GROUP 55B

AUTOMATIC AIR CONDITIONER

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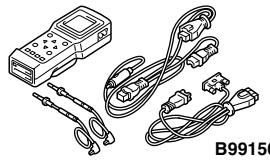
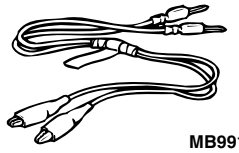
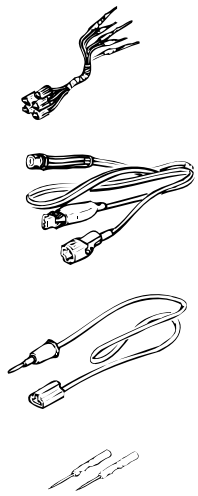
SERVICE SPECIFICATIONS

M1554000300083

Item		Standard value
Resistance value for air mixing damper control motor and potentiometer kΩ	MAX HOT	Approximately 5.35
	MAX COOL	Approximately 0.65
Resistance value for mode selection damper control motor and potentiometer kΩ	DEF position	Approximately 0.65
	FACE position	Approximately 5.35

SPECIAL TOOL

M1555000600054

Tool	Number	Name	Use
 B991502	MB991502	MUT-II sub-assembly	Automatic A/C check
 MB991529	MB991529	Diagnosis code check harness	Automatic A/C check with a voltmeter
 MB991223	MB991223 A: MB991219 B: MB991220 C: MB991221 D: MB991222	Harness set A: Test harness B: LED harness C: LED harness adapter D: Probe	Continuity check and voltage measurement at harness wire or connector A: For checking connector pin contact pressure B: For checking power supply circuit C: For checking power supply circuit D: For connecting a locally sourced tester

TROUBLESHOOTING

DIAGNOSIS TROUBLESHOOTING FLOW

M1554004700102

Refer to GROUP 00, How to Use Troubleshooting/ Inspection Service Points P.00-6.

DIAGNOSIS FUNCTION

M1554004800121

How to read diagnosis code

Connect the MUT-II to the 16-pin diagnosis connector to read diagnosis code (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points P.00-6).

How to erase diagnosis code

Refer to GROUP 00, How to Use Troubleshooting/ Inspection Service Points P.00-6.

DIAGNOSIS CODE CHART

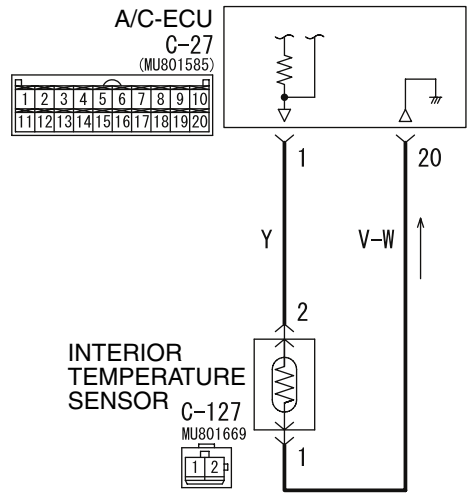
M1554004900140

Code No.	Diagnostic item	Reference page
11	Interior temperature senor system (open circuit)	P.55B-4
12	Interior temperature sensor system (short circuit)	
13	Outside thermo sensor system (open circuit)	P.55B-6
14	Outside thermo sensor system (short circuit)	
15	Heater water temperature sensor system (open circuit)	P.55B-8
16	Heater water temperature sensor system (short circuit)	
21	Air thermo sensor system (open circuit)	P.55B-10
22	Air thermo sensor system (short circuit)	
31	Air mixing damper control motor and potentiometer sensor system	P.55B-13
32	Mode selection damper control motor and potentiometer sensor system	P.55B-16
41	Air mixing damper control motor and potentiometer activating system	P.55B-18
42	Mode selection damper control motor and potentiometer activating system	P.55B-20

DIAGNOSTIC TROUBLE CODE PROCEDURES

Diagnosis code No.11, 12: Interior temperature sensor system

Interior Temperature Sensor Circuit



Wire colour code
B : Black LG : Light green G : Green L : Blue W : White Y : Yellow SB : Sky blue
BR : Brown O : Orange GR : Gray R : Red P : Pink V : Violet

W3Z05E01AA

COMMENTS ON TROUBLE SYMPTOM

This code is set when the interior temperature sensor circuit is open (Code No.11) or is short (Code No.12).

Possible causes

- Malfunction of the interior temperature sensor
- Damaged the wiring harness or connectors
- Malfunction of the auto air conditioner control panel (A/C-ECU)

DIAGNOSIS

Step 1. Check the interior temperature sensor.

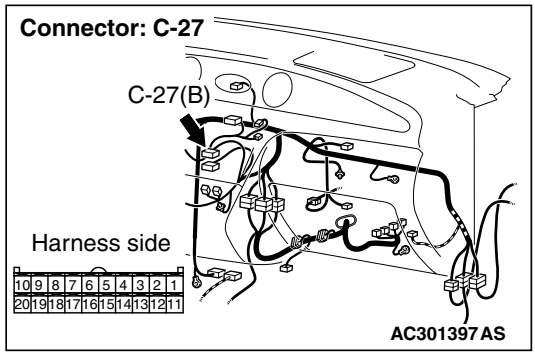
Refer to P.55B-73.

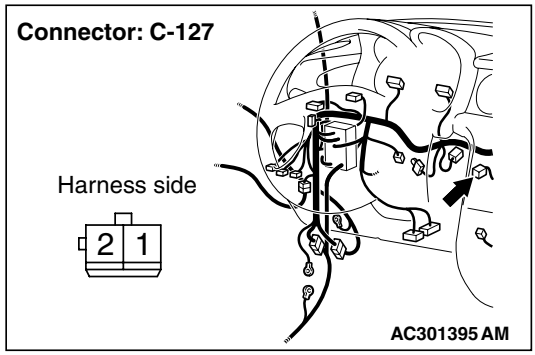
Q: Is the check result normal?

YES : Go to Step 2.

NO : Replace the interior temperature sensor.

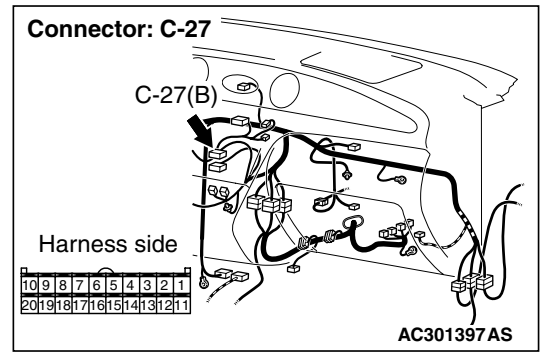
Step 2. Connector check: C-27 A/C-ECU connector and C-127 interior temperature sensor connector

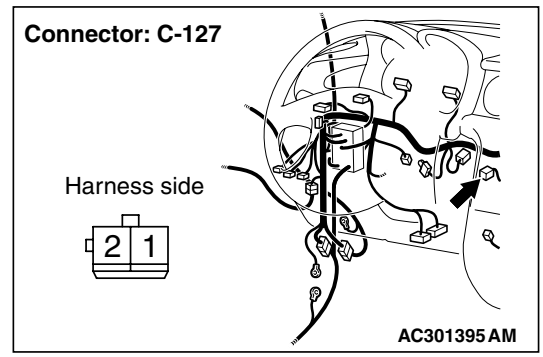




Q: Is the check result normal?
YES : Go to Step 3.
NO : Repair the connector.

Step 3. Check the wiring harness between C-27 A/C-ECU connector (terminals 1 and 20) and C-127 interior temperature sensor connector (terminals 2 and 1).



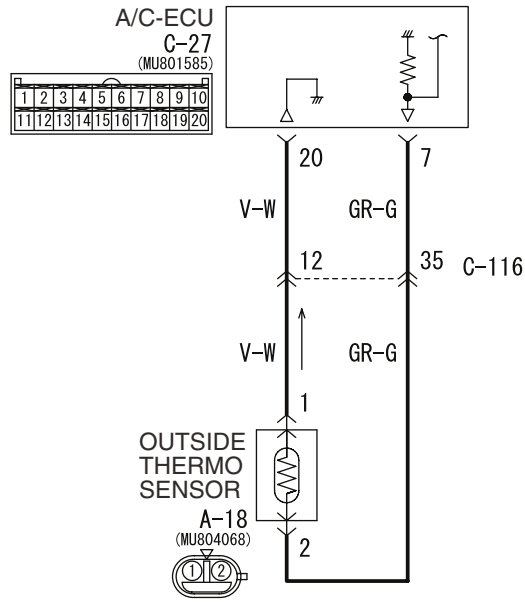


- Check the sensor signal line and earth line for open or short circuit.

Q: Is the check result normal?
YES : Replace the auto air conditioner control panel (A/C-ECU)
NO : Repair the wiring harness.

Diagnosis code 13, 14: Outside thermo sensor system

Outside Thermo Sensor Circuit



Wire colour code
B : Black LG : Light green G : Green L : Blue W : White Y : Yellow SB : Sky blue
BR : Brown O : Orange GR : Gray R : Red P : Pink V : Violet

W3Z05E02AA

COMMENTS ON TROUBLE SYMPTOM

This code is set when the outside thermo sensor circuit is open (Code No.13) or is short (Code No.14).

Possible causes

- Malfunction of the outside thermo sensor
- Damaged the wiring harness and connectors
- Malfunction of the auto air conditioner control panel (A/C-ECU)

DIAGNOSIS

Step 1. Check the outside thermo sensor.

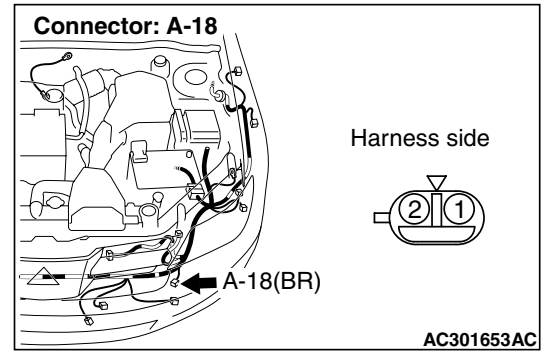
Refer to P.55B-74.

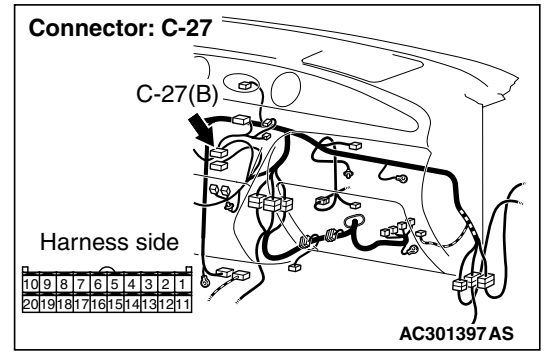
Q: Is the check result normal?

YES : Go to Step 2.

NO : Replace the outside thermo sensor.

Step 2. Connector check: A-18 outside thermo sensor connector and C-27 A/C-ECU connector



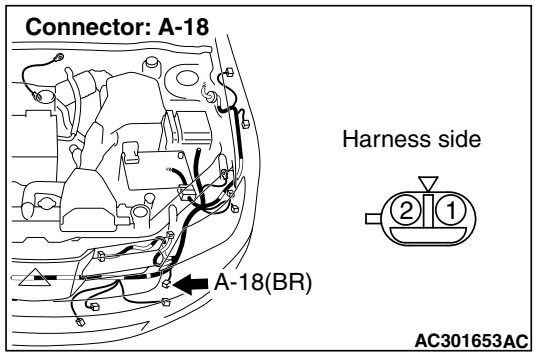


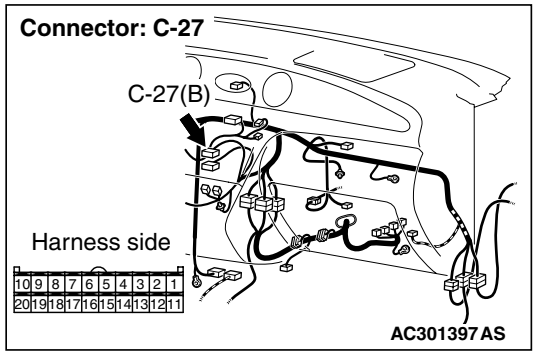
Q: Is the check result normal?

YES : Go to Step 3.

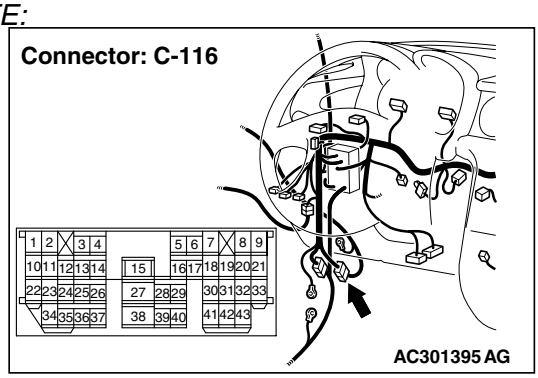
NO : Repair the connector.

Step 3. Check the wiring harness between A-18 outside thermo sensor connector (terminals 1 and 2) and C-27 A/C-ECU connector (terminals 20 and 7).





NOTE:



Prior to the wiring harness inspection, check intermediate connector C-116, and repair if necessary.

- Check the sensor signal line and earth line for open or short circuit.

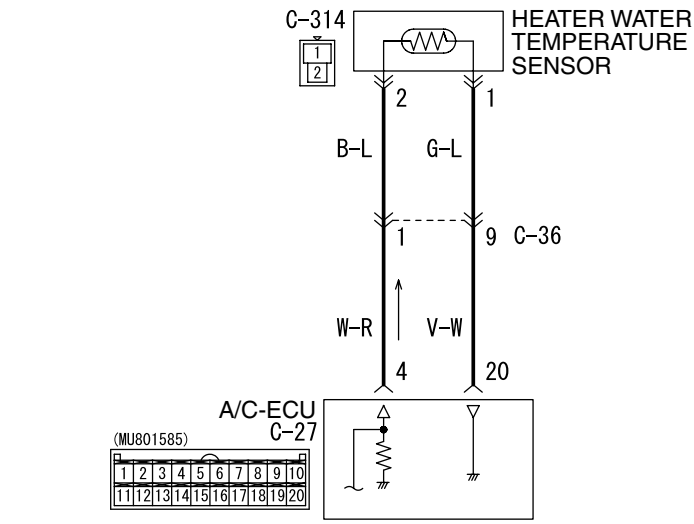
Q: Is the check result normal?

YES : Replace the auto air conditioner control panel (A/C-ECU)

NO : Repair the wiring harness.

Diagnosis code 15, 16: Heater water temperature sensor system

Heater Water Temperature Sensor Circuit



Wire colour code
B : Black LG : Light green G : Green L : Blue W : White Y : Yellow SB : Sky blue
BR : Brown O : Orange GR : Gray R : Red P : Pink V : Violet

W3Z05E06AA

COMMENTS ON TROUBLE SYMPTOM

This code is set when the heater water temperature sensor circuit is open (Code No.15) or is short (Code No.16).

Possible causes

- Malfunction of the heater water temperature sensor
- Damaged the wiring harness or connectors
- Malfunction of the auto air conditioner control panel (A/C-ECU)

DIAGNOSIS

Step 1. Check the heater water temperature sensor.

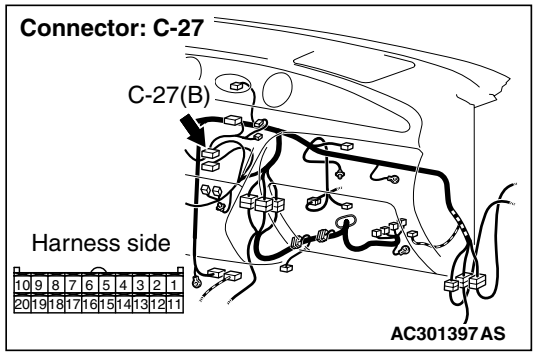
Refer to P.55B-73.

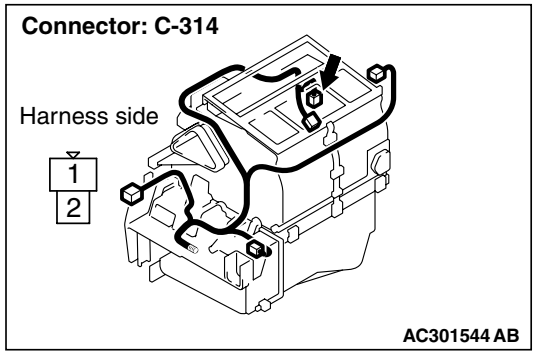
Q: Is the check result normal?

YES : Go to Step 2.

NO : Replace the heater water temperature sensor.

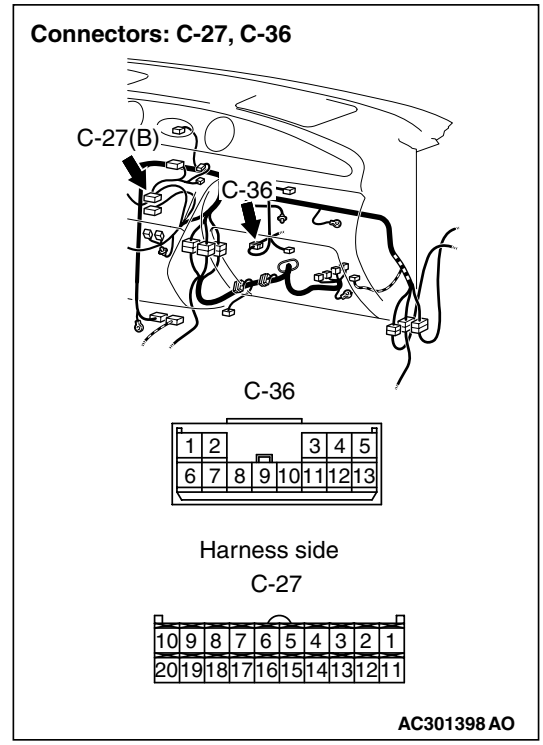
Step 2. Connector check: C-27 A/C-ECU connector and C-314 heater water temperature connector

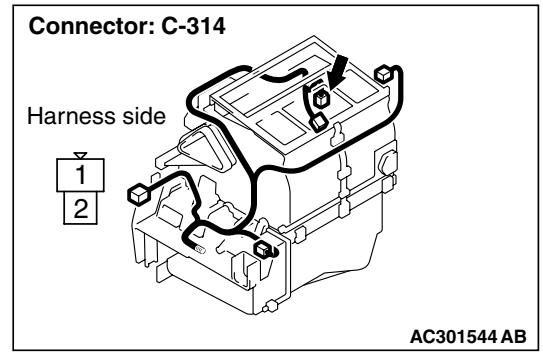




Q: Is the check result normal?
YES : Go to Step 3.
NO : Repair the connector.

Step 3. Check the wiring harness between C-27 A/C-ECU connector (terminals 4 and 20) and C-314 heater water temperature sensor connector (terminals 2 and 1).





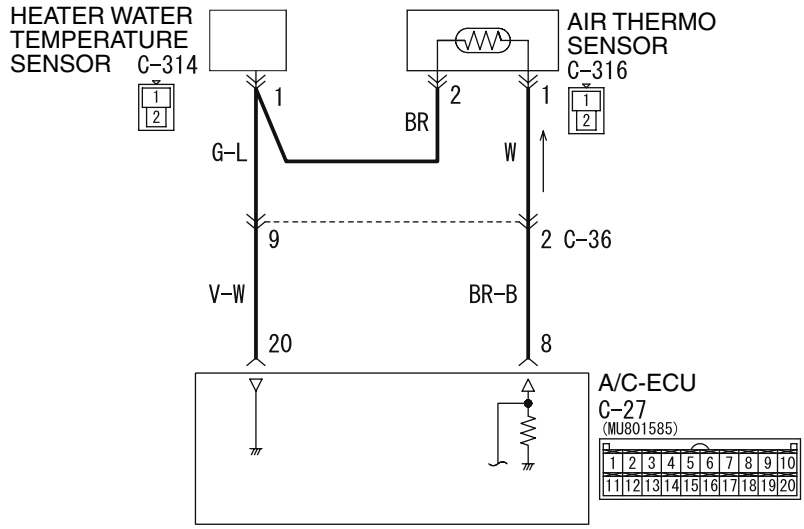
NOTE: Prior to the wiring harness inspection, check intermediate connector C-36, and repair if necessary.

- Check the sensor signal line and earth line for open or short circuit.

Q: Is the check result normal?
YES : Replace the auto air conditioner control panel (A/C-ECU)
NO : Repair the wiring harness.

Diagnosis code 21, 22: Air thermo sensor system

Air Thermo Sensor Circuit



Wire colour code
B : Black LG : Light green G : Green L : Blue W : White Y : Yellow SB : Sky blue
BR : Brown O : Orange GR : Gray R : Red P : Pink V : Violet

W3Z05E04AA

COMMENTS ON TROUBLE SYMPTOM

This code is set when the air thermo sensor circuit is open (Code No.21) or is short (Code No.22).

Possible causes

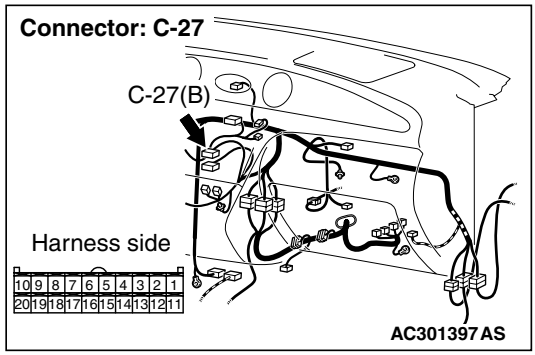
- Malfunction of the air thermo sensor
- Damaged the wiring harness or connectors
- Malfunction of the auto air conditioner control panel (A/C-ECU)

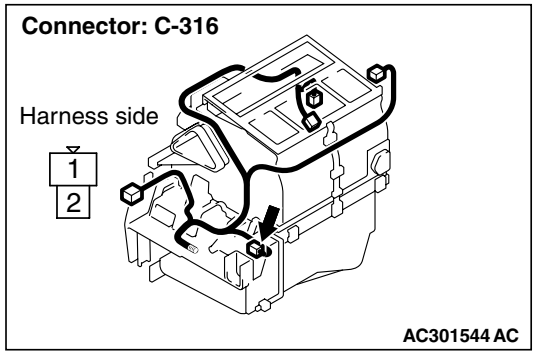
DIAGNOSIS

Step 1. Check the air thermo sensor.
Refer to P.55B-73.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Replace the air thermo sensor.

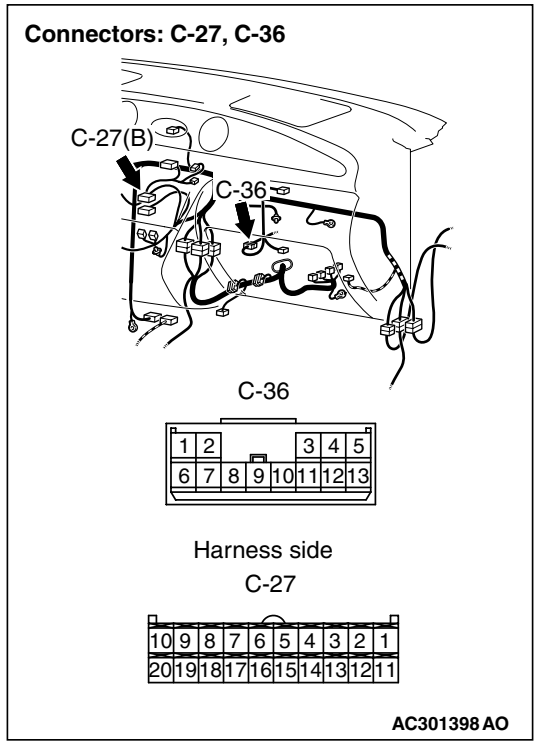
Step 2. Connector check: C-27 A/C-ECU connector and C-316 air thermo sensor connector

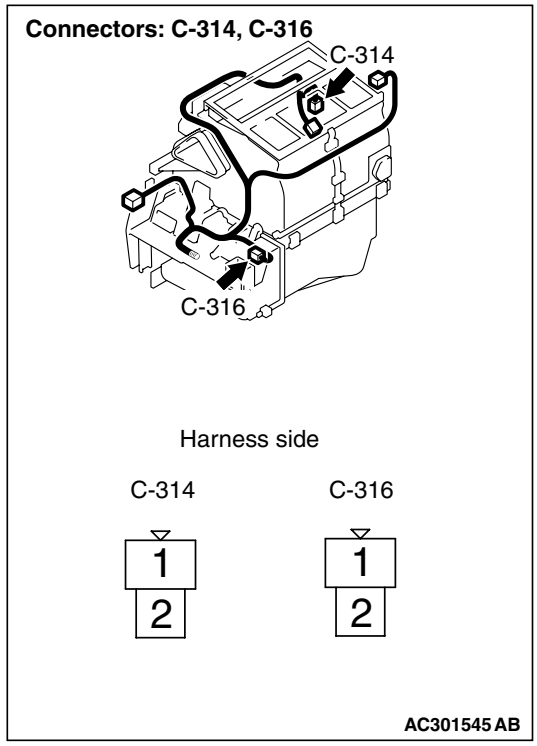




Q: Is the check result normal?
YES : Go to Step 3.
NO : Repair the connector.

Step 3. Check the wiring harness between C-27 A/C-ECU connector (terminals 8 and 20) and C-316 air thermo sensor connector (terminals 1 and 2).





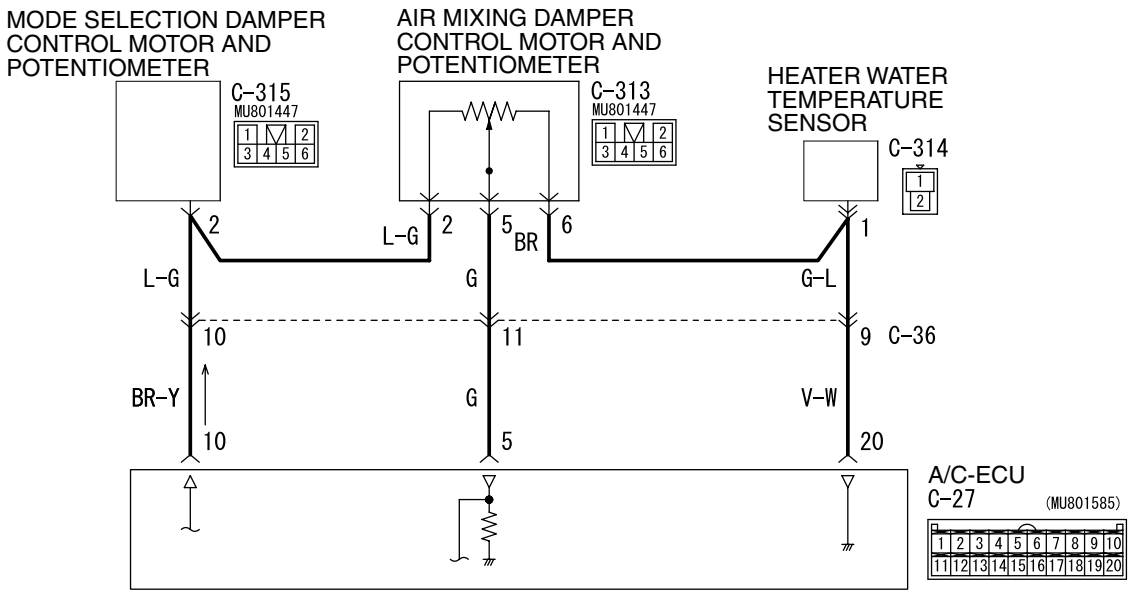
NOTE: Prior to the wiring harness inspection, check intermediate connector C-36 and heater water temperature sensor connector C-314, and repair if necessary.

- Check the sensor signal line and earth line for open or short circuit.

Q: Is the check result normal?
YES : Replace the auto air conditioner control panel (A/C-ECU)
NO : Repair the wiring harness.

Diagnosis code 31: Air mixing damper control motor potentiometer system

Air Mixing Damper Control Motor Potentiometer Circuit



Wire colour code
B : Black LG : Light green G : Green L : Blue W : White Y : Yellow SB : Sky blue
BR : Brown O : Orange GR : Gray R : Red P : Pink V : Violet

W3Z05E05AA

COMMENTS ON TROUBLE SYMPTOM

This code is set when the air mixing damper control motor potentiometer does not send any signal to the A/C-ECU due to short or open circuit.

Possible causes

- Malfunction of the air mixing damper control motor and potentiometer
- Damaged the wiring harness or connectors
- Malfunction of the auto air conditioner control panel (A/C-ECU)

DIAGNOSIS

Step 1. Check the air mixing damper control motor and potentiometer.

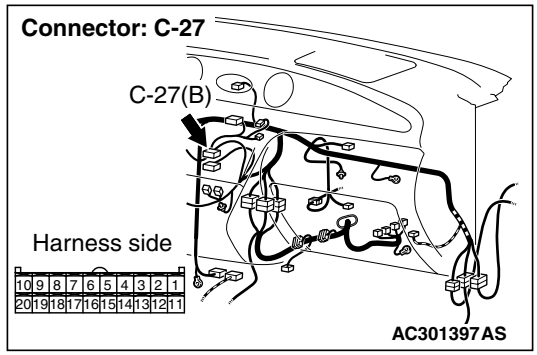
Refer to P.55B-70.

