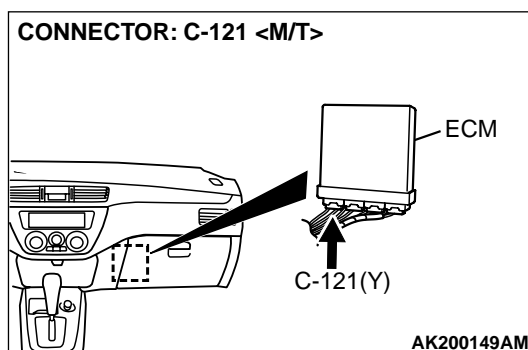
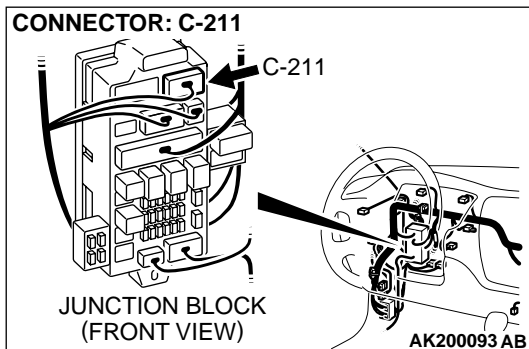
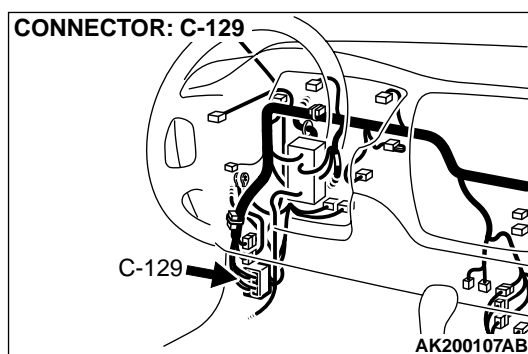
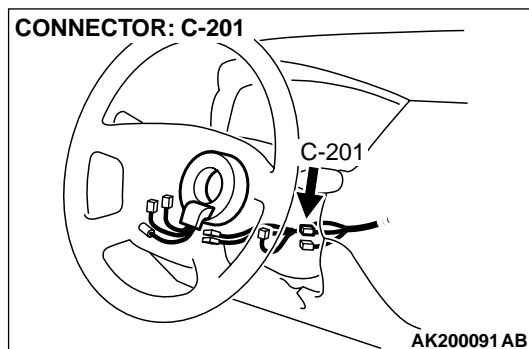
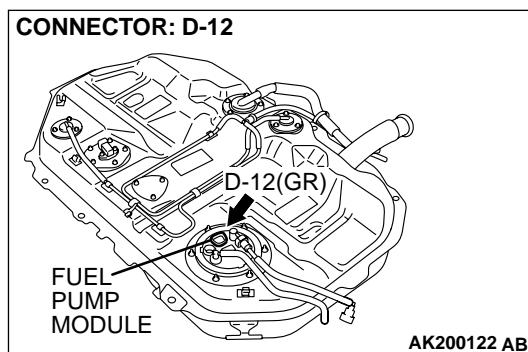
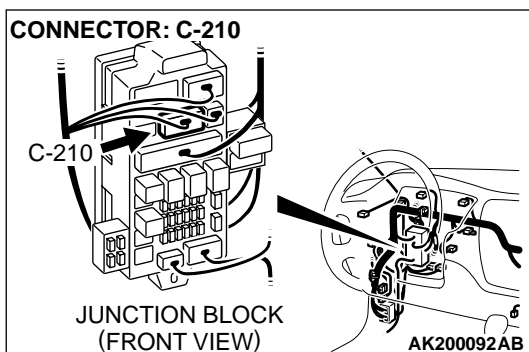
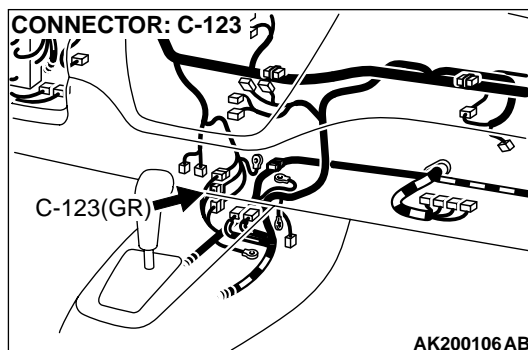
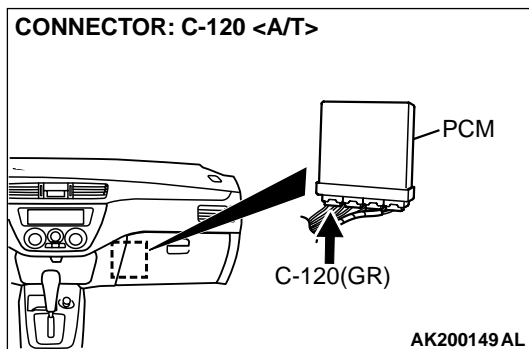
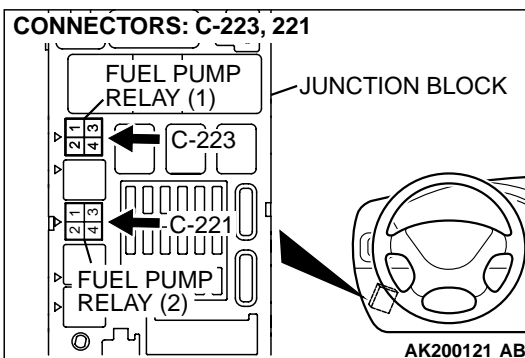
- YES :** Replace the ECM or PCM. Then confirm that the malfunction symptom is eliminated.
- NO :** Check connector C-105 at intermediate connector for damage, and repair or replace as required. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). If intermediate connector is in good condition, repair harness wire between MFI relay connector B-12X (terminal No. 4) and ECM connector C-121 (terminals No. 12, No. 25) <M/T> or PCM connector C-118 (terminals No. 41, No. 47) <A/T> because of open circuit. Then confirm that the malfunction symptom is eliminated.

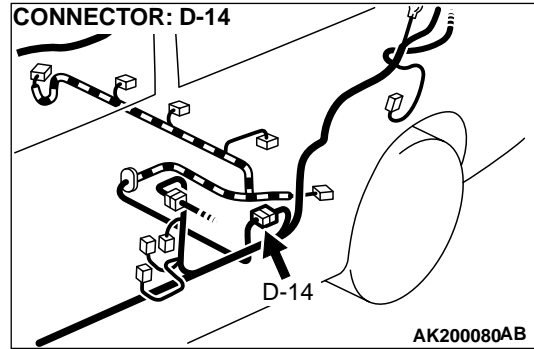
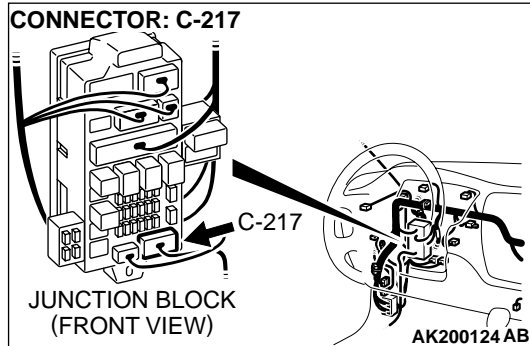
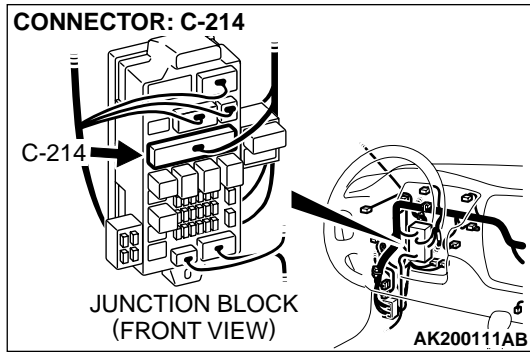
INSPECTION PROCEDURE 30: Fuel pump system.

Fuel Pump Circuit



AK200390





CIRCUIT OPERATION

- Battery positive voltage is applied to the fuel pump relay 1 (terminal No. 1) from the ignition switch-IG.
Ground is provided through terminal No. 4 to chassis ground.
- When the ignition switch is turned to the "ON" position, the battery positive voltage is applied to the fuel pump relay 2 (terminal No. 2) from the fuel pump relay 1 (terminal No. 2).
- A battery positive voltage is applied on the fuel pump relay 2 (terminal No. 1) from the ignition switch-IG.

- During cranking and while the engine is running, the ECM <M/T> or PCM <A/T> turns the power transistor in the ECM <M/T> or PCM <A/T> ON to ground the fuel pump relay 2 coil. With this, the fuel pump relay turns ON, and the battery positive voltage is supplied to the fuel pump from the fuel pump relay 2 (terminal No. 3).

TROUBLESHOOTING HINTS (The most likely causes for this code to be set are:)

- Malfunction of the fuel pump relay.
- Malfunction of the fuel pump.
- Improper connector contact, open or short-circuited harness wire.
- Malfunction of the ECM <M/T> or PCM <A/T>.

DIAGNOSIS

Required Special Tool:

- MB991502: Scan Tool (MUT-II)

STEP 1. Using scan tool MB991502, check actuator test item 07: Fuel Pump.

⚠ CAUTION

To prevent damage to scan tool MB991502, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

- (1) Connect scan tool MB991502 to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Set scan tool MB991502 to the actuator test mode for item 07, Fuel Pump.
 - An operation sound of the fuel pump should be heard.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the fuel pump operating properly?

YES : That this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points [P.00-6](#).

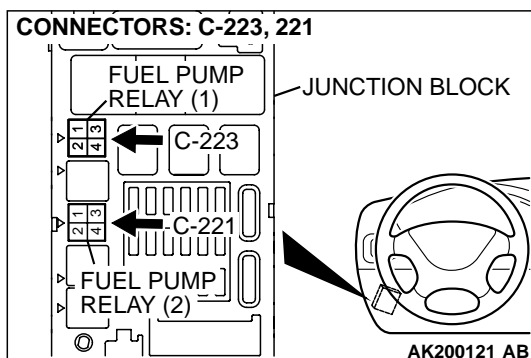
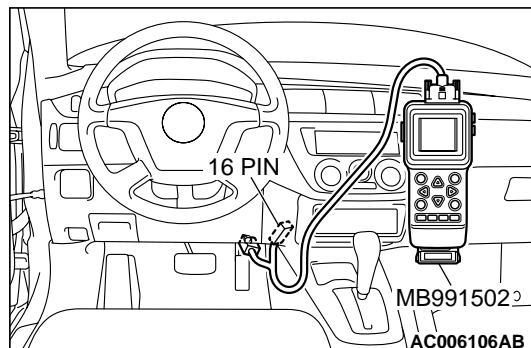
NO : Go to Step 2.

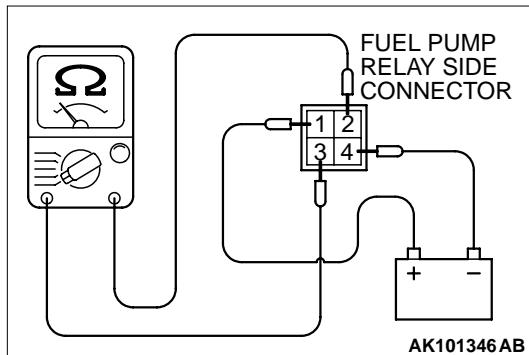
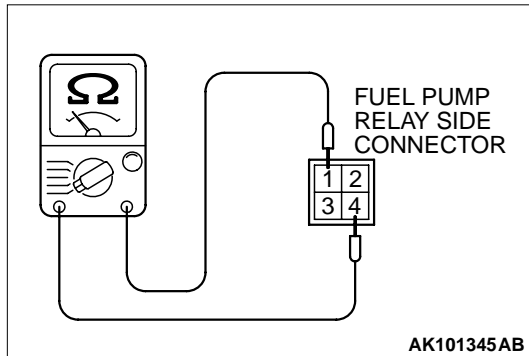
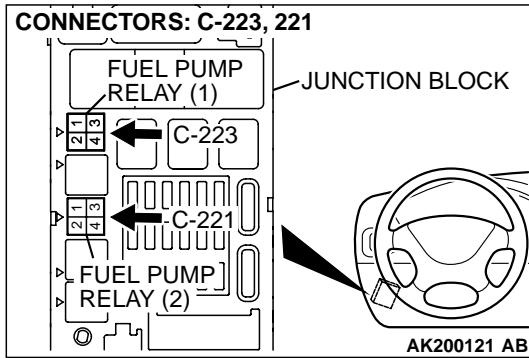
STEP 2. Check connector C-223 at fuel pump relay 1 and connector C-221 at fuel pump relay 2 for damage.

Q: Is the connector in good condition?

YES : Go to Step 3.

NO : Repair or replace it. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Then confirm that the malfunction symptom is eliminated.



**STEP 3. Check the fuel pump relay 1 and 2.**

(1) Remove the fuel pump relay.

(2) Check for continuity between the fuel pump relay terminals No. 1 and No. 4.

- There should be continuity. (approximately 70 ohms)

(3) Use jumper wires to connect fuel pump relay terminal No. 1 to the positive battery terminal and terminal No. 4 to the negative battery terminal.

(4) Check for continuity between the fuel pump relay terminals No. 2 and No. 3 while connecting and disconnecting the jumper wire at the negative battery terminal.

