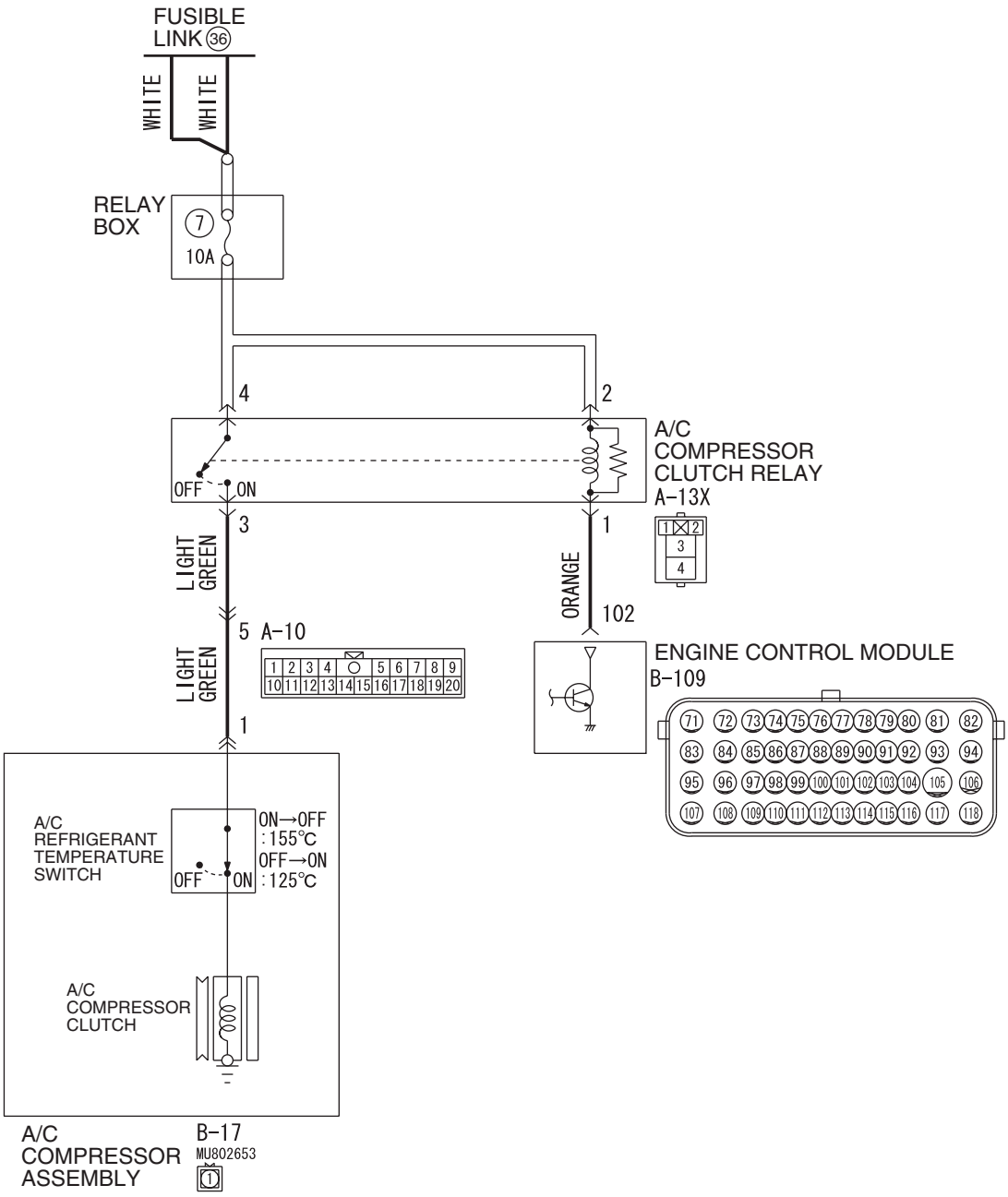
INSPECTION PROCEDURE 3: The Compressor does not Work.