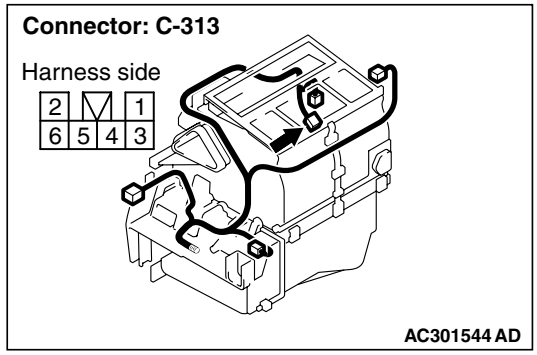
Q: Is the check result normal?

YES : Go to Step 2.

NO : Replace the air mixing damper control motor and potentiometer.

Step 2. Connector check: C-27 A/C-ECU connector and C-313 air mixing damper control motor and potentiometer connector



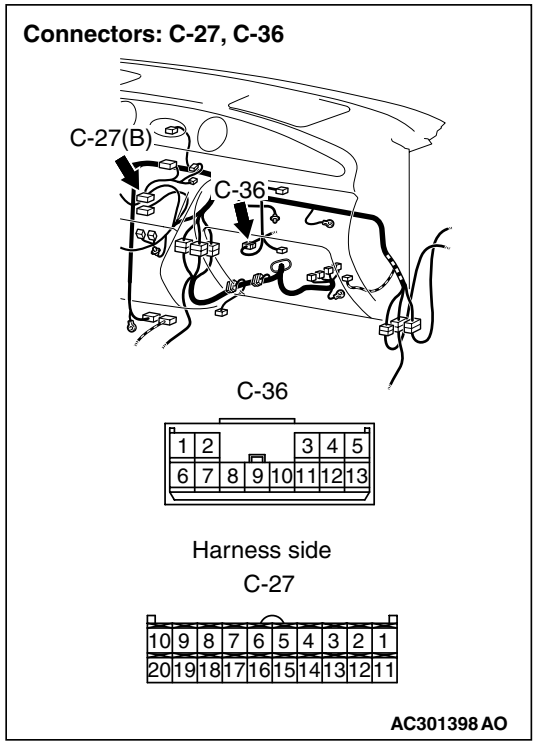


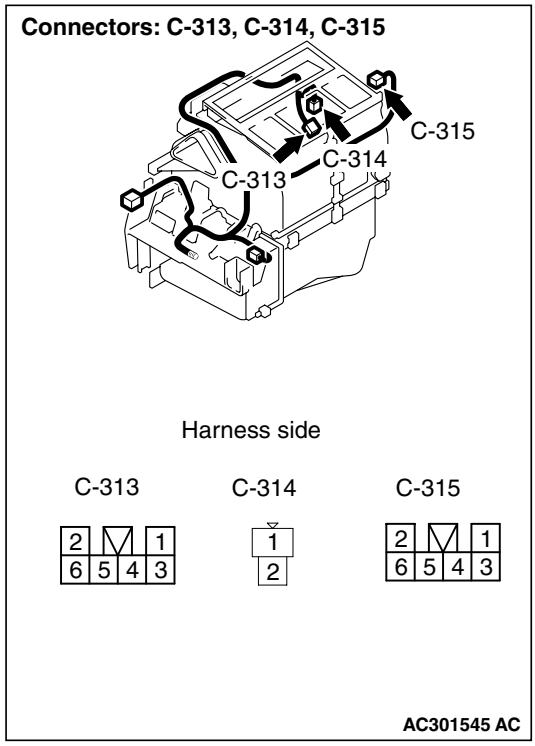
Q: Is the check result normal?

YES : Go to Step 3.

NO : Repair the connector.

Step 3. Check the wiring harness between C-27 A/C-ECU connector (terminals 10, 5 and 20) and C-313 air mixing damper control motor and potentiometer connector (terminals 2, 5 and 6).





NOTE: Prior to the wiring harness inspection, check intermediate connector C-36, mode selection damper control motor and potentiometer connector C-315 and heater water temperature sensor connector C-314, and repair if necessary.

- Check the potentiometer power supply, earth and signal line for open or short circuit.

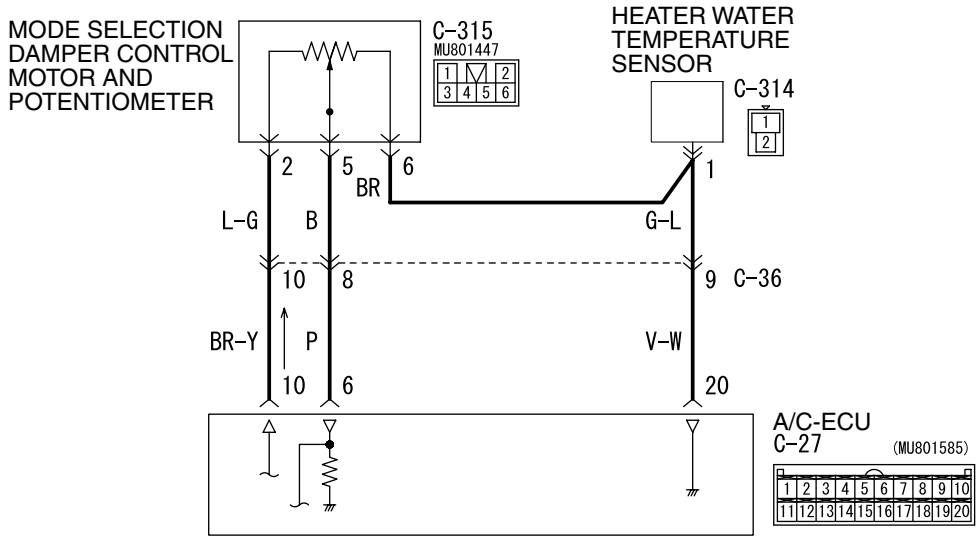
Q: Is the check result normal?

YES : Replace the auto air conditioner control panel (A/C-ECU).

NO : Repair the wiring harness.

Diagnosis code 32: Mode selection damper control motor potentiometer system

Mode Selection Damper Control Motor Potentiometer Circuit



Wire colour code
B : Black LG : Light green G : Green L : Blue W : White Y : Yellow SB : Sky blue
BR : Brown O : Orange GR : Gray R : Red P : Pink V : Violet

W3Z05E08AA

COMMENTS ON TROUBLE SYMPTOM

This code is set when the mode selection damper control motor potentiometer does not send any signal to the A/C-ECU due to short or open circuit.

Possible causes

- Malfunction of the mode selection damper control motor and potentiometer
- Malfunction of the auto air conditioner control panel (A/C-ECU)
- Damaged the wiring harness or connectors

DIAGNOSIS

Step 1. Check the mode selection damper control motor and potentiometer.

Refer to P.55B-70.

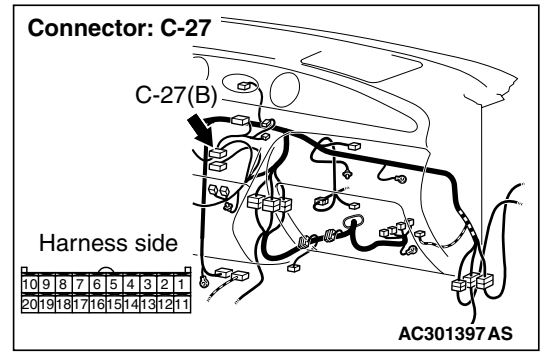
Q: Is the check result normal?

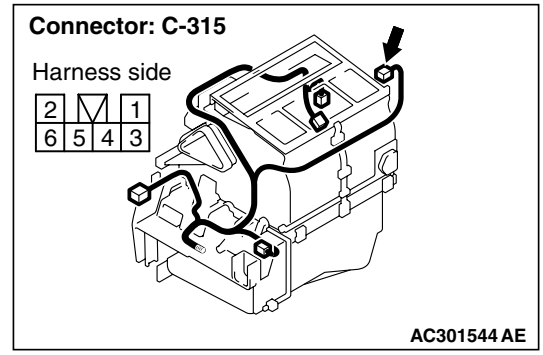
YES : Go to Step 2.

NO : Replace the mode selection damper control motor and potentiometer.

Step 2. Connector check: C-27 A/C-ECU connector and C-315 mode selection damper control motor and potentiometer connector

Q: Is the check result normal?

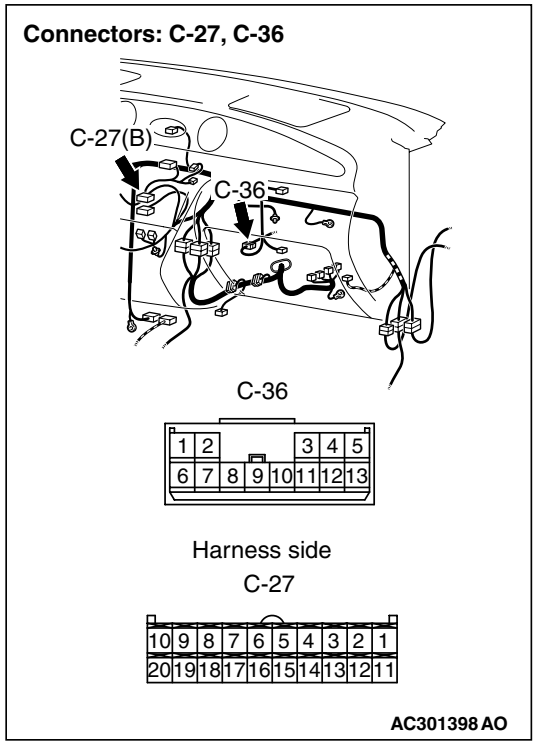


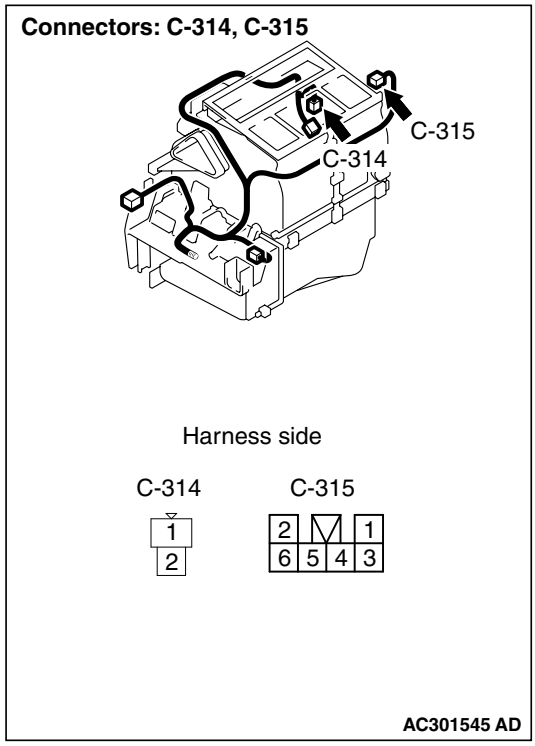


YES : Go to Step 3.

NO : Repair the connector.

Step 3. Check the wiring harness between C-27 A/C-ECU connector (terminals 10, 6 and 20) and C-315 mode selection damper control motor and potentiometer connector (terminals 2, 5 and 6).





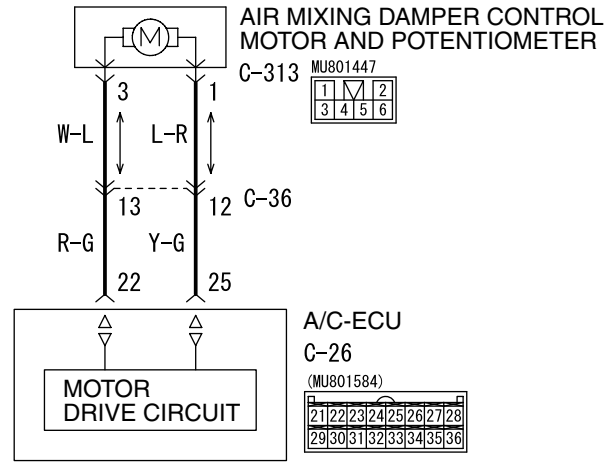
NOTE: Prior to the wiring harness inspection, check intermediate connector C-36 and heater water temperature sensor connector C-314, and repair if necessary.

- Check the potentiometer power supply, earth and signal line for open or short circuit.

Q: Is the check result normal?
YES : Malfunction of the auto air conditioner control panel (A/C-ECU)
NO : Repair the wiring harness.

Diagnosis code 41: Air mixing damper control motor system

Air MIxing Damper Control motor Circuit



Wire colour code
B : Black LG : Light green G : Green L : Blue W : White Y : Yellow SB : Sky blue
BR : Brown O : Orange GR : Gray R : Red P : Pink V : Violet

W3Z05E03AA

COMMENTS ON TROUBLE SYMPTOM

This code is set when the air mixing damper cannot be rotated to the preset opening angle.

Possible causes

- Malfunction of the air mixing damper control motor and potentiometer
- Malfunction of the auto air conditioner control panel (A/C-ECU)
- Damaged the wiring harness or connectors

DIAGNOSIS

Step 1. Check the air mixing damper control motor and potentiometer.

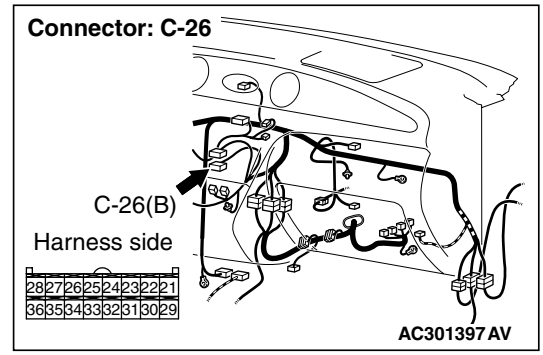
Refer to P.55B-70.

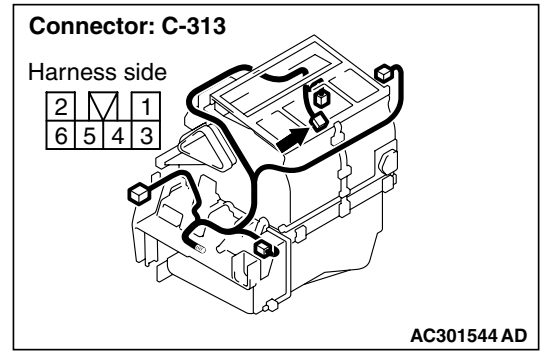
Q: Is the check result normal?

YES : Go to Step 2.

NO : Replace the air mixing damper control motor and potentiometer.

Step 2. Connector check: C-26 A/C-ECU connector and C-313 air mixing damper control motor and potentiometer connector



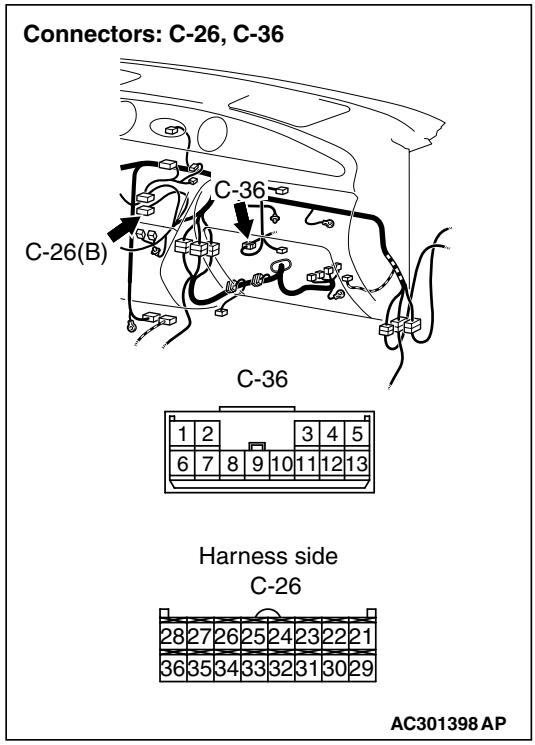


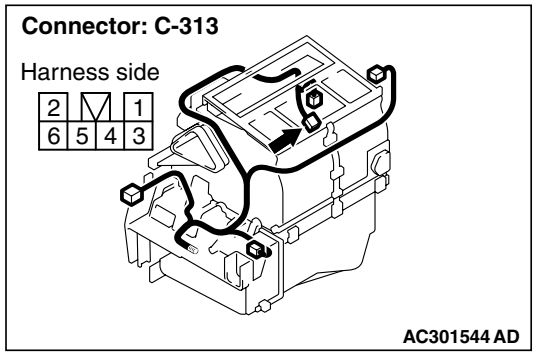
Q: Is the check result normal?

YES : Go to Step 3.

NO : Repair the connector.

Step 3. Check the wiring harness between C-26 A/C-ECU connector (terminals 22 and 25) and C-313 air mixing damper control motor and potentiometer connector (terminals 3 and 1).





NOTE: Prior to the wiring harness inspection, check intermediate connector C-36, and repair if necessary.

- Check the motor activating lines for open or short circuit.

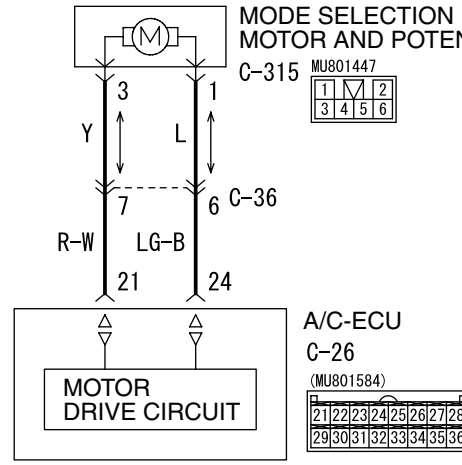
Q: Is the check result normal?

YES : Malfunction of the auto air conditioner control panel (A/C-ECU).

NO : Repair the wiring harness.

Diagnosis code 42: Mode selection damper control motor system

Mode Selection Damper Control Motor And Potentiometer Circuit



Wire colour code
B : Black LG : Light green G : Green L : Blue W : White Y : Yellow SB : Sky blue
BR : Brown O : Orange GR : Gray R : Red P : Pink V : Violet

W3Z05E07AA

COMMENTS ON TROUBLE SYMPTOM

This code is set when the mode selection damper cannot be rotated to the preset opening angle.

Possible causes

- Malfunction of the mode selection damper control motor and potentiometer
- Malfunction of the auto air conditioner control panel (A/C-ECU)
- Damaged the wiring harness or connectors

DIAGNOSIS

Step 1. Check the mode selection damper control motor and potentiometer.

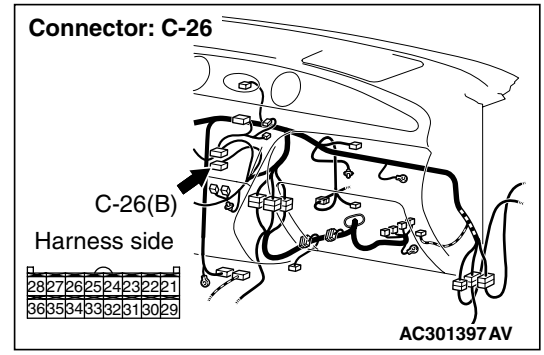
Refer to P.55B-70.

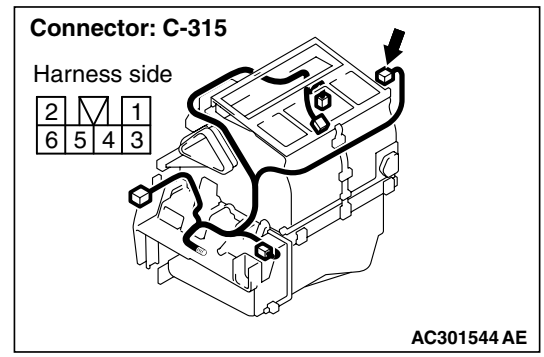
Q: Is the check result normal?

YES : Go to Step 2.

NO : Replace the mode selection damper control motor and potentiometer.

Step 2. Connector check: C-26 A/C-ECU connector and C-315 mode selection damper control motor and potentiometer connector



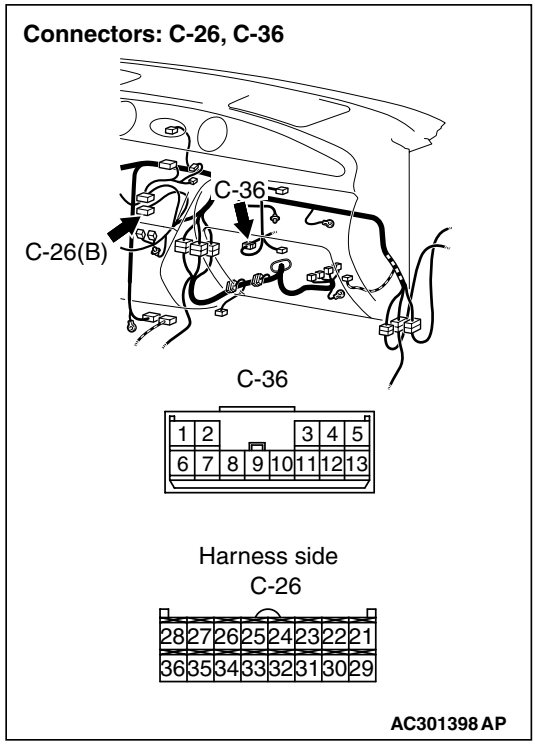


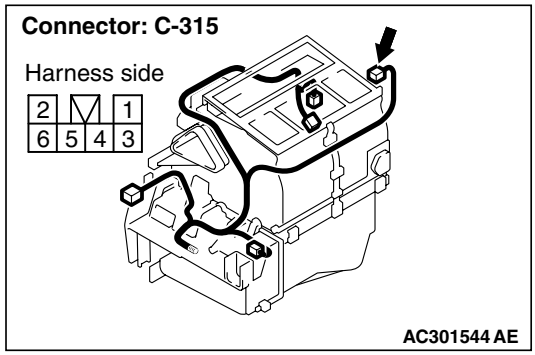
Q: Is the check result normal?

YES : Go to Step 3.

NO : Repair the connector.

Step 3. Check the wiring harness between C-26 A/C-ECU connector (terminals 21 and 24) and C-315 mode selection damper control motor and potentiometer connector (terminals 3 and 1).





NOTE: Prior to the wiring harness inspection, check intermediate connector C-36, and repair if necessary.

- Check the motor activating lines for open or short circuit.

Q: Is the check result normal?

YES : Replace the auto air conditioner control panel (A/C-ECU).

NO : Repair the wiring harness.

TROUBLE SYMPTOM CHART

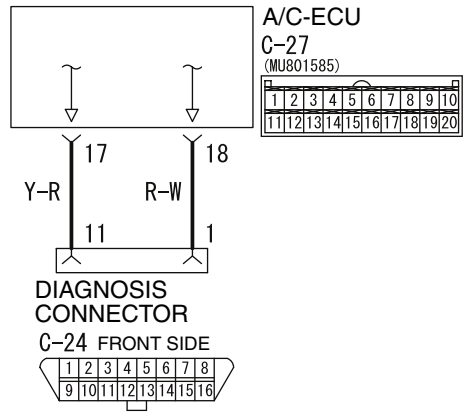
M1554005000140

Symptom	Inspection procedure number	Reference page
Communication with the MUT-II is not possible.	1	P.55B-22
The air conditioner does not work at all.	2	P.55B-24
A/C outlet air temperature cannot be set.	3	P.55B-36
The blower does not work.	4	P.55B-37
The blower air volume cannot be changed.	5	P.55B-44
When sunlight intensity changes, air outlet temperature does not change.	6	P.55B-46
The A/C indicator flashes.	7	P.55B-48
The inside/outside air changeover is impossible.	8	P.55B-49
Defogger function does not operate.	9	P.55B-53
Malfunction of the A/C-ECU power supply system.	10	P.55B-60

SYMPTOM PROCEDURES

INSPECTION PROCEDURE 1: Communication with the MUT-II is not possible.

Data Link Connector Circuit



Wire colour code
B : Black LG : Light green G : Green L : Blue W : White Y : Yellow SB : Sky blue
BR : Brown O : Orange GR : Gray R : Red P : Pink V : Violet

W3Z08E02AA

COMMENTS ON TROUBLE SYMPTOM

If communication with all other systems is not possible, there is a high possibility that there is a malfunction of the diagnosis line. If only the A/C system can not communicate with the MUT-II, the diagnosis line between the A/C-ECU and the diagnosis connector may be defective.

Possible causes

- Damaged the wiring harness or connectors
- Malfunction of the auto air conditioner control panel (A/C-ECU)

DIAGNOSIS

Step 1. Check the communication with other systems.

Q: Is the communication with the other systems possible using the MUT-II?

YES : Go to Step 2.

NO : Check the diagnosis line using the MUT-II, and repair if necessary.

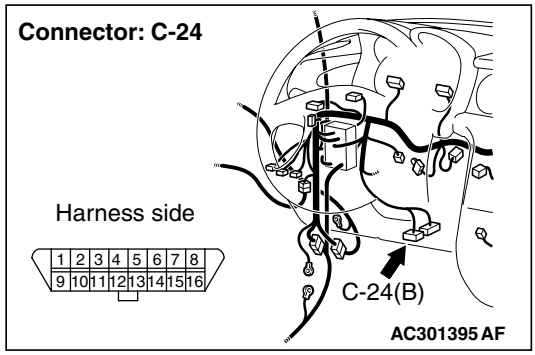
STEP 2. Check operations of the air conditioner, defogger and outside/inside air selection damper control motor.

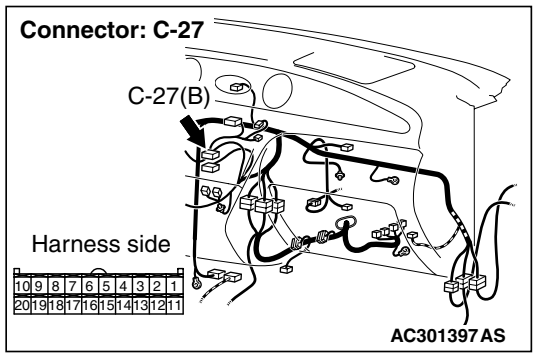
Q: Does the air conditioner, defogger or outside/inside air selection damper control motor operate?

YES : Go to Step 3.

NO : Refer to Inspection procedure 10 "Malfunction of the A/C-ECU power supply system P.55B-60."

Step 3. Connector check: C-27 A/C-ECU connector and C-24 diagnosis connector



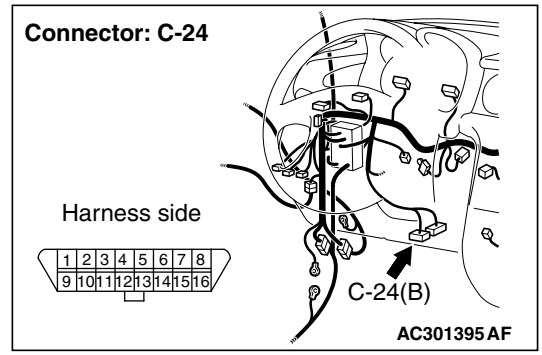


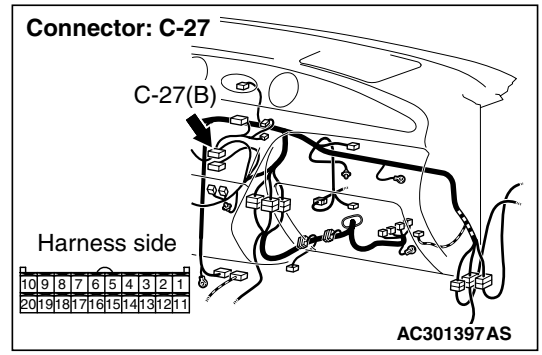
Q: Is the check result normal?

YES : Go to Step 4.

NO : Repair the connector.

Step 4. Check the wiring harness between C-27 A/C-ECU connector (terminal 17 and 18) and C-24 diagnosis connector (terminal 11 and 1).





- Check the communication lines for open or short circuit.

