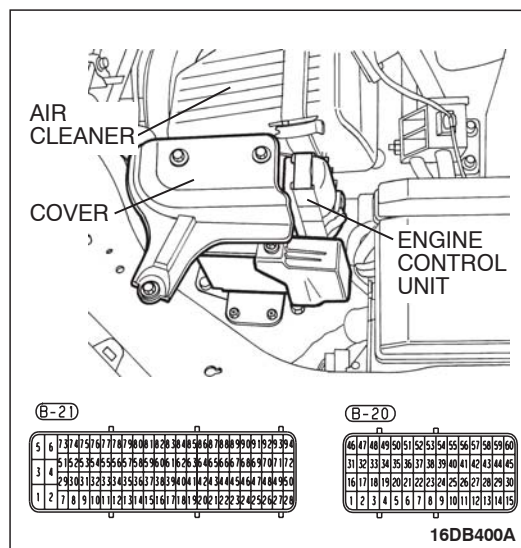
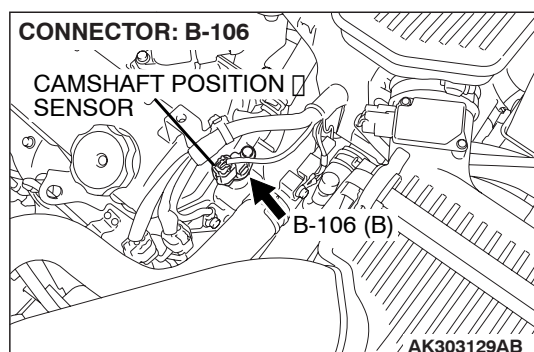


DTC P0340: Camshaft Position Sensor Circuit.**CIRCUIT OPERATION**

- The camshaft position sensor power is supplied from the ECU (terminal No. 25).
- Terminal No. 3 of the camshaft position sensor is grounded with ECU (terminal No. 8).
- A 5-volt supply is applied to the camshaft position sensor output terminal (terminal No. 2) from the ECU (terminal No. 38). The camshaft position sensor generates a pulse signal when the output terminal is opened and grounded.

TECHNICAL DESCRIPTION

- The camshaft position sensor functions to detect the top dead center position of the number 1 cylinder and to convert that data to pulse signals that are input to the ECU.
- When the engine is running, the camshaft position sensor outputs a pulse signal.
- The ECU checks whether pulse signal is input while the engine is cranking.

DTC SET CONDITIONS <Range/Performance problem - Alignment>**Check Conditions**

- Engine speed is higher than 50 r/min.

Judgment Criteria

- Normal signal pattern has not been input for cylinder identification from the crankshaft position sensor signal and camshaft position sensor signal for 2 seconds.

- MIL activated immediately.
- Engine stalls.

DTC SET CONDITIONS <Range/Performance problem - Circuit continuity>**Check Conditions**

- Engine speed is higher than 50 r/min.

Judgment Criteria

- Camshaft position sensor output voltage has not changed (no pulse signal is input) for 2 seconds.
- MIL activated immediately.
- Engine stalls.

EOBD DRIVE CYCLE PATTERN

Refer to Diagnostic Function – EOBD Drive Cycle – [P.13A-11](#).

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

- Camshaft position sensor failed.
- Open or shorted camshaft position sensor circuit.
- Harness or connector damage.
- Refer to component locations [GROUP-70](#)

- Refer to configuration diagrams GROUP-80
- Refer to circuit diagrams GROUP-90

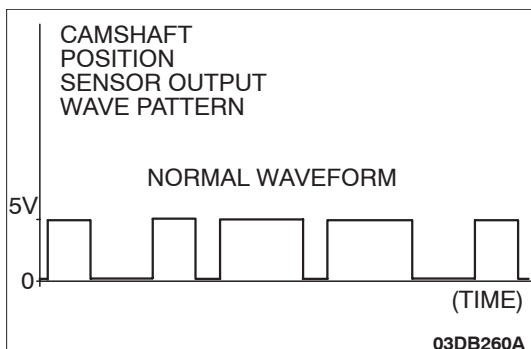
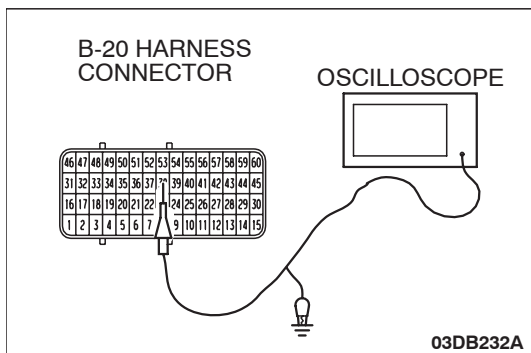
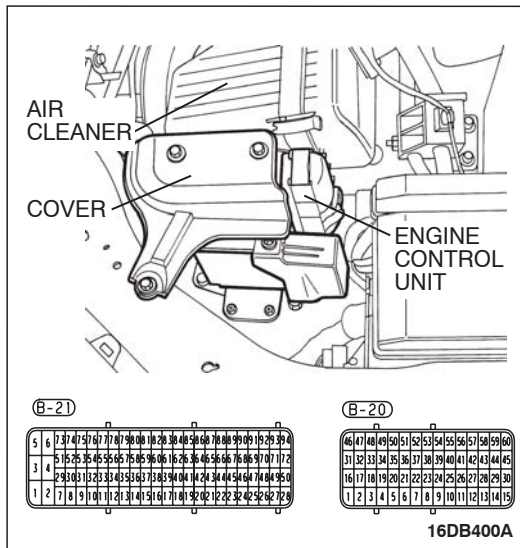
DIAGNOSIS

Required Special Tools:

- Diagnostic tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991910: Main Harness A
- MB992044: Engine ECU Check Harness

STEP 1. Using the oscilloscope, check the camshaft position sensor.

- (1) Disconnect the all ECU connectors and connect engine ECU check harness special tool MB992044 between the separated connectors.



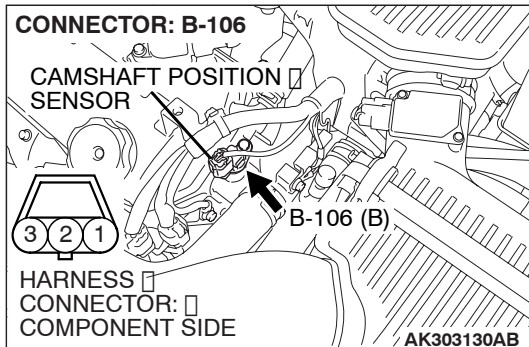
- (2) Connect the oscilloscope probe to the ECU check harness out put connector B-20 (terminal No. 38).
- (3) Start the engine and run at idle.

- (4) Check the waveform.
 - The waveform should show a pattern similar to the illustration.
- (5) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the waveform normal?

YES : Go to Step 2..

NO : Go to Step 4.



STEP 2. Check harness connector B-106 at camshaft position sensor 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 go to Step 20.

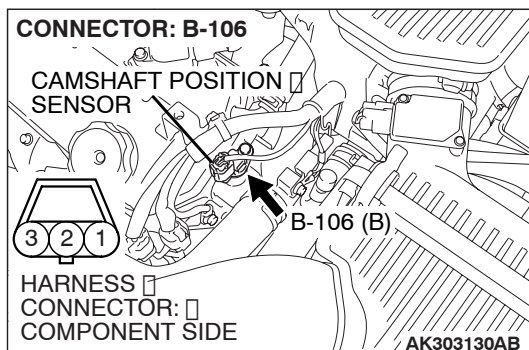
STEP 3. Check the trouble symptoms.

- (1) Carry out a test drive with the drive cycle pattern. Refer to Diagnostic Function – EOBD Drive Cycle – [P.13A-11](#).
- (2) Check the diagnostic trouble code (DTC).

Q: Is DTC P0340 set?

YES : Then go to Step 4.

NO : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-14](#).