A/C Compressor Assembly Circuit



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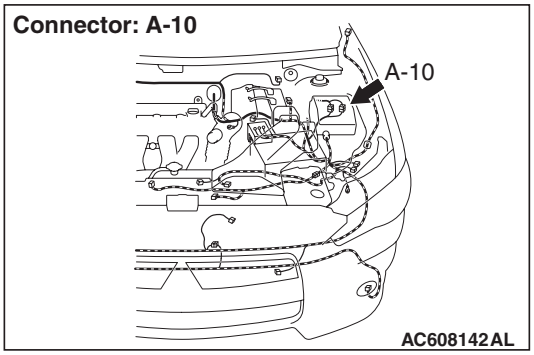
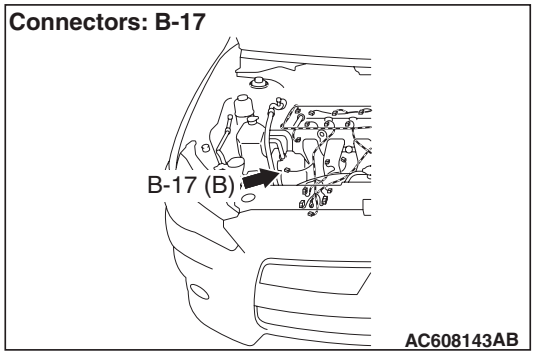
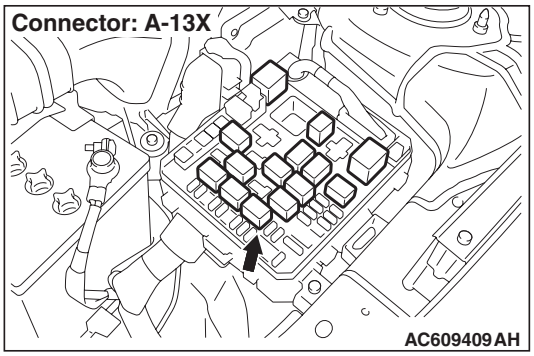
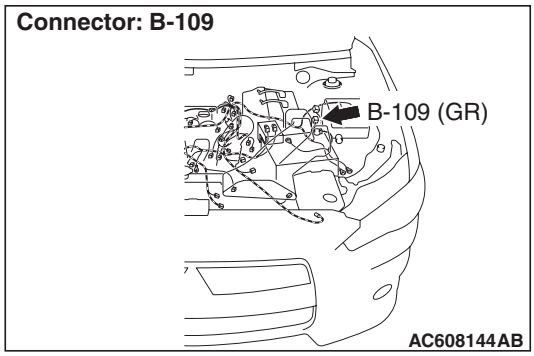
TSB Revision









FUNCTION

Compressor that recovers the refrigerant, which evaporated in the evaporator and became a high-temperature and high-pressure gas, and turns it into liquid again.

PROBABLE CAUSES

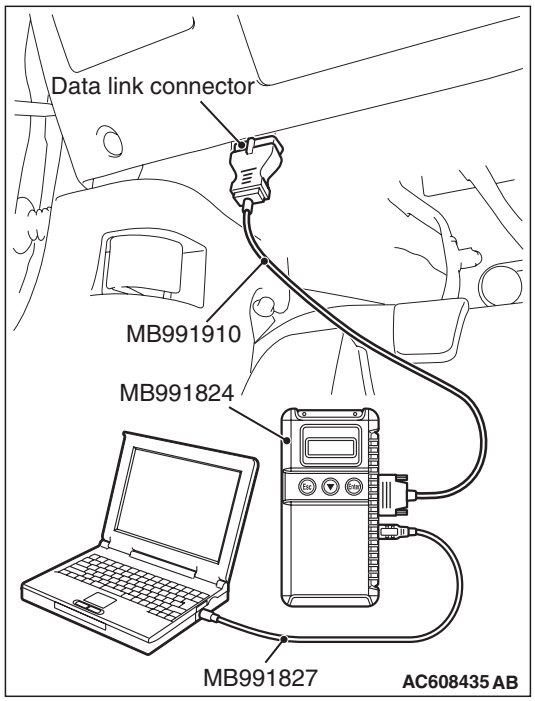
- Insufficient refrigerant
- Malfunction of connector.
- Malfunction of the harness (A/C compressor circuit is open/shorted to ground)
- Malfunction of the A/C pressure sensor.
- Malfunction of the A/C compressor.
- Malfunction of the A/C compressor clutch relay.
- Malfunction of the A/C-ECU.

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991658: Test Harness Set
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A

TSB Revision



STEP 1. Using scan tool MB991958, diagnose the CAN bus line.

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.55A-6."
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the CAN bus line found to be normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines (Refer to GROUP 54C, precautions on how to repair the CAN bus lines P.54C-16).

STEP 2. Using scan tool MB991958, read the diagnostic trouble code.