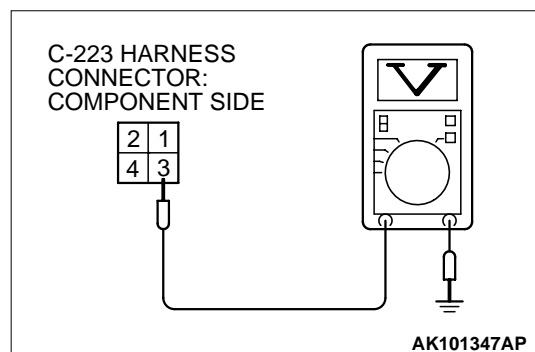
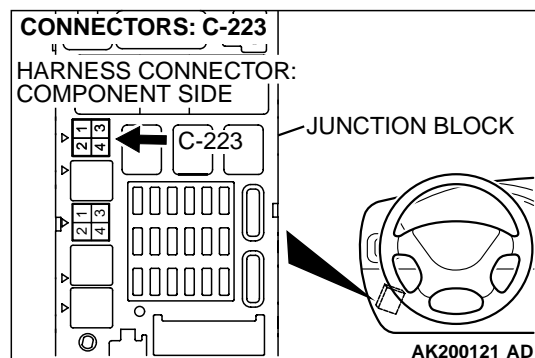
- Should be less than 2 ohms. (Negative battery terminal connected)
- Should be open loop. (Negative battery terminal disconnected)

(5) Install the fuel pump relay.

Q: Is the resistance normal?

YES : Go to Step 4.

NO : Replace the fuel pump relay. Then confirm that the malfunction symptom is eliminated.



STEP 4. Measure the power supply voltage at fuel pump relay 1 harness side connector C-223.

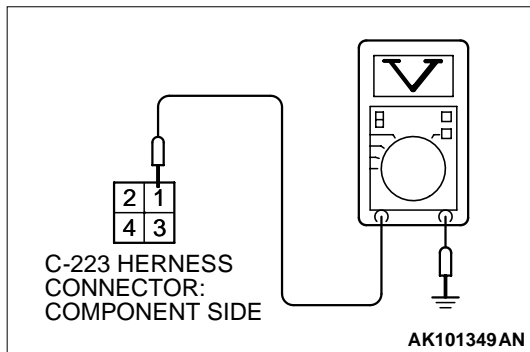
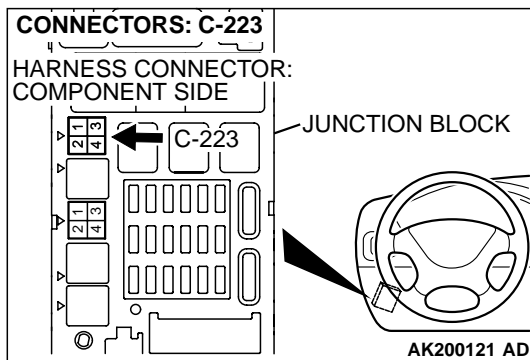
- (1) Disconnect the connector C-223 and measure at the harness side.

- (2) Measure the voltage between terminal No. 3 and ground.
 • Voltage should measure battery positive voltage.

Q: Is battery positive voltage (approximately 12 volts) present?

YES : Go to Step 5.

NO : Check harness connectors C-129 and C-210 at intermediate connector for damage, and repair or replace as required. Refer to, GROUP 00E, Harness Connector Inspection [P.00E-2](#). If intermediate connectors are in good condition, repair harness wire between dedicated fuse (15) and fuel pump relay 1 connector C-223 (terminal No. 3) because of open circuit. Then confirm that the malfunction symptom is eliminated.



STEP 5. Measure the power supply voltage at fuel pump relay 1 harness side connector C-223.

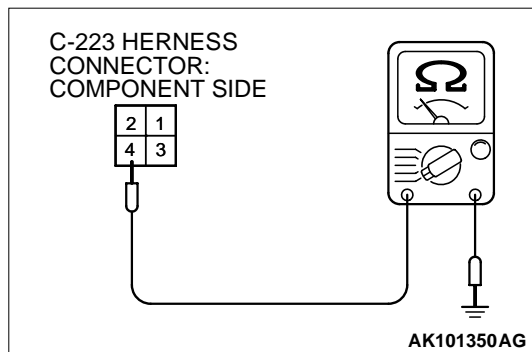
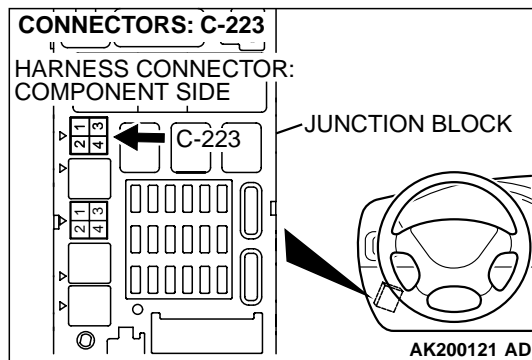
- (1) Disconnect the connector C-223 and measure at the harness side.
- (2) Turn the ignition switch to the "ON" position.

- (3) Measure the voltage between terminal No. 1 and ground.
 - Voltage should measure battery positive voltage.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is battery positive voltage (approximately 12 volts) present?

YES : Go to Step 6.

NO : Check harness connector C-211 at intermediate connector for damage, and repair or replace as required. Refer to, GROUP 00E, Harness Connector Inspection [P.00E-2](#). If intermediate connector is in good condition, repair harness wire between ignition switch connector C-201 (terminal No. 2) and fuel pump relay 1 connector C-223 (terminal No. 1) because of open circuit. Then confirm that the malfunction symptom is eliminated.



STEP 6. Check for continuity at fuel pump relay 1 harness side connector C-223.

- (1) Disconnect the connector C-223 and measure at the harness side.

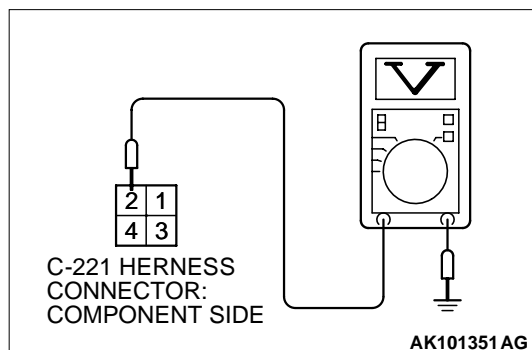
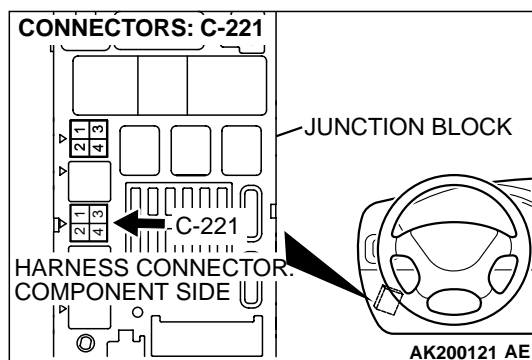
- (2) Check for the continuity between terminal No. 4 and ground.

- Should be less than 2 ohms.

Q: Does continuity exist?

YES : Go to Step 7.

NO : Check harness connectors C-06 and C-214 at intermediate connector for damage, and repair or replace as required. Refer to, GROUP 00E, Harness Connector Inspection [P.00E-2](#). If intermediate connectors are in good condition, repair harness wire between fuel pump relay 1 connector C-223 (terminal No. 4) and ground because of open circuit. Then confirm that the malfunction symptom is eliminated.



STEP 7. Measure the power supply voltage at fuel pump relay 2 harness side connector C-221.

- (1) Disconnect the connector C-221 and measure at the harness side.

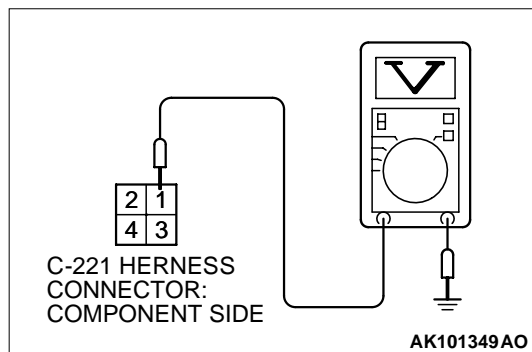
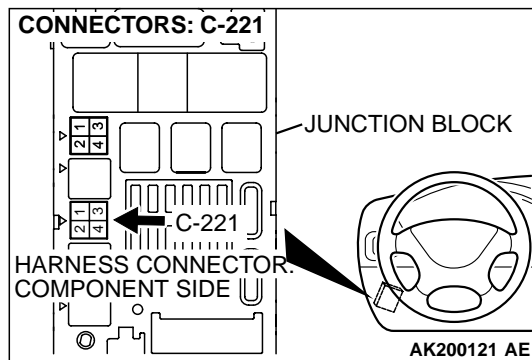
- (2) Turn the ignition switch to the "ON" position.

- (3) Measure the voltage between terminal No. 2 and ground.
- Voltage should measure battery positive voltage.

Q: Is battery positive voltage (approximately 12 volts) present?

YES : Go to Step 8.

NO : Repair harness wire between fuel pump relay 1 connector C-223 (terminal No. 2) and fuel pump relay 2 connector C-221 (terminal No. 2) because of open circuit. Then confirm that the malfunction symptom is eliminated.



STEP 8. Measure the power supply voltage at fuel pump relay 2 harness side connector C-221.

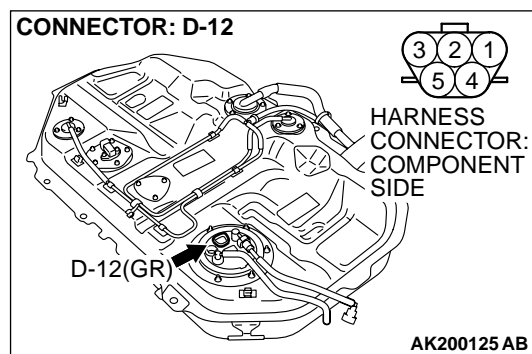
- (1) Disconnect the connector C-221 and measure at the harness side.
- (2) Turn the ignition switch to the "ON" position.

- (3) Measure the voltage between terminal No. 1 and ground.
 - Voltage should measure battery positive voltage.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is battery positive voltage (approximately 12 volts) present?

YES : Go to Step 9.

NO : Check harness connector C-211 at intermediate connector for damage, and repair or replace as required. Refer to, GROUP 00E, Harness Connector Inspection [P.00E-2](#). If intermediate connector is in good condition, repair harness wire between ignition switch connector C-201 (terminal No. 2) and fuel pump relay 2 connector C-221 (terminal No. 1) because of open circuit. Then confirm that the malfunction symptom is eliminated.

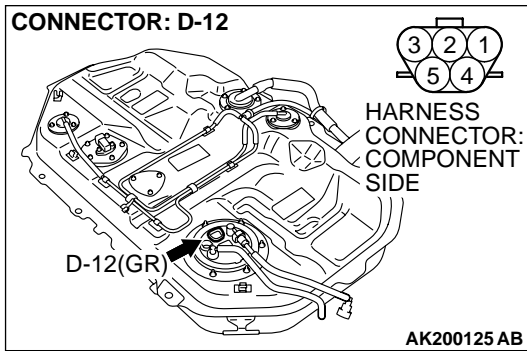
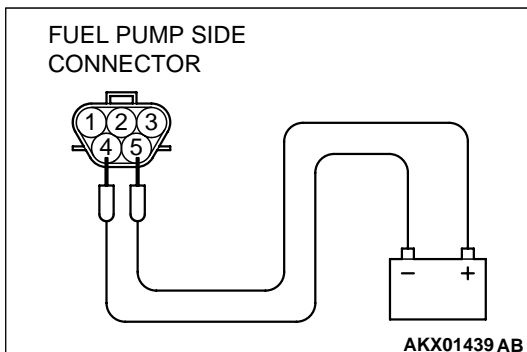


STEP 9. Check connector D-12 at fuel pump for damage.

Q: Is the connector in good condition?

YES : Go to Step 10.

NO : Repair or replace it. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Then confirm that the malfunction symptom is eliminated.

CONNECTOR: D-12**FUEL PUMP SIDE CONNECTOR****STEP 10. Check the fuel pump operation.**

(1) Disconnect fuel pump connector D-12.

(2) Use jumper wires to connect fuel pump connector terminal No. 5 to the positive battery terminal and terminal No. 4 to the negative battery terminal.

- An operating sound of the fuel pump should be heard.

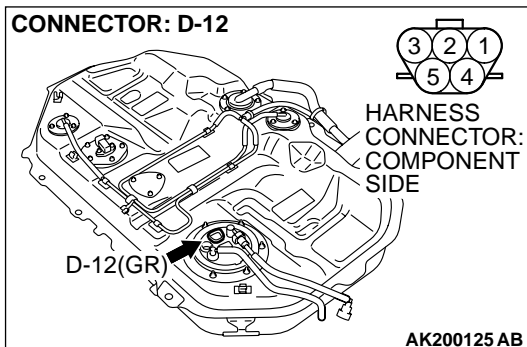
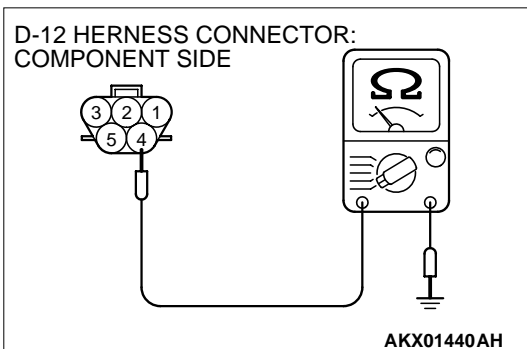
Q: Is the fuel pump operating properly?

YES : Go to Step 11.

NO : Replace the fuel pump. Then confirm that the malfunction symptom is eliminated.

STEP 11. Check for continuity at fuel pump harness side connector D-12.

(1) Disconnect the connector D-12 and measure at the harness side.