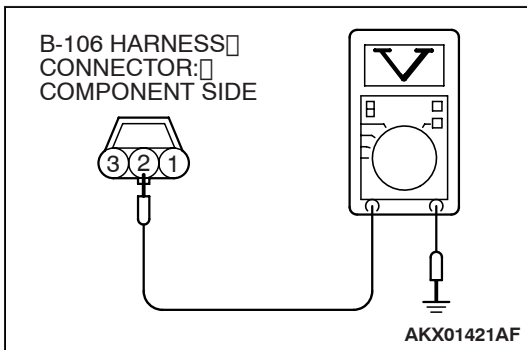
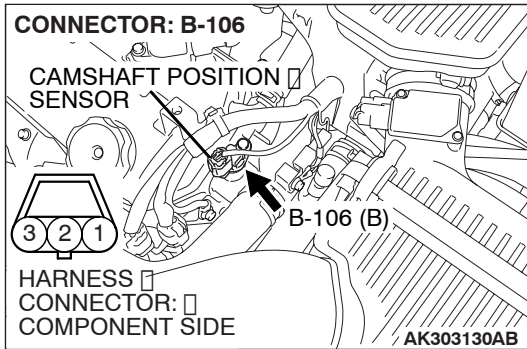


STEP 4. Check harness connector B-106 at camshaft position sensor for damage.

Q: Is the harness 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 go to Step 20.



STEP 5. Measure the sensor supply voltage at camshaft position sensor connector B-106.

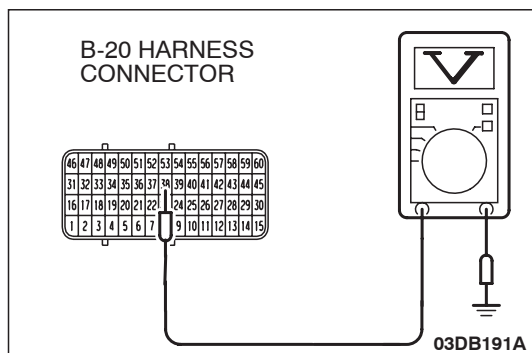
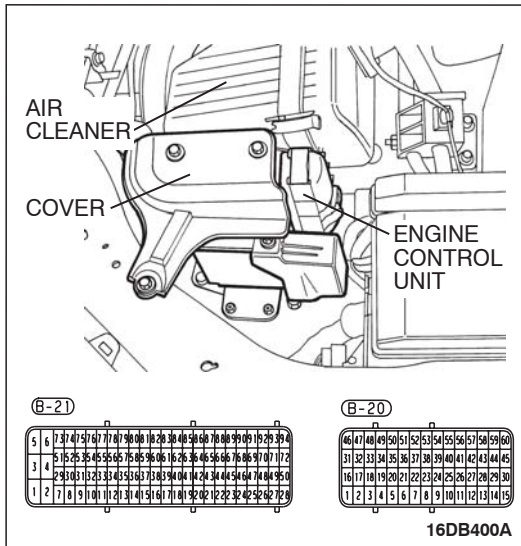
- (1) Disconnect the connector B-106 and measure at the harness side.
- (2) Turn the ignition switch to the "ON" position.

- (3) Measure the voltage between terminal No. 2 and ground.
 - Voltage should be between 4.9 and 5.1 volts.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the measured voltage between 4.9 and 5.1 volts?

YES : Go to Step 10.

NO : Go to Step 6.



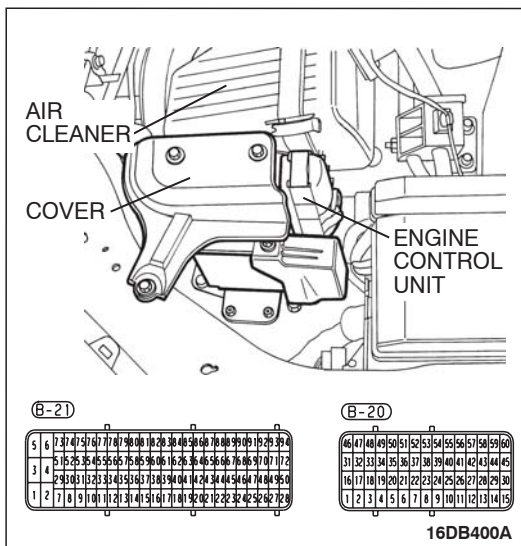
STEP 6. Measure the sensor supply voltage at ECU connector B-20 by using engine ECU check harness special tool MB992044.

- (1) Disconnect the all ECU connectors and connect engine ECU check harness special tool MB992044 between the separated connectors.
- (2) Disconnect the camshaft position sensor connector B-106.
- (3) Turn the ignition switch to the "ON" position.

- (4) Measure the voltage between terminal No. 38 and ground.
 - Voltage should be between 4.9 and 5.1 volts.
- (5) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the measured voltage between 4.9 and 5.1 volts?

- YES :** Go to Step 7.
NO : Go to Step 8.



STEP 7. Check harness connector B-20 at ECU for damage.

Q: Is the harness connector in good condition?

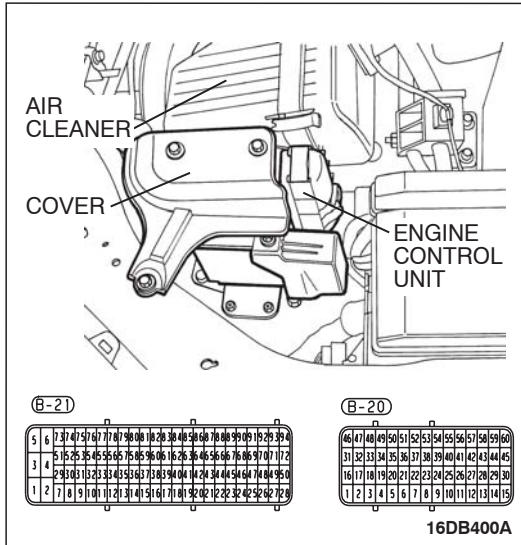
- YES :** Repair harness wire between camshaft position sensor connector B-106 (terminal No. 2) and ECU connector B-22 (terminal No. 38) because of open circuit. Then go to Step 20.
- NO :** Repair or replace it. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Then go to Step 20.

STEP 8. Check harness connector B-20 at ECU 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 go to Step 20.

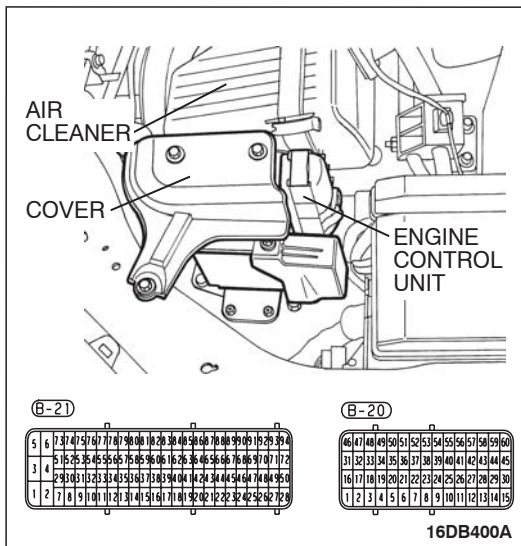
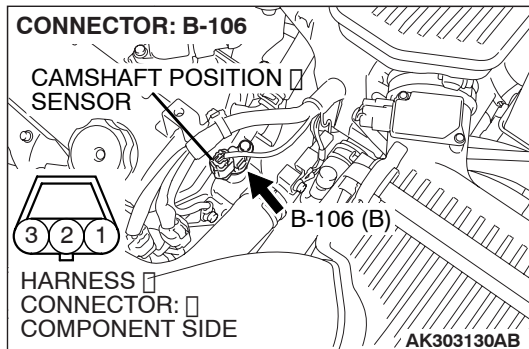


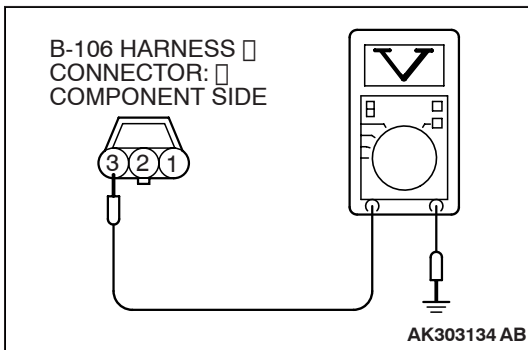
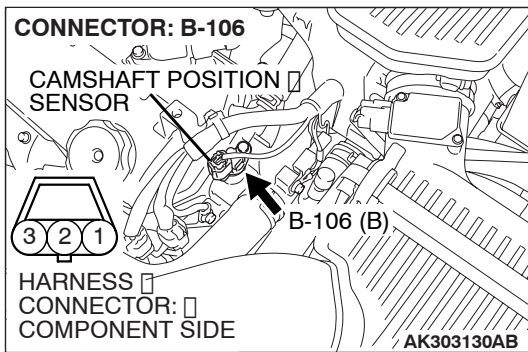
STEP 9. Check for short circuit to ground between camshaft position sensor connector B-106 (terminal No. 2) and ECU connector B-20 (terminal No. 38).