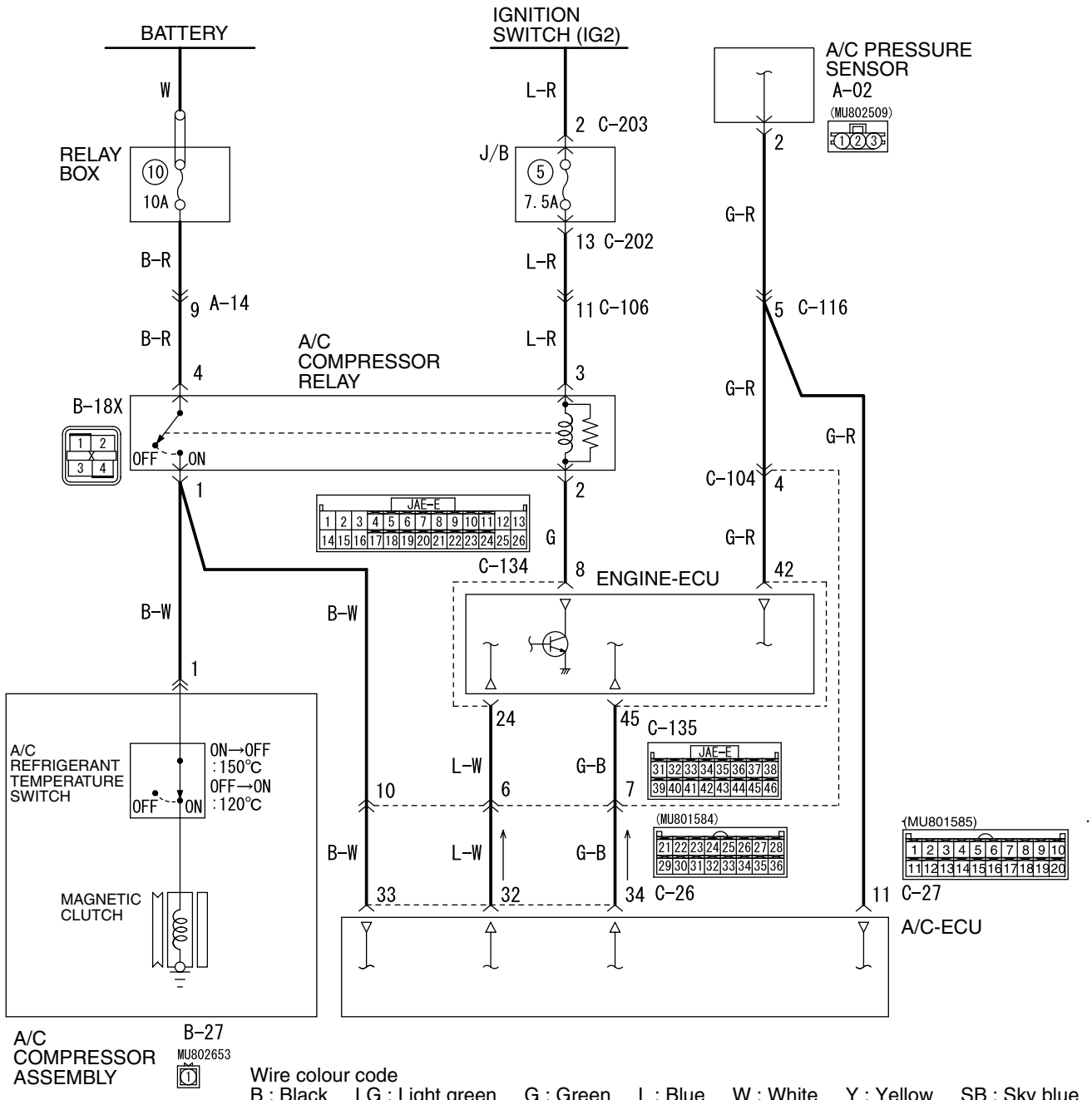
Q: Is the check result normal?

YES : Replace the auto air conditioner control panel (A/C-ECU).

NO : Repair the wiring harness.

INSPECTION PROCEDURE 2: The air conditioner does not work at all.

A/C Compressor Circuit



Wire colour code
B : Black LG : Light green G : Green L : Blue W : White Y : Yellow SB : Sky blue
BR : Brown O : Orange GR : Gray R : Red P : Pink V : Violet

W3Z08E03AA

CIRCUIT OPERATION

If cool air is not distributed when the A/C switch is on, A/C compressor relay system may be defective.

Possible causes

- Improper amount of refrigerant
- Malfunction of the A/C pressure sensor
- Malfunction of the A/C compressor relay
- Malfunction of the magnetic clutch
- Malfunction of the A/C refrigerant temperature switch
- Damaged the wiring harness or connectors

- Malfunction of the auto air conditioner control panel (A/C-ECU)

DIAGNOSIS

Step 1. Use the MUT-II to confirm a diagnosis code.

On completion, check that the diagnosis code is not reset.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Refer to diagnosis code chart P.55B-3.

Step 2. Check the blower operation.

(1) Turn the ignition switch to the ON position.
(2) Blower knob: Other than OFF
(3) Check that the air comes out of the blower.

Q: Is the check result normal?
YES : Go to Step 3.
NO : Refer to Inspection Procedure 4 "The blower does not work."

STEP 3. Check the defogger and outside/inside air selection damper control motor operation.

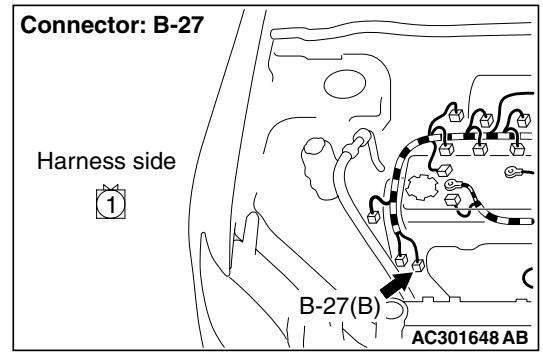
Q: Do the defogger and outside/inside air selection damper control motor work normally?
YES : Go to Step 4.
NO : Refer to Inspection procedure 10 "Malfunction of the A/C-ECU power supply system P.55B-60."

STEP 4. Check the A/C compressor.

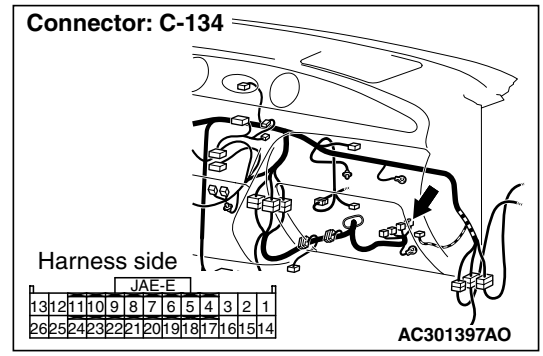
Check the A/C compressor for compressor oil leaks.

Q: Is the check result satisfactory?
YES : Go to Step 5.
NO : Replace the A/C compressor or the expansion valve.

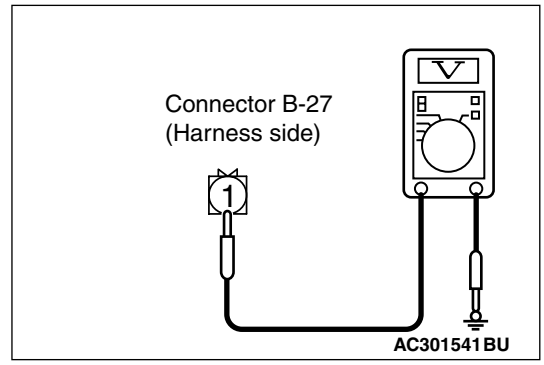
STEP 5. Measure the voltage at B-27 A/C compressor connector.



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



(3) Disconnect engine-ECU connector C-134, and earth terminal 8.



(4) Voltage between terminal 1 and body earth.

OK: System voltage

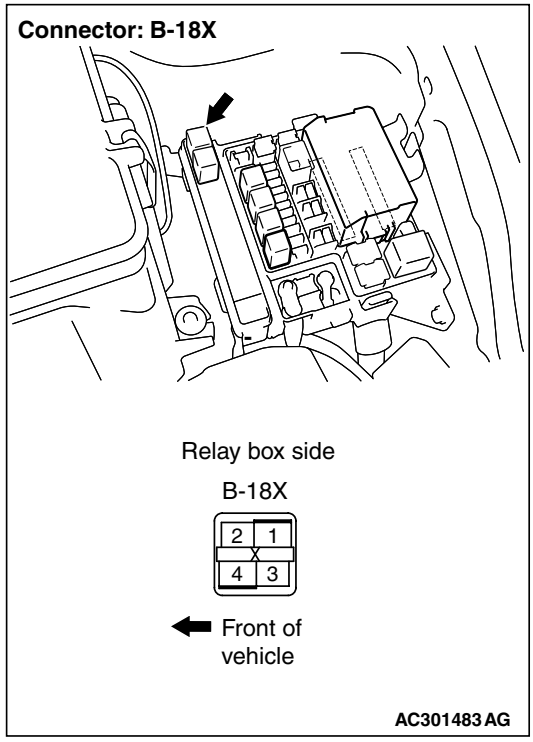
Q: Is the check result normal?
YES : Go to Step 17.
NO : Go to Step 6.

STEP 6. Check the A/C compressor relay continuity.

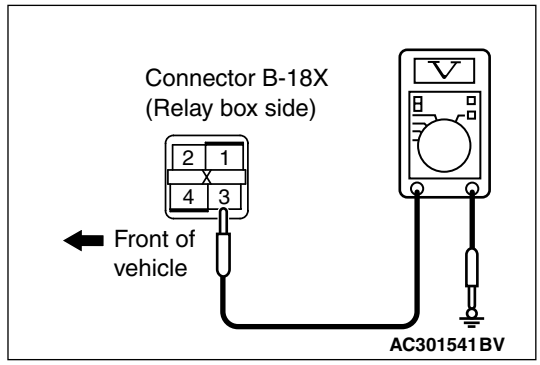
Refer to GROUP 55A, On vehicle service, power relay P.55A-54.

Q: Is the A/C compressor relay in good condition?
YES : Go to Step 7.
NO : Replace the A/C compressor relay.

STEP 7. Measure the voltage at B-18X A/C compressor relay connector.



(1) Remove the relay, and measure at the relay block side.
(2) Turn the ignition switch to the "ON" position.

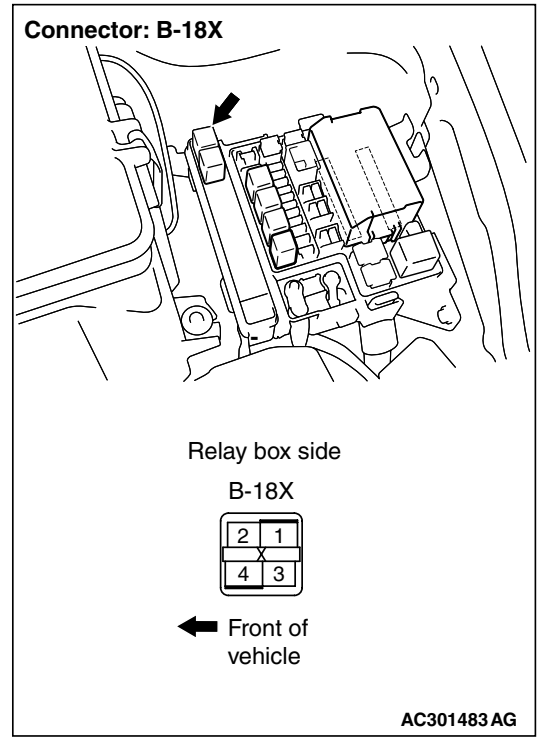


(3) Voltage between terminal 3 and body earth.

OK: System voltage

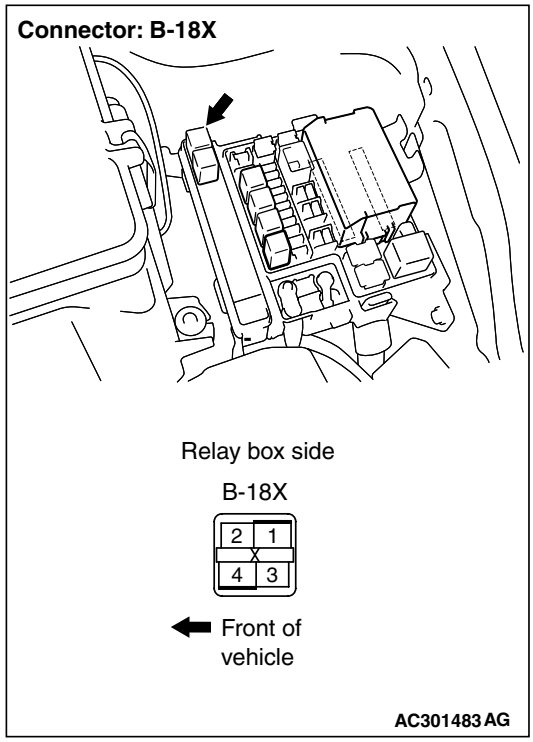
Q: Is the check result normal?
YES : Go to Step 10.
NO : Go to Step 8.

STEP 8. Connector check: B-18X A/C compressor relay connector.

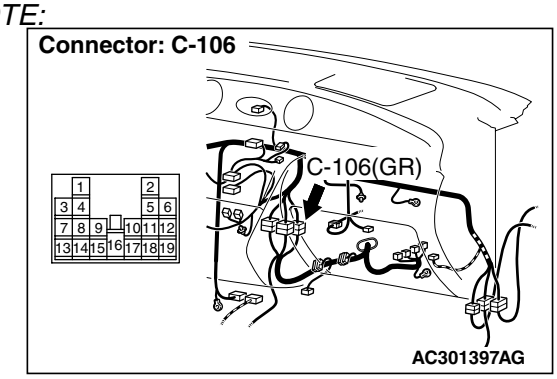


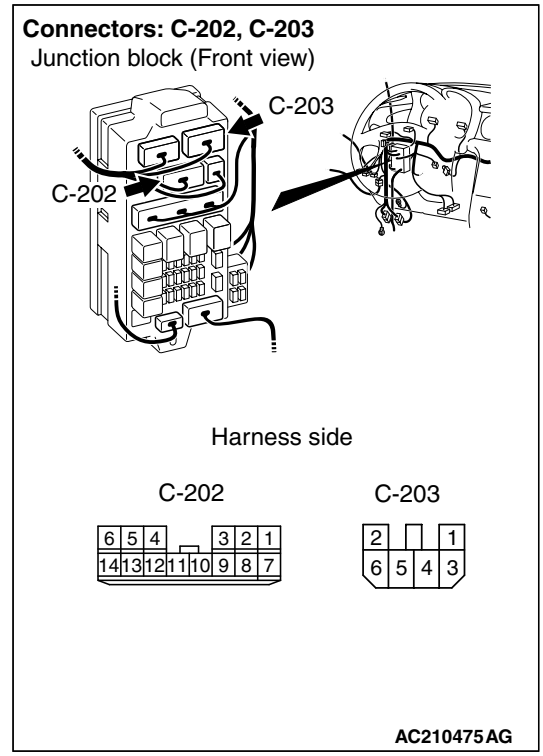
Q: Is the check result normal?
YES : Go to Step 9.
NO : Repair the connector.

STEP 9. Check the wiring harness between B-18X A/C compressor relay connector terminal No.3 and the ignition switch (IG2).



NOTE:





Prior to the wiring harness inspection, check junction block connectors C-203, C-202 and intermediate connector C-106, and repair if necessary.

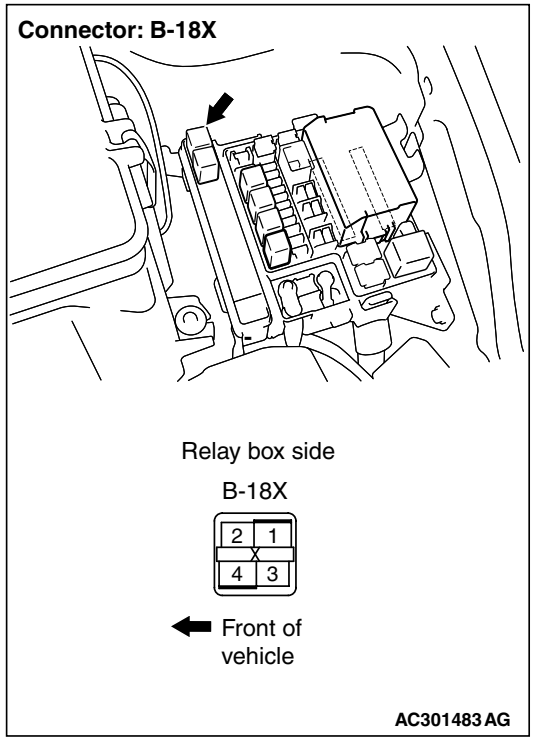
- Check the A/C compressor relay power supply line for open circuit.

Q: Is the check result normal?

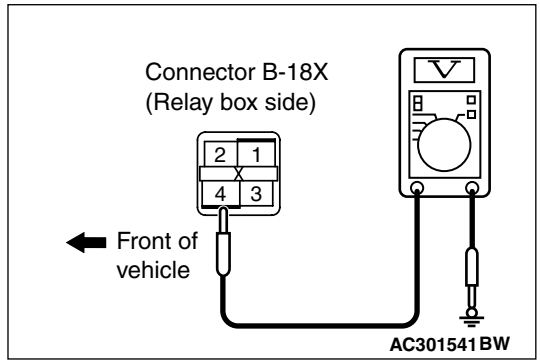
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-6).

NO : Repair the wiring harness.

STEP 10. Measure the voltage at B-18X A/C compressor relay connector.



(1) Remove the relay, and measure at the relay block side.

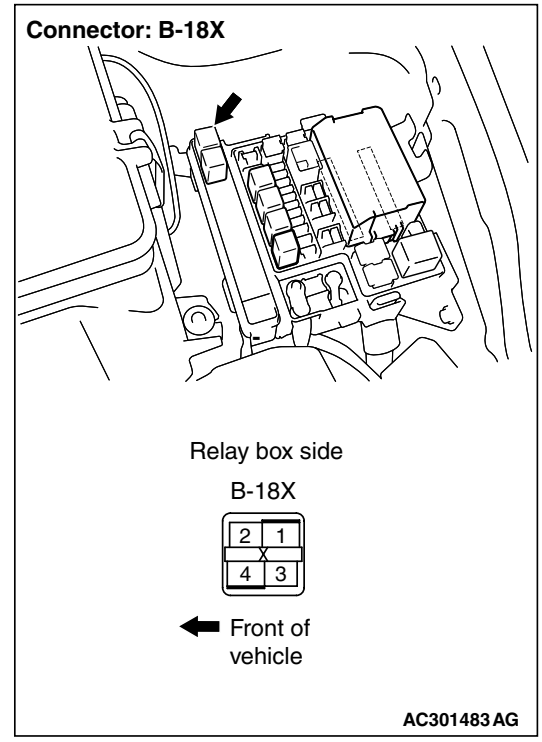


(2) Voltage between terminal 4 and body earth.

OK: System voltage

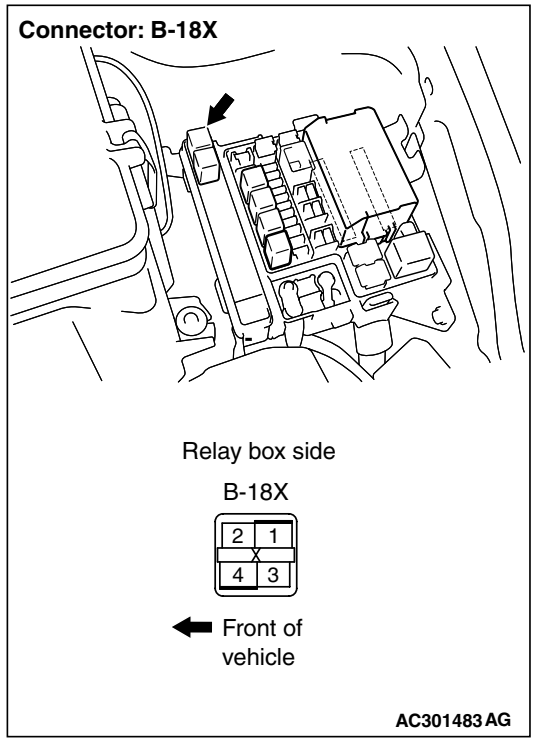
Q: Is the check result normal?
YES : Go to Step 13.
NO : Go to Step 11.

STEP 11. Connector check: B-18X A/C compressor relay connector

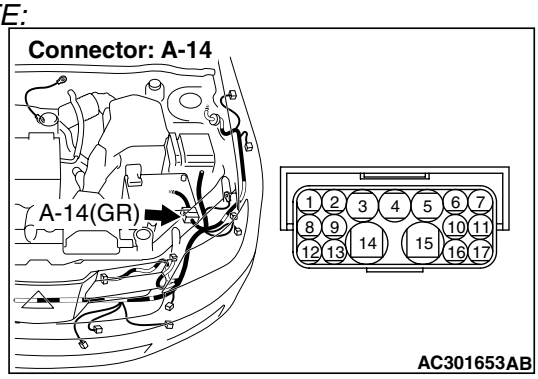


Q: Is the check result normal?
YES : Go to Step 12.
NO : Repair the connector.

STEP 12. Check the wiring harness between B-18X A/C compressor relay connector terminal No.4 and the battery.



NOTE:



Prior to the wiring harness inspection, check intermediate connector A-14, and repair if necessary.

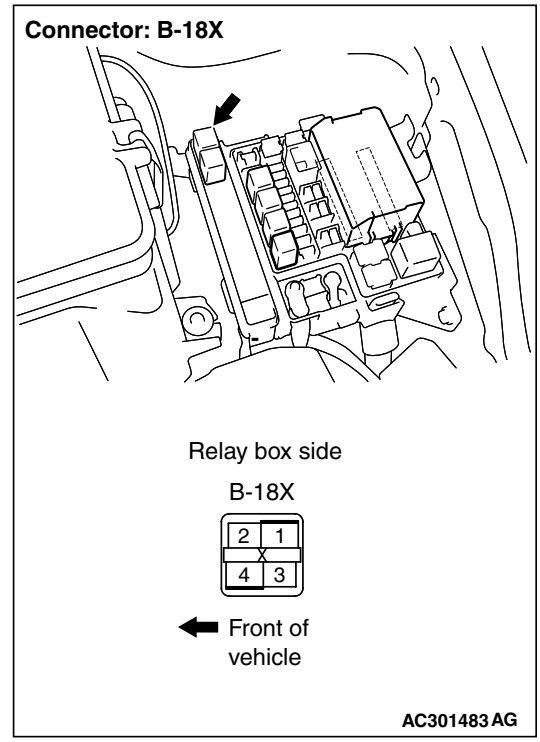
- Check the A/C compressor relay power supply line for open circuit.

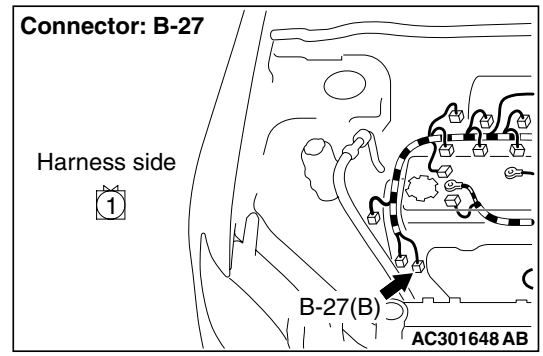
Q: Is the check result normal?

YES : Check that the air conditioner works normally.

NO : Repair the wiring harness. Check that the air conditioner works normally.

STEP 13. Connector check: B-18X A/C compressor relay connector and B-27 A/C compressor connector



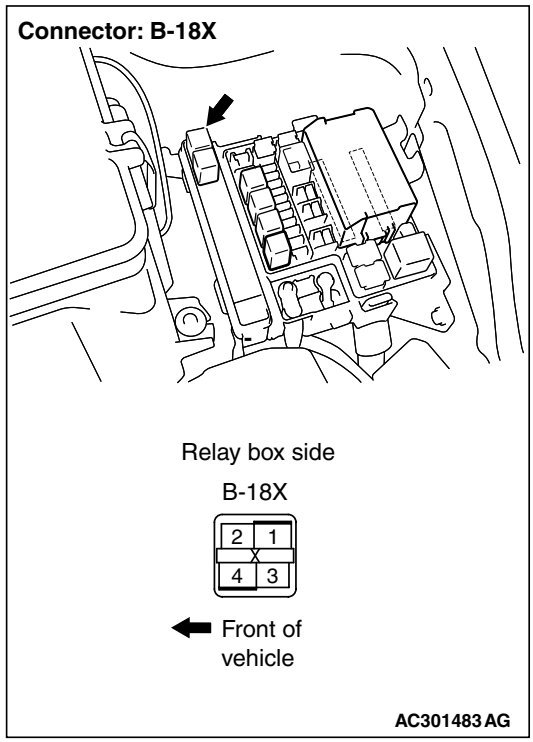


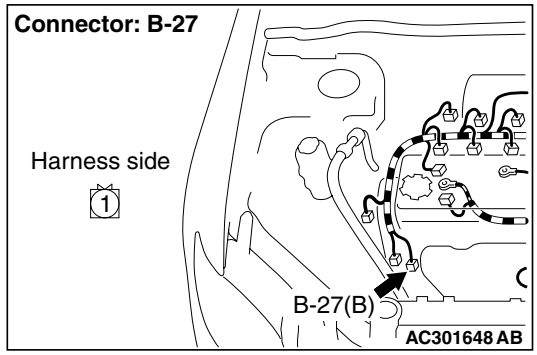
Q: Is the check result normal?

YES : Go to Step 14.

NO : Repair the connector.

STEP 14. Check the wiring harness between B-18X A/C compressor relay connector terminal No.1 and B-27 A/C compressor connector terminal No.1.

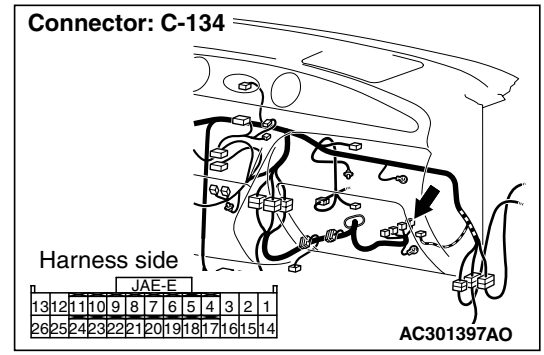


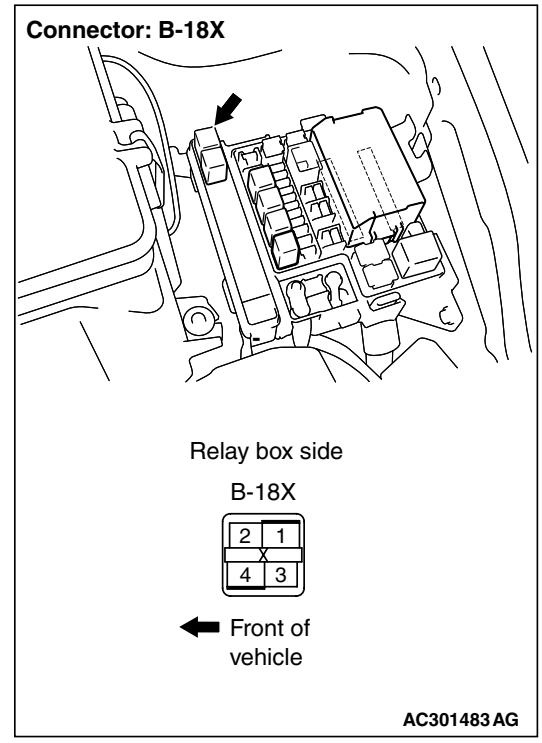


- Check the A/C compressor relay power supply line for open circuit.

Q: Is the check result normal?
YES : Go to Step 15.
NO : Repair the wiring harness.

STEP 15. Connector check: C-134 engine-ECU connector and B-18X A/C compressor relay connector

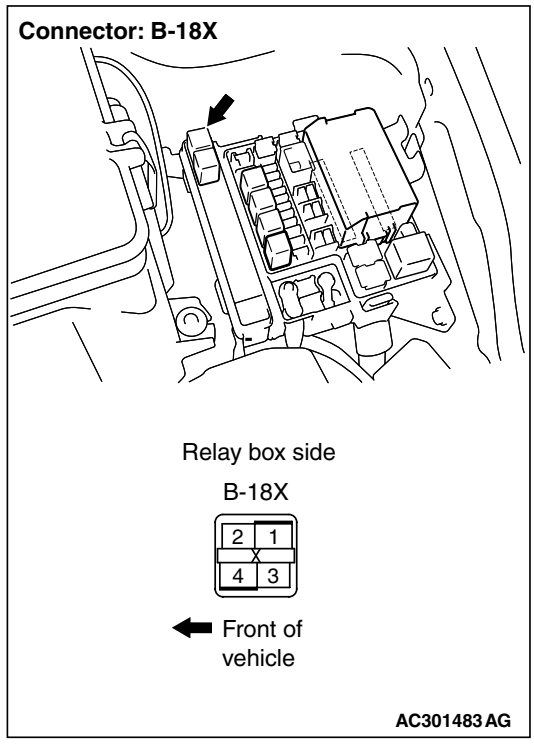


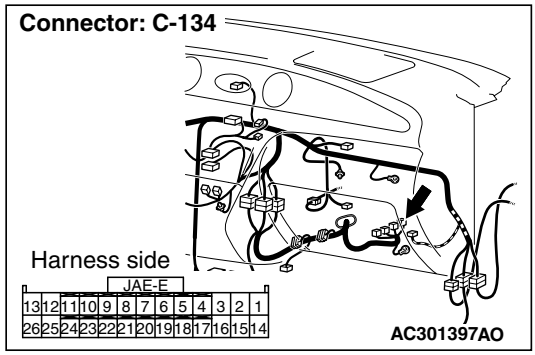


- Check the A/C compressor relay earth line for open circuit.

Q: Is the check result normal?
YES : Go to Step 16.
NO : Repair the connector.