CONNECTOR: D-12**D-12 HERNESS CONNECTOR: COMPONENT SIDE**

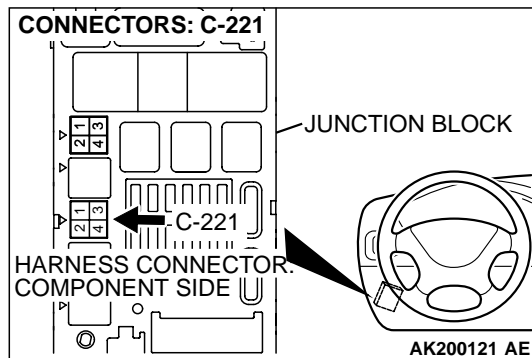
(2) Check for the continuity between terminal No. 4 and ground.

- Should be less than 2 ohms.

Q: Does continuity exist?

YES : Go to Step 12.

NO : Check harness connector D-14 at intermediate connector for damage, and repair or replace as required. Refer to, GROUP 00E, Harness Connector Inspection [P.00E-2](#). If intermediate connector is in good condition, repair harness wire damage between fuel pump connector D-12 (terminal No. 4) and ground because of open circuit or harness damage. Then confirm that the malfunction symptom is eliminated.



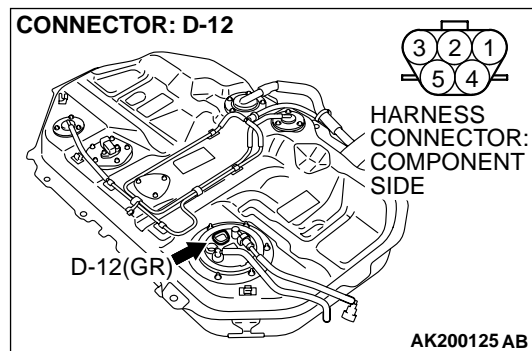
STEP 12. Check for open circuit and short circuit to ground and harness damage between fuel pump relay 2 connector C-221 (terminal No. 3) and fuel pump connector D-12 (terminal No. 5).

NOTE: Check harness after checking intermediate connectors C-217 and D-14. If intermediate connectors are damaged, repair or replace them. After to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Then check that the malfunction is eliminated.

Q: Is the harness wire in good condition?

YES : Go to Step 13.

NO : Repair it. Then confirm that the malfunction symptom is eliminated.

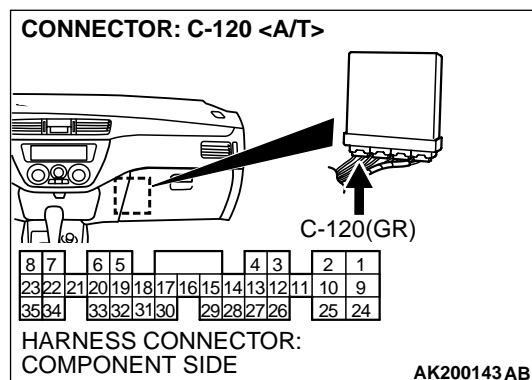
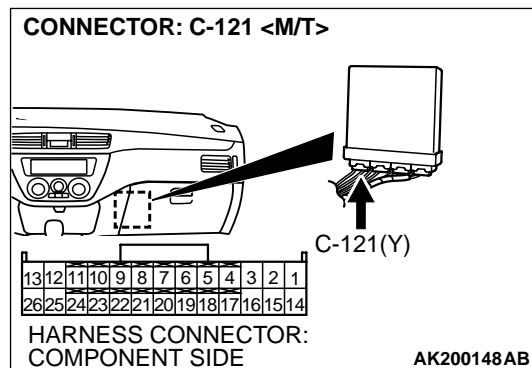


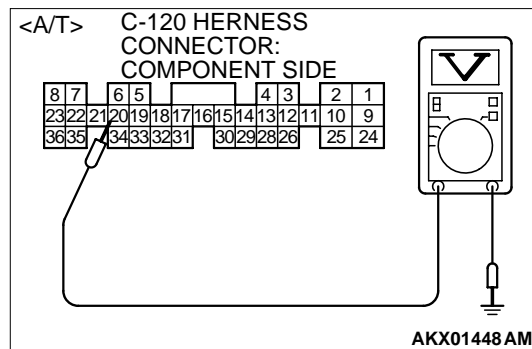
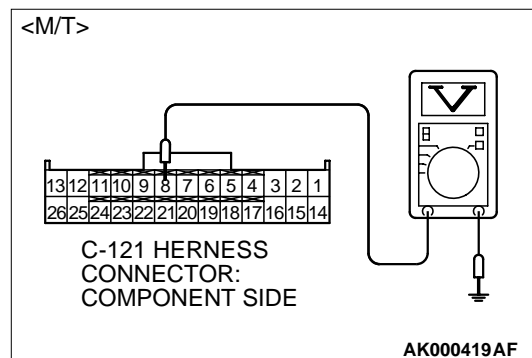
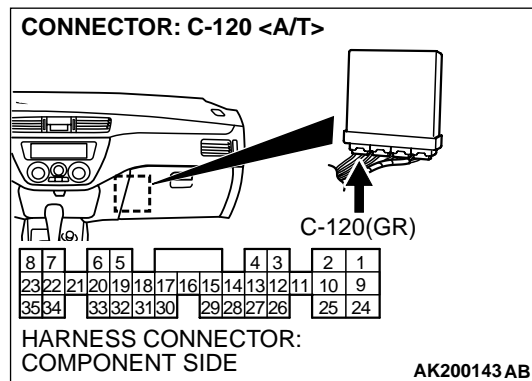
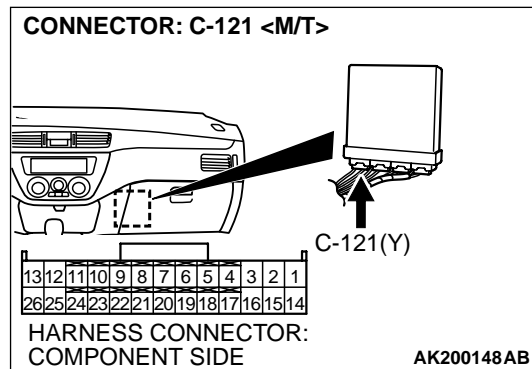
STEP 13. Check connector C-121 at ECM <M/T> or connector C-120 at PCM <A/T> for damage.

Q: Is the connector in good condition?

YES : Go to Step 14.

NO : Repair or replace it. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Then confirm that the malfunction symptom is eliminated.





STEP 14. Measure the power supply voltage at ECM connector C-121 <M/T> or PCM connector C-120 <A/T>.

- (1) Disconnect the connector C-121 <M/T> or C-120 <A/T> and measure at the harness side.
- (2) Turn the ignition switch to the "ON" position.

- (3) Measure the voltage between terminal No. 8 <M/T> or No. 20 <A/T> and ground.

- Voltage should measure battery positive voltage.

- (4) Turn the ignition switch to the "LOCK" (OFF) position.

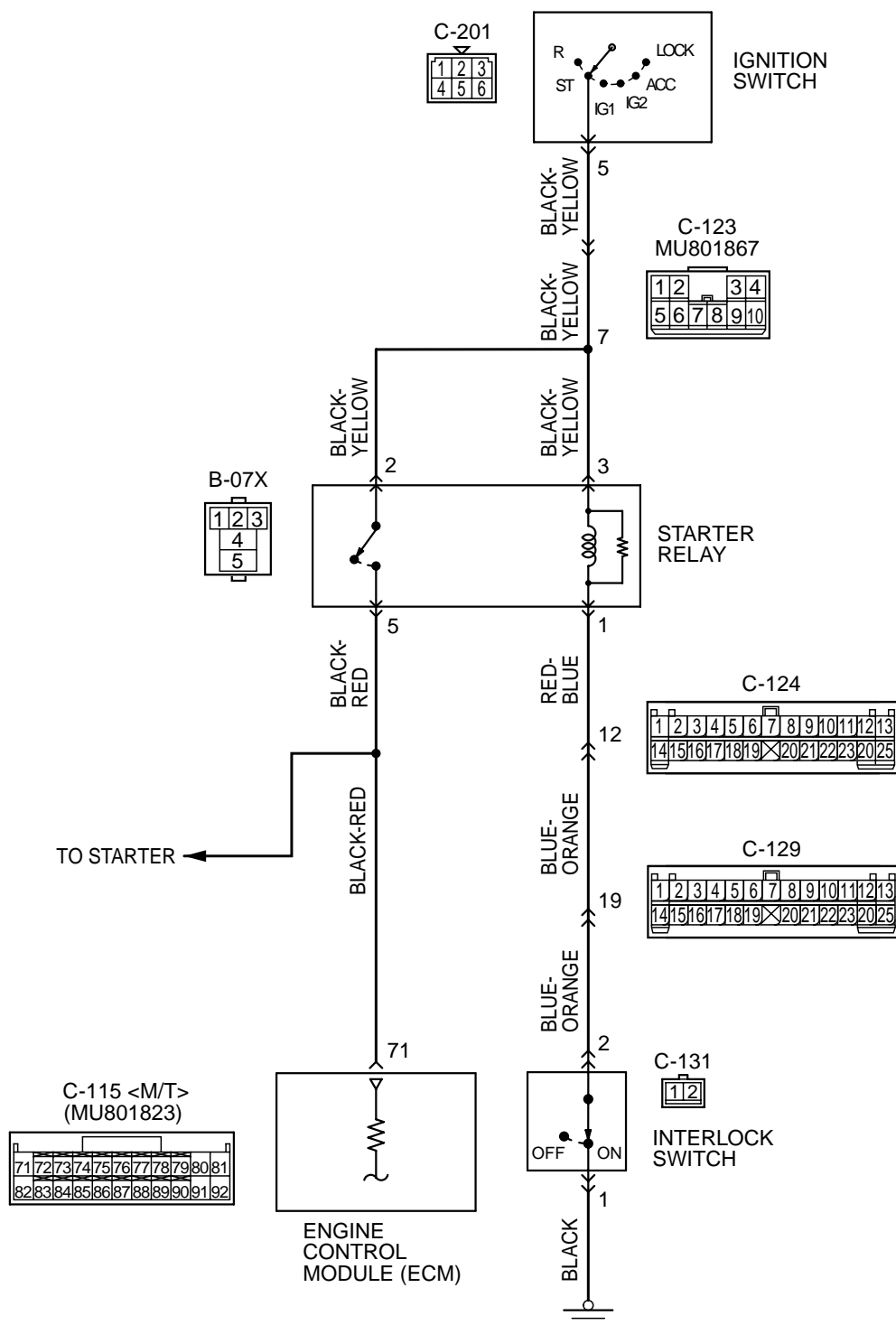
Q: Is battery positive voltage (approximately 12 volts) present?

YES : Replace the ECM or PCM. Then confirm that the malfunction symptom is eliminated.

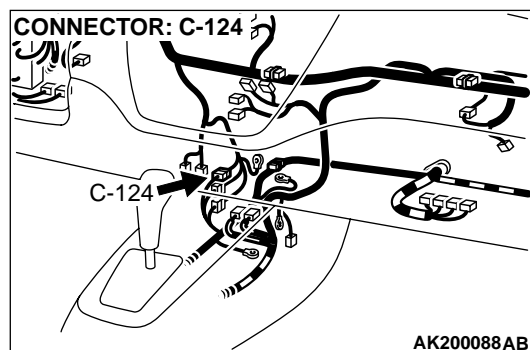
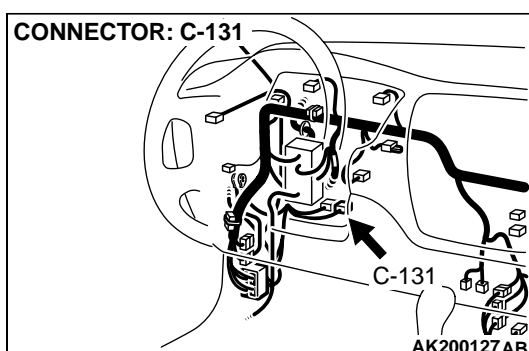
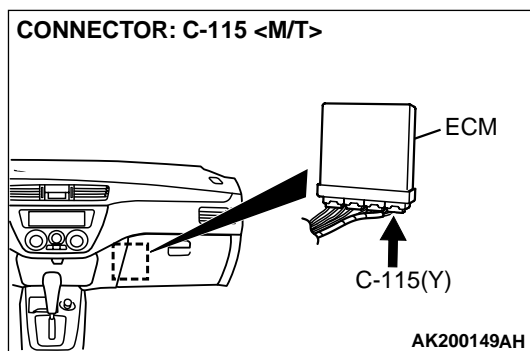
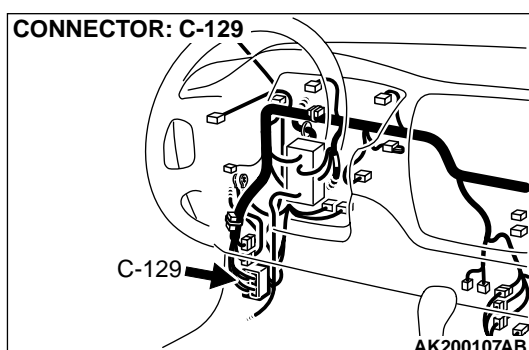
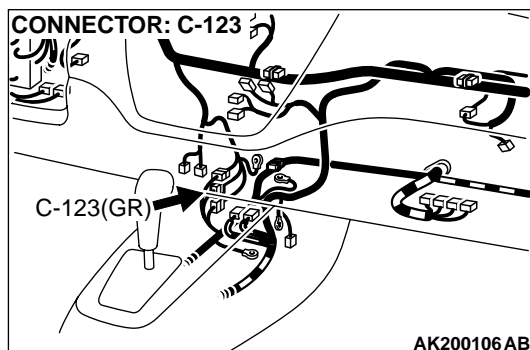
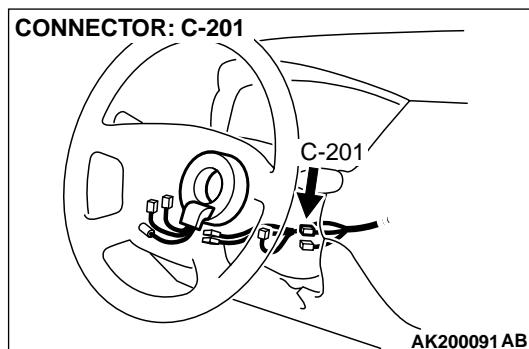
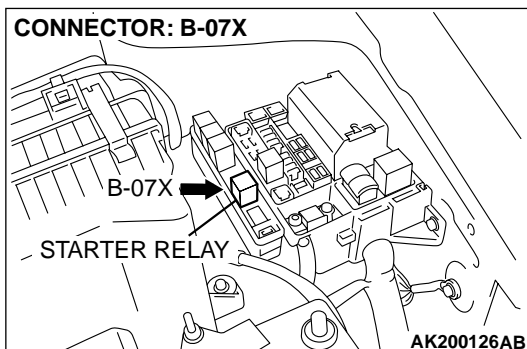
NO : Check harness connectors C-123 and C-214 at intermediate connector for damage, and repair or replace as required. Refer to, GROUP 00E, Harness Connector Inspection [P.00E-2](#). If intermediate connectors are in good condition, repair harness wire between fuel pump relay 2 connector C-221 (terminal No. 4) and ECM connector C-121 (terminal No. 8) <M/T> or PCM connector C-120 (terminal No. 20) <A/T> because of open circuit. Then confirm that the malfunction symptom is eliminated.