Q: Is the harness wire in good condition?

YES : Then go to Step 10.

NO : Repair it. Then go to Step 20.





STEP 10. Measure the power supply voltage at camshaft position sensor connector B-106.

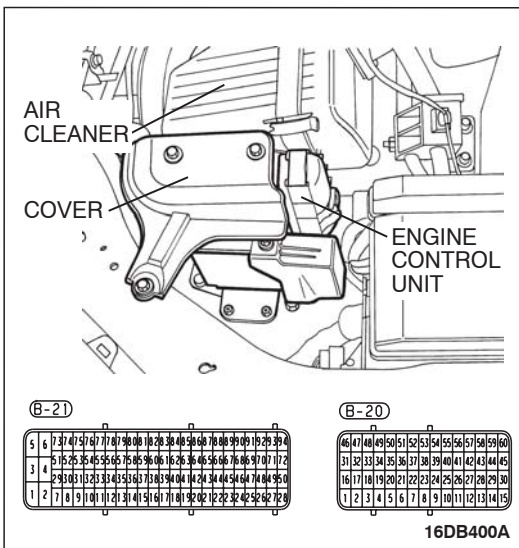
- (1) Disconnect the connector B-106 and measure at the harness side.
- (2) Turn the ignition switch to the "ON" position.

- (3) Measure the voltage between terminal No. 3 and ground.
 - Voltage should be approximately 4.9 - 5.1 volts.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the voltage approximately between 4.9 - 5.1volts?

YES : Go to Step 12.

NO : Go to Step 11.

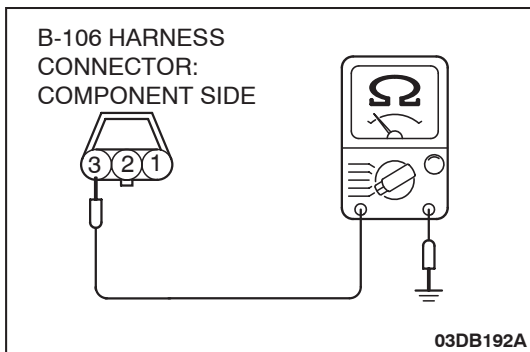
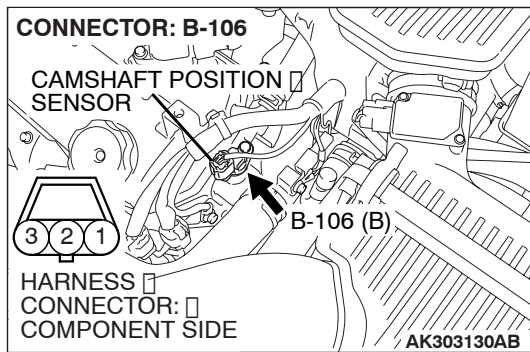


STEP 11. Check ECU harness connector B-20 for damage.

Q: Is the harness connector in good condition?

YES : Repair harness wire between ECU connector B-20 (terminal No. 25) and camshaft position sensor connector B-106 (terminal No. 01) because of open circuit or short circuit to ground. Then go to Step 20.

NO : Repair or replace it. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Then go to Step 20.



STEP 12. Check the continuity at camshaft position sensor connector B-106.

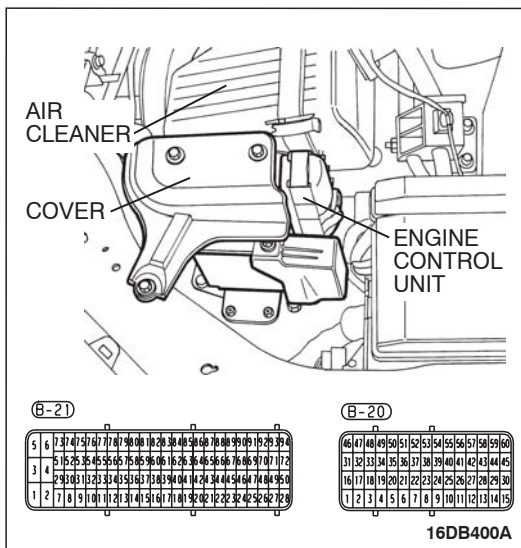
- (1) Disconnect the connector B-106 and measure at the harness side.

- (2) Check for the continuity between terminal No. 03 and ground.
- Should be less than 2 ohms.

Q: Does continuity exist?

YES : Go to Step 15.

NO : Go to Step 13.



STEP 13. Check harness connector B-20 at ECU for damage.

Q: Is the harness connector in good condition?

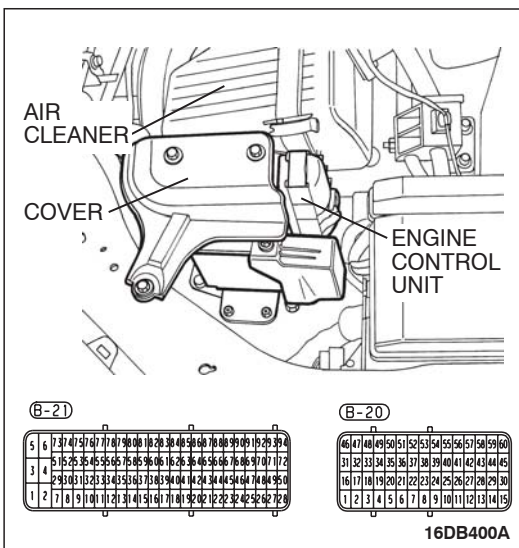
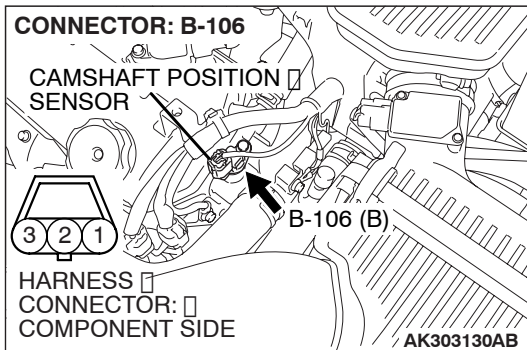
YES : Go to Step 14.

NO : Repair or replace it. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Then go to Step 20.

STEP 14. Check for open circuit and harness damage between camshaft position sensor connector B-106 (terminal No. 1) and ECU connector B-20 (terminal No. 25).
Q: Is the harness wire in good condition?

YES : Then go to Step 15.

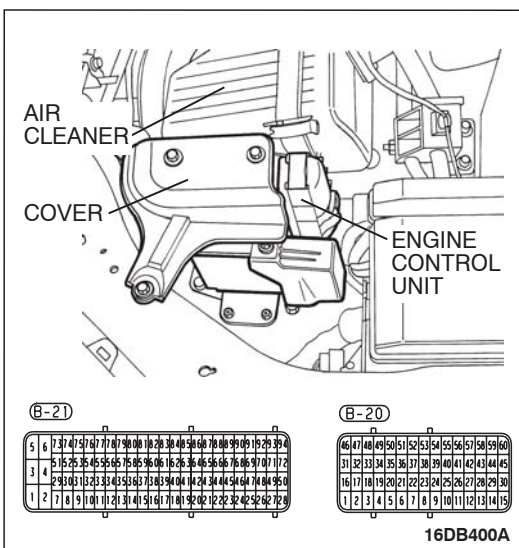
NO : Repair it. Then go to Step 20.



STEP 15. Check ECU harness connector B-20 for damage.
Q: Is the harness connector in good condition?

YES : Go to Step 16.

NO : Repair or replace it. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Then go to Step 20.