STEP 16. Check the wiring harness between C-134 engine-ECU connector terminal No.8 and B-18X A/C compressor relay connector terminal No.2.



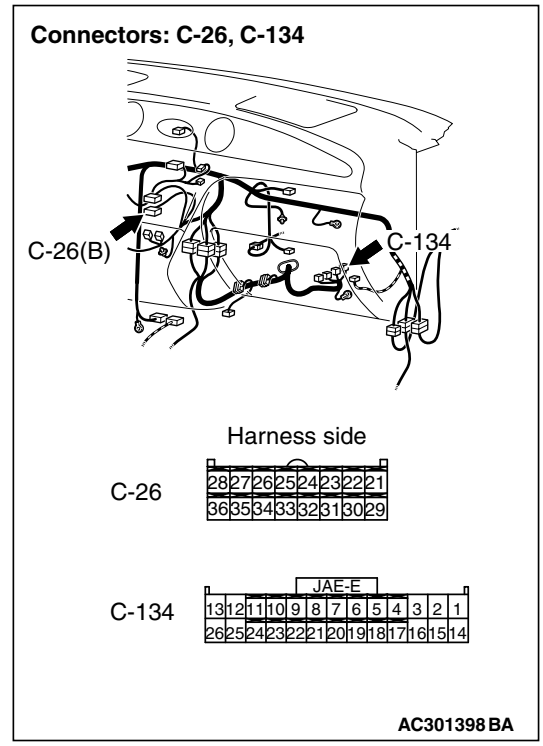


Q: Is the check result normal?

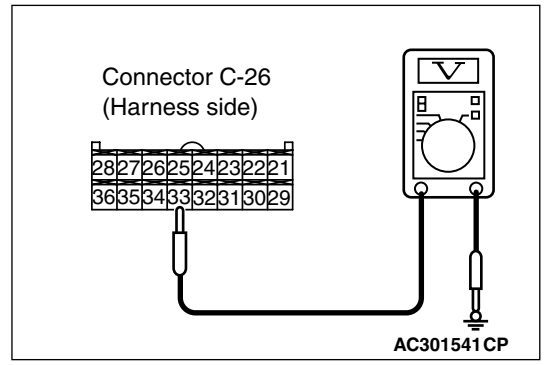
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-6).

NO : Repair the wiring harness.

STEP 17. Measure the voltage at C-26 A/C-ECU connector.



(1) Disconnect the connector, and measure at the wiring harness side.
(2) Turn the ignition switch to the "ON" position.
(3) Disconnect engine-ECU connector C-134, and earth terminal 8.



(4) Continuity between terminal 33 and body earth.

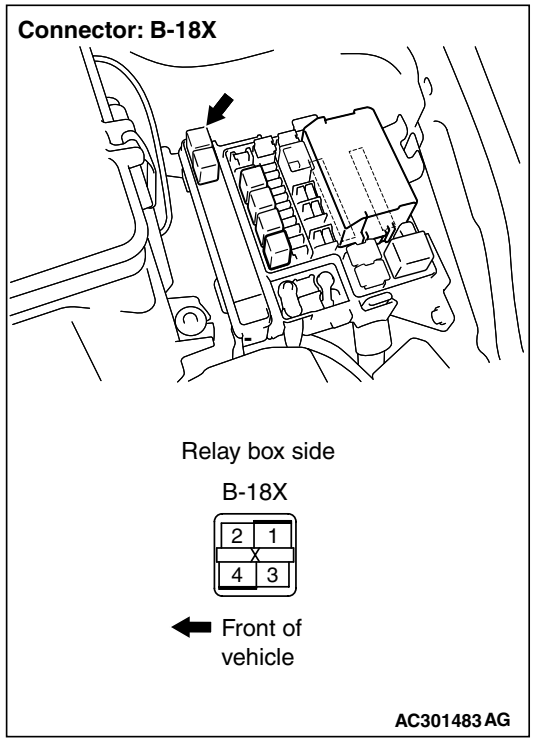
OK: System voltage

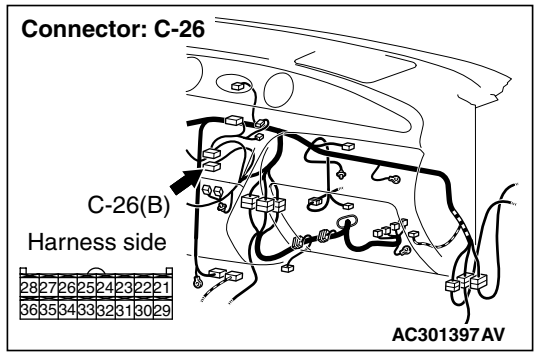
Q: Is the check result normal?

YES : Go to Step 20.

NO : Go to Step 18.

STEP 18. Connector check: B-18X A/C compressor relay connector and C-26 A/C-ECU connector



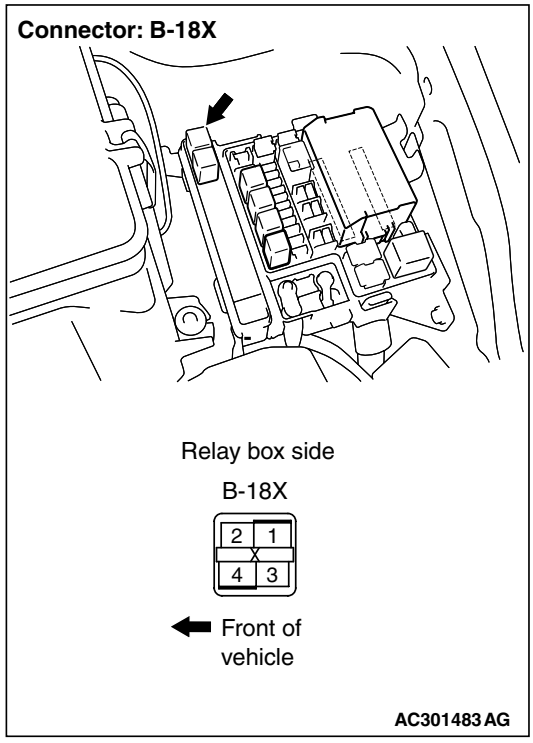


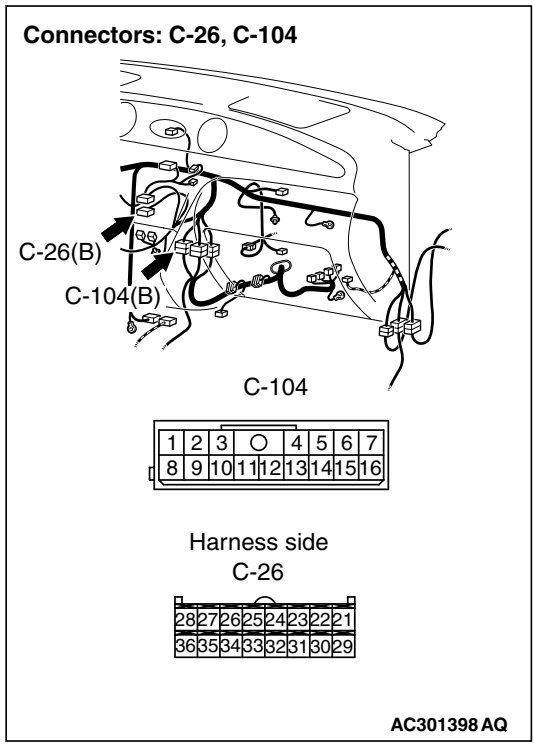
Q: Is the check result normal?

YES : Go to Step 19.

NO : Repair the connector.

STEP 19. Check the wiring harness between B-18X A/C compressor relay connector terminal No.1 and C-26 A/C-ECU connector terminal No.33.





NOTE: Prior to the wiring harness inspection, check intermediate connector C-104, and repair if necessary.

- Check the A/C compressor relay output line for open circuit.

Q: Is the check result normal?
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-6).
NO : Repair the wiring harness.

STEP 20. Check the magnetic clutch operation.
Refer to P.55A-48.

Q: Can the sound of the magnetic clutch (click) be heard?
YES : Go to Step 21.
NO : Replace the compressor magnet clutch.

STEP 21. Check the refrigerant temperature switch.
Refer to P.55A-71.

Q: Is the refrigerant temperature switch operating properly?
YES : Go to Step 22.
NO : Replace the refrigerant temperature switch.

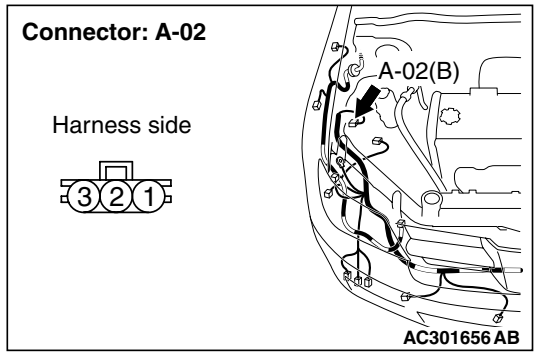
STEP 22. Check the refrigerant level.
Refer to P.55A-48.

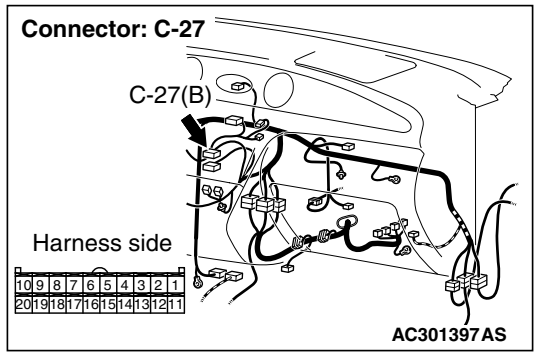
Q: Is the refrigerant level correct?
YES : Go to Step 23.
NO : Correct the refrigerant level (Refer to On-vehicle Service P.55A-49).

STEP 23. Check the A/C pressure sensor operation.
Refer to P.55A-48.

Q: Is the A/C pressure sensor operating properly?
YES : Go to Step 24.
NO : Replace the A/C pressure sensor.

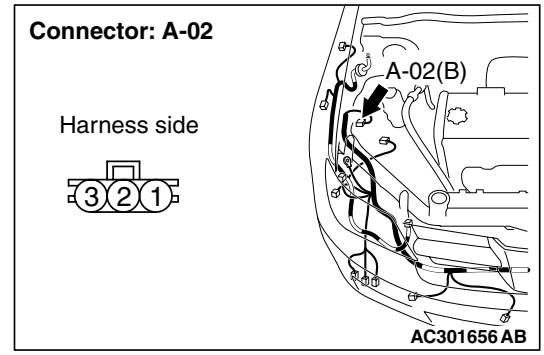
STEP 24. Connector check: A-02 A/C pressure sensor connector and C-27 A/C-ECU connector

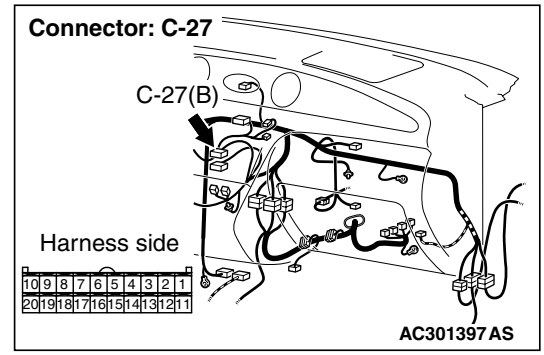




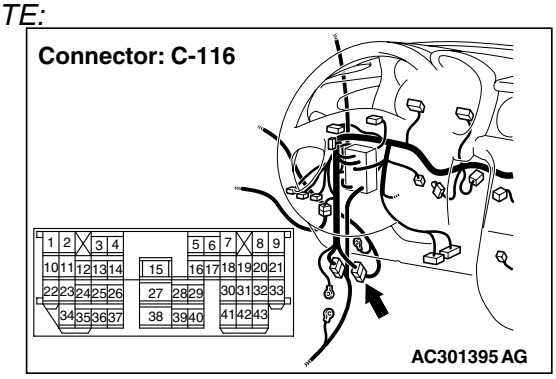
Q: Is the check result normal?
YES : Go to Step 25.
NO : Repair the connector.

STEP 25. Check the wiring harness between A-02 A/C pressure sensor connector terminal No.2 and C-27 A/C-ECU connector terminal No.11.





NOTE:

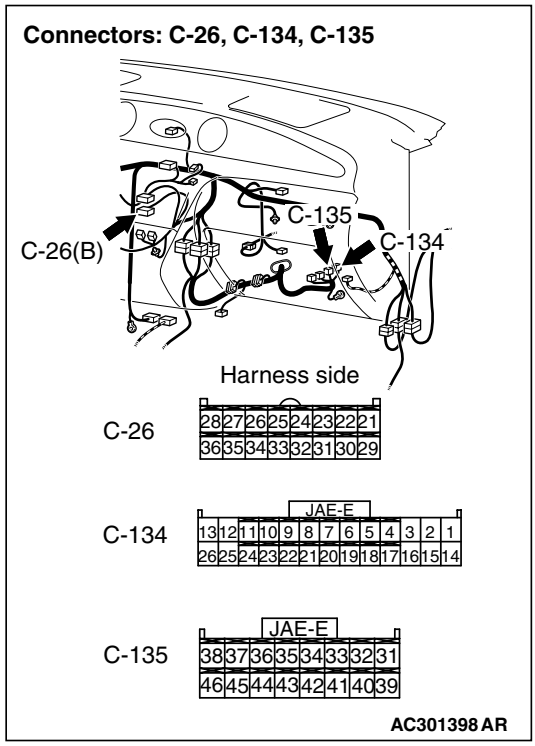


Prior to the wiring harness inspection, check intermediate connector C-116, and repair if necessary.

- Check the A/C pressure sensor signal line for open circuit.

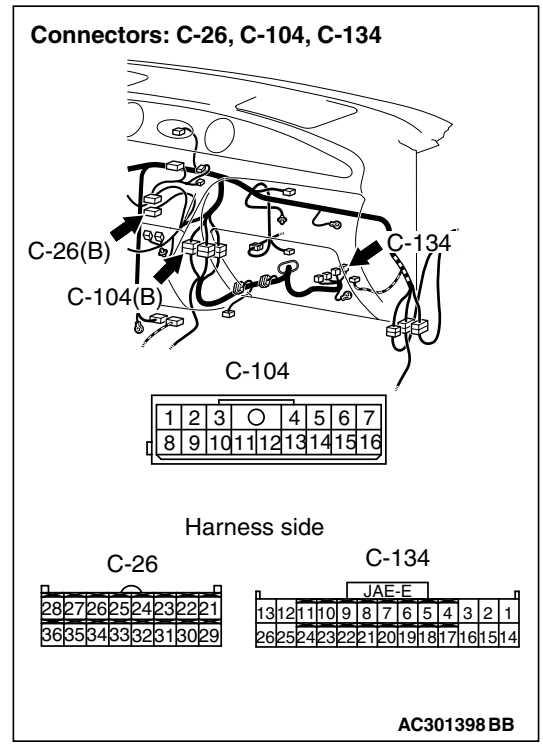
Q: Is the check result normal?
YES : Go to Step 26.
NO : Repair the wiring harness.

STEP 26. Connector check: C-134, C-135 engine-ECU connector and C-26 A/C-ECU connector



Q: Is the check result normal?
YES : Go to Step 27.
NO : Repair the connector.

STEP 27. Check the wiring harness between C-134 engine-ECU connector terminal No.24 and C-26 A/C-ECU connector terminal No.32.

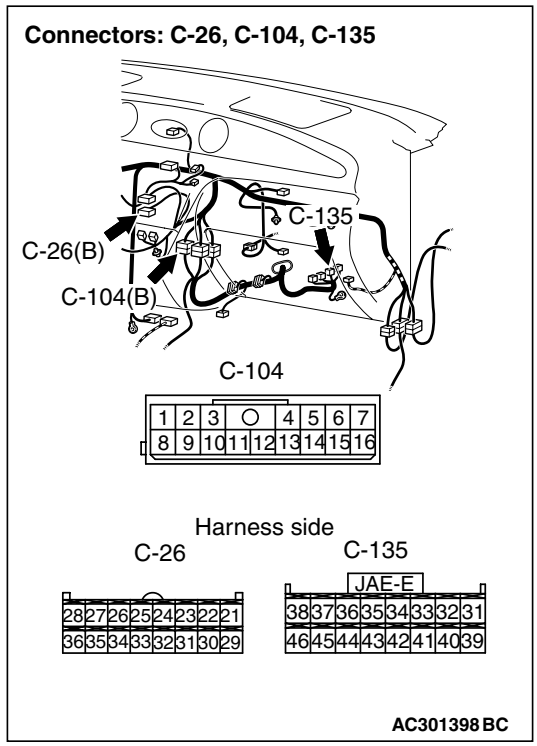


NOTE: Prior to the wiring harness inspection, check intermediate connector C-104, and repair if necessary.

- Check the communication line for open circuit.

Q: Is the check result normal?
YES : Go to Step 28.
NO : Repair the wiring harness.

STEP 28. Check the wiring harness between C-135 engine-ECU connector terminal No.45 and C-26 A/C-ECU connector terminal No.34.



NOTE: Prior to the wiring harness inspection, check intermediate connector C-104, and repair if necessary.

- Check the communication line for open circuit.

Q: Is the check result normal?
YES : Replace the A/C-ECU or engine-ECU.
NO : Repair the wiring harness.

INSPECTION PROCEDURE 3: A/C outlet air temperature cannot be set.

COMMENTS ON TROUBLE SYMPTOM

When the blower air temperature can not be changed even if the preset temperature is changed, the sensors, the air mixing damper control motor and potentiometer or the A/C-ECU may be defective.

Possible causes

- Malfunction of the A/C-ECU

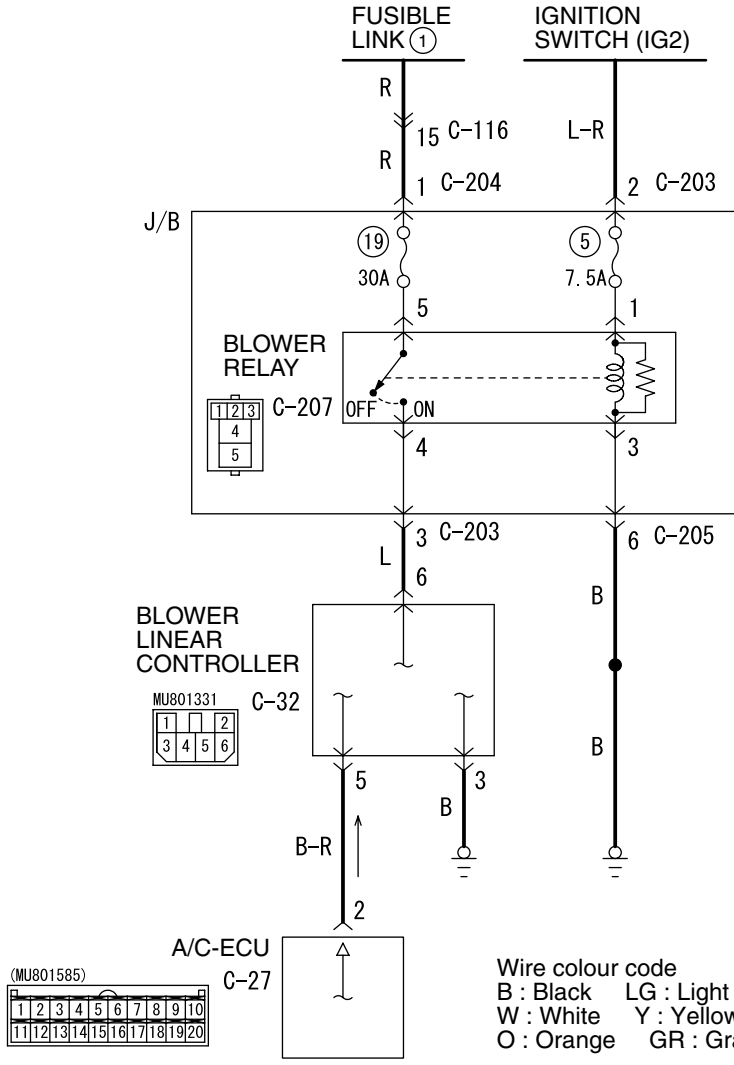
DIAGNOSIS

Read diagnosis code by using the MUT-II.

Q: Is the diagnosis code set?
YES : Refer to diagnosis code chart P.55B-3.
NO : Replace the auto air conditioner control panel (A/C-ECU).

INSPECTION PROCEDURE 4: The blower does not work.

Blower Motor Circuit



Wire colour code
B : Black LG : Light green G : Green L : Blue
W : White Y : Yellow SB : Sky blue BR : Brown
O : Orange GR : Gray R : Red P : Pink V : Violet

W3Z08E04AA

COMMENTS ON TROUBLE SYMPTOM

If the blower motor does not operate, the blower motor circuit system may be defective.

Possible causes

- Malfunction of the blower motor (blower linear controller).
- Malfunction of the auto air conditioner control panel (A/C-ECU)
- Damaged the wiring harness or connectors

DIAGNOSIS

Step 1. MUT-II actuator test

Carry out the actuator test.

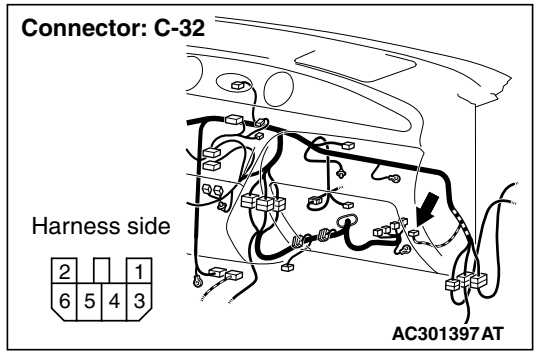
- Item 01, 02, 03, 04: Blower motor

Q: Does the blower motor work normally?

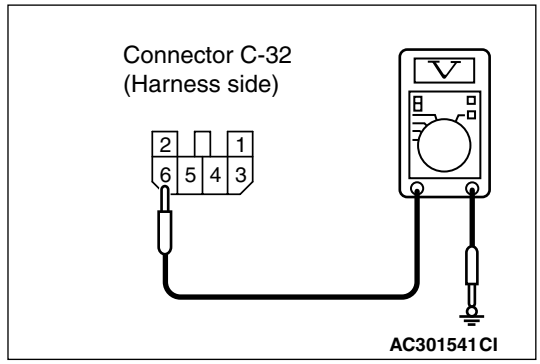
YES : Replace the auto air conditioner control panel (A/C-ECU).

NO : Go to Step 2.

Step 2. Measure the voltage at the C-32 blower linear controller connector.



(1) Disconnect the connector, and measure at the wiring harness side.
(2) Turn the ignition switch to the ON position.



(3) Measure the voltage between terminal 6 and body earth.

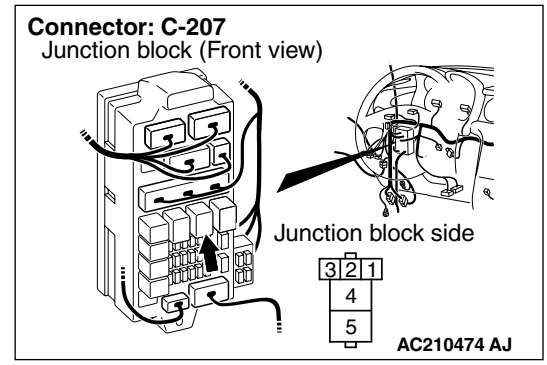
OK: System voltage

Q: Is the check result normal?
YES : Go to Step 15.
NO : Go to Step 3.

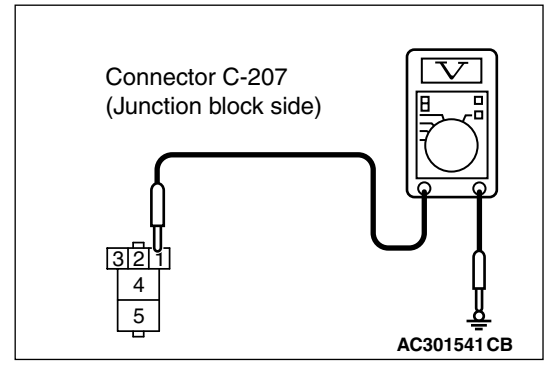
Step 3. Check the blower relay.
Refer to GROUP 55A, On-vehicle Service – Power relay check P.55A-54.

Q: Is the blower relay in good condition?
YES : Go to Step 4.
NO : Replace the blower relay.

Step 4. Measure the voltage at C-207 blower relay connector.



(1) Remove the relay, and measure at the junction block side.
(2) Turn the ignition switch to the ON position.

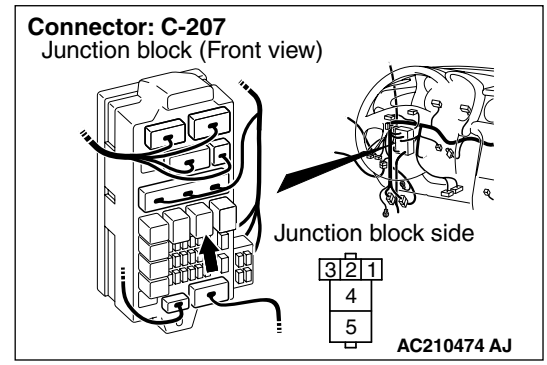


(3) Voltage between terminal 1 and body earth.

OK: System voltage

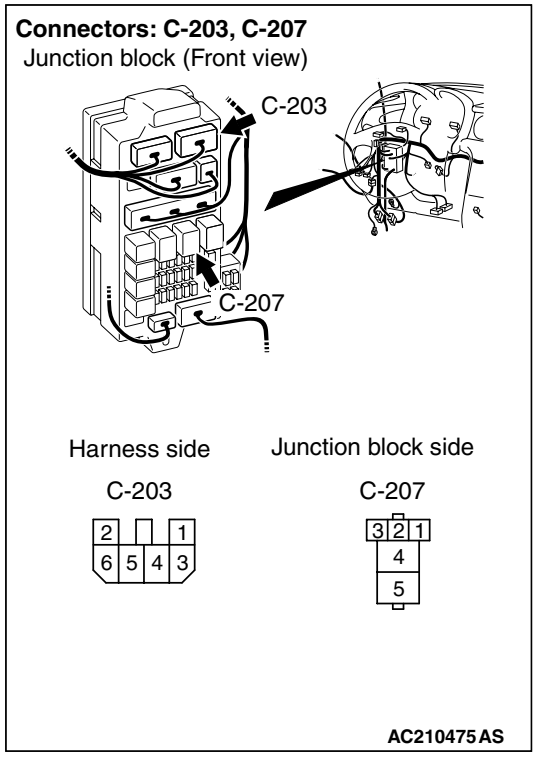
Q: Is the check result normal?
YES : Go to Step 7.
NO : Go to Step 5.

Step 5. Connector check: C-207 blower relay connector



Q: Is the check result normal?
YES : Go to Step 6.
NO : Repair the connector.

Step 6. Check the wiring harness between C-207 blower relay connector terminal No.1 and the ignition switch (IG2).



NOTE: Prior to the wiring harness inspection, check junction block connector C-203, and repair if necessary.

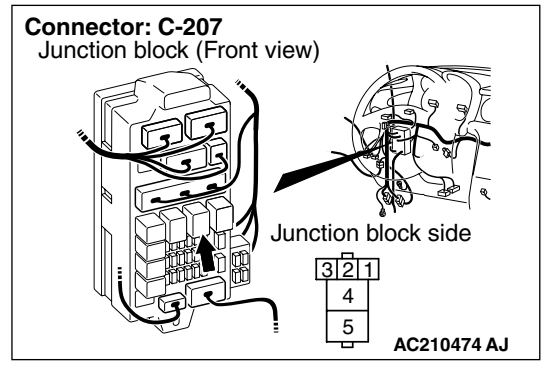
- Check the blower relay power supply line for open circuit.

Q: Is the check result normal?

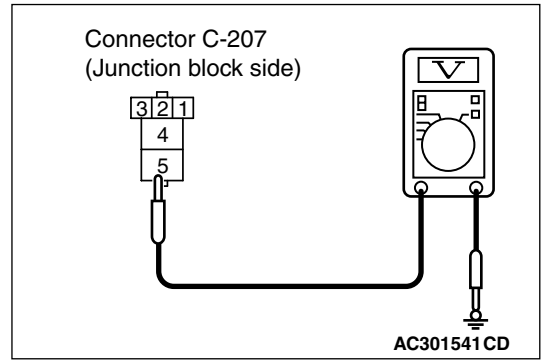
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-6).

NO : Repair the wiring harness.

Step 7. Measure the voltage at C-207 blower relay connector.



(1) Remove the relay, and measure at the junction block side.



(2) Voltage between terminal 5 and body earth.

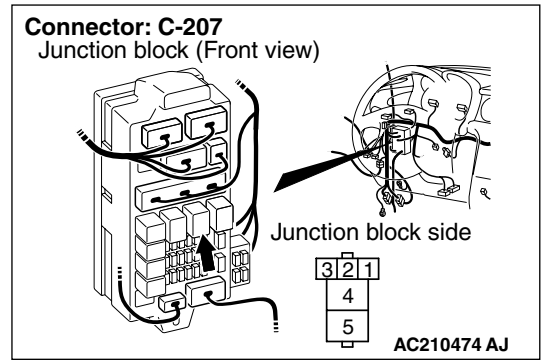
OK: System voltage

Q: Is the check result normal?