Check if an A/C-ECU DTC is set.
(1) Connect scan tool MB991958 to the data link connector.
(2) Turn the ignition switch to the "ON" position.
(3) Check if the DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

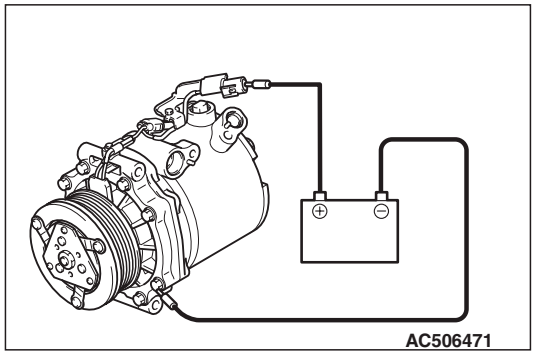
Q: Is the DTC set?

YES : Refer to Diagnostic Trouble Code Chart P.55A-8.
NO : Go to Step 3.

STEP 3. Check A/C compressor assembly connector B-17 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is A/C compressor assembly connector B-17 in good condition?

YES : Go to Step 4.
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.



STEP 4. Check the A/C compressor clutch operation.
Connect the compressor connector terminal to the battery positive (+) terminal and ground the battery's negative (-) terminal to the compressor unit. At that time, the A/C compressor clutch should make a definite operating sound.

Q: Can the sound (click) of the A/C compressor clutch operation be heard?

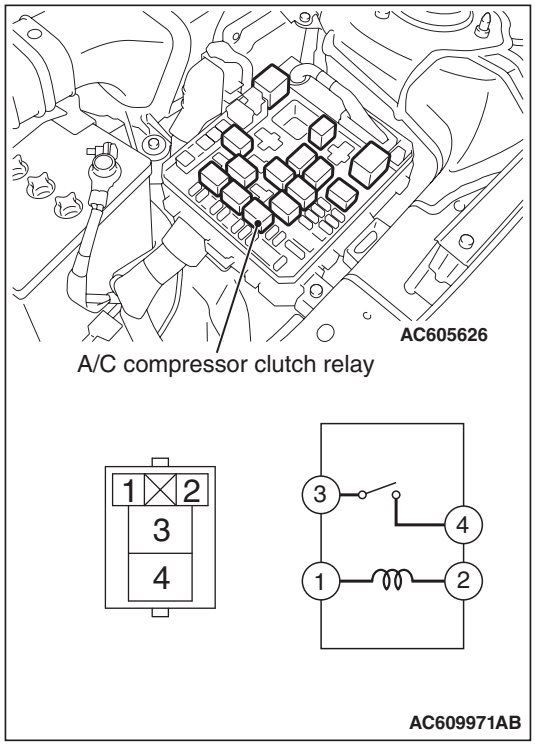
YES : Go to Step 5.
NO : Replace the compressor magnet clutch.

STEP 5. Check A/C compressor clutch relay connector A-13X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is A/C compressor clutch relay connector A-13X in good condition?

YES : Go to Step 6.
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

STEP 6. Check the A/C compressor clutch relay continuity.
Follow the table below to check the A/C compressor clutch relay for continuity.



BATTERY VOLTAGE	TESTER CONNECTION	SPECIFIED CONDITION
Not applied	3 –4	Open circuit
• Connect terminal 2 to the positive battery terminal • Connect terminal 1 to the negative battery terminal	3 –4	Less than 2 ohms

Q: Is the A/C compressor clutch relay in good condition?

YES : Go to Step 7.
NO : Replace the A/C compressor clutch relay.

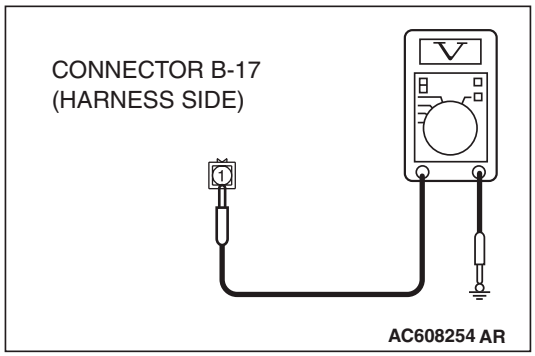
STEP 7. Check engine control module connector B-109 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is engine control module connector B-109 in good condition?

YES : Go to Step 8.
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

STEP 8. Measure the voltage at A/C compressor assembly connector B-17.

(1) Disconnect A/C compressor assembly connector B-17 and measure the voltage at the wiring harness side.
(2) Disconnect powertrain control module connector B-109 and ground harness side terminal No.102.
(3) Turn the ignition switch to the "ON" position.
(4) A/C compressor assembly connector B-17 terminal 1 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).