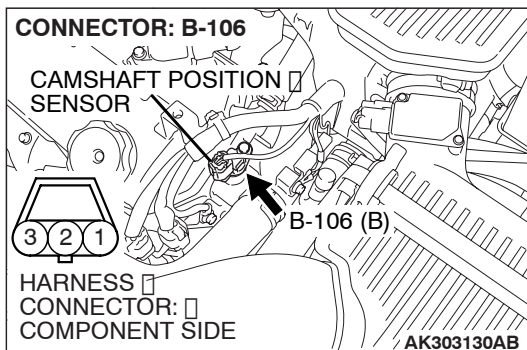
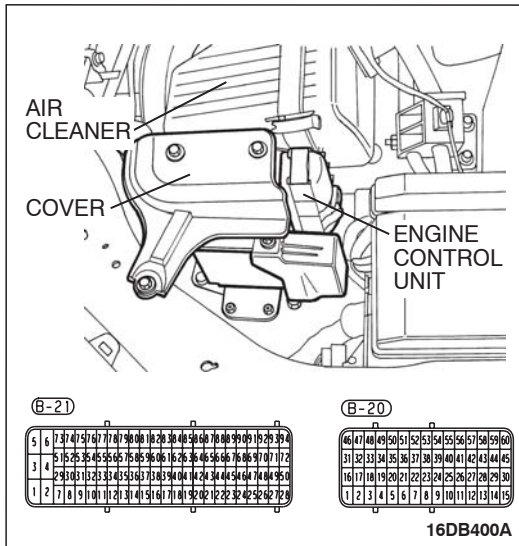


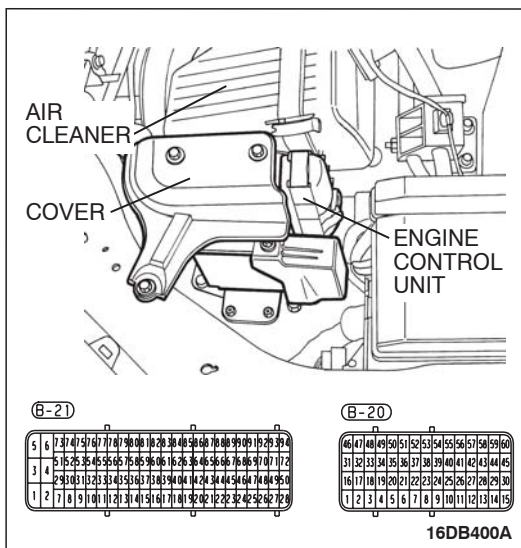
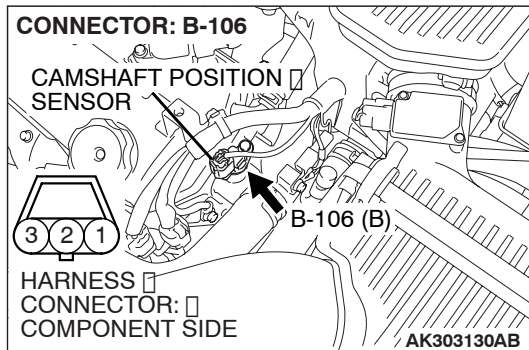
STEP 17. Check for harness damage between connector B-20 (terminal No. 25) and camshaft position sensor connector B-106 (terminal No. 1).

Q: Is the harness wire in good condition?

YES : Go to Step 18.

NO : Repair it. Then go to Step 20.





STEP 18. Check for harness damage between camshaft position sensor connector B-106 (terminal No. 2) and ECU connector B-20 (terminal No. 38).

Q: Is the harness wire in good condition?

YES : Go to Step 19.

NO : Repair it. Then go to Step 20.

STEP 19. Check the camshaft position sensing cylinder.

Q: Is the camshaft position sensing cylinder in good condition?

YES : Replace the camshaft position sensor. Then go to Step 20.

NO : Repair or replace it. Then go to Step 20.

STEP 20. Test the EOB D drive cycle.

- (1) Carry out a test drive with the drive cycle pattern. Refer to Diagnostic Function – EOB D Drive Cycle– [P.13A-11](#).
- (2) Check the diagnostic trouble code (DTC).

Q: Is DTC P0340 set?

YES : Retry the troubleshooting.

NO : The inspection is complete.

DTC P0421: Warm Up Catalyst Efficiency Below Threshold (bank 1)

TECHNICAL DESCRIPTION

- The signal from the rear heated oxygen sensor differs from the front heated oxygen sensor. That is because the catalytic converter purifies exhaust gas. When the catalytic converter has deteriorated, the signal from the front heated oxygen sensor becomes similar to the rear heated oxygen sensor.

DTC SET CONDITIONS

Check Conditions

- Lambda control upstream catalyst is active.
- Downstream oxygen sensor ready for operation.
- Lambda controller does not reach MIN/MAX limit.
- P-part of lambda control downstream is active.
- Neutralization of catalyst oxygen storage is not active.
- No misfire.
- Transient control is not active.
- Active charcoal is not highly charged.
- No rapid load changes.
- Catalyst load within range.
- Load is between 14 and 30% <M/T> or 16 and 38% <A/T>.
- Engine speed is between 1080 and 2480 r/min <M/T> or 1120 and 2480 r/min <A/T>.
- Catalyst temperature is between 580 and 780 degreeC <M/T> or 535 and 730 degreeC <A/T>.

- The ECU compares the output of the front and rear heated oxygen sensor signals.

Judgment Criteria

- calculated ageing value (based on the sensor signal ratio) exceeds 0.55.
- MIL activated after 2 drive cycles.
- No Limp home.

EOBD DRIVE CYCLE PATTERN

Refer to Diagnostic Function – EOBD Drive Cycle – [P.13A-11](#).

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

- Right bank side catalytic converter deteriorated.
- Exhaust leak.
- Refer to component locations [GROUP-70](#)
- Refer to configuration diagrams [GROUP-80](#)
- Refer to circuit diagrams [GROUP-90](#)

DIAGNOSIS

Required Special Tools:

- Diagnostic tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991910: Main Harness A

STEP 1. Check for exhaust leak.

Q: Are there any abnormalities?

YES : Repair it. Then go to Step 3.

NO : Go to Step 2.

STEP 2. Using diagnostic tool, check data list item AD: Heated Oxygen Sensor Bank 1, Sensor 2 (right rear).

CAUTION

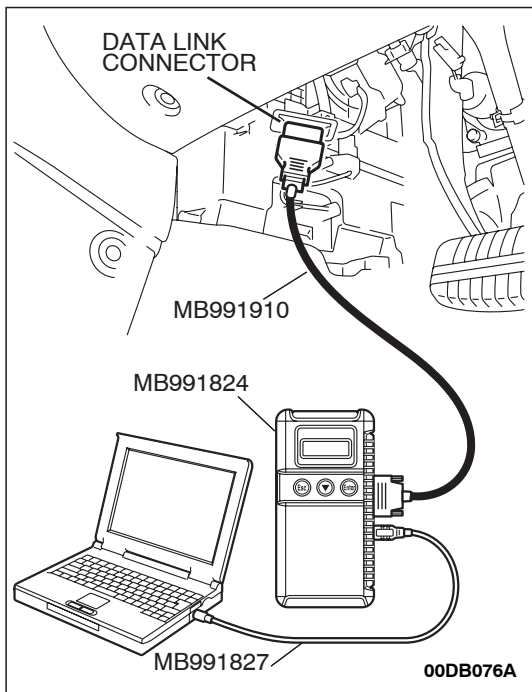
To prevent damage to diagnostic tool, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting diagnostic tool .

- (1) Connect diagnostic tool to the data link connector.
- (2) Start the engine and run at idle.
- (3) Set diagnostic tool to the data reading mode for item AD, Heated Oxygen Sensor Bank 1, Sensor 2 (right rear).
 - Warming up the engine. When the engine is revved, the output voltage should repeat 0 volt and 0.6 to 1.0 volt alternately.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the sensor operating properly?

YES : Go to Step 3.

NO : Refer to DTC P0136 – Heated Oxygen Sensor Circuit (Bank 1, Sensor 2) [P.13A-186](#), DTC P0137 – Heated Oxygen Sensor Circuit Low Voltage (Bank 1, Sensor 2) [P.13A-192](#), DTC P0138 – Heated Oxygen Sensor Circuit High Voltage (Bank 1, Sensor 2) [P.13A-198](#), DTC P0139 – Heated Oxygen Sensor Circuit Slow Response (Bank 1, Sensor 2) [P.13A-203](#).



STEP 3. Test the EOBD drive cycle.

- (1) Carry out a test drive with the drive cycle pattern. Refer to Diagnostic Function – EOBD Drive Cycle – [P.13A-11](#).
- (2) Read the diagnostic trouble code.

Q: Is DTC P0421 set?

YES : Replace the right bank side catalytic converter.

NO : The inspection is complete.