INSPECTION PROCEDURE 31: Ignition Switch-ST System <M/T>

Ignition Switch-ST Circuit



AK200391



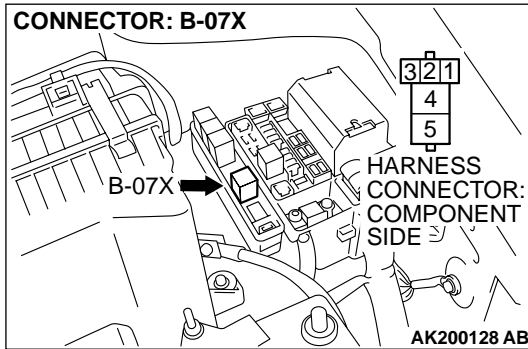
CIRCUIT OPERATION

- The battery positive voltage is supplied to the ECM (terminal No. 71) via the starter relay during engine cranking. With this, the ECM detects that the engine is being cranked.

TROUBLESHOOTING HINTS (The most likely causes for this case:)

- Malfunction of the ignition switch.
- Malfunction of the starter relay.
- Improper connector contact, open circuit or short-circuited harness wire.
- Malfunction of the ECM.

DIAGNOSIS



STEP 1. Check connector B-07X at starter relay for damage.

Q: Is the connector in good condition?

YES : Go to Step 2.

NO : Repair or replace it. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Then confirm that the malfunction symptom is eliminated.

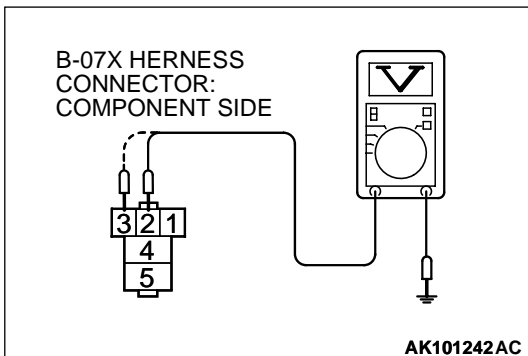
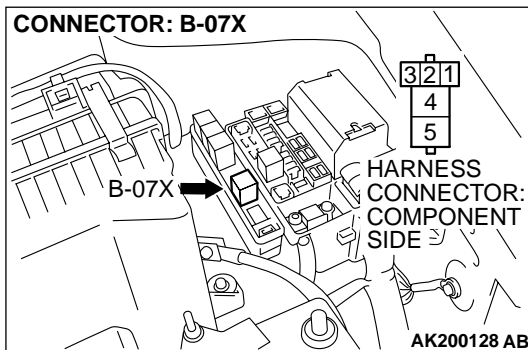
STEP 2. Check the starter relay.

Refer to GROUP 16, Starting system – On-vehicle Service – Starter relay check [P.16-20](#)

Q: Are there any abnormalities?

YES : Go to Step 3.

NO : Repair or replace it. Then confirm that the malfunction symptom is eliminated.



STEP 3. Measure the power supply voltage at starter relay connector B-07X.

(1) Disconnect the connector B-07X and measure at the harness side.

(2) Turn the ignition switch to the "START" position.

(3) Measure the voltage between terminals No. 2, No. 3 and ground.

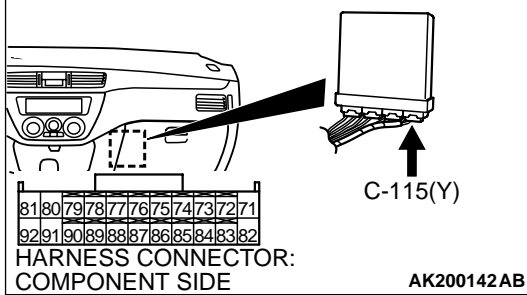
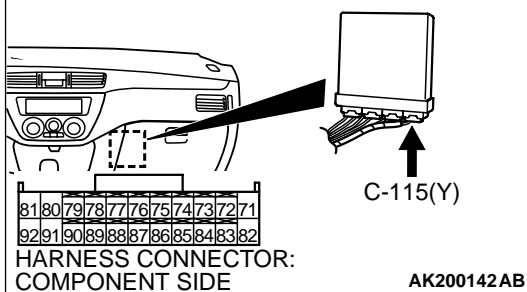
- Voltage should measure battery positive voltage.

(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is battery positive voltage (approximately 12 volts) present?

YES : Go to Step 4.

NO : Check connector C-123 at intermediate connector for damage, and repair or replace as required. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). If intermediate connector is in good condition, repair harness wire between ignition switch connector C-201 (terminal No. 5) and starter relay connector B-07X (terminals No. 2, No. 3) because of open circuit. Then confirm that the malfunction symptom is eliminated.

CONNECTOR: C-115 <M/T>**STEP 4. Check connector C-620 at ECM for damage.****Q: Is the connector in good condition?****YES :** Go to Step 5.**NO :** Repair or replace it. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Then confirm that the malfunction symptom is eliminated.**CONNECTOR: C-115 <M/T>****STEP 5. Measure the power supply voltage at ECM connector C-115.**

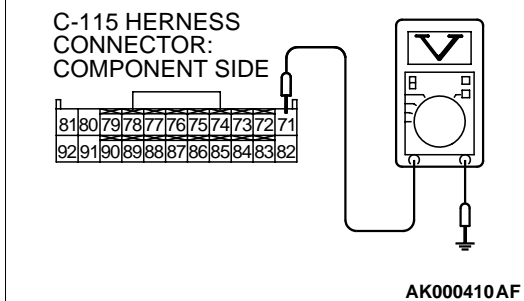
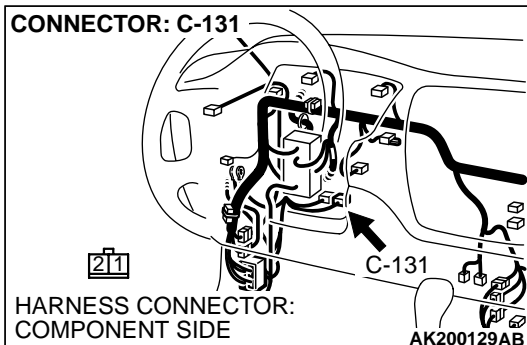
(1) Disconnect the connector C-115 and measure at the harness side.

(2) Turn the ignition switch to the "START" position.

(3) Measure the voltage between terminal No. 71 and ground.

- Voltage should measure battery positive voltage.

(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is battery positive voltage (approximately 12 volts) present?**YES :** Go to Step 6.**NO :** Repair harness wire between starter relay connector B-07X (terminal No. 5) and ECM connector C-115 (terminal No. 71) because of open circuit. Then confirm that the malfunction symptom is eliminated.**STEP 6. Check connector C-131 at interlock switch for damage.****Q: Is the connector in good condition?****YES :** Go to Step 7.**NO :** Repair or replace it. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Then confirm that the malfunction symptom is eliminated.

STEP 7. Check the interlock switch.

Refer to GROUP 21A, On-vehicle Service – Interlock switch check and adjustment [P.21A-8](#)

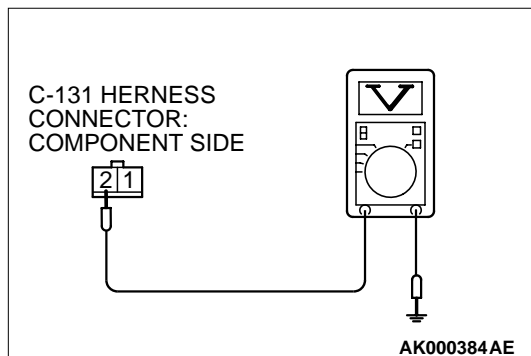
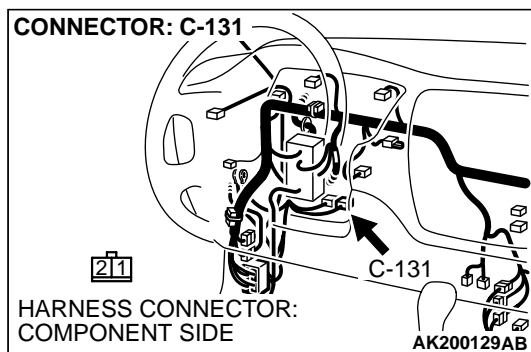
Q: Are there any abnormalities?

YES : Go to Step 8.

NO : Repair or replace it. Then confirm that the malfunction symptom is eliminated.

STEP 8. Measure the power supply voltage at interlock switch connector C-131.

- (1) Disconnect the connector C-131 and measure at the harness side.
- (2) Turn the ignition switch to the "START" position.

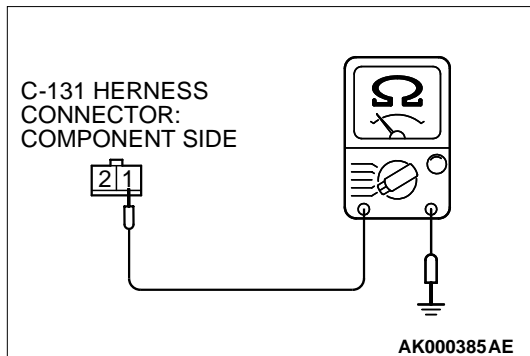
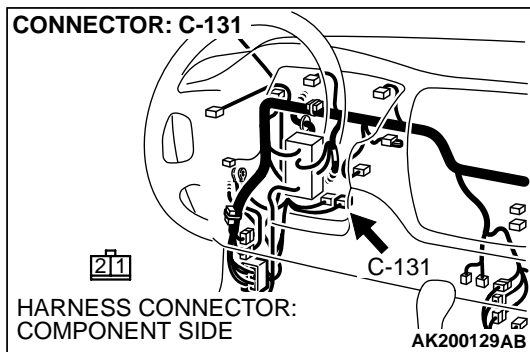


- (3) Measure the voltage between terminal No. 2 and ground.
 - Voltage should measure battery positive voltage.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is battery positive voltage (approximately 12 volts) present?

YES : Go to Step 9.

NO : Check connector C-124 and C-129 at intermediate connector for damage, and repair or replace as required. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). If intermediate connectors are in good condition, repair harness wire between starter relay connector B-07X (terminal No. 1) and interlock switch connector C-131 (terminal No. 2) because of open circuit. Then confirm that the malfunction symptom is eliminated.



STEP 9. Check for continuity at interlock switch harness side connector C-131.

(1) Disconnect the connector C-131 and measure at the harness side.

(2) Check for the continuity between terminal No. 1 and ground.

- Should be less than 2 ohms.