YES : Go to Step 10.

NO : Go to Step 8.

Step 8. Connector check: C-207 blower relay connector

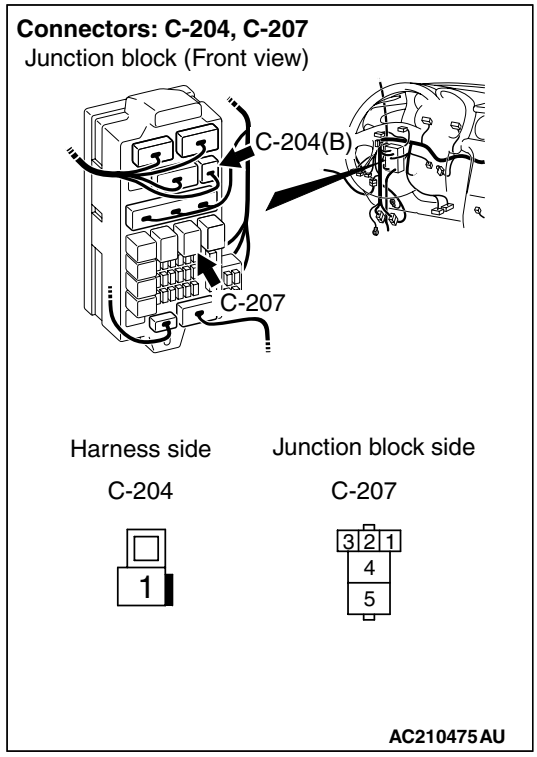


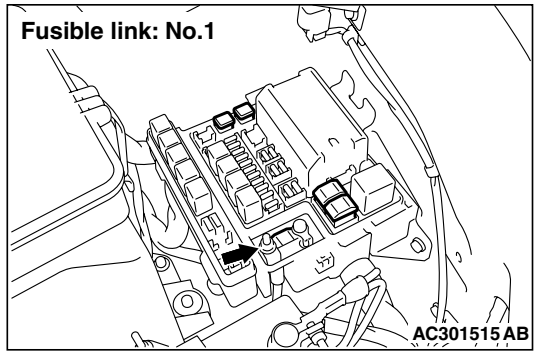
Q: Is the check result normal?

YES : Go to Step 9.

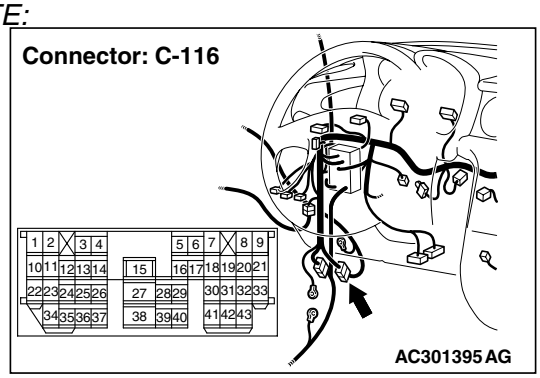
NO : Repair the connector.

Step 9. Check the wiring harness between C-207 blower relay connector terminal No.5 and fusible link (1).





NOTE:

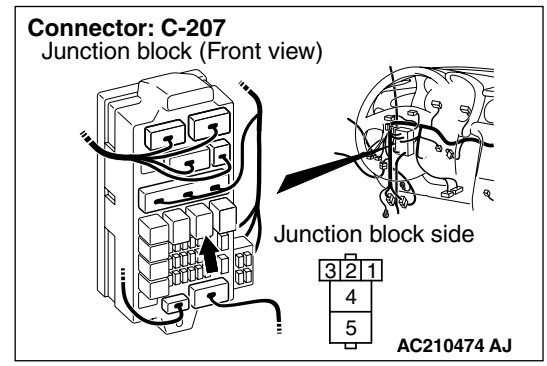


Prior to the wiring harness inspection, check intermediate connectors C-116 and junction block connector C-204, and repair if necessary.

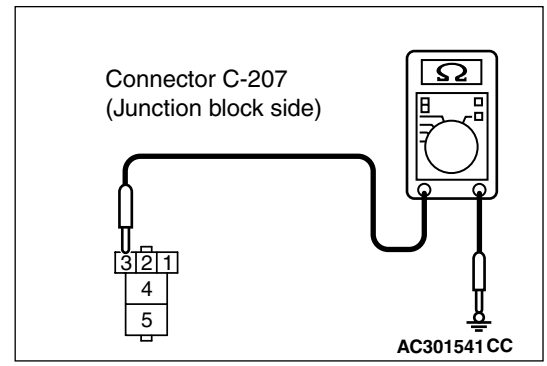
- Check the blower relay power supply line for open circuit.

Q: Is the check result normal?
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-6).
NO : Repair the wiring harness.

Step 10. Measure the resistance at C-207 blower relay connector.



(1) Remove the relay, and measure at the junction block side.

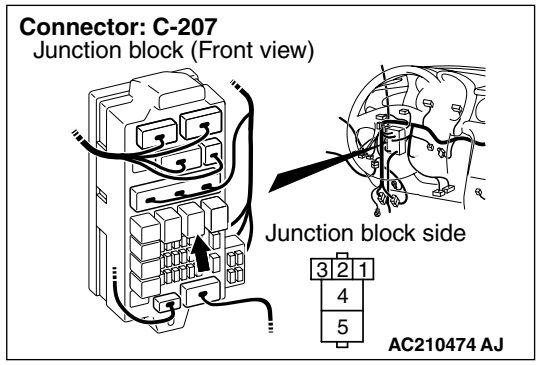


(2) Measure the resistance between terminal 3 and body earth

OK: 2Ω or less

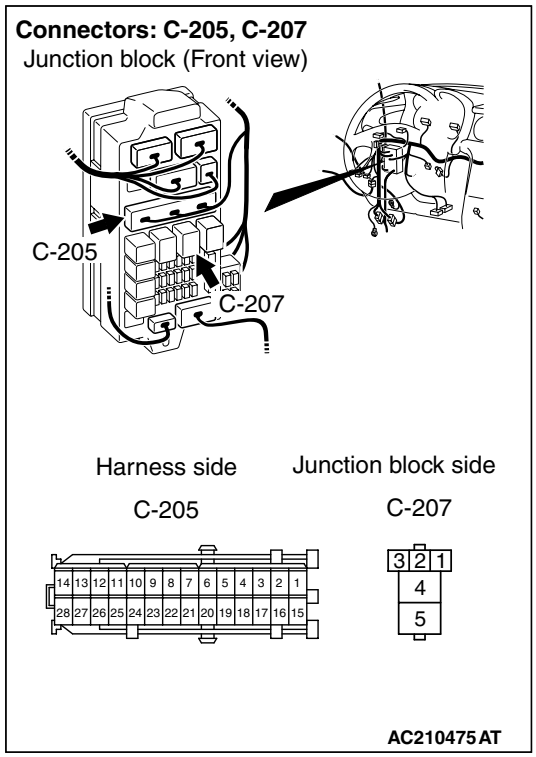
Q: Is the check result normal?
YES : Go to Step 13.
NO : Go to Step 11.

Step 11. Connector check: C-207 blower relay connector



Q: Is the check result normal?
YES : Go to Step 12.
NO : Repair the connector.

Step 12. Check the wiring harness between C-207 blower relay connector terminal No.3 and body earth.

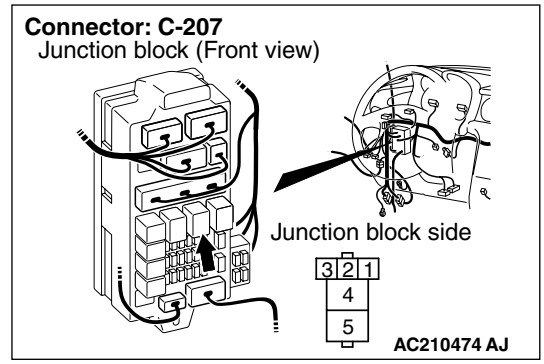


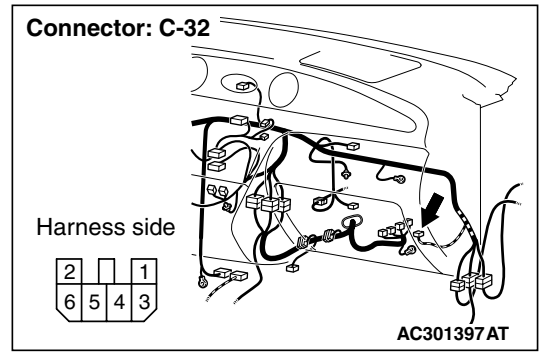
NOTE: Prior to the wiring harness inspection, check junction block connector C-205, and repair if necessary.

- Check the blower relay earth wires for open circuit.

Q: Is the check result normal?
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-6).
NO : Repair the wiring harness.

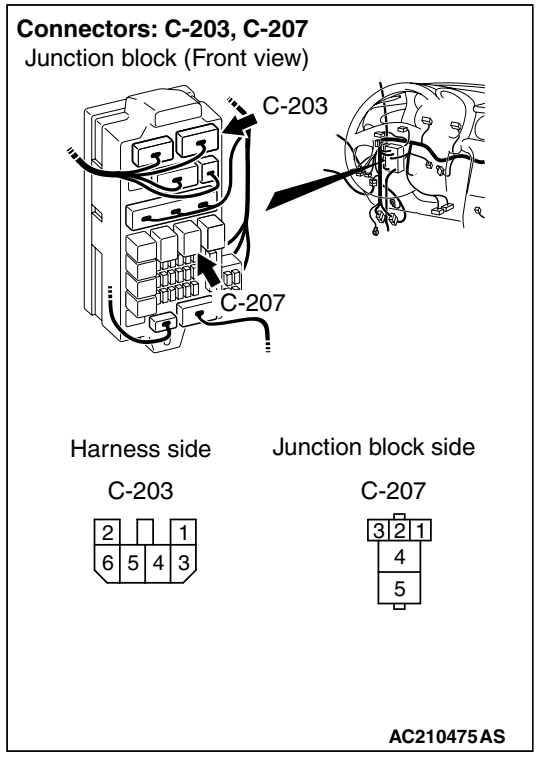
Step 13. Connector check: C-207 blower relay connector and C-32 blower linear controller connector

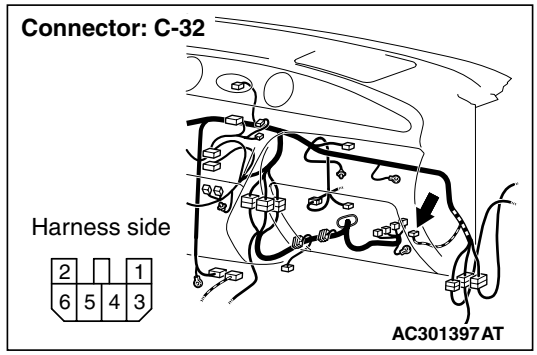




Q: Is the check result normal?
YES : Go to Step 14.
NO : Repair the connector.

Step 14. Check the wiring harness between C-207 blower relay connector terminal No.4 and C-32 blower linear controller connector terminal No.6.





NOTE: Prior to the wiring harness inspection, check junction block connector C-203, and repair if necessary.

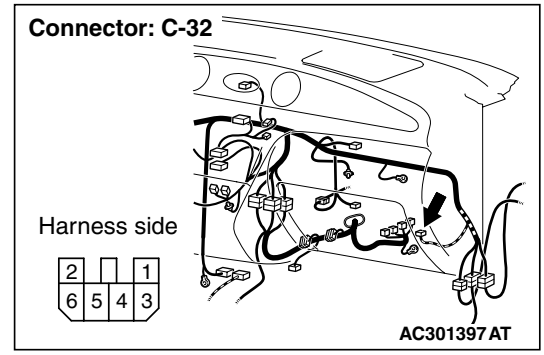
- Check the blower linear controller power supply line for open circuit.

Q: Is the check result normal?

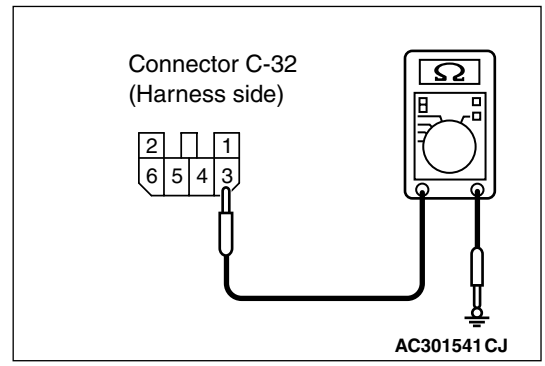
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-6).

NO : Repair the wiring harness.

Step 15. Measure the resistance at the C-32 blower linear controller connector.



(1) Disconnect the connector, and measure at the wiring harness side.



(2) Continuity between terminal 3 and body earth

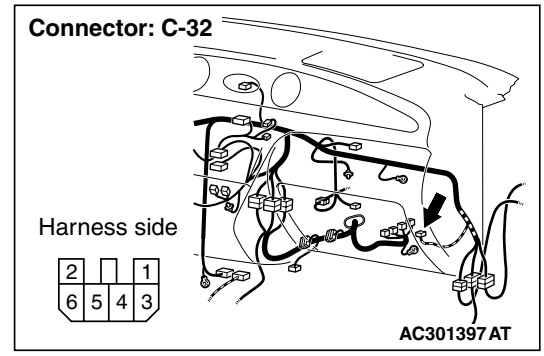
OK: 2Ω or less

Q: Is the check result normal?

YES : Go to Step 18.

NO : Go to Step 16.

Step 16. Connector check: C-32 blower liner controller

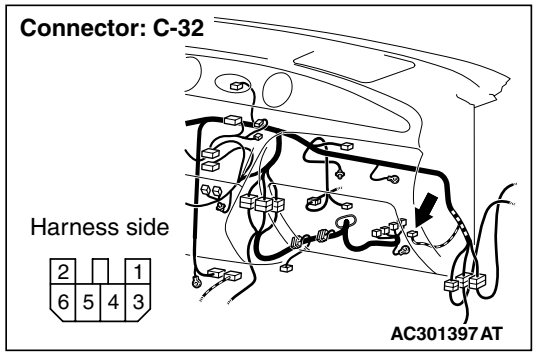


Q: Is the check result normal?

YES : Go to Step 17.

NO : Repair the connector.

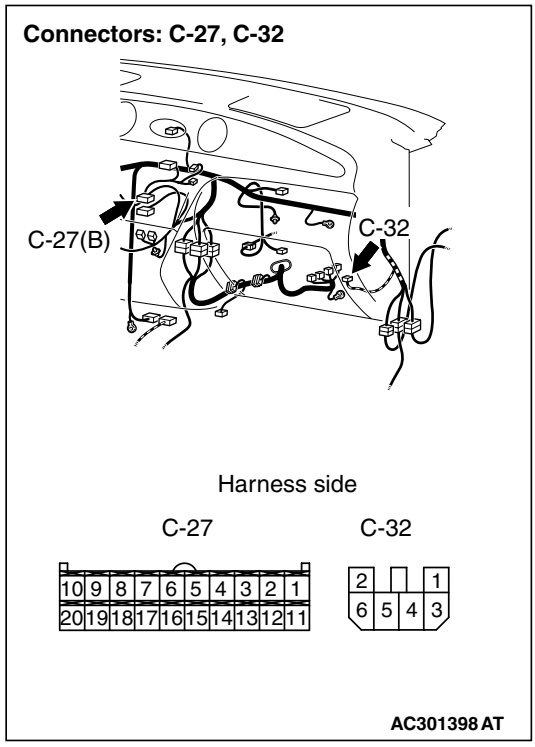
Step 17. Check the wiring harness between C-32 blower linear controller connector terminal No.3 and body earth.



- Check the blower linear controller earth line for open circuit.

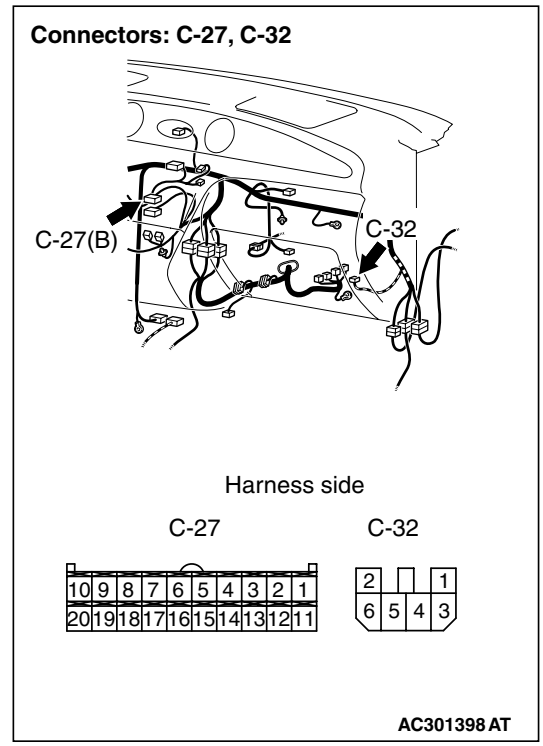
Q: Is the check result normal?
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-6).
NO : Repair the wiring harness.

Step 18. Connector check: C-27 A/C-ECU connector and C-32 blower linear controller connector



Q: Is the check result normal?
YES : Go to Step 19.
NO : Repair the connector.

Step 19. Check the wiring harness between C-27 A/C-ECU connector terminal No.2 and C-32 blower linear controller connector terminal No.5.

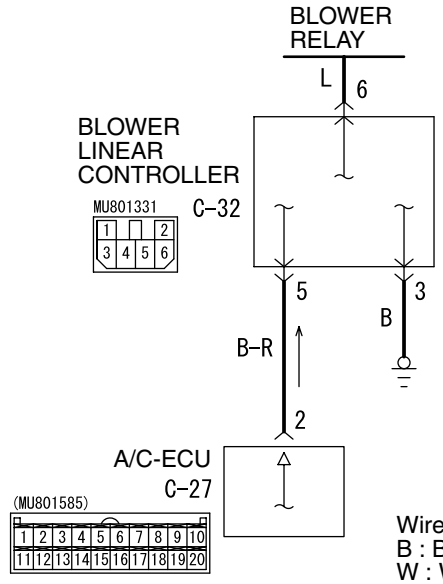


- Check the communication line for open or short circuit.

Q: Is the check result normal?
YES : Replace the air conditioner control panel (A/C-ECU) or the blower motor (blower linear controller).
NO : Repair the wiring harness.

INSPECTION PROCEDURE 5: The blower air volume cannot be changed.

Blower Motor Circuit



Wire colour code
B : Black LG : Light green G : Green L : Blue
W : White Y : Yellow SB : Sky blue BR : Brown
O : Orange GR : Gray R : Red P : Pink V : Violet

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COMMENTS ON TROUBLE SYMPTOM

If the blower air volume can not be changed when the blower switch is operated, the circuit between blower motor and A/C-ECU may be defective.

Possible causes

- Blower motor (blower linear controller)
- Damaged the wiring harness or connectors
- Malfunction of the auto air conditioner control panel (A/C-ECU)

Step 1. MUT-II actuator test

Carry out the actuator test.

- Item 01, 02, 03, 04: Blower motor

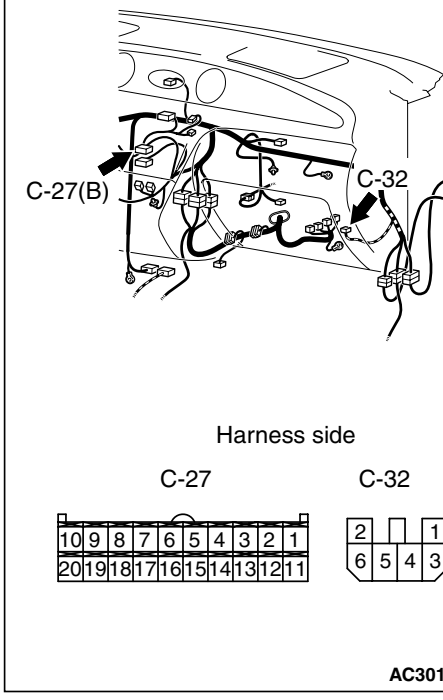
Q: Does the blower motor work normally?

YES : Replace the auto air conditioner control panel (A/C-ECU)

NO : Go to Step 2.

Step 2. Connector check: C-27 A/C-ECU connector and C-32 blower linear controller connector

Connectors: C-27, C-32



AC301398 AT

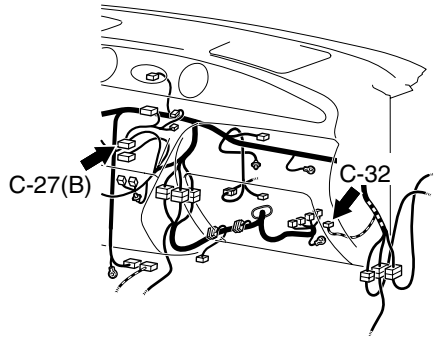
Q: Is the check result normal?

YES : Go to Step 3.

NO : Repair the connector.

Step 3. Check the wiring harness between C-27 A/C-ECU connector terminal No.2 and C-32 blower linear controller connector terminal No.5.

Connectors: C-27, C-32



Harness side

C-27

10	9	8	7	6	5	4	3	2	1
20	19	18	17	16	15	14	13	12	11

C-32

	2		1
6	5	4	3

AC301398 AT

- Check the communication line for open or short circuit.

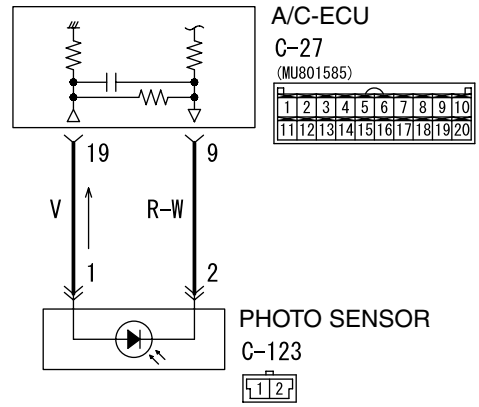
Q: Is the check result normal?

YES : Replace the air conditioner control panel (A/C-ECU) or the blower motor (blower linear controller).

NO : Repair the wiring harness.

INSPECTION PROCEDURE 6: When sunlight intensity changes, blower air temperature does not Change.

Photo Sensor Circuit



Wire colour code
B : Black LG : Light green G : Green L : Blue W : White Y : Yellow SB : Sky blue
BR : Brown O : Orange GR : Gray R : Red P : Pink V : Violet

W3Z08E01AA

CIRCUIT OPERATION
When the blower air temperature can not be changed even if the preset temperature is changed, the sensors may be defective.

TROUBLESHOOTING HINTS
- Malfunction of the photo sensor
- Damaged the wiring harness or connectors
- Malfunction of the A/C-ECU

DIAGNOSIS

STEP 1. Check the defogger and outside/inside air selection damper control motor operation.

Q: Do the defogger and outside/inside air selection damper control motor work normally?
YES : Go to Step 2.
NO : Refer to Inspection procedure 10 "Malfunction of the A/C-ECU power supply system P.55B-60."

Step 2. Use the MUT-II to confirm a diagnosis code.
On completion, check that the diagnosis code is not reset.

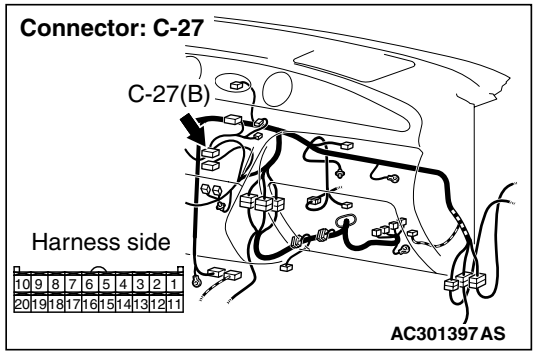
Q: Is the check result normal?
YES : Go to Step 3.
NO : Carry the diagnosis code procedures. Refer to P.55B-3.

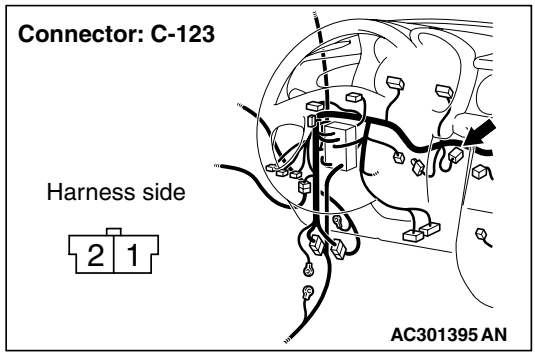
Step 3. Check the MUT-II data list.
- Item 14: Photo sensor

OK: Check that the volume of insolation takes inverse proportion with the MUT-II displayed voltage.

Q: Is the check result normal?
YES : Replace the auto air conditioner control panel (A/C-ECU).
NO : Go to Step 4.

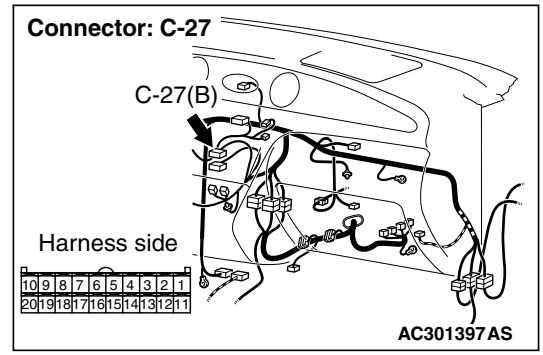
STEP 4. Connector check: C-27 A/C-ECU connector and C-123 photo sensor connector.

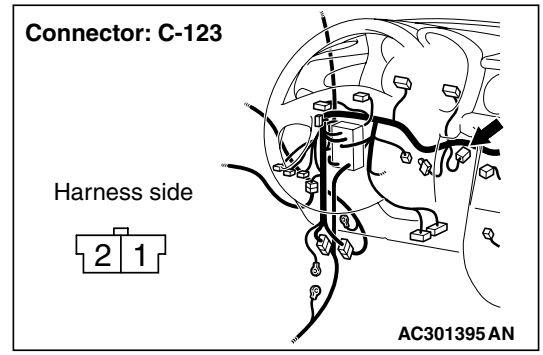




Q: Is the check result normal?
YES : Go to Step 5.
NO : Repair or replace the connector.

STEP 5. Check the wiring harness between C-123 photo sensor connector (terminal 1, 2) and C-27 A/C-ECU connector (terminal 19, 9).

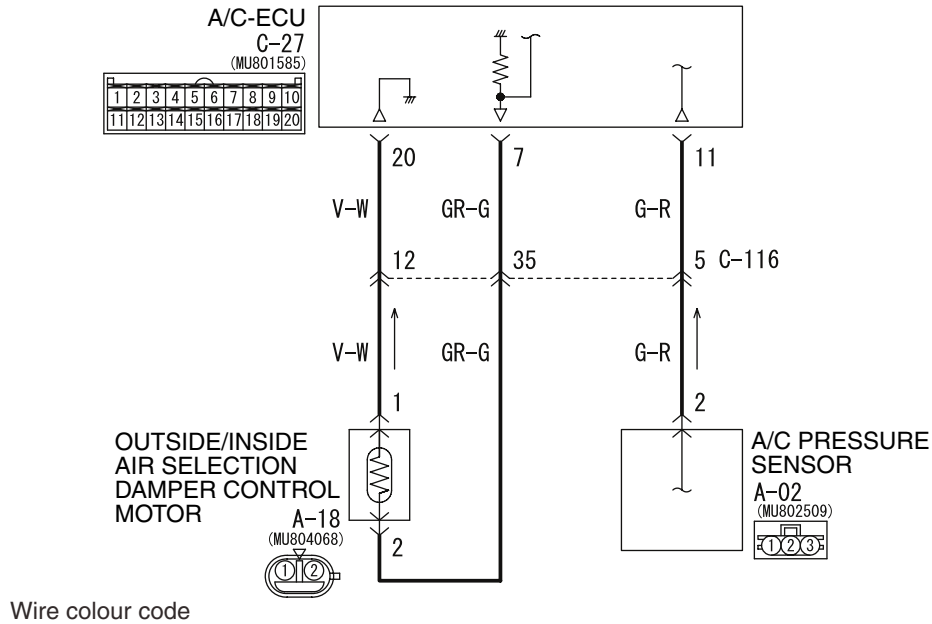




- Check the photo sensor signal lines for open or short circuit.

Q: Is the check result normal?
YES : Replace the Photo sensor.
NO : Repair the wiring harness.

INSPECTION PROCEDURE 7: The A/C indicator flashes.



Wire colour code
B : Black LG : Light green G : Green L : Blue W : White Y : Yellow SB : Sky blue
BR : Brown O : Orange GR : Gray R : Red P : Pink V : Violet

W3Z08E06AA

CIRCUIT OPERATION
If the A/C indicator flashes then the possible causes may be due to a defective A/C pressure system or insufficient refrigerant gas.

TROUBLESHOOTING HINTS
- Malfunction of the A/C pressure sensor
- Malfunction of the outside thermo sensor
- Malfunction of the A/C-ECU

DIAGNOSIS

STEP 1. Check the A/C pressure sensor operation.
Refer to GROUP 55A, On vehicle service – A/C pressure sensor check P.55A-48.