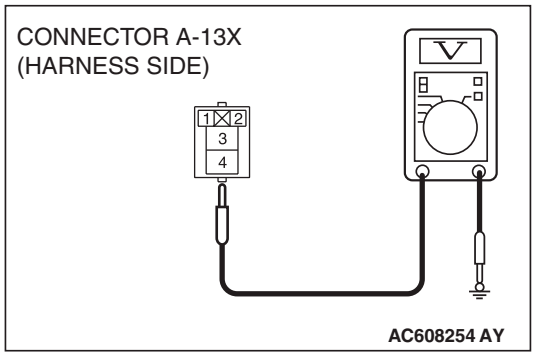
Q: Is the measured voltage approximately 12 volts?

YES : Go to Step 13.
NO : Go to Step 9.

STEP 9. Measure the voltage at A/C compressor clutch relay connector A-13X.

(1) Disconnect A/C compressor connector A-13X and measure the voltage at the relay box side.
(2) Turn the ignition switch to the "ON" position.
(3) Measure the voltage between terminal 4 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

(4) Measure the voltage between terminal 2 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).



Q: Is the measured voltage approximately 12 volts?

YES : Go to Step 11.
NO : Go to Step 10.

STEP 10. Check the wiring harness between A/C compressor clutch relay connector A-13X (terminals 2 and 4) and the fusible link (36).

Q: Is the wiring harness between A/C compressor clutch relay connector A-13X (terminals 2 and 4) and the fusible link (36) in good condition?

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.00-13.

NO : Repair the wiring harness. Check that the A/C works normally.

STEP 11. Check the wiring harness between A/C compressor clutch relay connector A-13X (terminal 3) and A/C compressor assembly connector B-17 (terminal 1).

NOTE: Also check intermediate connector A-10 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector A-10 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between A/C compressor clutch relay connector A-13X (terminal 3) and A/C compressor assembly connector B-17 (terminal 1) in good condition?

YES : Go to Step 12.

NO : Repair the wiring harness. Check that the A/C works normally.

STEP 12. Check the wiring harness between powertrain control module connector B-109 (terminal 102) and A/C compressor clutch relay connector A-13X (terminal 1).

Q: Is the wiring harness between powertrain control module connector B-109 (terminal 102) and A/C compressor clutch relay connector A-13X (terminal 1) in good condition?

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.00-13.

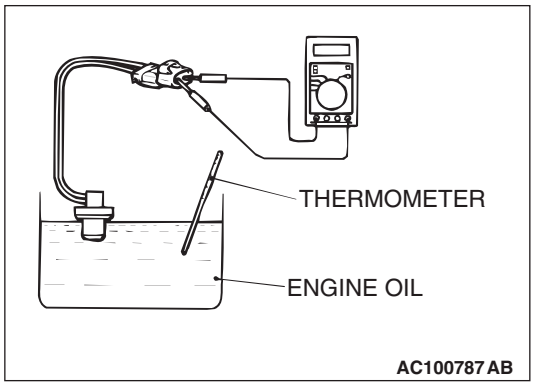
NO : Repair the wiring harness. Check that the A/C works normally.

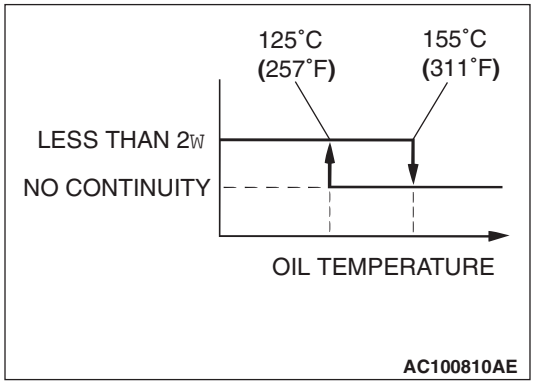
STEP 13. Check the refrigerant temperature switch.

⚠ CAUTION

Do not heat more than necessary.

(1) Dip the metal part of the cooling temperature switch into engine oil and increase the oil temperature using a gas burner or similar.





(2) When the oil temperature reaches the standard value, check that resistance is supplied between the terminals.

Standard value:

ITEM	TEMPERATURE
Less than 2 ohms	Slightly below 155° C (311° F)
No continuity	155° C (311° F) or more

NOTE: When the oil temperature is 155°C (311°F) or more and there is no continuity, the resistance will not be 2Ω or lower until the oil temperature reduces to 125°C (257°F) or less.

Q: Is the refrigerant temperature switch operating properly?

YES : Go to Step 14.

NO : Replace the refrigerant temperature switch. Check that the A/C works normally.

STEP 14. Replace the A/C-ECU.

Q: Does the A/C operate normally?

YES : No action is necessary and testing is complete.

NO : Replace the powertrain control module. Check that the A/C works normally.