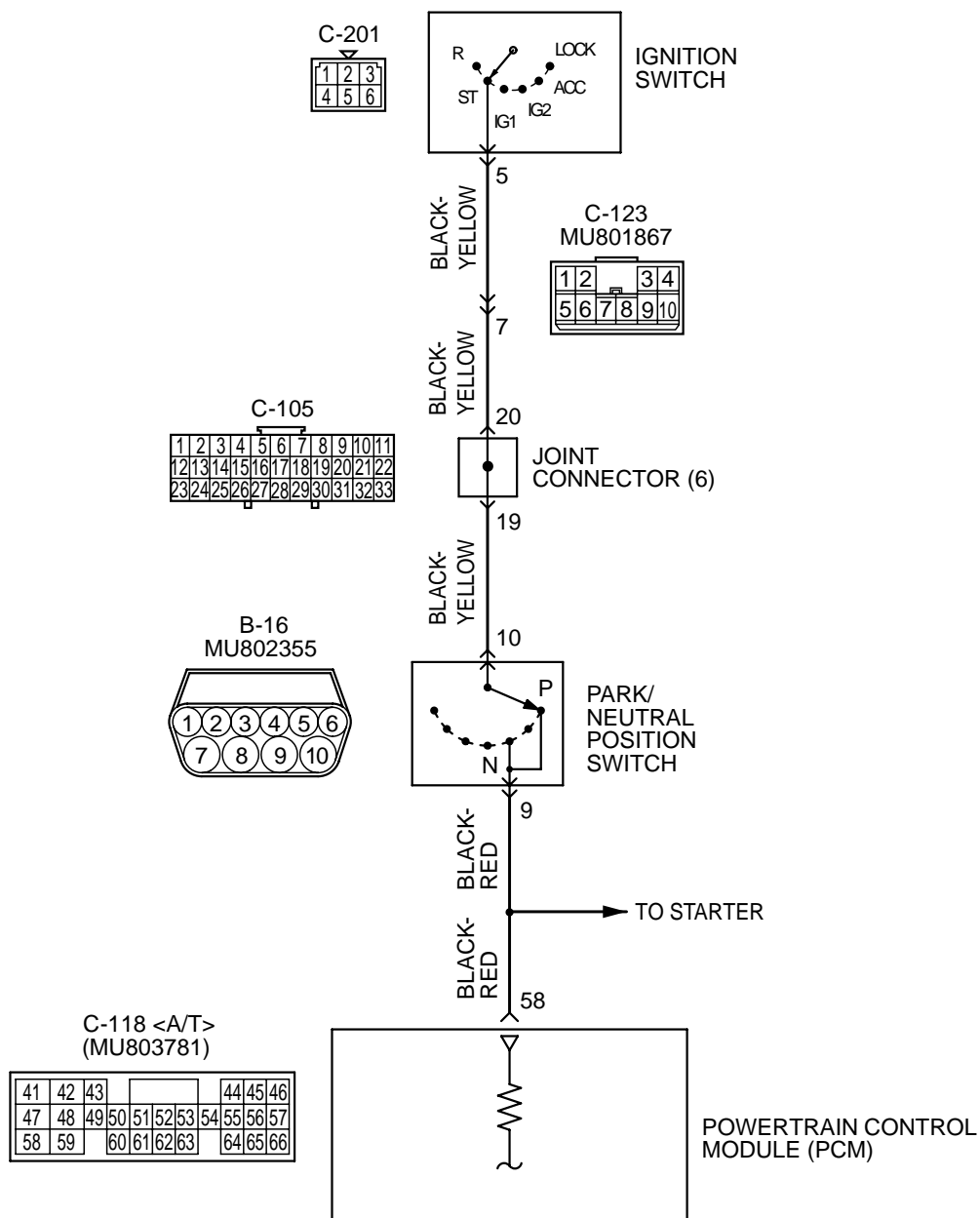
Q: Does continuity exist?

YES : Replace the ECM. Then confirm that the malfunction symptom is eliminated.

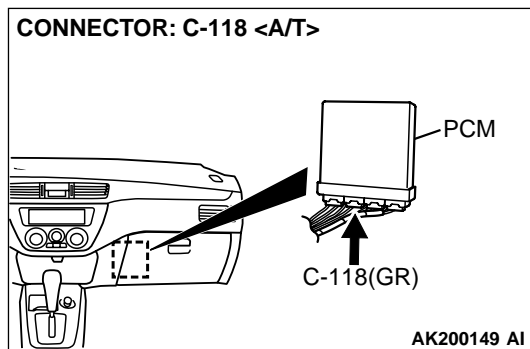
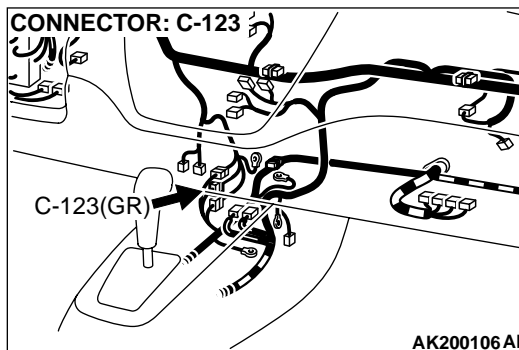
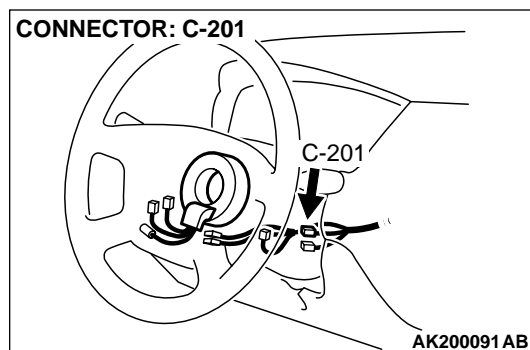
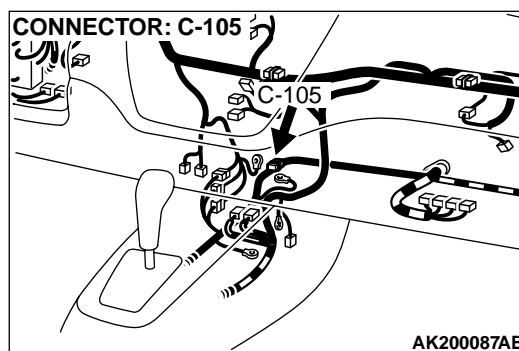
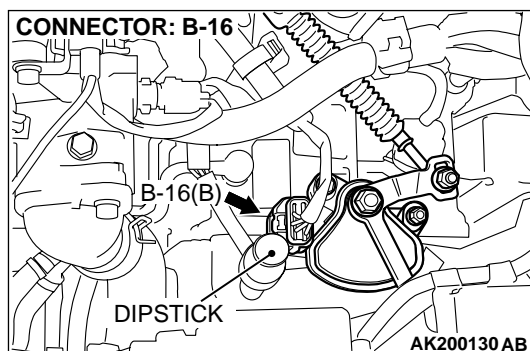
NO : Repair harness wire between interlock switch connector C-131 (terminal No. 1) and ground because of open circuit or harness damage. Then confirm that the malfunction symptom is eliminated.

INSPECTION PROCEDURE 32: Ignition Switch – ST System and Park/Neutral Position Switch System <A/T>

Ignition Switch-ST and Park/Neutral Position Switch Circuit



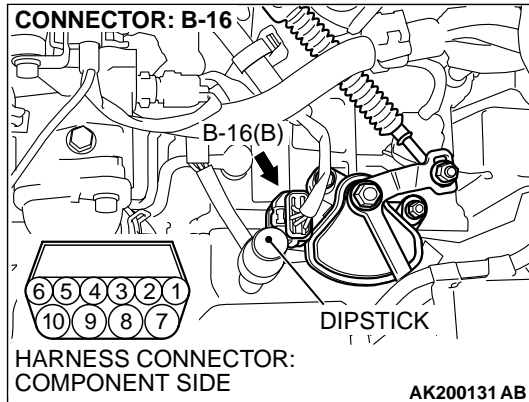
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**COMMENT**

- If the selector lever is moved to "P" or "N" range and the ignition switch is turned to "START" position, battery positive voltage is supplied to PCM (terminal No. 58) through the ignition switch and park/neutral position switch. Because of this, the PCM detects that the engine is cranking.
- The park/neutral position switch detects the selector lever position (P, N or other ranges) and converts it to a voltage signal (high or low). Then the park/neutral position switch sends that signal to the PCM.

TROUBLESHOOTING HINTS (The most likely caused for this code to be set are:)

- Malfunction of the ignition switch.
- Malfunction of the park/neutral position switch.
- Improper connector contact, open circuit or short-circuit in the harness wire.
- Malfunction of the PCM.

DIAGNOSIS

STEP 1. Check connector B-16 at park/neutral position switch for damage.

Q: Is the connector in good condition?

YES : Go to Step 2.

NO : Repair or replace it. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Then confirm that the malfunction symptom is eliminated.

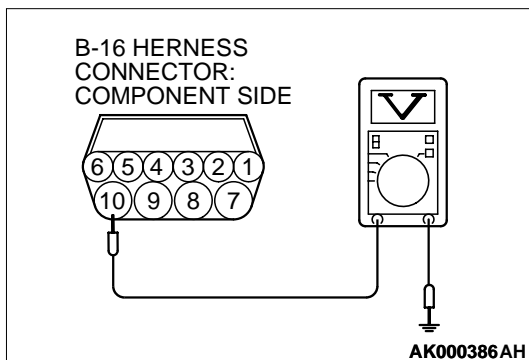
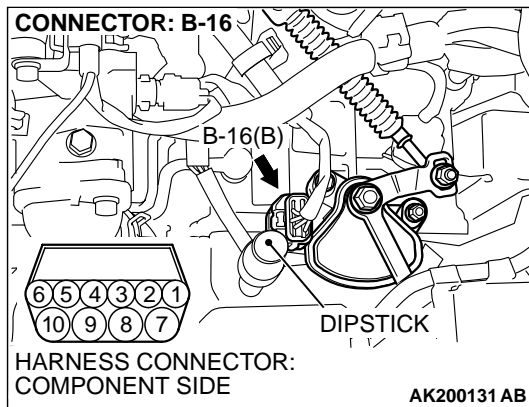
STEP 2. Check the park/neutral position switch.

Refer to GROUP 23A, On-vehicle Service – Essential Service – Park/Neutral Position Switch Continuity Check [P.23Aa-18](#).

Q: Are there any abnormalities?

YES : Go to Step 3.

NO : Repair or replace it. Then confirm that the malfunction symptom is eliminated.



STEP 3. Measure the power supply voltage at park/neutral position switch connector B-16.

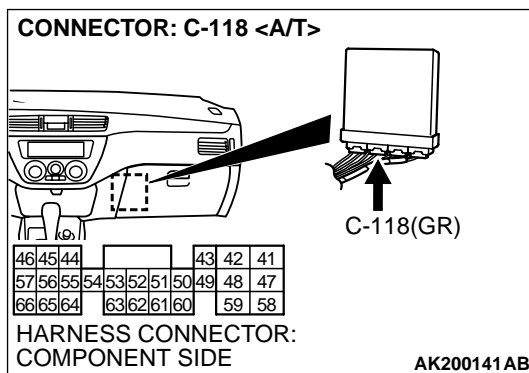
- (1) Disconnect the connector B-16 and measure at the harness side.
- (2) Turn the ignition switch to the "START" position.

- (3) Measure the voltage between terminal No. 10 and ground.
 - Voltage should measure battery positive voltage.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is battery positive voltage (approximately 12 volts) present?

YES : Go to Step 4.

NO : Check connector C-105 and C-123 at intermediate connector for damage, and repair or replace as required. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). If intermediate connector are in good condition, repair harness wire between ignition switch connector C-201 (terminal No. 5) and park/neutral position switch connector B-16 (terminal No. 10) because of open circuit. Then confirm that the malfunction symptom is eliminated.

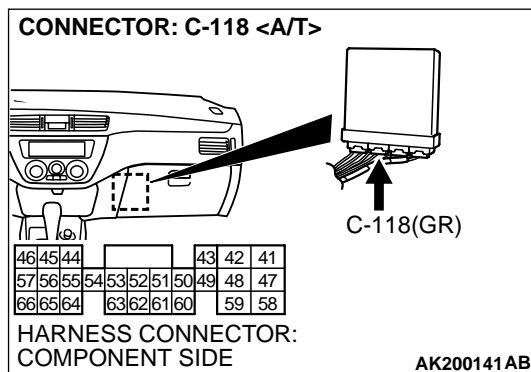
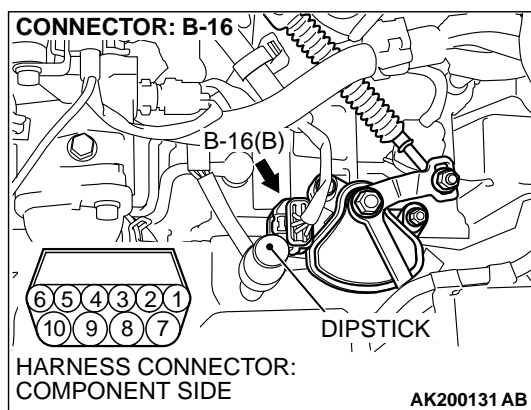


STEP 4. Check connector C-118 at PCM for damage.

Q: Is the connector in good condition?

YES : Go to Step 5.

NO : Repair or replace it. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Then confirm that the malfunction symptom is eliminated.



STEP 5. Check for open circuit and short circuit to ground and harness damage between park/neutral position switch connector B-16 (terminal No. 9) and PCM connector C-118 (terminal No. 58).