Q: Is the A/C pressure sensor operating properly?
YES : Go to Step 2.
NO : Replace the A/C pressure sensor.

STEP 2. Check the outside thermo sensor.
Refer to P.55B-74.

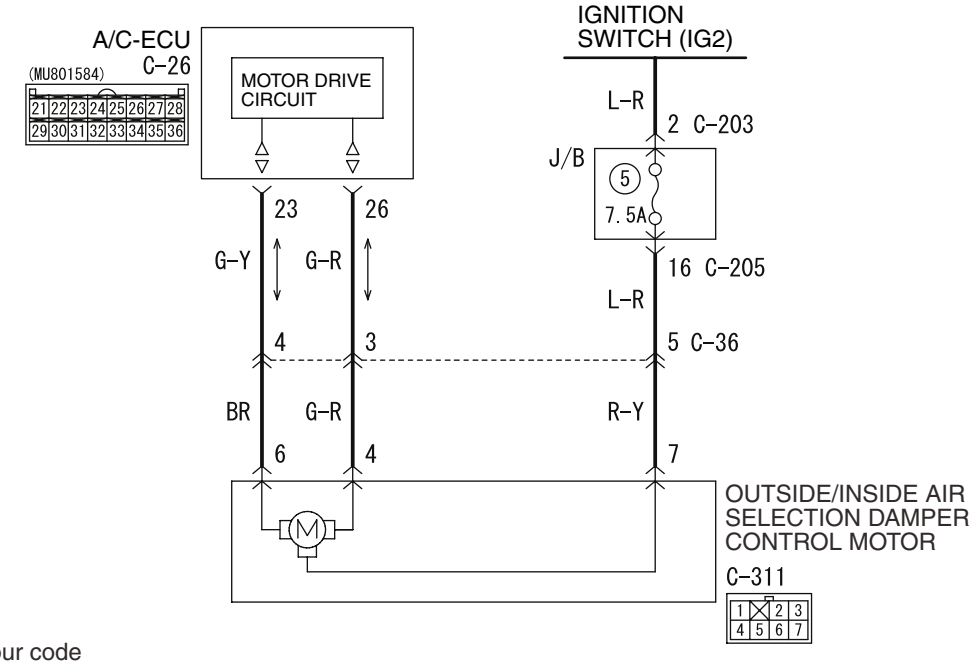
Q: Is the outside thermo sensor in good condition?
YES : Go to Step 3.
NO : Replace the air thermo sensor.

STEP 3. Check the refrigerant level.
Refer to GROUP 55A, On vehicle service – sight glass refrigerant level test P.55A-48.

Q: Is the refrigerant level correct?
YES : Replace the auto air conditioner control panel (A/C-ECU).
NO : Correct the refrigerant level. (Refer to GROUP 55A, On-vehicle ServiceP.55A-53).

INSPECTION PROCEDURE 8: The inside/outside air changeover is impossible.

Outside/Inside Air Selection Damper Control Motor Circuit



Wire colour code
B : Black LG : Light green G : Green L : Blue W : White Y : Yellow SB : Sky blue
BR : Brown O : Orange GR : Gray R : Red P : Pink V : Violet

W3Z08E07AA

COMMENTS ON TROUBLE SYMPTOM

When inside air cannot be changed to outside air vice versa even if its changeover switch is on, the outside/inside air selection damper control motor system may be defective.

Possible causes

- Malfunction of the outside/inside air selection damper control motor
- Damaged the wiring harness or connectors
- Malfunction of the auto air conditioner control panel (A/C-ECU)

DIAGNOSIS

Step 1. MUT-II actuator test

Carry out the actuator test.

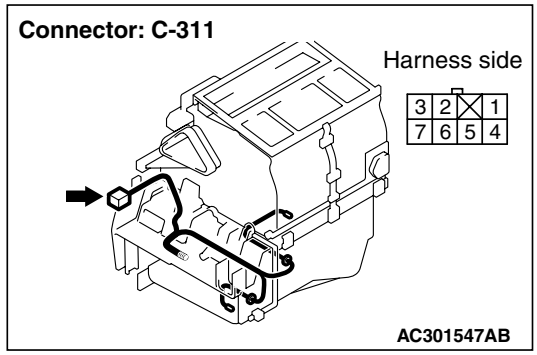
- Item 13, 14: outside/inside air selection damper control motor

Q: Does the blower motor work normally?

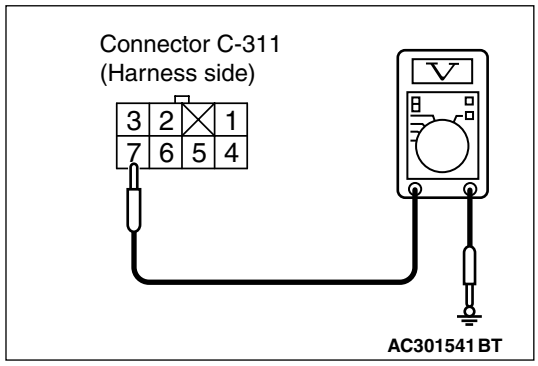
YES : Replace the auto air conditioner control panel (A/C-ECU)

NO : Go to Step 2.

Step 2. Measure the voltage at C-311 outside/ inside air selection damper control motor connector.



(1) Disconnect the connector, and measure at the wiring harness side.
(2) Turn the ignition switch to the ON position.

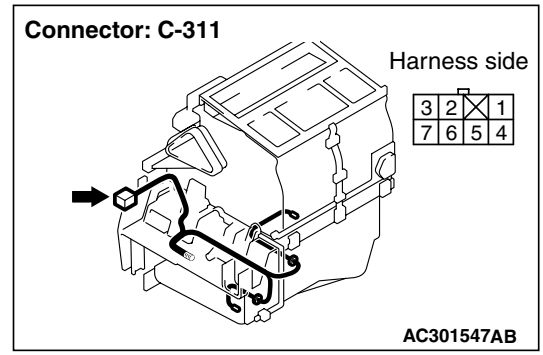


(3) Measure the voltage between terminal 7 and body earth.

OK: System voltage

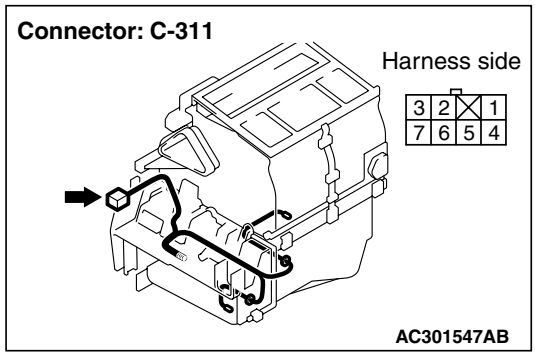
Q: Is the check result normal?
YES : Go to Step 5.
NO : Go to Step 3.

Step 3. Connector check: C-311 outside/inside air selection damper control motor connector

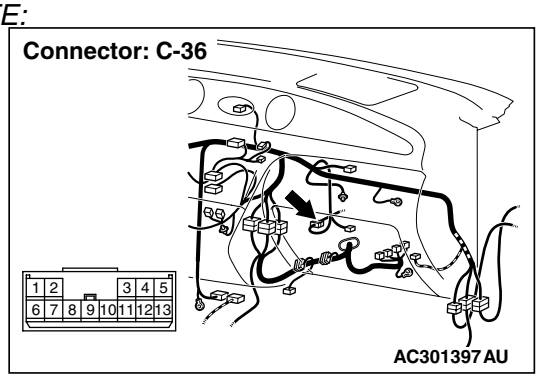


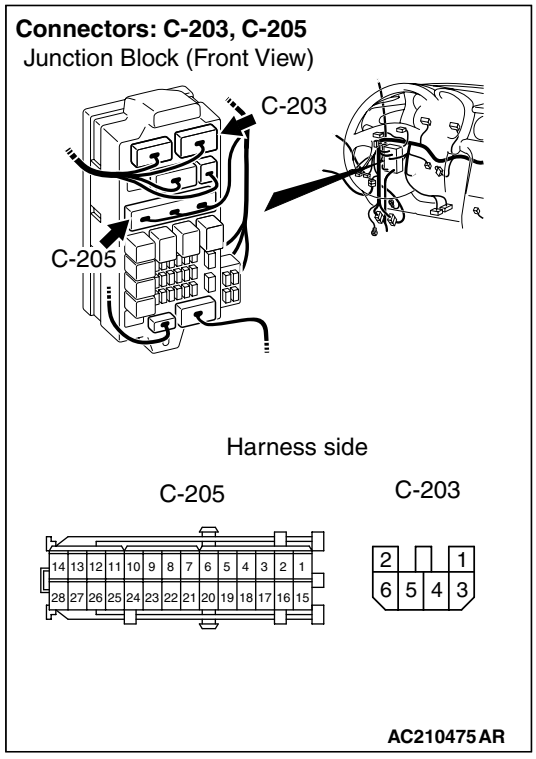
Q: Is the check result normal?
YES : Go to Step 4.
NO : Repair the connector.

Step 4. Check the wiring harness between C-311 outside/inside air selection damper control motor connector terminal No.7 and the ignition switch (IG2).



NOTE:





Prior to the wiring harness inspection, check intermediate connector C-36 and junction block connectors C-203 and C-205, and repair if necessary.

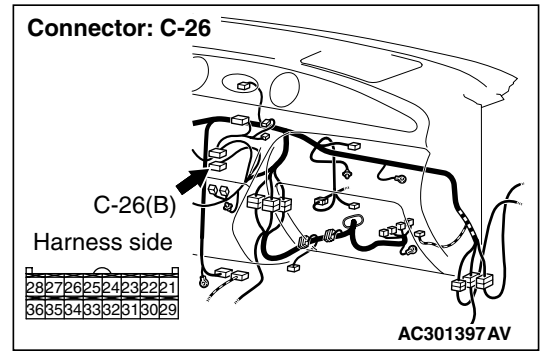
- Check the motor power supply line for open circuit.

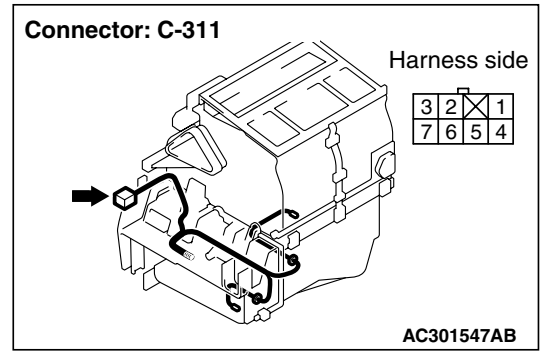
Q: Is the check result normal?
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-6).
NO : Repair the wiring harness.

Step 5. Check the outside/inside air selection damper control motor
Refer to GROUP 55A, Resistor, blower motor and inside/outside air selection damper control motor P.55A-64.

Q: Is the check result normal?
YES : Go to Step 6.
NO : Replace the outside/inside air selection damper control motor.

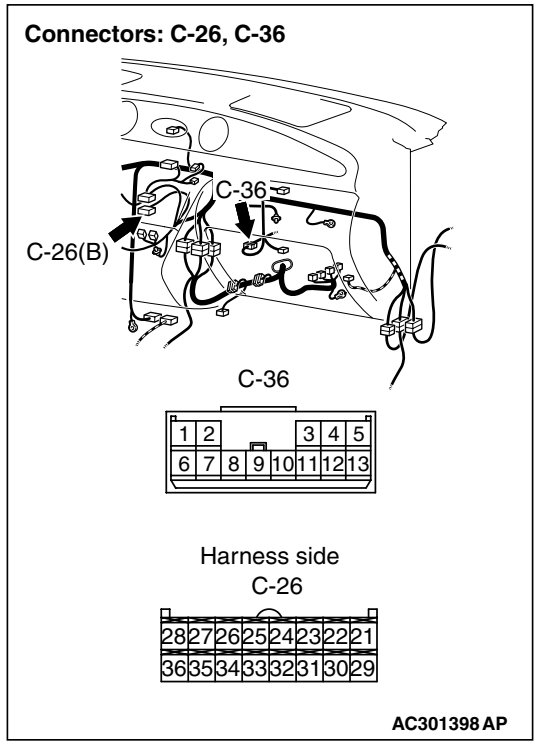
Step 6. Connector check: C-26 A/C-ECU connector and C-311 outside/inside air selection damper control motor connector

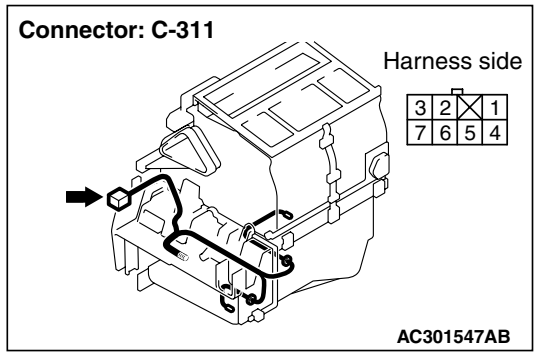




Q: Is the check result normal?
YES : Go to Step 7.
NO : Repair the connector.

Step 7. Check the wiring harness between C-26 A/C-ECU connector (terminals 23 and 26) and C-311 outside/inside air selection damper control motor connector (terminals 6 and 4).





NOTE: Prior to the wiring harness inspection, check intermediate connector C-36, and repair if necessary.

- Check the motor activating lines for open or short circuit.

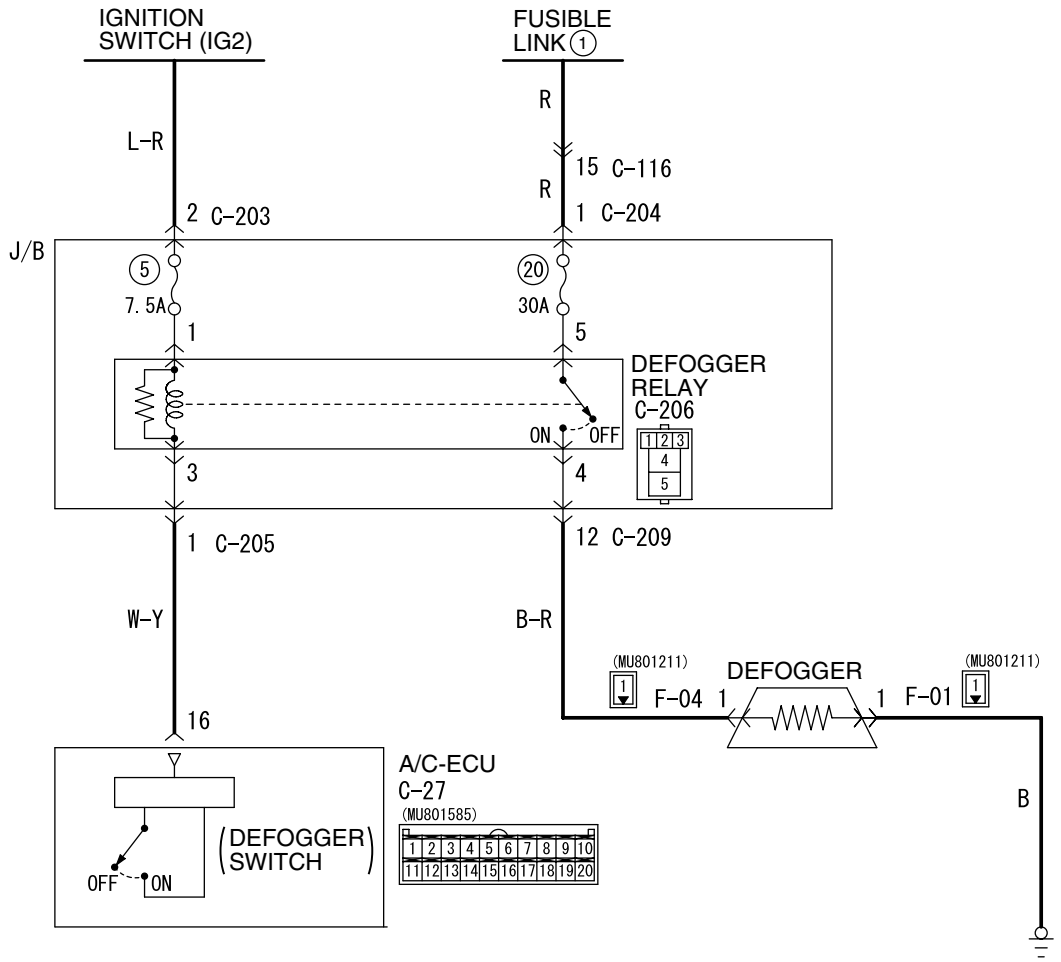
Q: Is the check result normal?

YES : Replace the auto air conditioner control panel (A/C-ECU).

NO : Repair the wiring harness.

INSPECTION PROCEDURE 9: Defogger function does not operate.

Defogger Circuit



Wire colour code
B : Black LG : Light green G : Green L : Blue W : White Y : Yellow SB : Sky blue
BR : Brown O : Orange GR : Gray R : Red P : Pink V : Violet

W3Z08E08AA

CIRCUIT OPERATION

If the defogger does not operate when the defogger switch is turned on, the defogger relay system may be defective.

TROUBLESHOOTING HINTS

- Malfunction of the A/C-ECU
- Malfunction of the defogger relay
- Damaged the wiring harness or connectors
- Malfunction of the defogger

DIAGNOSIS

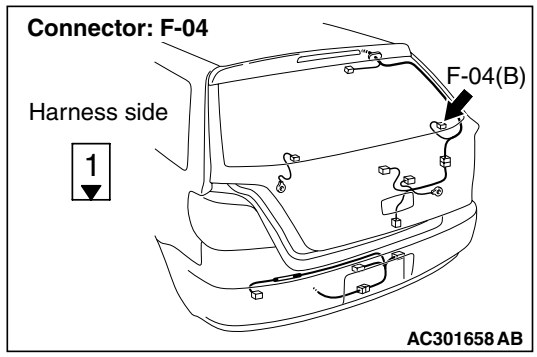
STEP 1. Check the A/C and outside/inside air selection damper control motor operation.

Q: Do the A/C and outside/inside air selection damper control motor work normally?

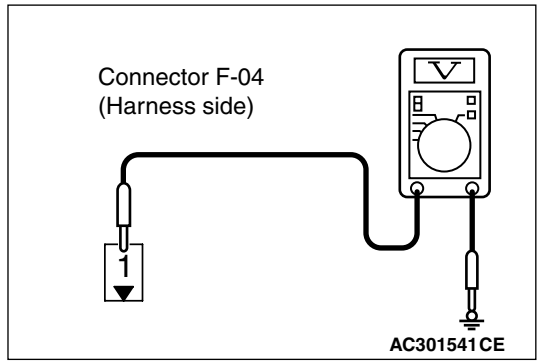
YES : Go to Step 2.

NO : Refer to Inspection procedure 10 "Malfunction of the A/C-ECU power supply system P.55B-60."

STEP 2. Measure the voltage at F-04 defogger connector.



(1) Disconnect the connector, and measure at the wiring harness side.
(2) Turn the defogger switch to the "ON" position.



(3) Measure the voltage between terminal 1 and body earth.

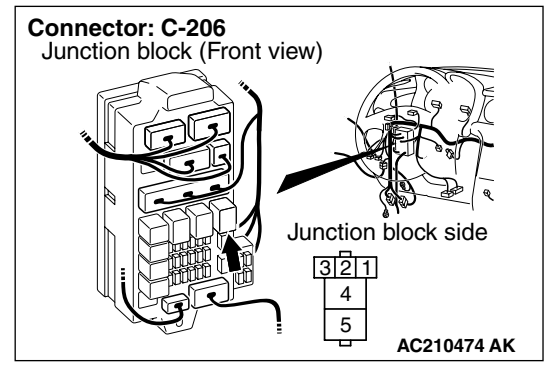
OK: System voltage

Q: Is the check result normal?
YES : Go to Step 14.
NO : Go to Step 3.

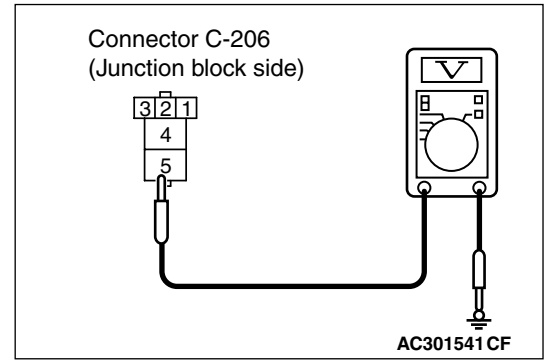
STEP 3. Check the defogger relay continuity.
Refer to P.55A-54.

Q: Is the defogger relay in good condition?
YES : Go to Step 4.
NO : Replace the defogger relay.

STEP 4. Measure the voltage at C-206 defogger relay connector.



(1) Remove the relay, and measure at the junction block side.

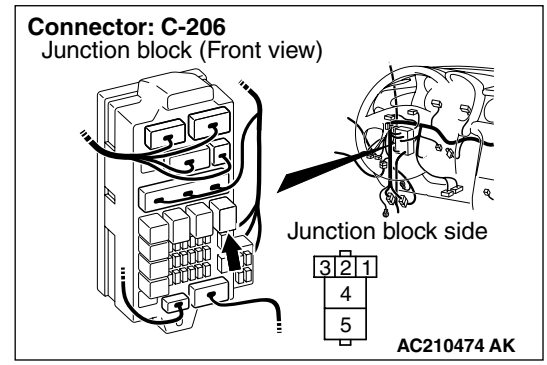


(2) Measure the voltage between terminal 5 and body earth.

OK: System voltage

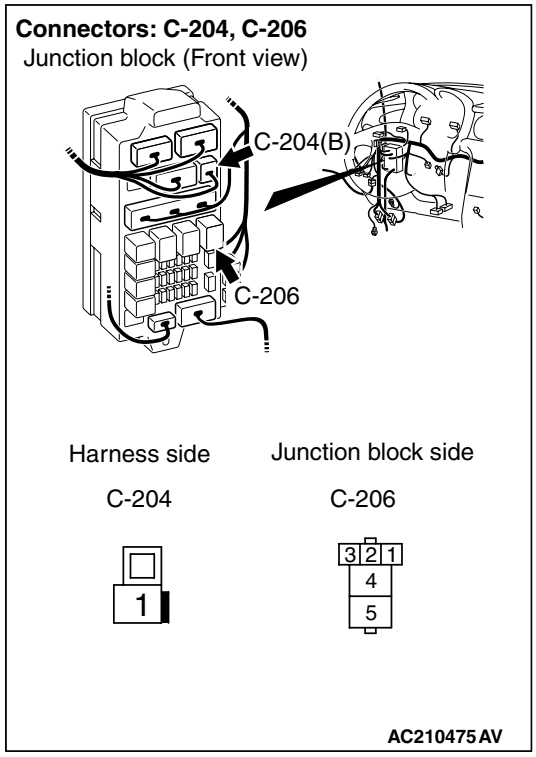
Q: Is the check result normal?
YES : Go to Step 7.
NO : Go to Step 5.

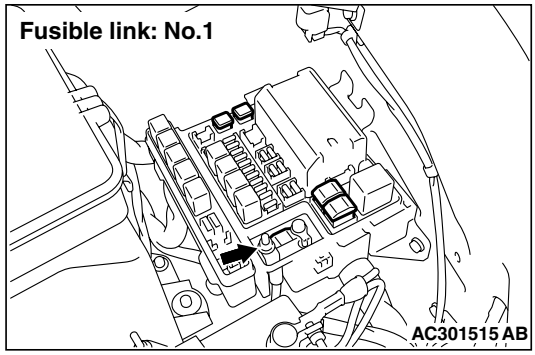
STEP 5. Connector check: C-206 defogger relay connector



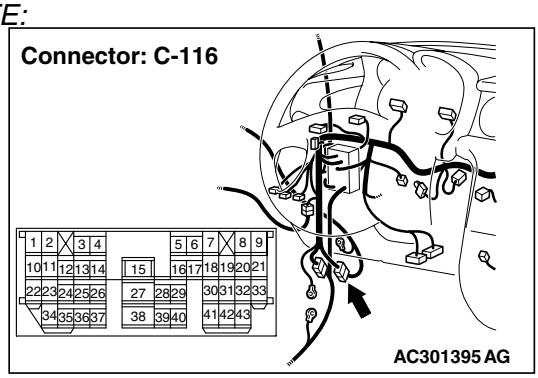
Q: Is the check result normal?
YES : Go to Step 6.
NO : Repair the connector.

STEP 6. Check the wiring harness between C-206 defogger relay connector terminal No.5 and the fusible link (1).





NOTE:

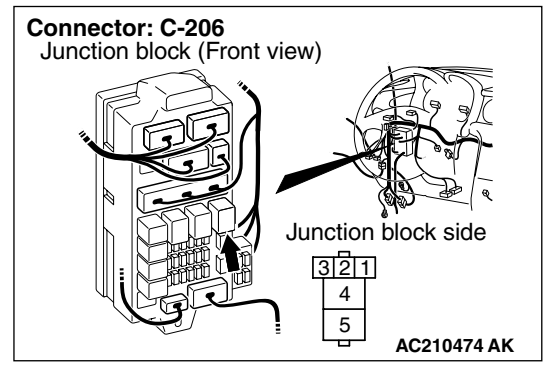


Prior to the wiring harness inspection, check intermediate connectors C-116 and junction block connector C-204, and repair if necessary.

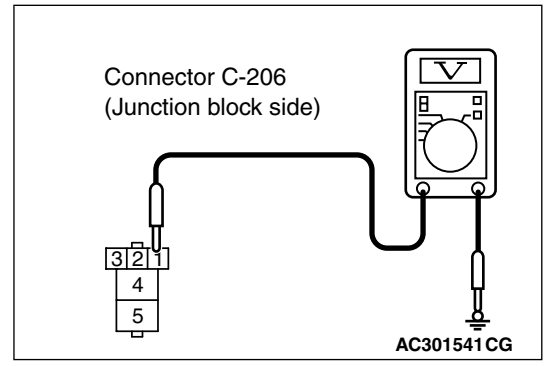
- Check the defogger relay power supply line for open or short circuit.

Q: Is the check result normal?
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-6).
NO : Repair the wiring harness.

STEP 7. Measure the voltage at C-206 defogger relay connector.



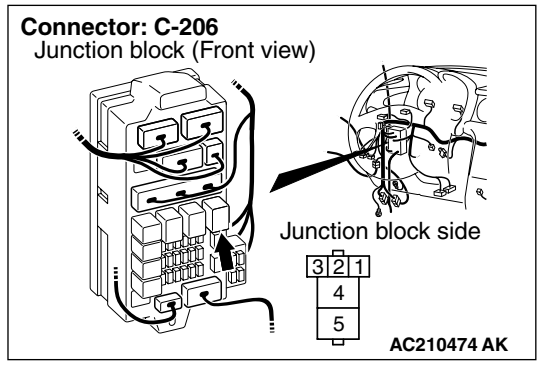
(1) Remove the relay, and measure at the junction block side.
(2) Turn the ignition switch to the "ON" position.



(3) Voltage between terminal 1 and body earth.
OK: System voltage

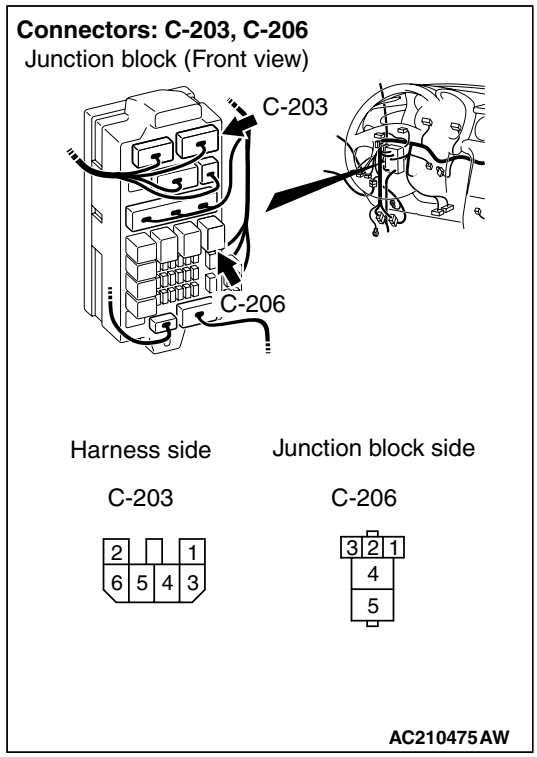
Q: Is the check result normal?
YES : Go to Step 10.
NO : Go to Step 8.

STEP 8. Connector check: C-206 defogger relay connector



Q: Is the check result normal?
YES : Go to Step 9.
NO : Repair the connector.

STEP 9. Check the wiring harness between C-206 defogger relay connector No.1 and ignition switch (IG2).