DTC P0431: Warm Up Catalyst Efficiency Below Threshold (bank 2)

TECHNICAL DESCRIPTION

- The signal from the rear heated oxygen sensor differs from the front heated oxygen sensor. That is because the catalytic converter purifies exhaust gas. When the catalytic converter has deteriorated, the signal from the front heated oxygen sensor becomes similar to the rear heated oxygen sensor.
- The ECU compares the output of the front and rear heated oxygen sensor signals.

DTC SET CONDITIONS

Check Conditions

- Lambda control upstream catalyst is active.
- Downstream oxygen sensor ready for operation.
- Lambda controller does not reach MIN/MAX limit.
- P-part of lambda control downstream is active.
- Neutralization of catalyst oxygen storage is not active.
- No misfire.
- Transient control is not active.
- Active charcoal is not highly charged.
- No rapid load changes.
- Catalyst load within range.
- Load is between 14 and 30% <M/T> or 16 and 38% <A/T>.
- Engine speed is between 1080 and 2480 r/min <M/T> or 1120 and 2480 r/min <A/T>.
- Catalyst temperature is between 580 and 780 degreeC <M/T> or 535 and 730 degreeC <A/T>.

Judgment Criteria

- calculated ageing value (based on the sensor signal ratio) exceeds 0.55.
- MIL activated after 2 drive cycles.
- No Limp home.

EOBD DRIVE CYCLE PATTERN

Refer to Diagnostic Function – EOBD Drive Cycle – [P.13A-11](#).

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

- Left bank side catalytic converter deteriorated.
- Exhaust leak.
- Refer to component locations [GROUP-70](#)
- Refer to configuration diagrams [GROUP-80](#)
- Refer to circuit diagrams [GROUP-90](#)

DIAGNOSIS

Required Special Tools:

- Diagnostic tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991910: Main Harness A

STEP 1. Check for exhaust leak.

Q: Are there any abnormalities?

YES : Repair it. Then go to Step 3.

NO : Go to Step 2.

STEP 2. Using diagnostic tool, check data list item AF: Heated Oxygen Sensor Bank 2, Sensor 2 (left rear).

CAUTION

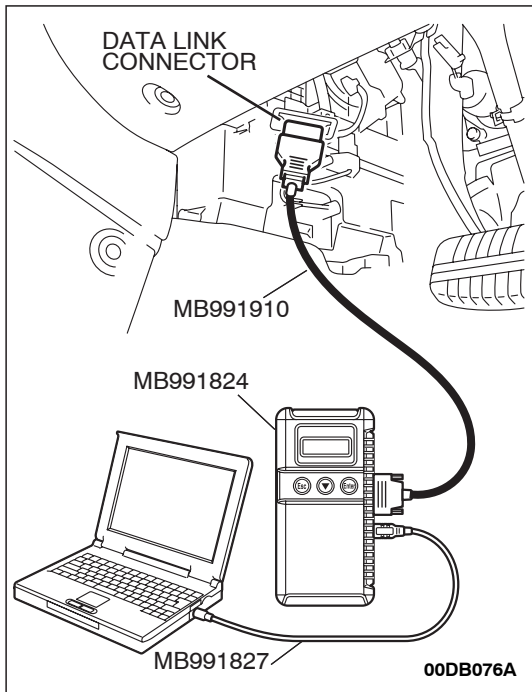
To prevent damage to diagnostic tool, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting diagnostic tool .

- (1) Connect diagnostic tool to the data link connector.
- (2) Start the engine and run at idle.
- (3) Set diagnostic tool to the data reading mode for item AF, Heated Oxygen Sensor Bank 2, Sensor 2 (left rear).
 - Warming up the engine. When the engine is revved, the output voltage should repeat 0 volt and 0.6 to 1.0 volt alternately.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the sensor operating properly?

YES : Go to Step 3.

NO : Refer to DTC P0156 – Heated Oxygen Sensor Circuit (Bank 2, Sensor 2) [P.13A-238](#), DTC P0157 – Heated Oxygen Sensor Circuit Low Voltage (Bank 2, Sensor 2) [P.13A-244](#), DTC P0158 – Heated Oxygen Sensor Circuit High Voltage (Bank 2, Sensor 2) [P.13A-250](#), DTC P0159 – Heated Oxygen Sensor Circuit Slow Response (Bank 2, Sensor 2) [P.13A-255](#).



STEP 3. Test the EOBD drive cycle.

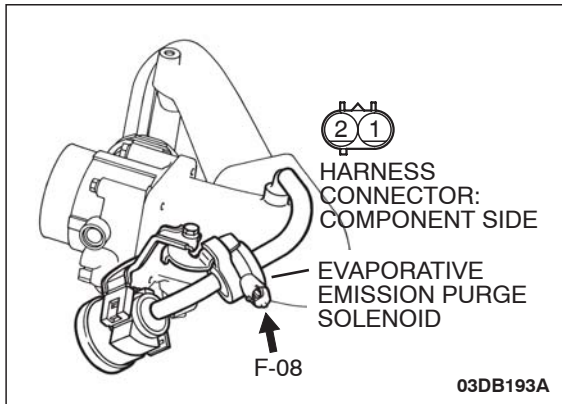
- (1) Carry out a test drive with the drive cycle pattern. Refer to Diagnostic Function – EOBD Drive Cycle – [P.13A-11](#).
- (2) Read the diagnostic trouble code.

Q: Is DTC P0431 set?

YES : Replace the left bank side catalytic converter.

NO : The inspection is complete.

DTC P0441: Evaporative Emission Control System Incorrect Purge Flow.



CIRCUIT OPERATION

- The evaporative emission purge solenoid power is supplied from the MPI relay (terminal No. 4).
- The ECU controls ground evaporative emission purge solenoid by turning the power transistor in the ECU "ON" and "OFF".

DTC SET CONDITIONS

Check Conditions

- Battery voltage is between 9.04 and 16.01volts.
Engine speed is above 801r/min.

Judgment Criteria

- Purge valve operation
- No MIL.

EOBD DRIVE CYCLE PATTERN

Refer to Diagnostic Function – EOBD Drive Cycle –
[P.13A-11](#).

TECHNICAL DESCRIPTION

- To judge if the purge valve is stuck open.

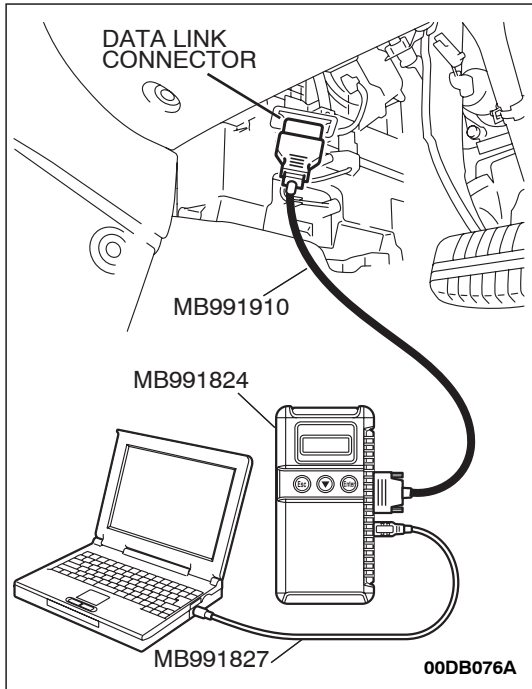
TROUBLESHOOTING HINTS (The most likely causes for this code to be set are:)

- Purge solenoid valve stuck open.
- Refer to component locations [GROUP-70](#)
- Refer to configuration diagrams [GROUP-80](#)
- Refer to circuit diagrams [GROUP-90](#)

DIAGNOSIS

Required Special Tools:

- Diagnostic tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991910: Main Harness A



STEP 1. Using diagnostic tool, check actuator test item 10: Evaporative Emission Purge Solenoid.

⚠ CAUTION

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

- (1) Connect diagnostic tool to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Set diagnostic tool to the actuator test mode for item 10, Evaporative emission purge solenoid.