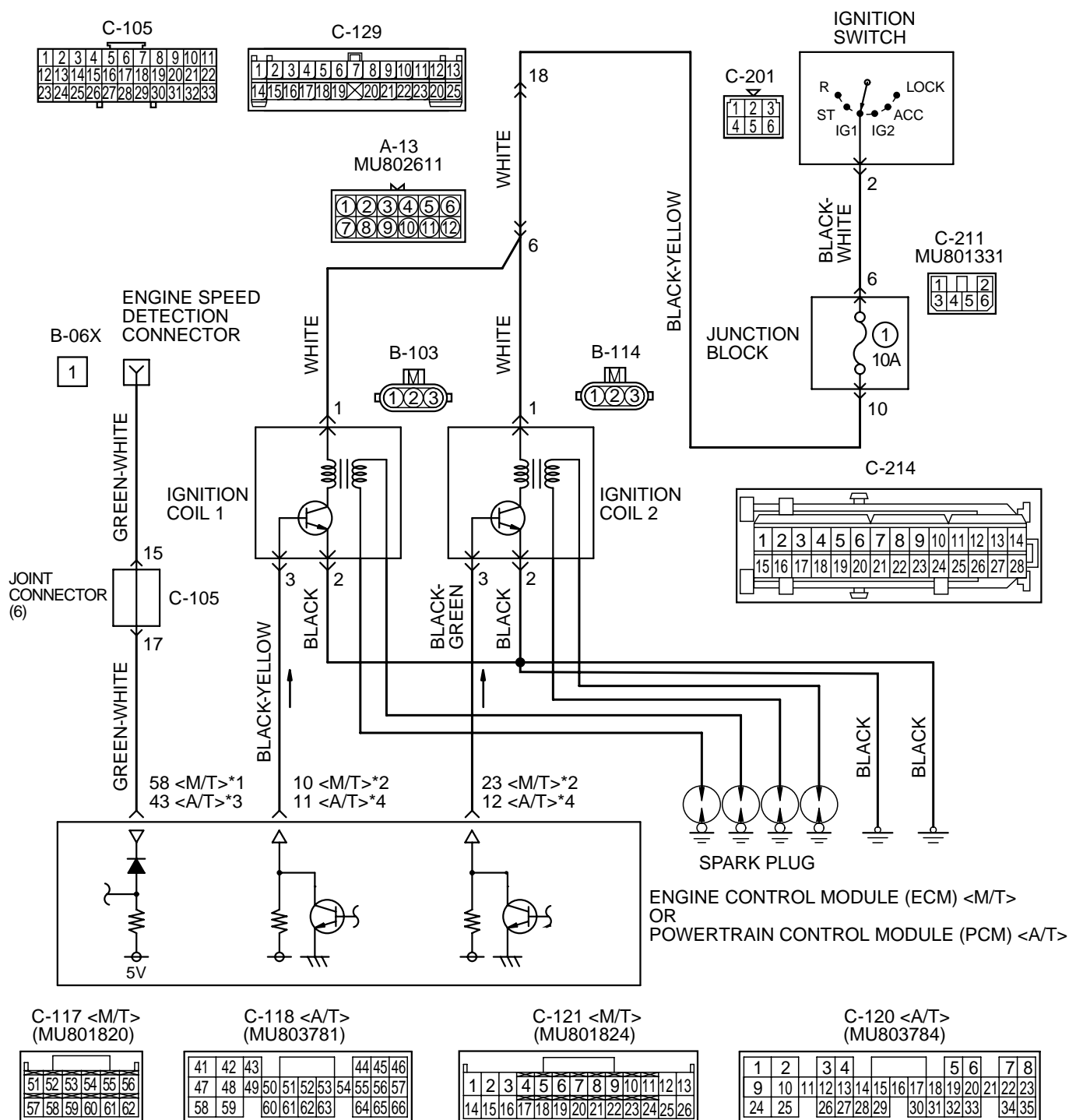
Q: Is the harness wire in good condition?

YES : Replace the PCM. Then confirm that the malfunction symptom is eliminated.

NO : Repair it. Then confirm that the malfunction symptom is eliminated.

INSPECTION PROCEDURE 33: Ignition Circuit System

Ignition Circuit

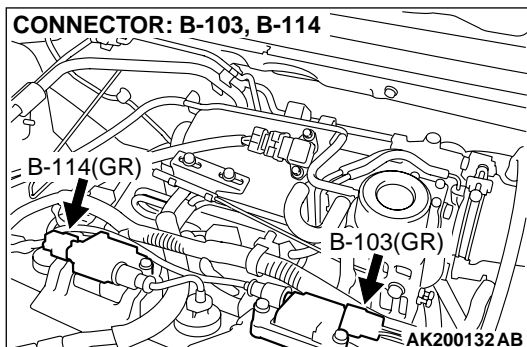


NOTE

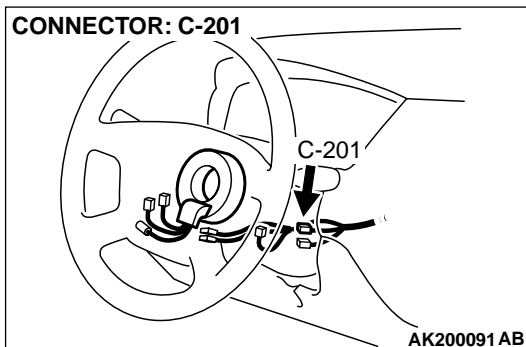
- *1: ECM connector C-117 <M/T>
- *2: ECM connector C-121 <M/T>
- *3: PCM connector C-118 <A/T>
- *4: PCM connector C-120 <A/T>

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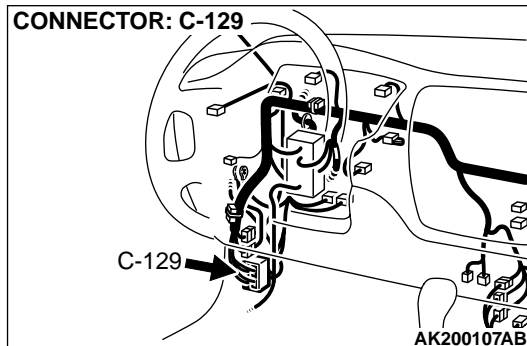
CONNECTOR: B-103, B-114



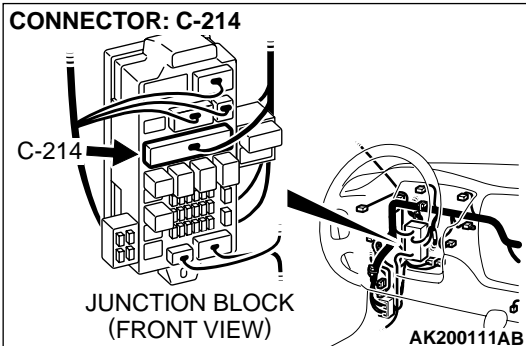
CONNECTOR: C-201



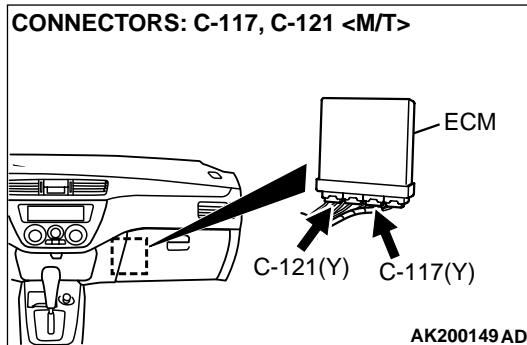
CONNECTOR: C-129



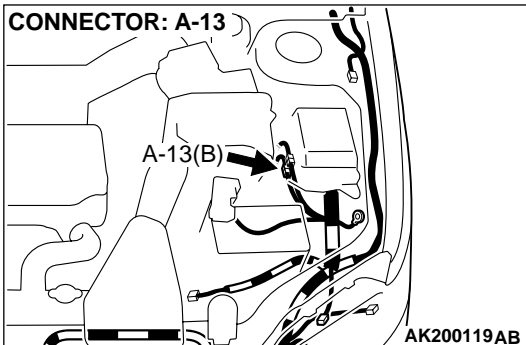
CONNECTOR: C-214



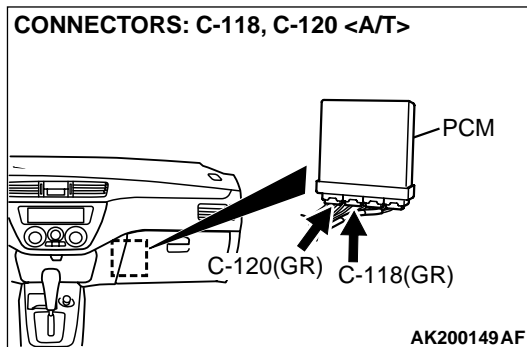
CONNECTORS: C-117, C-121 <M/T>



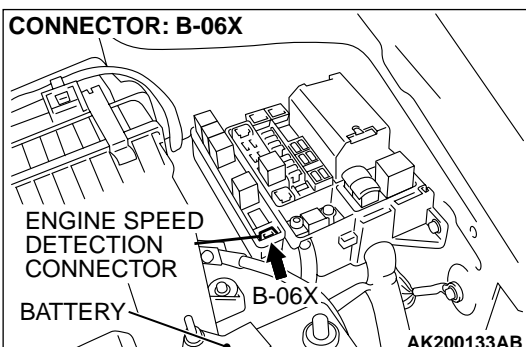
CONNECTOR: A-13



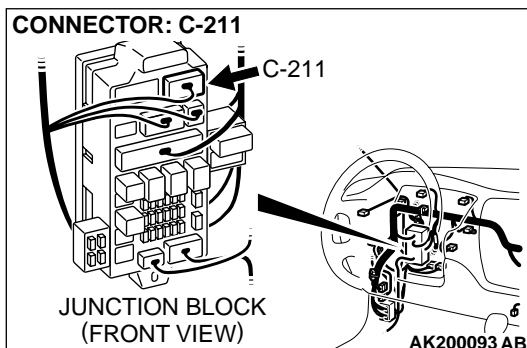
CONNECTORS: C-118, C-120 <A/T>



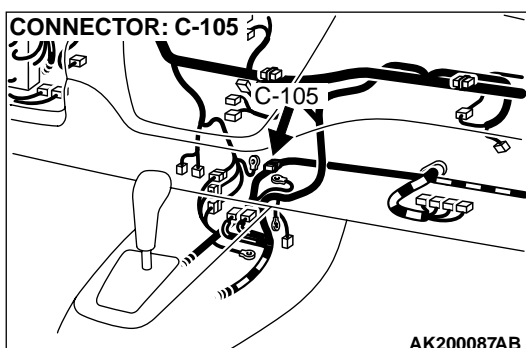
CONNECTOR: B-06X



CONNECTOR: C-211



CONNECTOR: C-105



CIRCUIT OPERATION

- The ignition coil is energized by Battery positive voltage from the ignition switch.
- When the ECM <M/T> or PCM <A/T> turns off its internal power transistor, battery positive voltage is applied to the ignition power transistor (terminal No. 3) inside the ignition coil, causing the ignition power transistor to be turned on.

- If the ignition power transistor is turned on, the primary circuit of the ignition coil is energized by grounding the ignition coil through terminal No. 2, causing the primary current to flow to the ignition coil.

TROUBLESHOOTING HINTS (The most likely causes for this case:)

- Malfunction of the ignition coil.
- Malfunction of the ignition power transistor.
- Improper connector contact, open circuit or short-circuited harness wire.
- Malfunction of the ECM <M/T> or PCM <A/T>.

DIAGNOSIS**STEP 1. Check the ignition coil.**

Refer to GROUP 16, Ignition System – On-vehicle service – Ignition Coil Check [P.16-30](#).

Q: Are there any abnormalities?

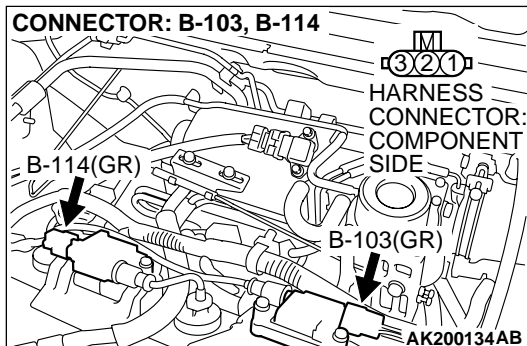
YES : Go to Step 2.

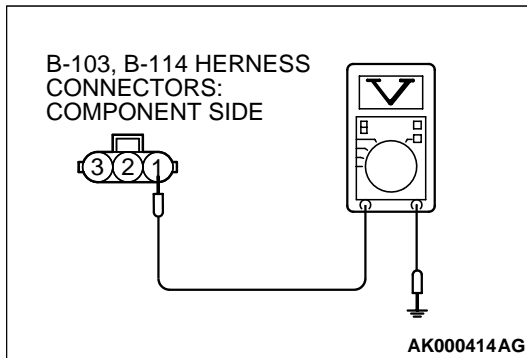
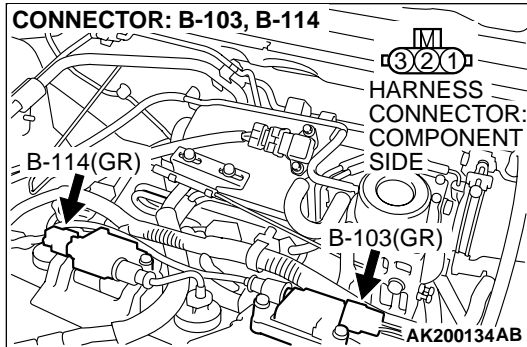
NO : Replace the ignition coil. Then confirm that the malfunction symptom is eliminated.

STEP 2. Check harness connectors B-103, B-114 at ignition coil for damage.**Q: Is the harness connector in good condition?**

YES : Go to Step 3.

NO : Repair or replace it. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Then confirm that the malfunction symptom is eliminated.





STEP 3. Measure the power supply voltage at ignition coil connectors B-103, B-114.

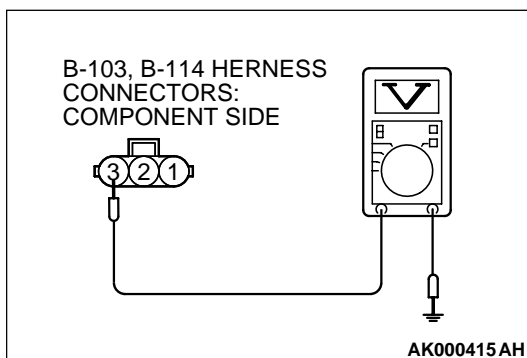
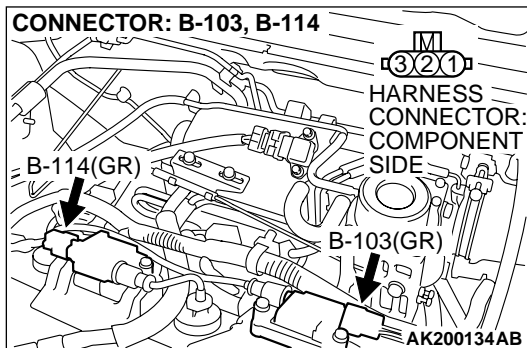
- (1) Disconnect the connector B-103, B-114 and measure at the harness side.
- (2) Turn the ignition switch to the "ON" position.