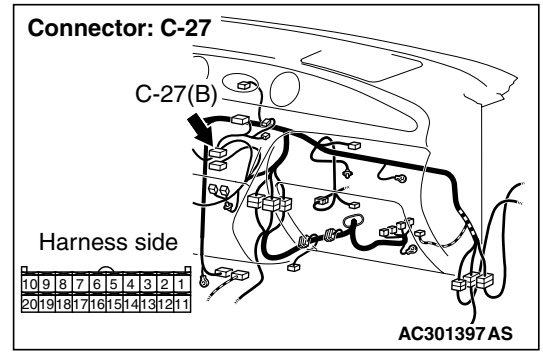


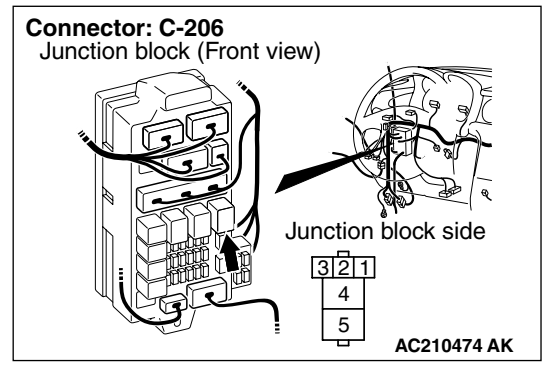
NOTE: Prior to the wiring harness inspection, check junction block connector C-203, and repair if necessary.

- Check the defogger power supply line for open circuit.

Q: Is the check result normal?
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-6).
NO : Repair the wiring harness.

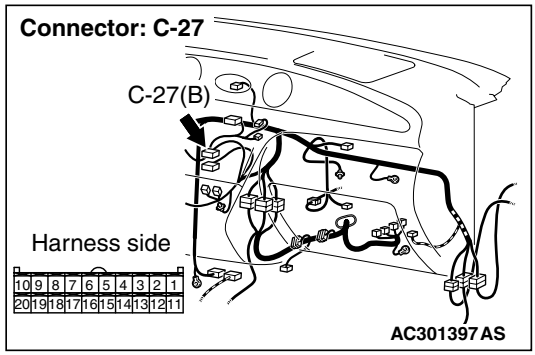
STEP 10. Connector check: C-206 defogger relay connector and C-27 A/C-ECU connector

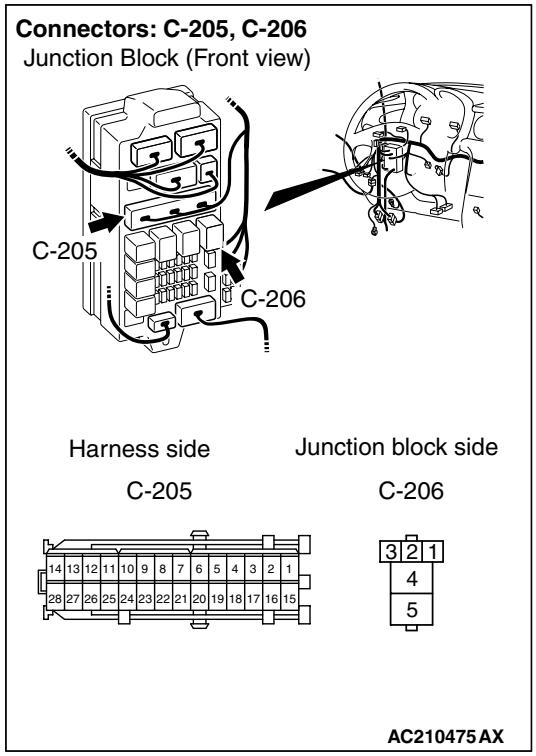




Q: Is the check result normal?
YES : Go to Step 11.
NO : Repair the connector.

STEP 11. Check the wiring harness between C-206 defogger relay connector No.3 and C-27 A/C-ECU connector No.16.



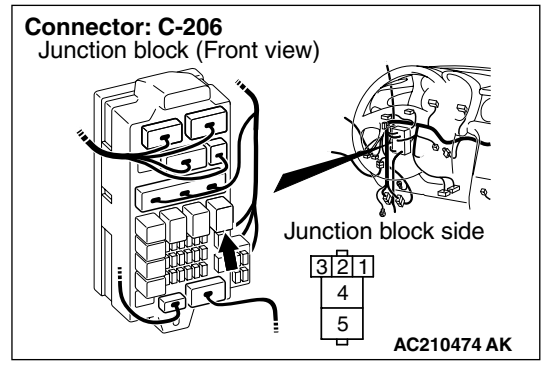


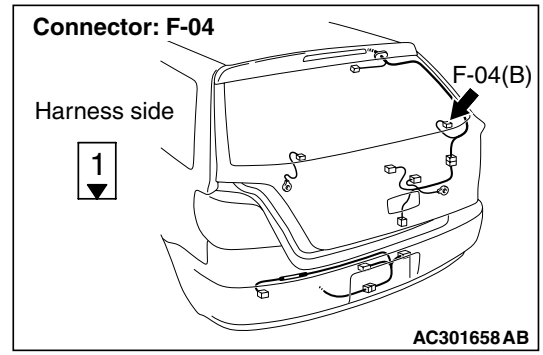
NOTE: Prior to the wiring harness inspection, check junction block connector C-205, and repair if necessary.

- Check the defogger relay line for open or short circuit.

Q: Is the check result normal?
YES : Go to Step 12.
NO : Repair the wiring harness.

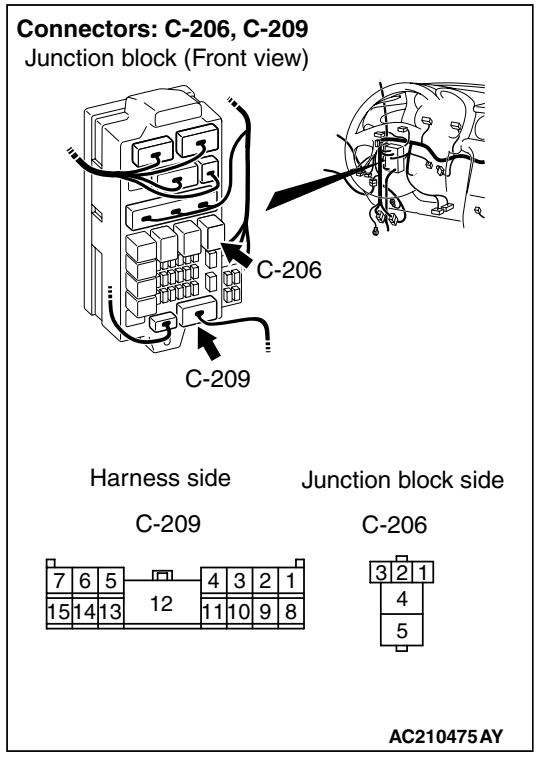
STEP 12. Connector check: C-206 defogger relay connector and F-04 defogger connector

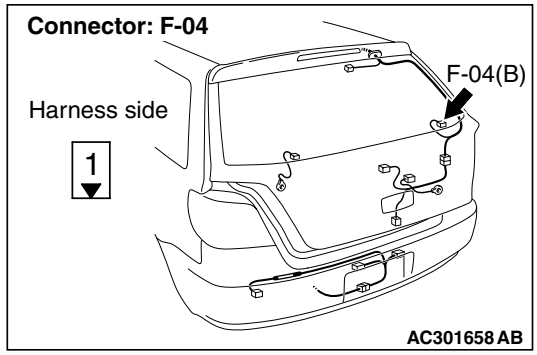




Q: Is the check result normal?
YES : Go to Step 13.
NO : Repair the connector.

STEP 13. Check the wiring harness between C-206 defogger relay connector terminal No.4 and F-04 defogger connector terminal No.1.



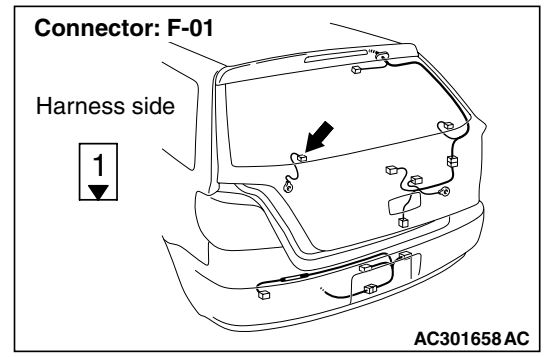


NOTE: Prior to the wiring harness inspection, check junction block connector C-209, and repair if necessary.

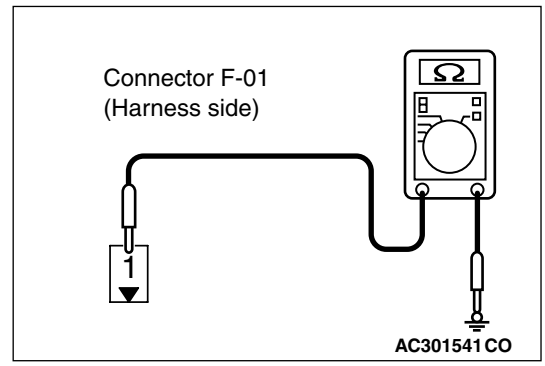
- Check the defogger power supply line for open or short circuit.

Q: Is the check result normal?
YES : Replace the auto air conditioner control panel (A/C-ECU).
NO : Repair the wiring harness.

STEP 14. Measure the resistance at F-01 defogger connector.



(1) Disconnect the connector, and measure at the wiring harness side.

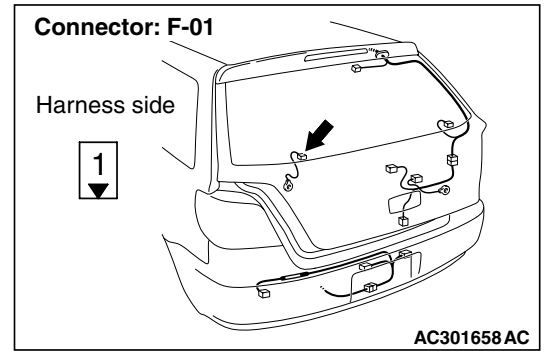


(2) Continuity between terminal 1 and body earth.

OK: 2 ohm or less

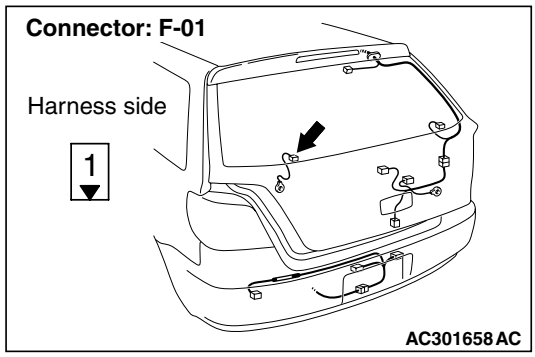
Q: Is the check result normal?
YES : Go to Step 17.
NO : Go to Step 15.

STEP 15. Connector check: F-01 defogger connector



Q: Is the check result normal?
YES : Go to Step 16.
NO : Repair the connector.

STEP 16. Check the wiring harness between F-01 defogger connector terminal No.1 and earth.



- Check the defogger earth line for open or short circuit.

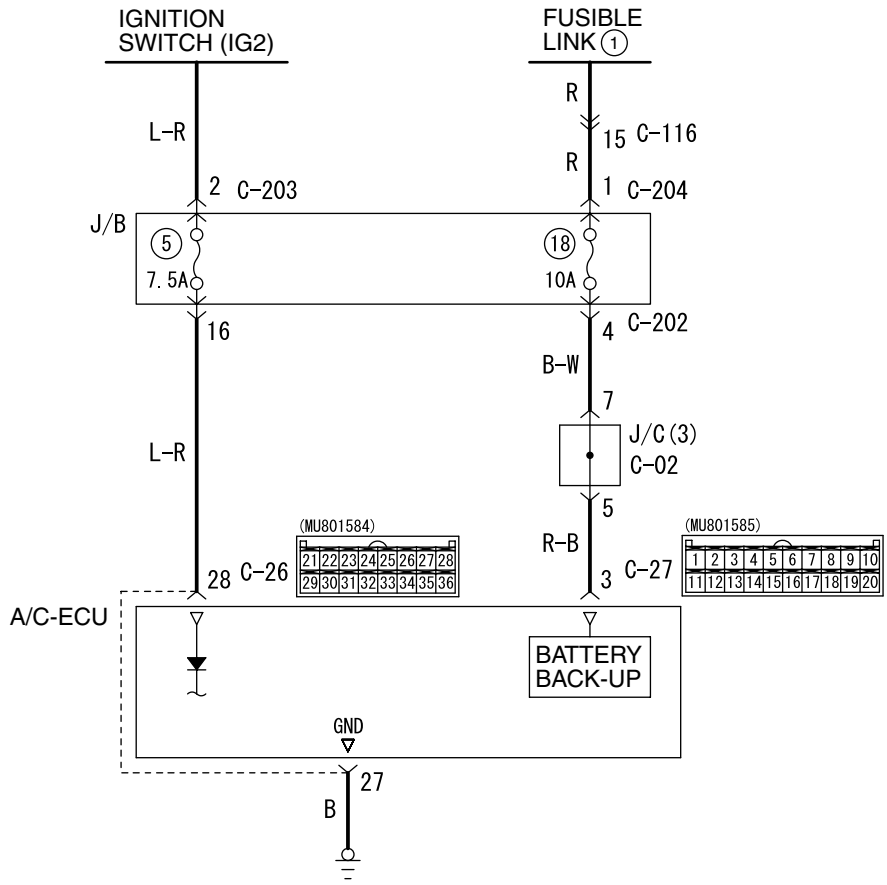
Q: Is the check result normal?
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-6).
NO : Repair or replace the wiring harness.

STEP 17. Check the defogger.
Refer to GROUP 54A, DefoggerP.55A-54.

Q: Does the defogger work normally?
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-6).
NO : Repair the defogger.

INSPECTION PROCEDURE 10: Malfunction of the A/C-ECU power supply system.

A/C-ECU Power Supply Circuit



Wire colour code
B : Black LG : Light green G : Green L : Blue W : White Y : Yellow SB : Sky blue
BR : Brown O : Orange GR : Gray R : Red P : Pink V : Violet

W3Z08E09AA

CIRCUIT OPERATION

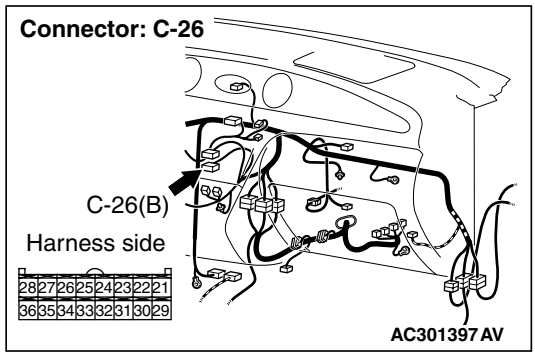
The A/C-ECU power system may be defective if the air conditioner, defogger, and outside/inside air selection damper motor all do not operate normally.

TROUBLESHOOTING HINTS

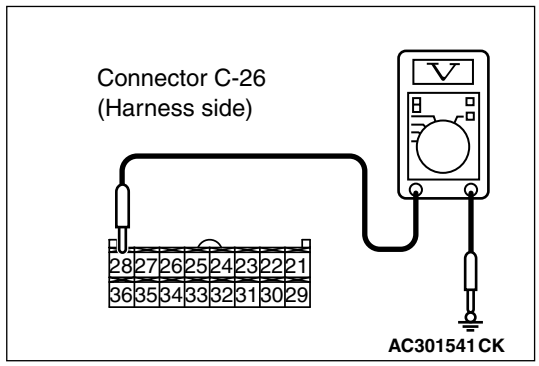
- Damaged the wiring harness or connectors
- Malfunction of the A/C-ECU

DIAGNOSIS

STEP 1. Measure the voltage at A/C-ECU connector C-26.



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

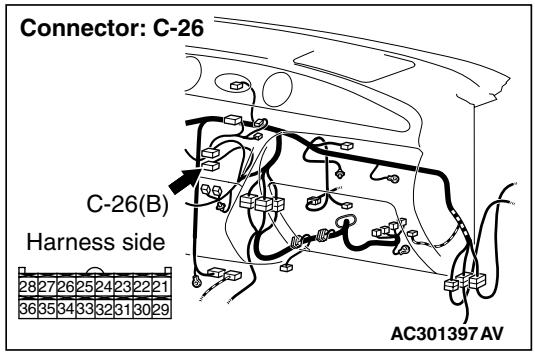


(3) Measure the voltage between terminal 28 and body earth.

OK: System voltage

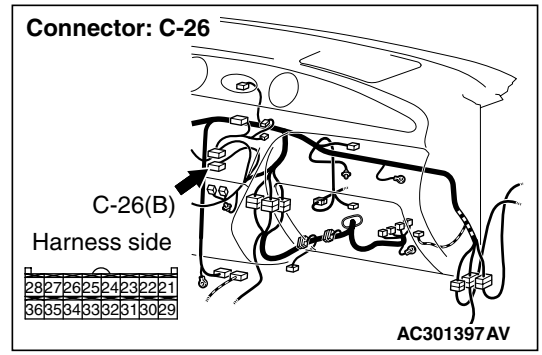
Q: Is the check result normal?
YES : Go to Step 4.
NO : Go to Step 2.

STEP 2. Connector check: C-26 A/C-ECU connector

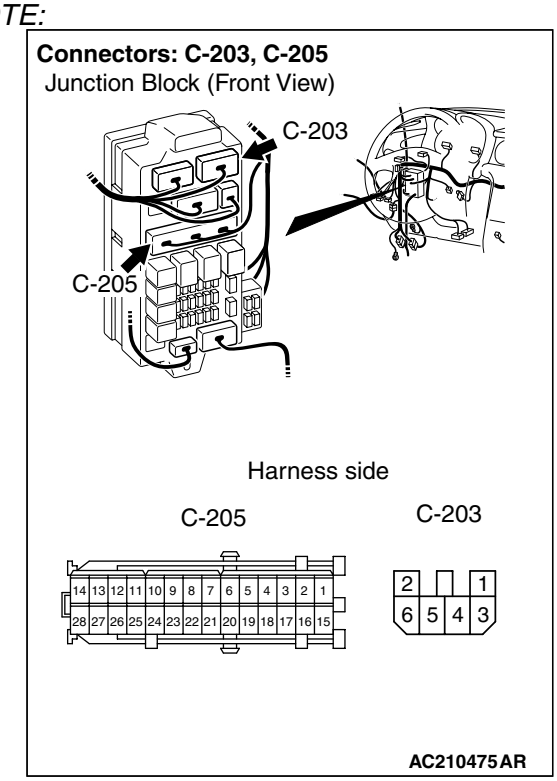


Q: Is the check result normal?
YES : Go to Step 3.
NO : Repair the connector.

STEP 3. Check the wiring harness between C-26 A/C-ECU connector terminal No.28 and the ignition switch (IG2).



NOTE:

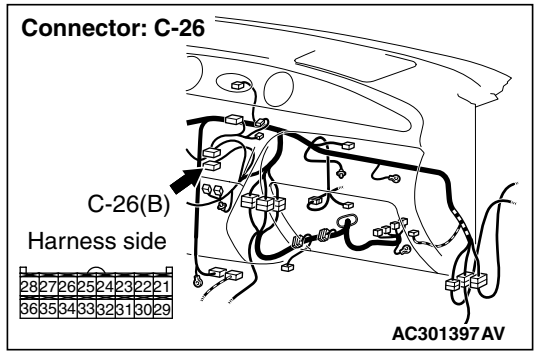


Prior to the wiring harness inspection, check junction block connectors C-205 and C-203, and repair if necessary.

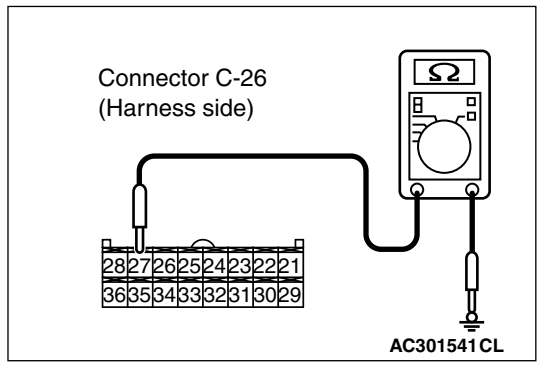
- Check the A/C-ECU power supply line for open or short circuit.

Q: Is the check result normal?
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-6).
NO : Repair the wiring harness.

STEP 4. Measure the resistance at C-26 A/C-ECU connector.



(1) Remove the relay, and measure at the junction block side.

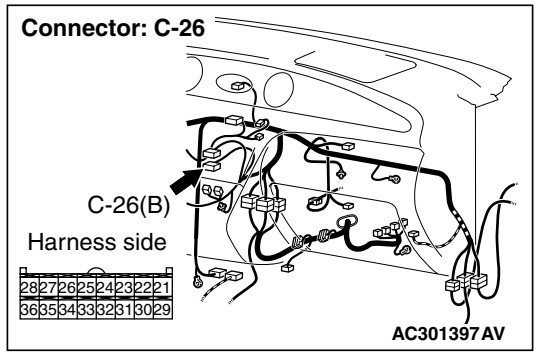


(2) Continuity between terminal 27 and body earth.

OK: 2 ohm or less

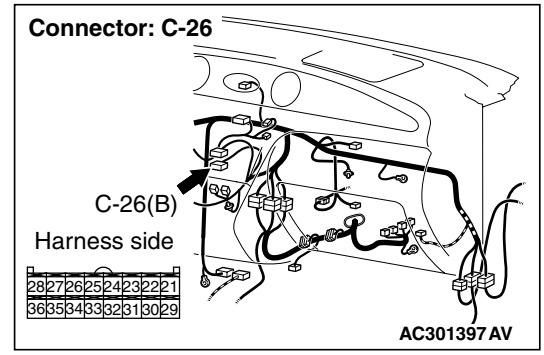
Q: Is the check result normal?
YES : Go to Step 7.
NO : Go to Step 5.

STEP 5. Connector check: C-26 A/C-ECU connector



Q: Is the check result normal?
YES : Go to Step 6.
NO : Repair the connector.

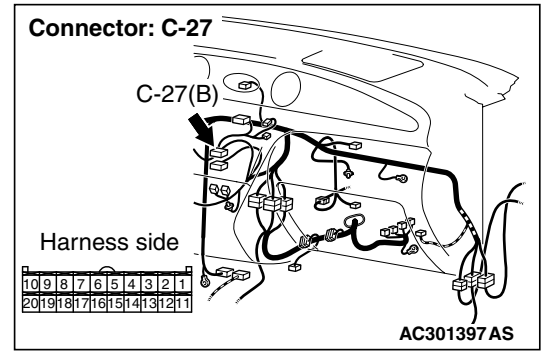
STEP 6. Check the wiring harness between C-26 A/C-ECU connector terminal No.27 and the earth.



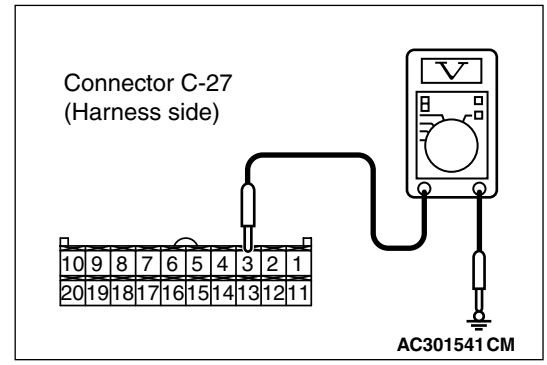
- Check the A/C-ECU earth line for open or short circuit.

Q: Is the check result normal?
YES : Replace the auto air conditioner control panel (A/C-ECU).
NO : Repair the wiring harness.

STEP 7. Measure the voltage at C-27 A/C-ECU connector.



(1) Disconnect the connector, and measure at the wiring harness side.

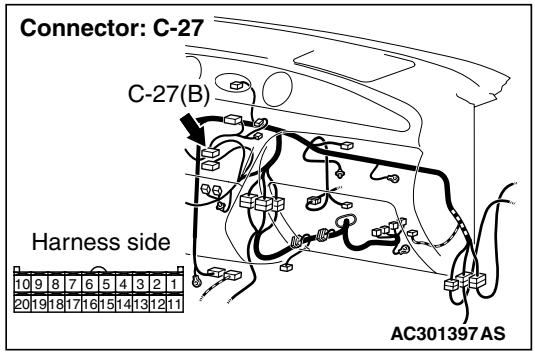


(2) Measure the voltage between terminal 3 and earth.

OK: System voltage

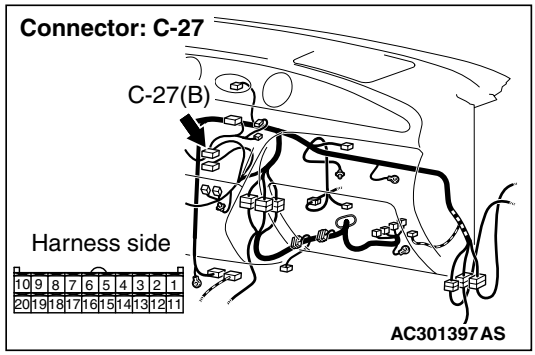
Q: Is the check result normal?
YES : Replace the auto air conditioner control panel (A/C-ECU).
NO : Go to Step 8.

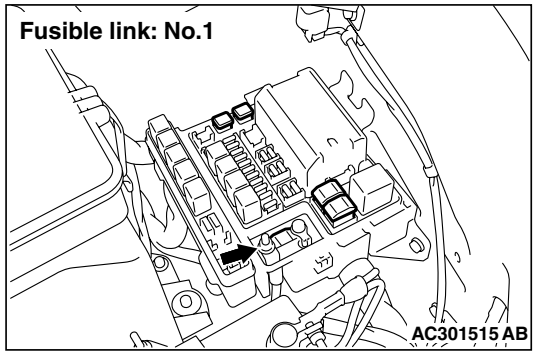
STEP 8. Connector check: C-27 A/C-ECU connector



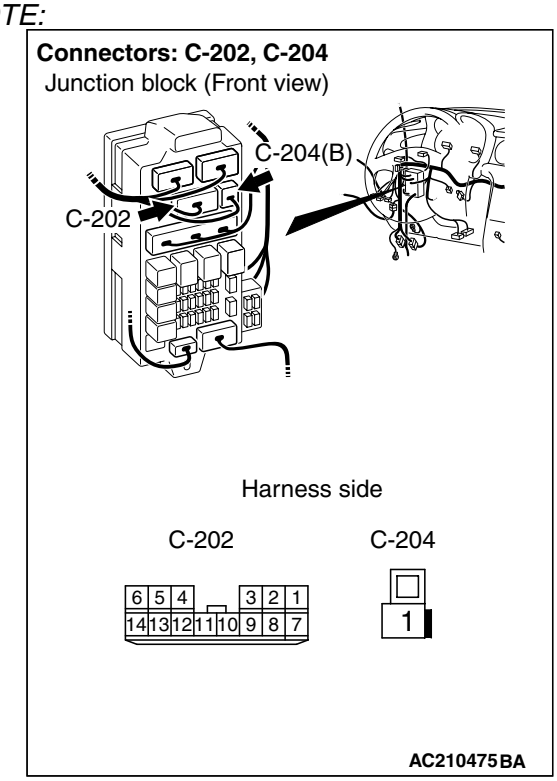
Q: Is the check result normal?
YES : Go to Step 9.
NO : Repair the connector.

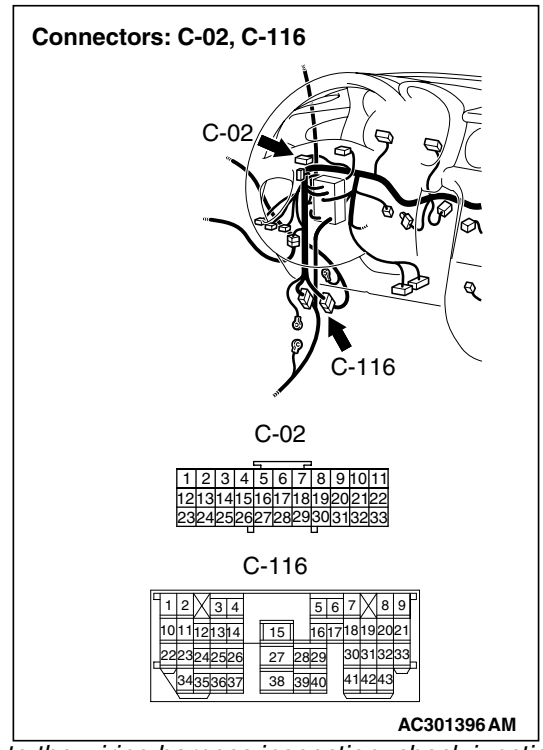
STEP 9. Check the wiring harness between C-27 A/C-ECU connector terminal No.3 and fusible link (1).





NOTE:





Prior to the wiring harness inspection, check junction block connectors C-202, C-204, intermediate connectors C-116 and joint connector C-02, and repair if necessary.

- Check the A/C-ECU power supply (battery back-up) line for open or short circuit.

Q: Is the check result normal?
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-6).
NO : Repair the wiring harness.