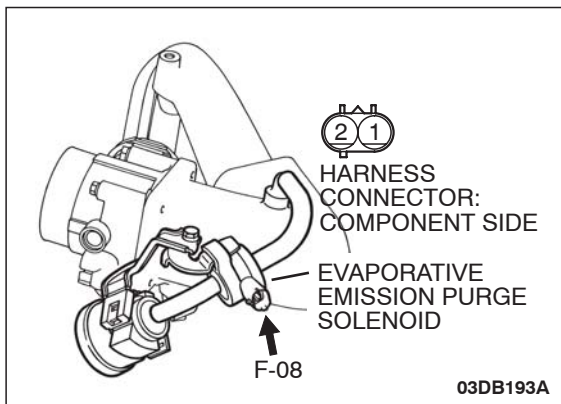
- An operation sound should be heard and vibration should be felt when the evaporative emission purge solenoid is operated.

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

Q: Is the solenoid operating properly?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-14](#).

NO : Go to Step 2.



STEP 2 Check the Purge solenoid valve operation. Refer to Group 17 , Evaporative Emission Purge Solenoid Valve Check [P.17-82](#)

Q: Is the Purge Solenoid Valve operating correctly?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-14](#).

NO : Repair or replace it. Then go to Step 3.

STEP3. Test the EOBD drive cycle.

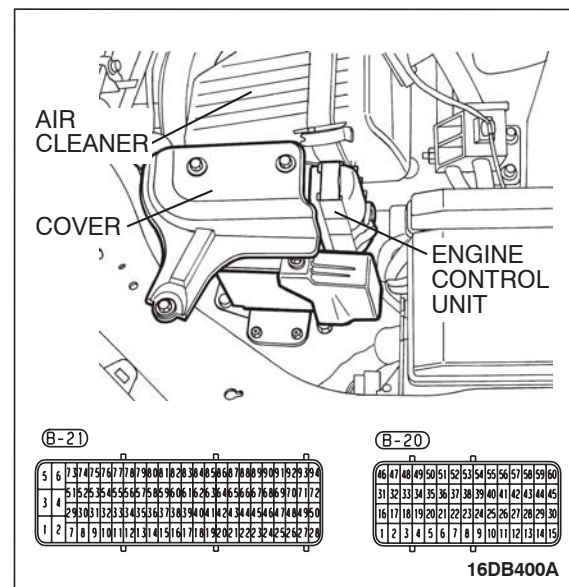
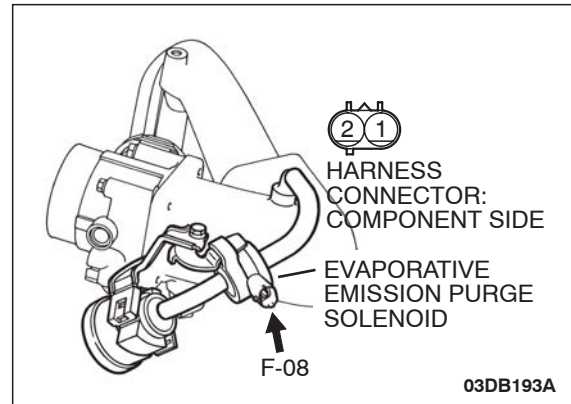
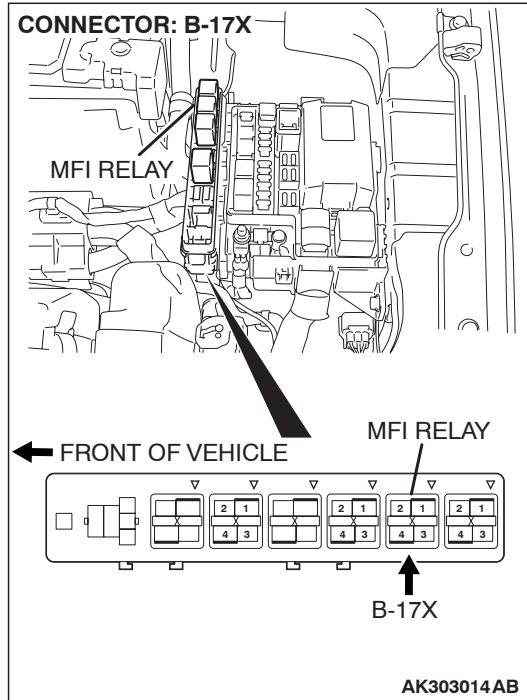
- (1) Carry out a test drive with the drive cycle pattern. Refer to Diagnostic Function – EOBD Drive Cycle – [P.13A-11](#).
- (2) Check the diagnostic trouble code (DTC).

Q: Is DTC P0441 set?

YES : Retry the troubleshooting.

NO : The inspection is complete.

DTC P0443: Evaporative Emission Control System Purge Control Valve Circuit.



CIRCUIT OPERATION

- The evaporative emission purge solenoid power is supplied from the MPI relay (terminal No. 4).
- The ECU controls ground evaporative emission purge solenoid by turning the power transistor in the ECU "ON" and "OFF".

DTC SET CONDITIONS

Check Conditions

- Battery voltage is between 9.04 and 16.01volts.
- Engine speed is above 801r/min.

Judgment Criteria

- IC internal test (open circuit, short to earth, short to battery).
- No MIL.

EOBD DRIVE CYCLE PATTERN

Refer to Diagnostic Function – EOBD Drive Cycle –
[P.13A-11](#).

TECHNICAL DESCRIPTION

- To judge if there is open circuit in the evaporative emission purge solenoid drive circuit, the ECU performs an internal test.

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

- Evaporative emission purge solenoid failed.
- Open or shorted evaporative emission purge solenoid circuit.
- Harness or connector damage.
- Refer to component locations [GROUP-70](#)
- Refer to configuration diagrams [GROUP-80](#)
- Refer to circuit diagrams [GROUP-90](#)

DIAGNOSIS

Required Special Tools:

- Diagnostic tool (MUT-III Sub Assembly)
 - MB991824: V.C.I.
 - MB991827: USB Cable
 - MB991910: Main Harness A
- MB992044: Engine ECU Check Harness

STEP 1. Using diagnostic tool, check actuator test item 10: Evaporative Emission Purge Solenoid.

⚠ CAUTION

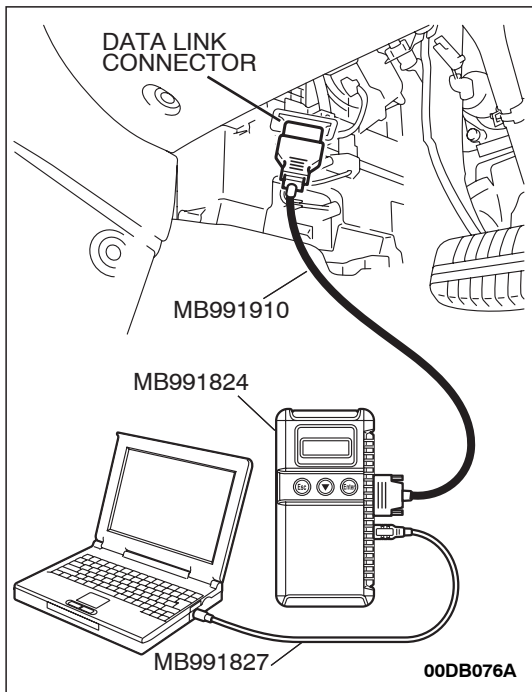
To prevent damage to diagnostic tool, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting diagnostic tool .

- (1) Connect diagnostic tool to the data link connector.
- (2) Turn the ignition switch to the "ON" position.
- (3) Set diagnostic tool to the actuator test mode for item 10, Evaporative emission purge solenoid.
 - An operation sound should be heard and vibration should be felt when the evaporative emission purge solenoid is operated.
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the solenoid operating properly?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-14](#).

NO : Go to Step 2.

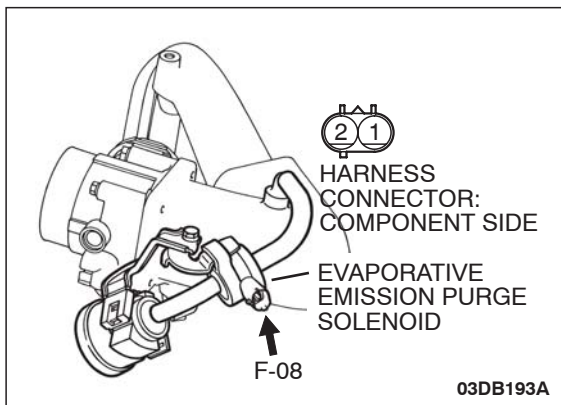


STEP 2 Check harness connector F-08 at the evaporative emission purge solenoid for damage.

Q: Is the harness connector in good condition?