- (3) Measure the voltage between terminal No. 1 and ground.
 - Voltage should measure battery positive voltage.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is battery positive voltage (approximately 12 volts) present?

YES : Go to Step 4.

NO : Check the connectors A-13, C-129, C-211 and C-214 at intermediate connectors for damage, and repair or replace as required. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). If intermediate connector are in good condition, repair harness wire between ignition switch connector C-201 (terminal No. 2) and ignition coil connector B-103, B-114 (terminal No. 1) because of open circuit. Then confirm that the malfunction symptom is eliminated.



STEP 4. Check the circuit at ignition coil harness side connectors B-103, B-114.

- (1) Disconnect the connectors B-103, B-114 and measure at the harness side.
- (2) Engine cranking.

- (3) Measure the voltage between terminal No. 3 and ground.
 - Voltage should measure 0.3 and 3.0 volts.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the measured voltage between 0.3 and 3.0 volts?

YES : Go to Step 7.

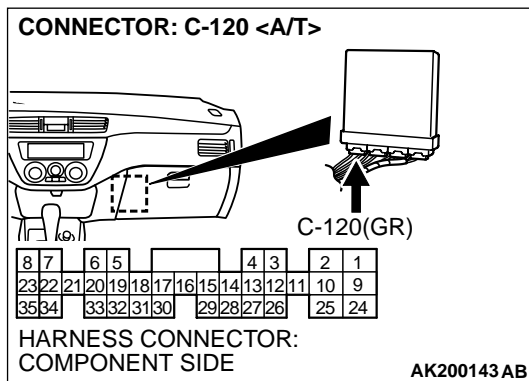
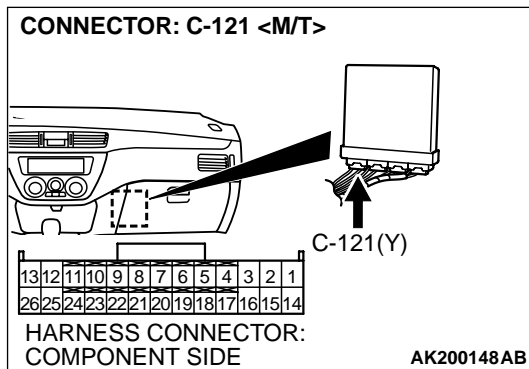
NO : Go to Step 5.

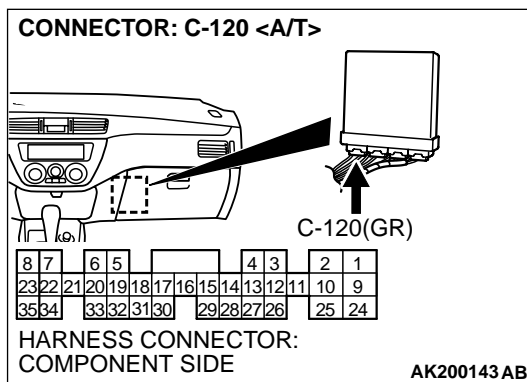
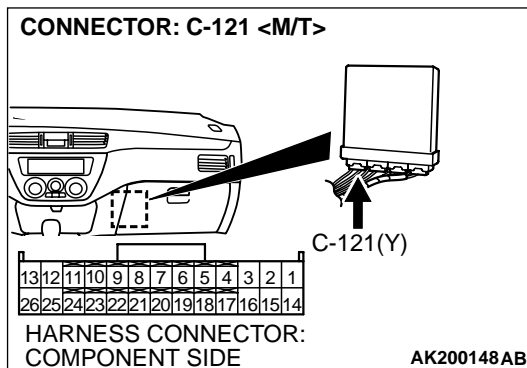
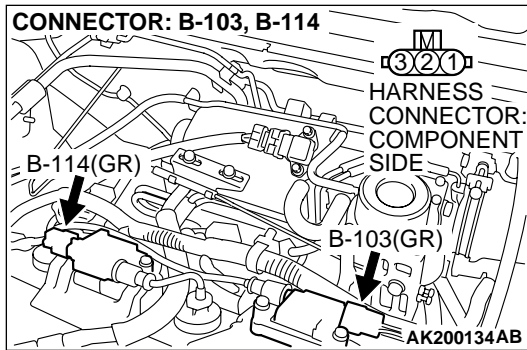
STEP 5. Check connector C-121 at ECM <M/T> or connector C-120 at PCM <A/T> for damage.

Q: Is the connector in good condition?

YES : Go to Step 6.

NO : Repair or replace it. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Then confirm that the malfunction symptom is eliminated.





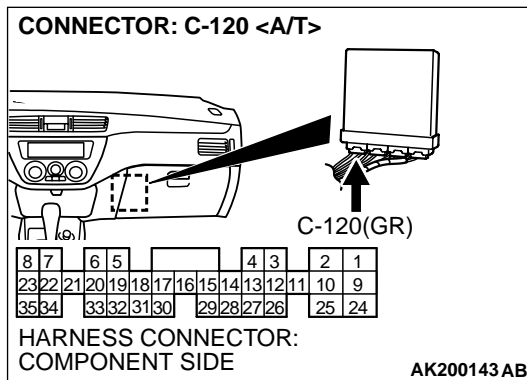
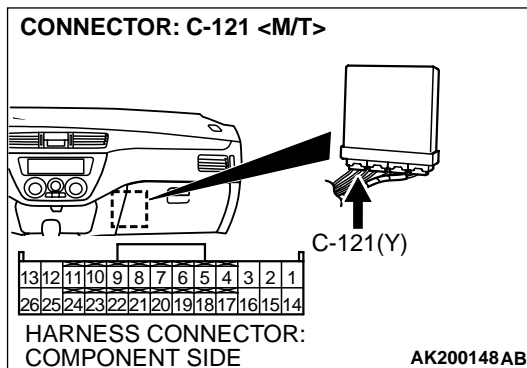
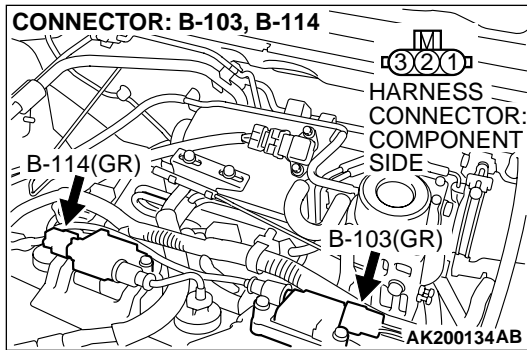
STEP 6. Check for open circuit and short circuit to ground between ignition coil connector and ECM connector <M/T> or PCM connector <A/T>.

- Check the harness wire between ignition coil connector B-103 (terminal No. 3) and ECM connector C-121 (terminal No. 10) <M/T> or PCM connector C-120 (terminal No. 11) <A/T> when checking ignition coil 1.
- Check the harness wire between ignition coil connector B-114 (terminal No. 3) and ECM connector C-121 (terminal No. 23) <M/T> or PCM connector C-120 (terminal No. 12) <A/T> when checking ignition coil 2.

Q: Is the harness wire in good condition?

YES : Replace the PCM. Then confirm that the malfunction symptom is eliminated.

NO : Repair it. Then confirm that the malfunction symptom is eliminated.



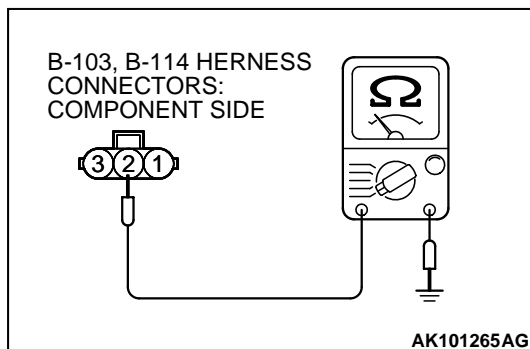
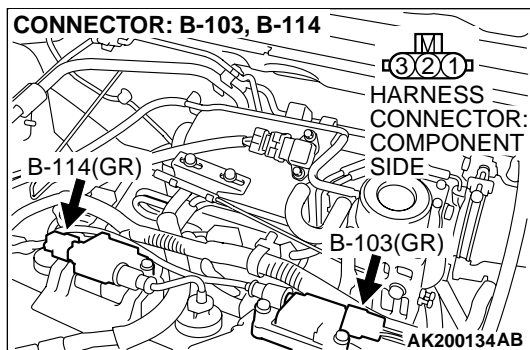
STEP 7. Check for harness damage between ignition coil connector and ECM connector <M/T> or PCM connector <A/T>.

- Check the harness wire between ignition coil connector B-103 (terminal No. 3) and ECM connector C-121 (terminal No. 10) <M/T> or PCM connector C-120 (terminal No. 11) <A/T> when checking ignition coil 1.
- Check the harness wire between ignition coil connector B-114 (terminal No. 3) and ECM connector C-121 (terminal No. 23) <M/T> or PCM connector C-120 (terminal No. 12) <A/T> when checking ignition coil 2.

Q: Is the harness wire in good condition?

YES : Go to Step 8.

NO : Repair it. Then confirm that the malfunction symptom is eliminated.



STEP 8. Check for continuity at ignition coil harness side connectors B-103, B-114.

(1) Disconnect the connectors B-103, B-114 and measure at the harness side.

(2) Check for continuity between terminal No. 2 and ground.

- Should be less than 2 ohms.

Q: Does continuity exist?

YES : Go to Step 9.

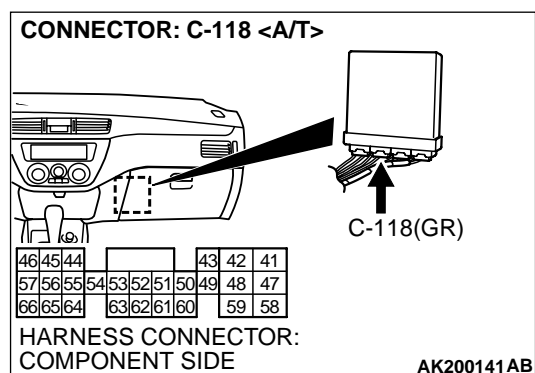
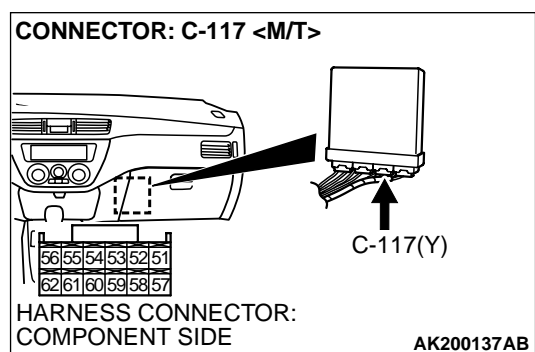
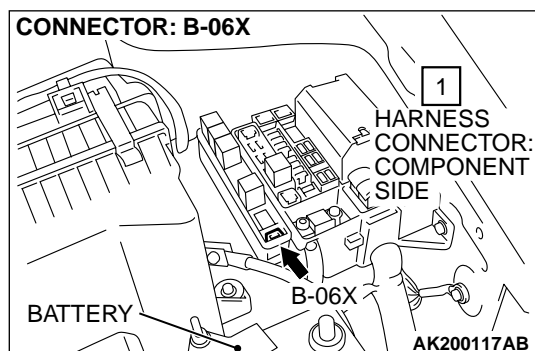
NO : Repair harness wire between ignition coil connectors B-103, B-114 (terminal No. 2) and ground because of open circuit or harness damage. Then confirm that the malfunction symptom is eliminated.

STEP 9. Check connector B-06X at engine speed detection and connector C-117 at ECM <M/T> or connector C-118 at PCM <A/T> for damage.

Q: Is the connector in good condition?

YES : Go to Step 10.

NO : Repair or replace it. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Then confirm that the malfunction symptom is eliminated.

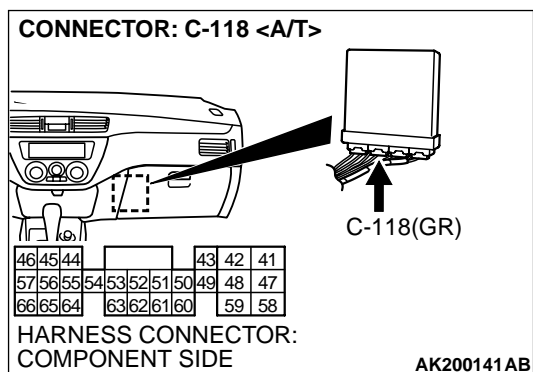
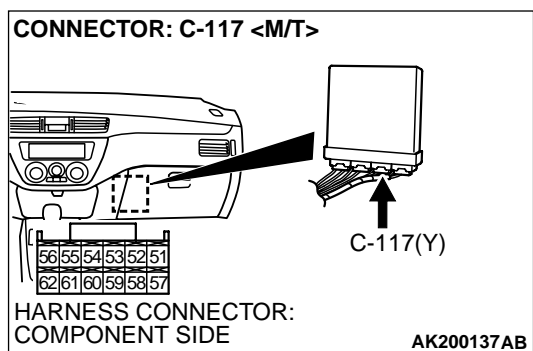
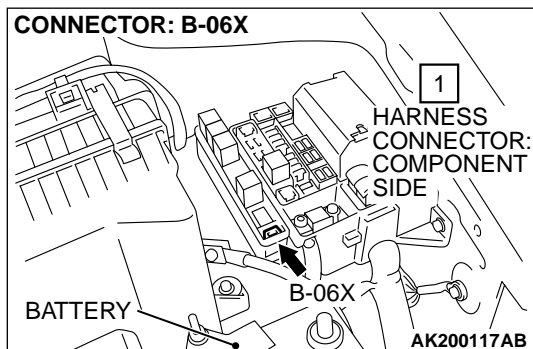


STEP 10. Check for open circuit and short circuit to ground and harness damage between engine speed detection connector B-06X and ECM connector C-117 (terminal No. 58) <M/T> or PCM connector C-118 (terminal No. 43) <A/T>

Q: Is the harness wire in good condition?