DATA LIST REFERENCE TABLE

M1554005100103

Item No.	Check items	Inspection conditions	Normal condition
11	Interior temperature sensor	Turn the ignition switch to the ON position.	Room temperature is the same as MUT-II displayed temperature.
12	Outside thermo sensor	Turn the ignition switch to the ON position.	Outside temperature is the same as MUT-II displayed temperature.
13	Heater water temperature sensor	Turn the ignition switch to the ON position.	Heater core wall surface temperature is the same as MUT-II displayed temperature.
14	Photo sensor	• Turn the ignition switch to the ON position. • Change the volume of insolation.	The volume of insolation takes inverse proportion with the MUT-II displayed voltage.
16	Air thermo sensor	Turn the ignition switch to the ON position.	Evaporator outlet temperate is the same as MUT-II displayed temperature
17	Air mixing damper control motor and potentiometer	• Turn the ignition switch to the ON position. • Door position: MAX HOT	Opening angle: approximately 100%
		• Turn the ignition switch to the ON position. • Door position: MAX HOT	Opening angle: approximately 0%
18	Mode selection damper control motor and potentiometer	• Turn the ignition switch to the ON position. • Damper position: FACE	Opening angle: approximately 0%
		• Turn the ignition switch to the ON position. • Damper position: FOOT	Opening angle: approximately 60%
		• Turn the ignition switch to the ON position. • Damper position: FOOT/ DEF	Opening angle: approximately 80%
		• Turn the ignition switch to the ON position. • Damper position: DEF	Opening angle: approximately 100%

ACTUATOR TEST TABLE

M1554005200100

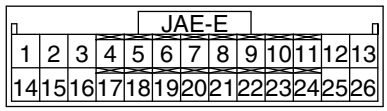
Item No.	Check items	Drive content
01	Blower motor	Stop
02		Low speed
03		Middle speed
04		High speed

Item No.	Check items	Drive content
05	Air mixing damper control motor	Open angle: Approximately 0% (MAX COOL)
06		Opening angle: approximately 50%
07		Open angle: Approximately 100% (MAX COOL)
08	Mode selection damper control motor	FACE
09		FOOT
10		DEF
11	Compressor output	OFF
12		ON
13	outside/inside air selection damper control motor	Outside air
14		Inside air
15	Idle-up	OFF (A/C high pressure)
16		ON (A/C low pressure)

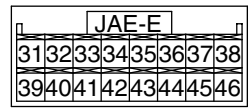
CHECK AT ENGINE-A/T ECU TERMINALS

M1554005400148

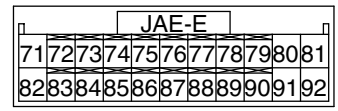
<C-134>



<C-135>



<C-137>



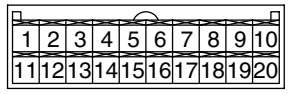
AC301466AB

Terminal No.	Check items	Check conditions	Normal conditions
8	Output to A/C compressor	A/C compressor relay: OFF	System voltage
		A/C compressor relay: ON	0 V
21	Output to fan controller	Air conditioner switch: OFF	4.9 – 5.1 V
		Air conditioner switch: ON	0 V
24	Input from A/C-ECU (A/C1)	When the A/C is in operation (When the air thermo sensor detects 3°C or more).	System voltage
42	Input from A/C pressure sensor	2.6MPa	3.9 V
45	Input from A/C-ECU (A/C2)	When the A/C is under low load	System voltage
81	A/C pressure sensor power supply	Always	4.9 – 5.1 V
92	A/C pressure sensor earth	Always	0 V

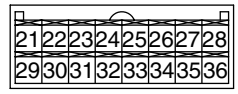
CHECK AT A/C-ECU TERMINALS

M1554005400159

<C-27>



<C-26>



AC300196AB

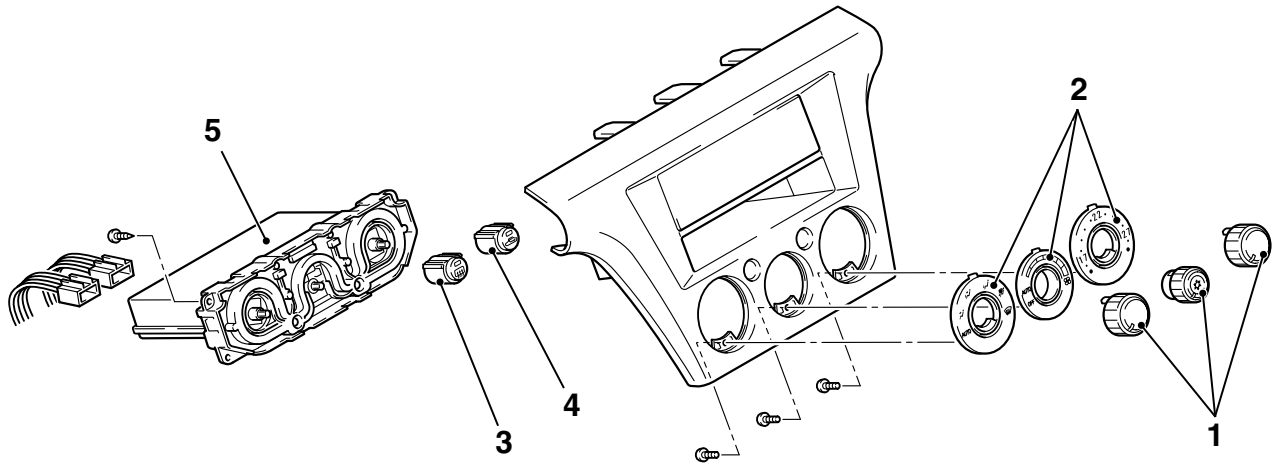
Terminal No.	Check items	Check conditions	Normal conditions
1	Interior temperature sensor	Sensor temperature: 25°C (4kΩ)	2.1– 2.7V
2	Output to blower pulse controller	When the blower is operating.	0 – 2.5V (Effective alternating voltage)
3	Back-up power supply	Always	System voltage
4	Input from heater water temperature sensor	Sensor temperature: 25°C (4kΩ)	2.1 – 2.7V
5	Input from air mixing damper control motor potentiometer	When the damper flaps is moving to the MAX HOT position.	4.1 – 4.6 V
6	Input from mode selection damper control motor potentiometer	When the damper is moved to the DEF position.	4.1 – 4.6 V
7	Input from the outside thermo sensor	Sensor temperature: 25°C (4kΩ)	2.1 – 2.7 V
8	Input from the air thermo sensor	Sensor temperature: 25°C (4kΩ)	2.1 – 2.7 V
9	Photo sensor (-)	Brightness is 0 lux	4.9 – 5.1 V
		Brightness is 100000 lux or more	Approximately 0 V
10	Potentiometer power supply	Always	5 V
11	Input from the A/C pressure sensor	2.6 Mpa	3.9 V
12 – 15	-	-	-
16	Rear defogger	When the rear defogger is operating.	2.0 V or less
		When the rear defogger is stopped	System voltage
17	Diagnosis set	Ignition switch: ON	A voltmeter needle fluctuates between 0 and 12 V.
18	Input from diagnosis	Ignition switch: ON	Approximately 5 V
19	Photo sensor (+)	Always	0 V
20	Sensors and potentiometers earth	Always	0 V
21	Air outlet changeover damper motor (FACE)	When the damper is moved to the FACE position.	10 V
		When the damper is moved to the DEF position.	Faint voltage (0.5 V)
22	Air mix damper motor (MAX COOL)	When the damper flaps is moving to the MAX COOL position.	10 V
		When the damper flaps is moving to the MAX HOT position.	Faint voltage (0.5 V)

Terminal No.	Check items	Check conditions	Normal conditions
23	outside/inside air selection damper control motor (outside)	When the damper is moved to the inside air recirculation position	10 V (When the motor is stopped)
		When the damper is moved to the outside air inside air intake position	2.0 or less
24	Mode selection damper control motor and potentiometer (DEF)	When the damper is moved to the FACE position.	Faint voltage (0.5 V)
		When the damper is moved to the DEF position.	10 V
25	Air mixing damper control motor and potentiometer (MAX HOT)	When the damper flaps is moving to the MAX COOL position.	Faint voltage (0.5 V)
		When the damper flaps is moving to the MAX HOT position.	10 V
26	outside/inside air selection damper control motor (inside)	When the damper is moved to the inside air recirculation position	2.0 V or less
		When the damper is moved to the outside air inside air intake position	10 V (When the motor is stopped)
27	Earth	Always	Continuity exists.
28	IG2 power supply	Ignition switch: ON	System voltage
29	Illumination earth	Always	Continuity exists.
30	ILL power supply	Lighting switch: ON	System voltage
31	-	-	-
32	Input from the engine-A/T-ECU (A/C2)	When the A/C is under low load	System voltage
33	Input from the compressor relay	Compressor: ON	System voltage
34	Input from the engine-A/T-ECU (A/C1)	When the A/C is stopped	0 V
		When the A/C is operating (When the compressor is operating)	System voltage
35	-	-	-
36	ACC power supply	Ignition switch: ACC	System voltage

AUTOMATIC AIR CONDITIONER PANEL ASSEMBLY (A/C-ECU)

REMOVAL AND INSTALLATION

M1554010900042



AC301496AB

Removal steps

- Centre panel (Refer to GROUP 52A, Instrumental PanelP.52A-2).

1. Knob
2. Panel

Removal steps (Continued)

3. Rear defogger knob
4. Outside/inside air selection knob
5. Automatic air conditioner control panel (A/C-ECU)

HEATER UNIT

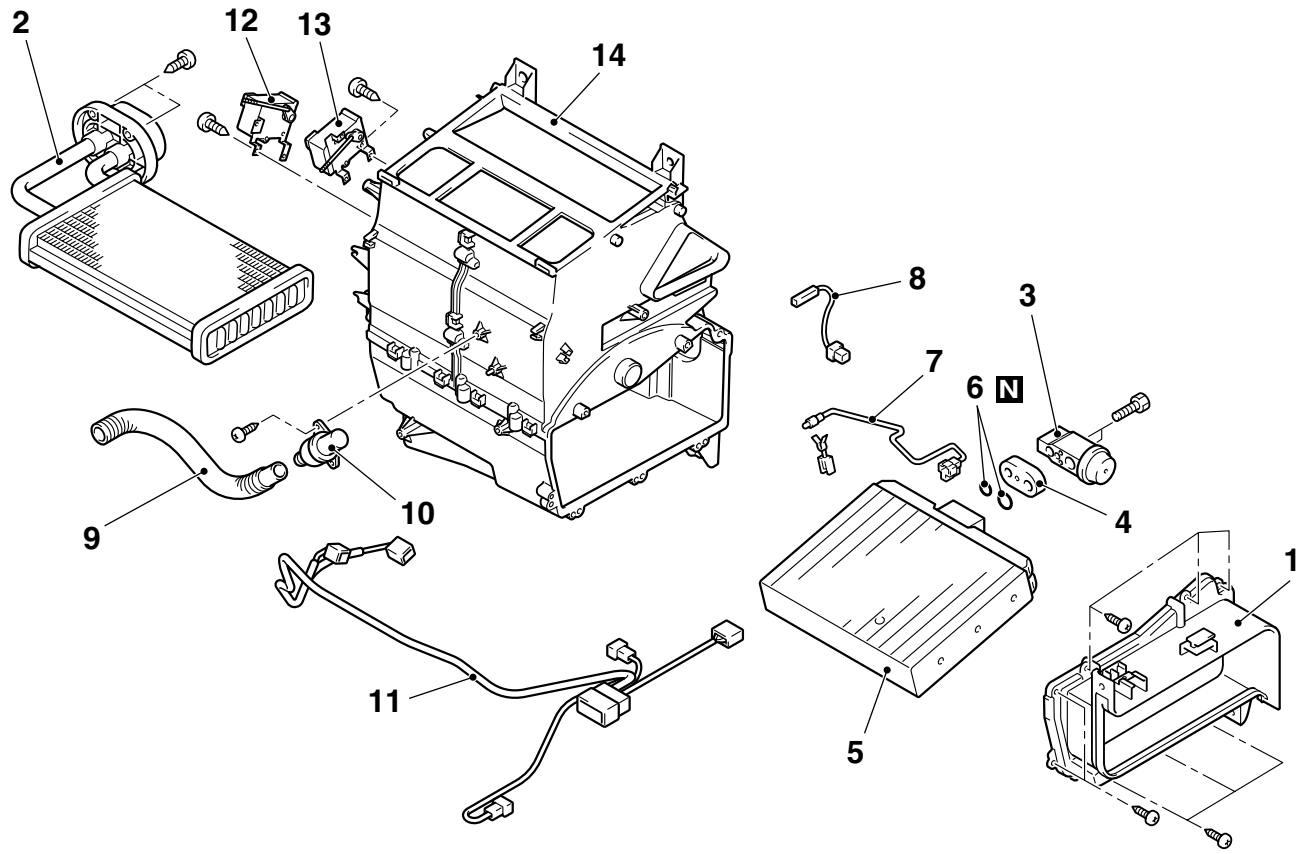
REMOVAL AND INSTALLATION

M1554009100097

Refer to GROUP 55A, Heater Unit Blower assembly P.55A-60.

DISASSEMBLY AND REASSEMBLY

M1554009200072



AC301506AB

Disassembly steps

1. Evaporator cover
2. Heater core
3. Expansion valve
4. Joint
5. Evaporator
6. O ring
7. Air thermo sensor
8. Heater water temperature sensor

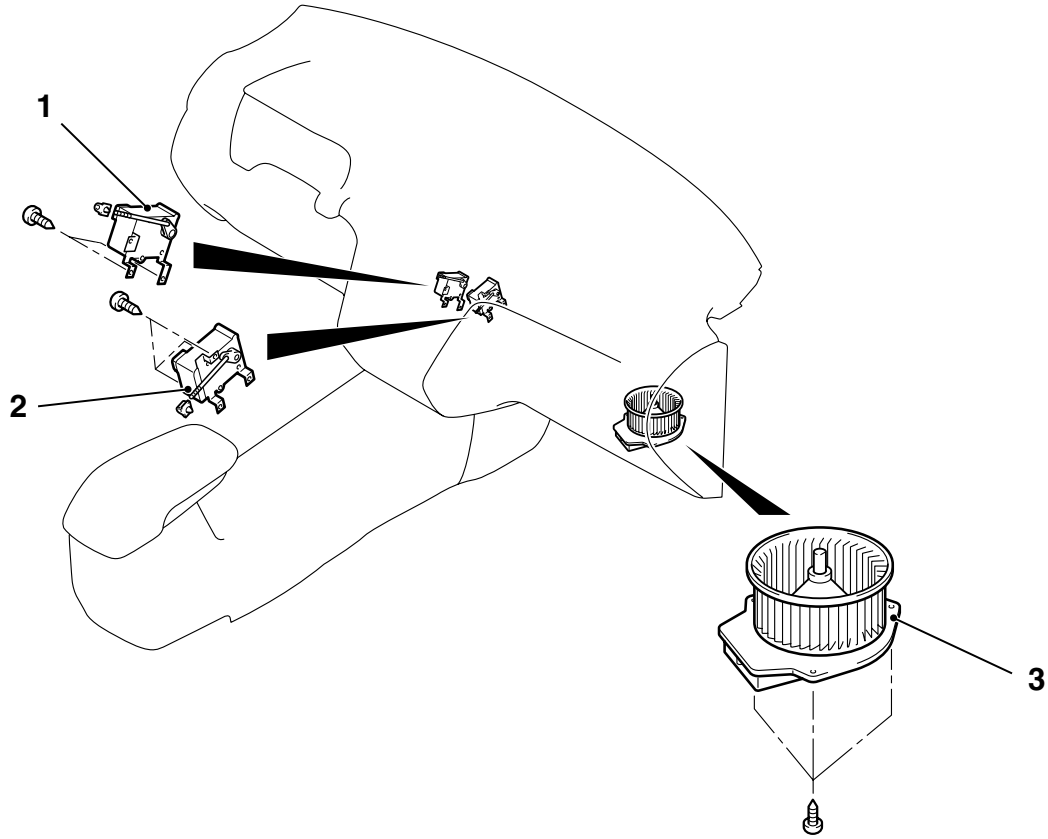
Disassembly steps (Continued)

9. Aspirator hose
10. Aspirator
11. Wiring harness
12. Mode selection damper control motor and potentiometer
13. Air mixing damper control motor and potentiometer
14. Heater case

AIR MIXING DOOR MOTOR, AIR OUTLET CHANGEOVER DAMPER MOTOR AND BLOWER MOTOR

REMOVAL AND INSTALLATION

M1554011100050



AC301512AB

Air mixing damper control motor and potentiometer removal steps

- Foot duct <driver's side>

1. Air mixing damper control motor and potentiometer

Mode selection damper control motor and potentiometer removal steps

2. Mode selection damper control motor and potentiometer

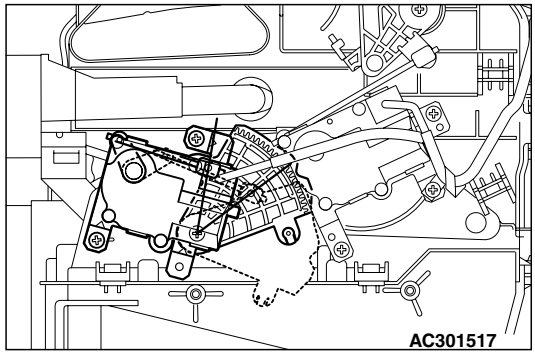
Blower motor removal steps

3. Blower motor

INSPECTION

M1552014300778

CHECK THE AIR MIXING DAMPER CONTROL MOTOR AND POTENTIOMETER



AC301517

Check the air mixing damper control motor

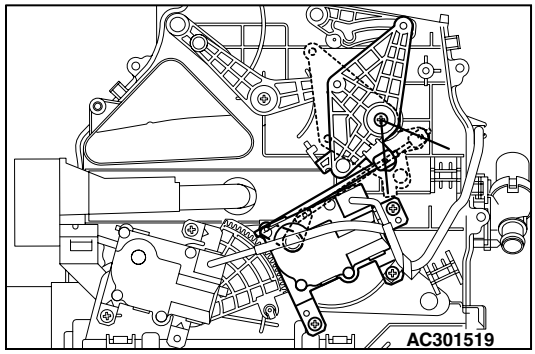
Battery connection (+) terminal	Battery connection (-) terminal	Lever operation
1	3	Rotate to the HOT position.
3	1	Rotate to the COOL position.

Potentiometer check

When the resistances between terminals 2 and 5 as well as terminals 5 and 6 are measured at the air mixing damper motor check, the resistance value should change gradually within the standard value.

Standard value: Approximately 0.65 – 5.35 kΩ

MODE SELECTION DAMPER CONTROL MOTOR AND POTENTIOMETER CHECK



Mode selection damper control motor check

Battery connection (+) terminal	Battery connection (-) terminal	Lever operation
1	3	Rotate to the DEF position.
3	1	Rotate to the FACE position.

Potentiometer check

When the resistances between terminals 2 and 5 as well as terminals 5 and 6 are measured at the mode selection damper control motor check, the resistance value should change gradually within the standard value.

Standard value: Approximately 0.65 – 5.35 kΩ

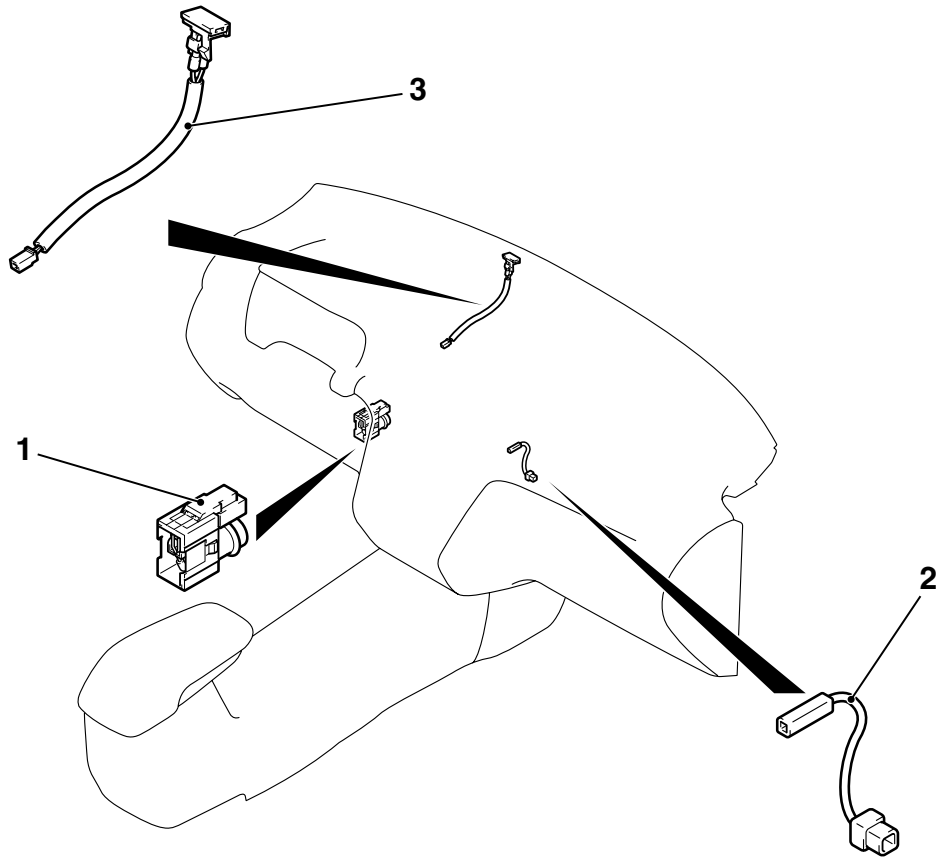
BLOWER MOTOR CHECK

Execute actuator test item No.01 to 04 by using MUT-II with the vehicle body, and check that the blower motor works normally. (Refer to P.55B-64).

SENSORS

REMOVAL AND INSTALLATION

M1554001900077



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Interior temperature sensor removal steps

- Instrument lower panel (Refer to GROUP 52A, Instrumental Panel P.52A-2).

1. Interior temperature sensor

Heater water temperature sensor removal steps

- Foot duct <front passenger's side> (Refer to GROUP 55A, Ventilator P.55A-75).

2. Heater water temperature sensor

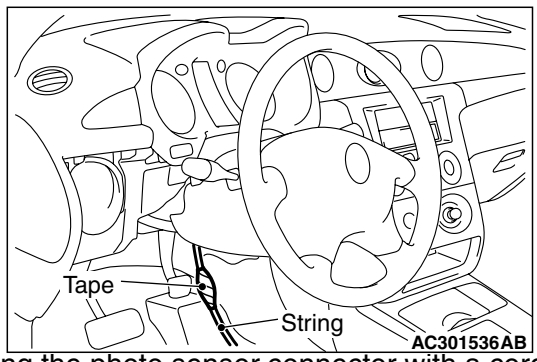
Photo sensor removal steps

- Instrument lower panel (Refer to GROUP 52A, Instrumental Panel P.52A-2).

<<A>> >>A<< 3. Photo sensor

REMOVAL SERVICE POINTS

<<A>> PHOTO SENSOR REMOVAL



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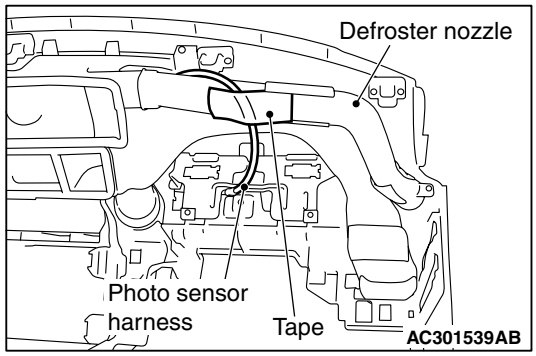
Binding the photo sensor connector with a cord and rapping a tape around the connector as its surface is flatly to pull out the photo sensor toward the instrument panel upper.

INSTALLATION SERVICE POINTS

>>A<< PHOTO SENSOR INSTALLATION

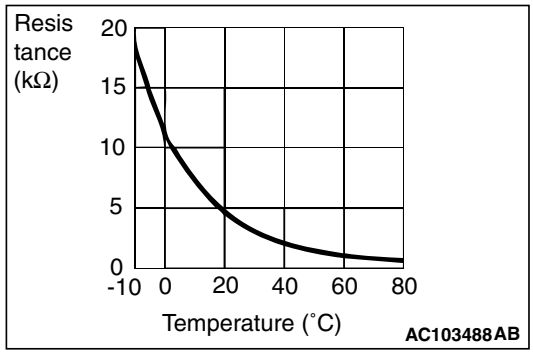


Tape the photo sensor under the defroster nozzle.

INSPECTION

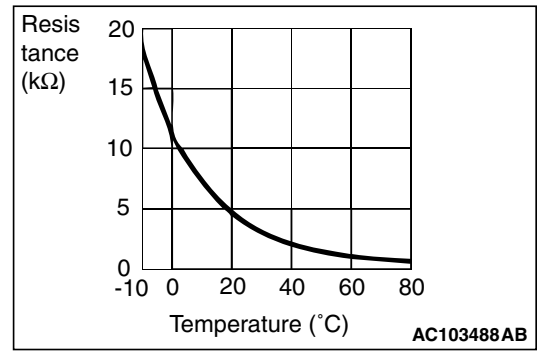
M1552014300767

INTERIOR TEMPERATURE SENSOR CHECK



Check to see that the resistance shown in the graph is almost satisfied when measuring the resistance between the terminals under two or more different temperature conditions.

HEATER WATER TEMPERATURE SENSOR CHECK



Check to see that the resistance shown in the graph is almost satisfied when measuring the resistance between the terminals under two or more different temperature conditions.

PHOTO SENSOR CHECK

Check that the blower rotation comes down if the photo sensor is covered with hands, when the automatic A/C is operating (in summer sunbeam). If not the rotation comes down, replace the photo sensor.

EVAPORATOR ASSEMBLY

REMOVAL AND INSTALLATION

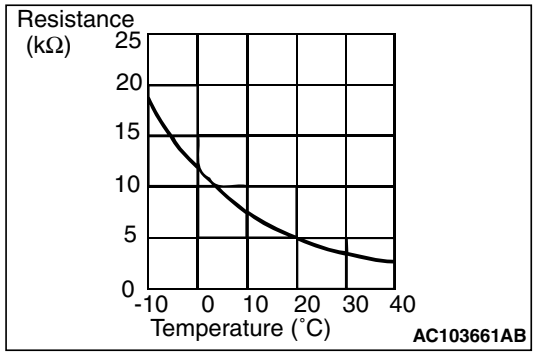
M1552003600195

Refer to GROUP 55A, Evaporator assembly P.55A-66).

INSPECTION

M1552014300734

AIR THERMO SENSOR CHECK



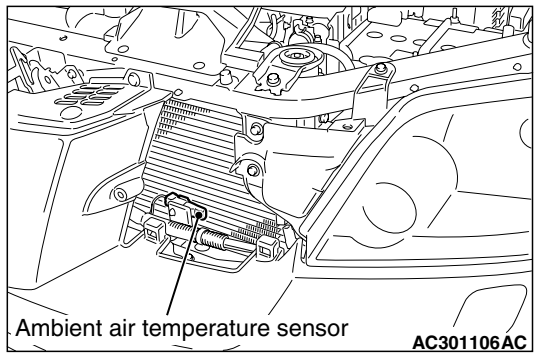
Check to see that the resistance shown in the graph is almost satisfied when measuring the resistance between the terminals under two or more different temperature conditions.

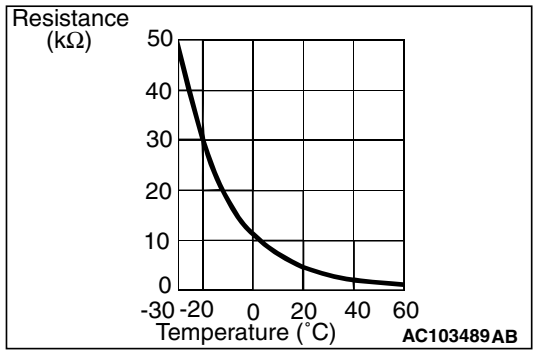
NOTE: The temperature should be within the shown range.

AMBIENT TEMPERATURE SENSOR

INSPECTION

M1552014300745





Check to see that the resistance shown in the graph is almost satisfied when measuring the resistance between the sensor terminals under two or more different temperature conditions.

OTHER PARTS

OTHER PARTS

M1554004000073

The following maintenance service points are the same as for the manual A/C.

Item		Reference page
On-vehicle service	Refrigerant level test	P.55A-48
	Magnetic clutch test	P.55A-48
	Compressor drive belt adjustment	P.55A-48
	A/C pressure sensor simple check	P.55A-48
	Charging	P.55A-49
	Correcting low refrigerant level in case the service can in used	P.55A-51
	Discharging system	P.55A-52
	Refilling of oil in the A/C system	P.55A-52
	Performance test	P.55A-52
	Refrigerant leak repair procedure	P.55A-53
	Compressor noise check	P.55A-54
	Power relay continuity check	P.55A-54
	Idle-up operation check	P.55A-55
	Clean air filter replacement procedure	P.55A-56

Item	Reference page
Heater unit and blower assembly	P.55A-60
Blower motor and outside/inside air selection damper control motor	P.55A-64
Evaporator and air thermo sensor	P.55A-66
A/C compressor	P.55A-68
Condenser and condenser fan motor	P.55A-72
Refrigerant line	P.55A-74
Ventilators	P.55A-75

NOTES