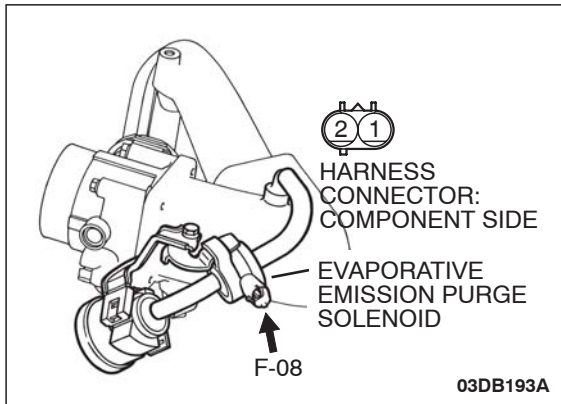
YES : Go to Step 3.

NO : Repair or replace it. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Then go to Step 12.



STEP 3 Check the evaporative emission purge solenoid.

- (1) Disconnect the evaporative emission purge solenoid connector F-08.



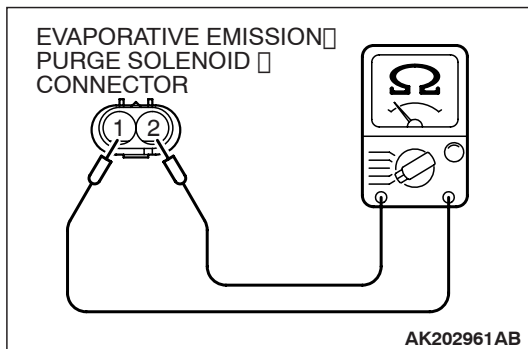
- (2) Measure the resistance between evaporative emission purge solenoid side connector terminal No. 1 and No. 2.

Standard value: 16 ± 2 ohms [at 20°C]

Q: Is the measured resistance between 14 and 18 ohms [at 20°C]?

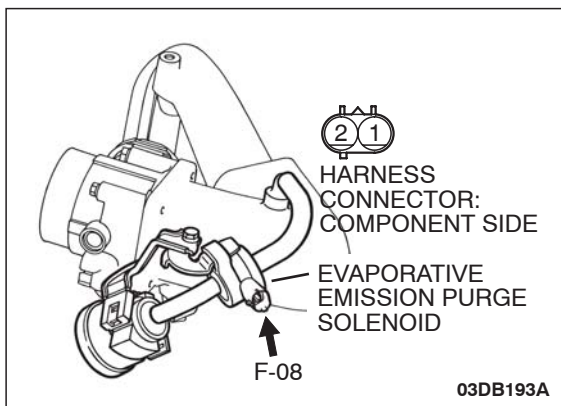
YES : Go to Step 4.

NO : Replace the evaporative emission purge solenoid.
Then go to Step 12.



STEP 4. Measure the power supply voltage at evaporative emission purge solenoid harness side connector F-08.

- (1) Disconnect the connector F-08 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.

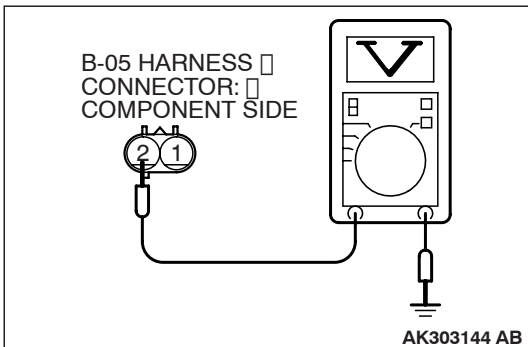
- Voltage should be battery positive voltage.

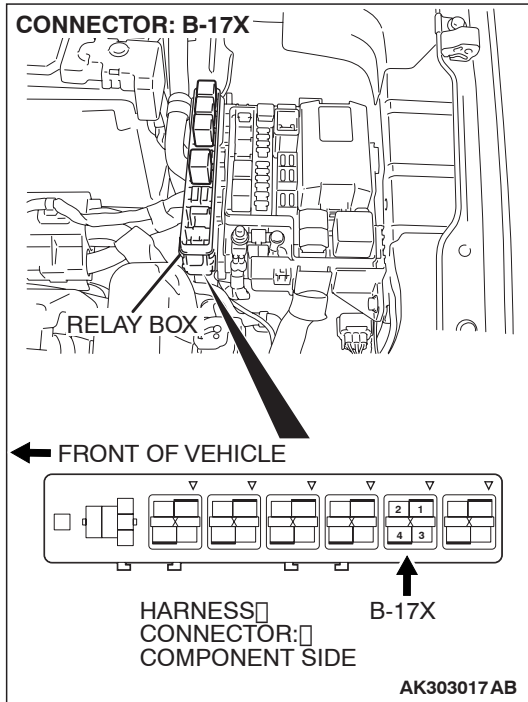
- (4) Turn the ignition switch to the "LOCK" (OFF) position.

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

YES : Go to Step 6.

NO : Go to Step 5.



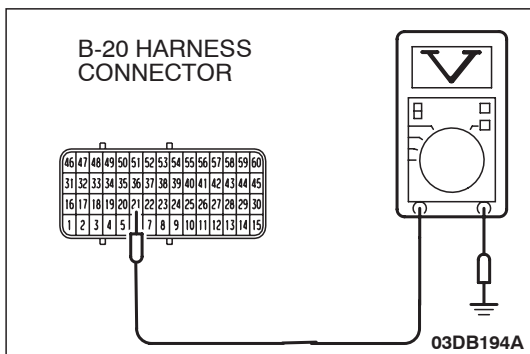
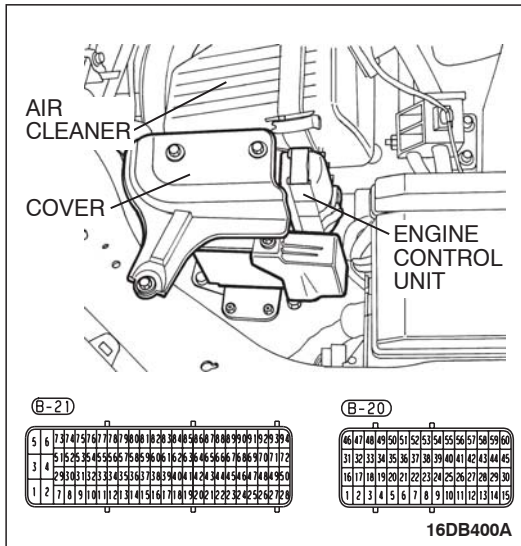


STEP 5. Check harness connector B-17X at MPI relay for damage.

Q: Is the harness connector in good condition?

YES : Repair harness wire between MPI relay connector B-17X (terminal No. 4) and evaporative emission purge solenoid connector F-08 (terminal No. 2) because of open circuit or short circuit to ground. Then go to Step 12.

NO : Repair or replace it. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Then go to Step 12.



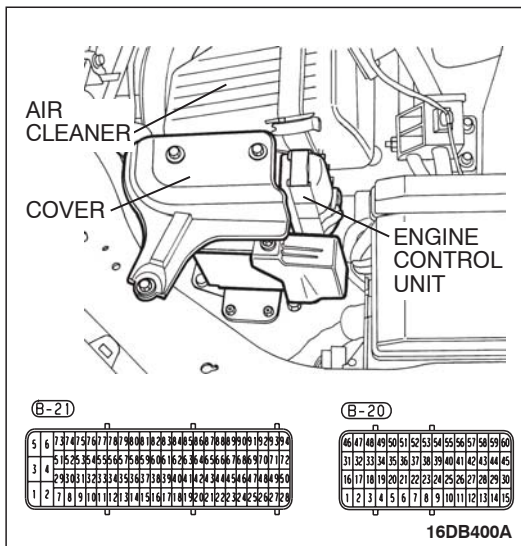
STEP 6. Measure the power supply voltage at ECU connector B-20 by using engine ECU check harness special tool MB992044.

- (1) Disconnect the all ECU connectors and connect engine ECU check harness special tool MB992044 between the separated connectors.
- (2) Turn the ignition switch to the "ON" position.

- (3) Measure the voltage between terminal No. 21 and ground.
 - Voltage should be 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 : Go to Step 7.



STEP 7. Check harness connector B-20 at ECU for damage.

Q: Is the harness connector in good condition?