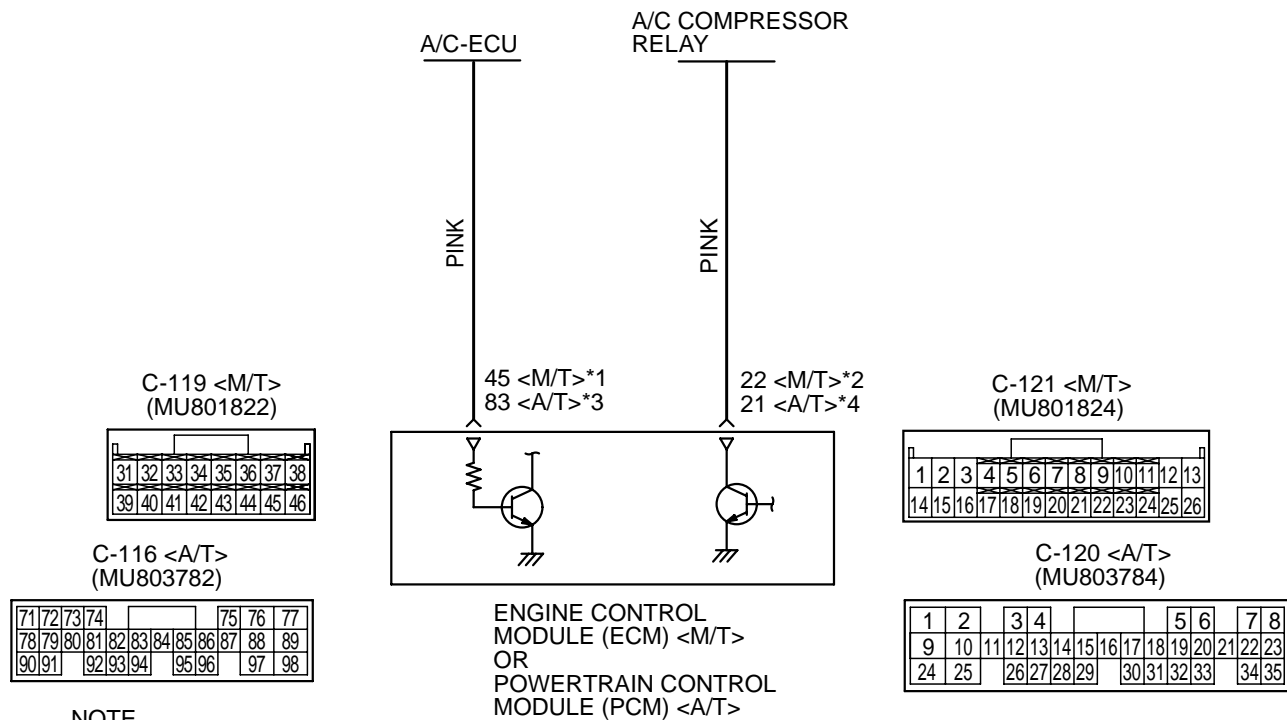
YES : Check the connector C-105 at intermediate connectors for damage, and repair or replace as required. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). If intermediate connector is in good condition, replace the ECM or PCM. Then confirm that the malfunction symptom is eliminated.

NO : Repair it. Then confirm that the malfunction symptom is eliminated.



INSPECTION PROCEDURE 34: A/C system.

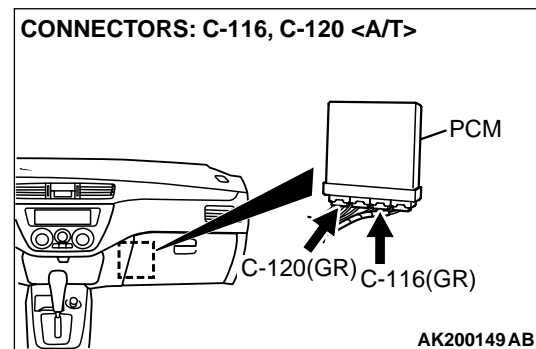
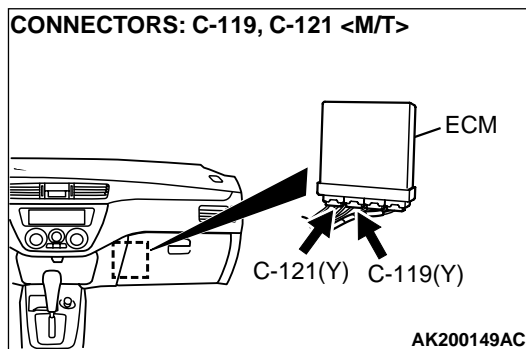
A/C Circuit



NOTE

- *1: ECM connector C-119 <M/T>
- *2: ECM connector C-121 <M/T>
- *3: PCM connector C-116 <A/T>
- *4: PCM connector C-120 <A/T>

AK100111



COMMENT

- When the A/C is "ON", the battery positive voltage is applied on the ECM (terminal No. 45) <M/T> PCM (terminal No. 83) <A/T> from the automatic compressor controller. When battery positive voltage is applied to the ECM <M/T> or PCM <A/T>, the ECM <M/T> or PCM <A/T> turns "ON" the power transistor in the ECM <M/T> or PCM <A/T>. The ECM <M/T> or PCM <A/T> delays A/C engagement momentarily while it increases idle r/min. Then the A/C compressor clutch relay coil will be energized.

With this, the A/C compressor clutch relay turns "ON", and the A/C compressor clutch functions.

TROUBLESHOOTING HINTS (The most likely causes for this case:)

- Malfunction of the A/C control system.
- Malfunction of the A/C switch.
- Improper connector contact, open circuit or short-circuited harness wire.
- Malfunction of the ECM <M/T> or PCM <A/T>.

DIAGNOSIS

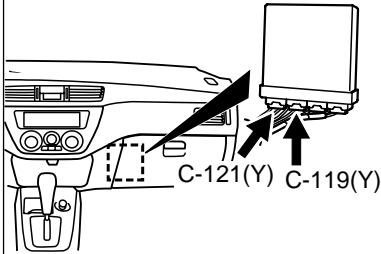
STEP 1. Check connector C-119, C-121 at ECM <M/T> or connector C-116, C-120 at PCM <A/T> for damage.

Q: Is the connector in good condition?

YES : Go to Step 2.

NO : Repair or replace it. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Then confirm that the malfunction symptom is eliminated.

CONNECTORS: C-119, C-121 <M/T>



38	37	36	35	34	33	32	31
46	45	44	43	42	41	40	39

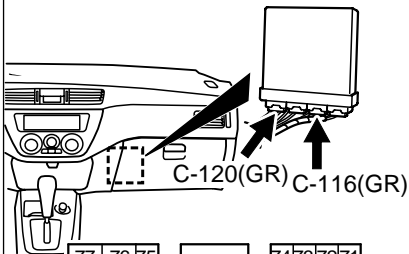
C-119 HARNESS CONNECTOR:
COMPONENT SIDE

13	12	11	10	9	8	7	6	5	4	3	2	1
26	25	24	23	22	21	20	19	18	17	16	15	14

C-121 HARNESS CONNECTOR:
COMPONENT SIDE

AK200136AB

CONNECTORS: C-116, C-120 <A/T>



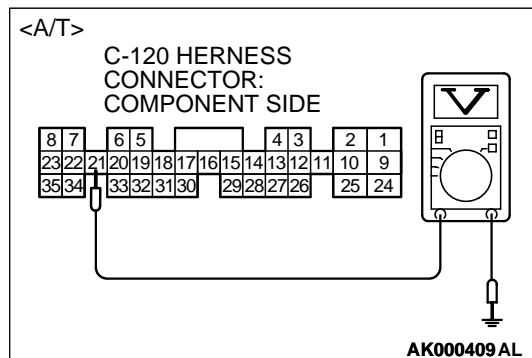
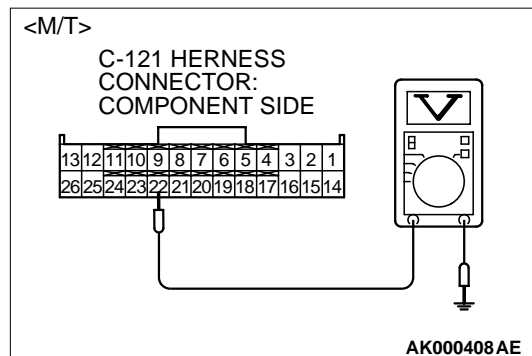
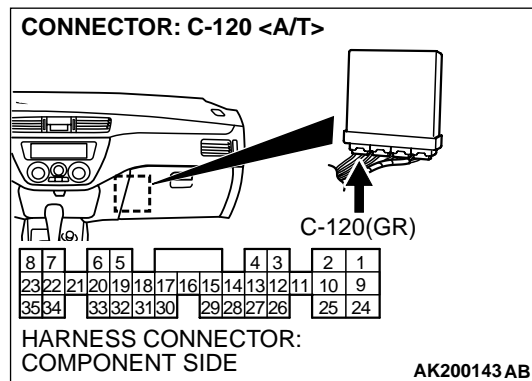
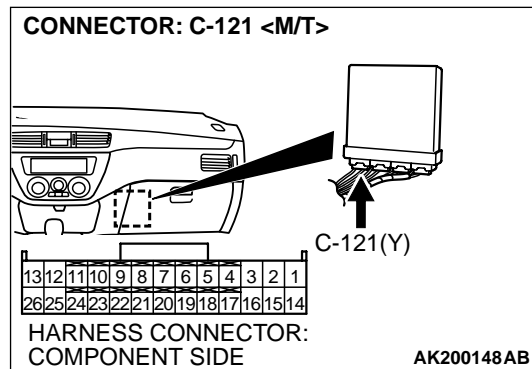
77	76	75					74	73	72	71	
89	88	87	86	85	84	83	82	81	80	79	78
98	97		96	95		94	93	92		91	90

C-116 HARNESS CONNECTOR:
COMPONENT SIDE

8	7		6	5					4	3			2	1
23	22	21	20	19	18	17	16	15	14	13	12	11	10	9
35	34		33	32	31	30		29	28	27	26		25	24

C-120 HARNESS CONNECTOR:
COMPONENT SIDE

AK200135AB



STEP 2. Check the circuit at ECM connector C-121 <M/T> or PCM connector C-120 <A/T>.

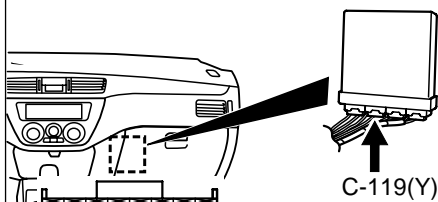
- (1) Disconnect the connectors C-121 <M/T> or C-120 <A/T> and measure at the harness side.
- (2) Turn the ignition switch to the "ON" position.

- (3) Measure the voltage between terminal No. 22 <M/T> or No. 21 <A/T> and ground.
 - Voltage should measure battery positive voltage.
- (4) Using a jumper wire, connect terminal No. 22 <M/T> or No. 21 <A/T> to ground.
 - A/C compressor relay should turn "ON".
- (5) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the voltage and A/C compressor relay condition normal?

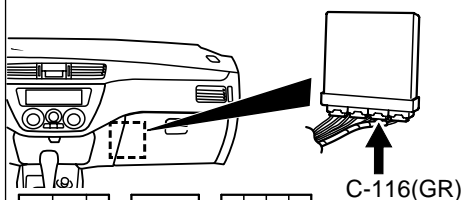
YES : Go to Step 3.

NO : Refer to GROUP 55A, Heater, Air Conditioning And Ventilation – Manual A/C Diagnosis – Symptom Chart P.55-5.

CONNECTOR: C-119 <M/T>

HARNESS CONNECTOR:
COMPONENT SIDE

AK200140AB

CONNECTOR: C-116 <A/T>

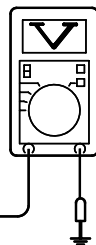
HARNESS CONNECTOR:
COMPONENT SIDE

AK200138 AB

<M/T>

C-119 HARNESS
CONNECTOR:
COMPONENT SIDE

38	37	36	35	34	33	32	31
46	45	44	43	42	41	40	39

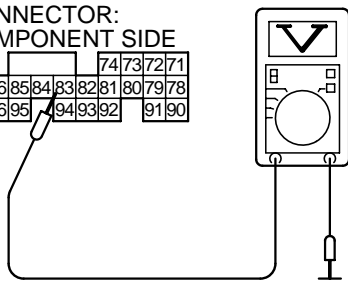


AK000420 AF

<A/T>

C-116 HARNESS
CONNECTOR:
COMPONENT SIDE

77	76	75				74	73	72	71
89	88	87	86	85	84	83	82	81	80
98	97	96	95	94	93	92	91	90	



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STEP 3. Check the circuit at ECM connector C-119 <M/T> or PCM connector C-116 <A/T>.

- (1) Disconnect the connectors C-119 <M/T> or C-116 <A/T> and measure at the harness side.
- (2) Turn the ignition switch to the "ON" position.

- (3) Measure the voltage between terminal No. 45 <M/T> or No. 83 <A/T> and ground.

- Voltage should measure 1 volt or less when the A/C switch is "OFF".
- Voltage should measure battery positive voltage when the A/C switch is "ON".

- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the measured voltage within the specified range?

YES : Replace the ECM or PCM. Then confirm that the malfunction symptom is eliminated.

NO : Refer to GROUP 55A, Heater, Air Conditioning And Ventilation – Manual A/C Diagnosis – Symptom Chart

[P.55-5.](#)

NOTES