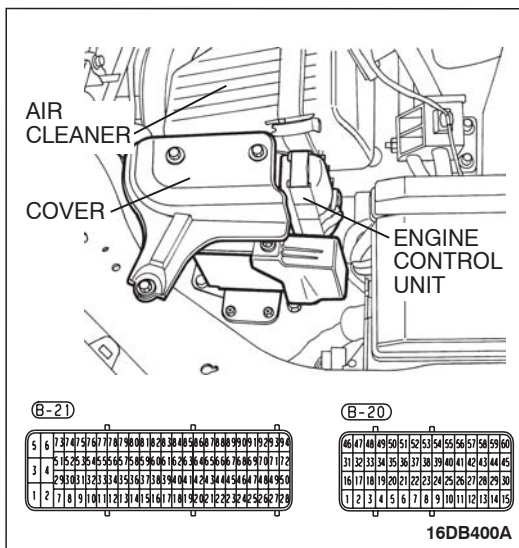
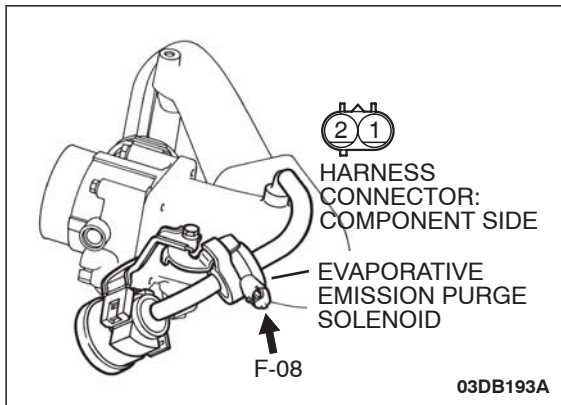
- YES :** Go to Step 8.
NO : Repair or replace it. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Then go to Step 12.

STEP 8. Check for open circuit and short circuit to ground between evaporative emission purge solenoid connector F-08 (terminal No. 1) and ECU connector B-20 (terminal No. 21).

Q: Is the harness wire in good condition?

YES : Then go to Step 9.

NO : Repair it. Then go to Step 12.

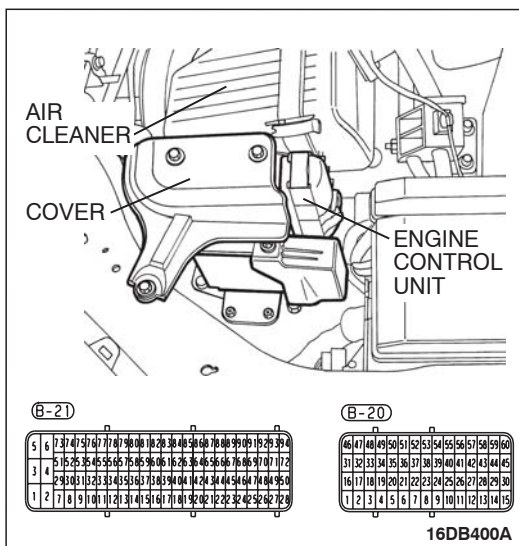


STEP 9. Check harness connector B-20 at ECU for damage.

Q: Is the harness 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 go to Step 12.

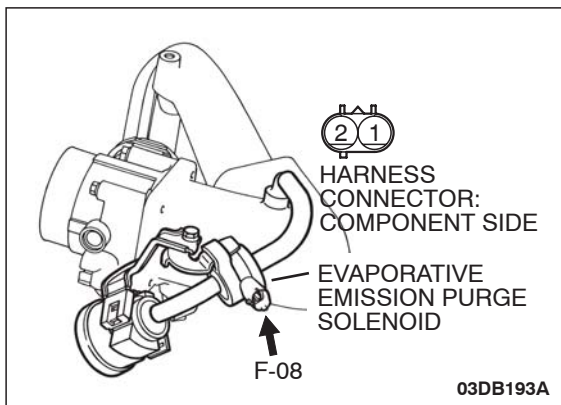
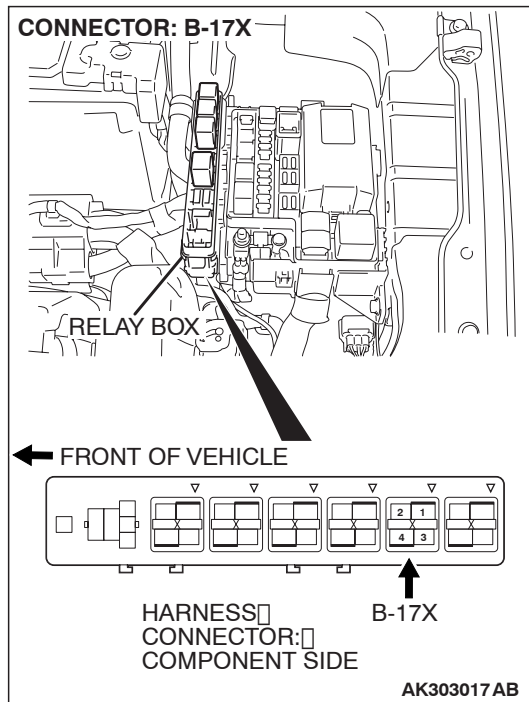


STEP 10. Check for harness damage between MPI relay connector B-17X (terminal No. 4) and evaporative emission purge solenoid connector F-08 (terminal No. 2).

Q:Is the harness wire in good condition?

YES : Go to Step 11.

NO : Repair it. Then go to Step 12.

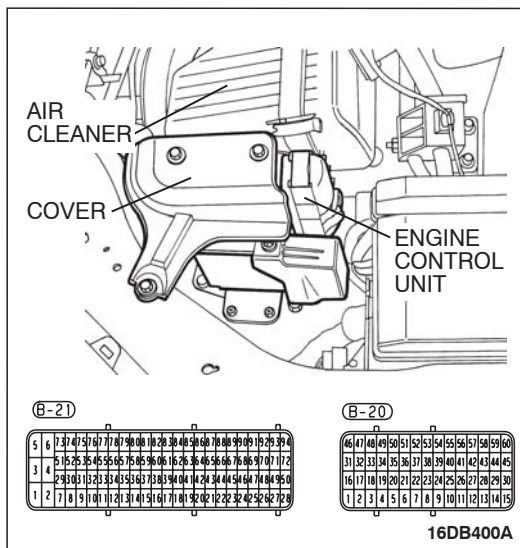
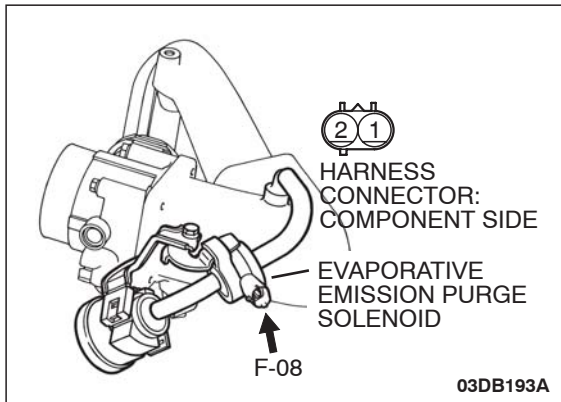


STEP 11. Check for harness damage between evaporative emission purge solenoid connector F-08 (terminal No. 1) and ECU connector B-20 (terminal No. 21).

Q: Is the harness wire in good condition?

YES : Then go to Step 12.

NO : Repair it. Then go to Step 12.



STEP 12. Test the EOBD drive cycle.

- (1) Carry out a test drive with the drive cycle pattern. Refer to Diagnostic Function – EOBD Drive Cycle – [P.13A-11](#).
- (2) Check the diagnostic trouble code (DTC).

Q: Is DTC P0443 set?

YES : Retry the troubleshooting.

NO : The inspection is complete.

DTC P0461: Fuel Level Sensor (main) Circuit Range/Performance

CIRCUIT OPERATION

- The fuel level sensor (main) output voltage is input into ENGINE- ECU via meter circuit.

TECHNICAL DESCRIPTION

- The ENGINE-ECU detects the amount of fuel left in the fuel tank with this signal.
- This input is used in conjunction with the Engine Management System and does not indicate a sensor or wiring fault.

DTC SET CONDITIONS

Check Conditions, Judgement Criteria

- Fuel level in tank is too low.

EOBD DRIVE CYCLE PATTERN

None .

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

- Fuel level too low in tank.

[NEXT PAGE](#)