GROUP 55B

AUTOMATIC AIR CONDITIONER

CONTENTS

Continued on next page

GENERAL INFORMATION

M1554000100119

The heater and A/C system incorporating the heater and cooling units has reduced ventilation resistance to increase air volume and reduce noise.

SPECIFICATION

Item		Specification
Heater unit type		Two-layer full blow air mix method
Heater control type		Rotary type
A/C switch type		Push button type
Compressor type	Standard type	MSC90CA
	Large capacity type	MSC105CA
Cooling output		5.5 kW
Heating output	L.H. drive vehicles	5.0 kW
	R.H. drive vehicles	5.5 kW

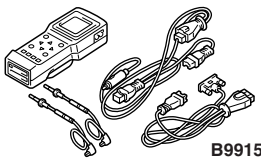
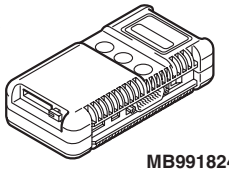
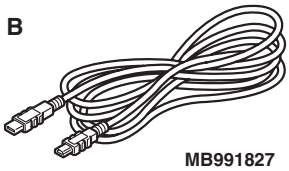
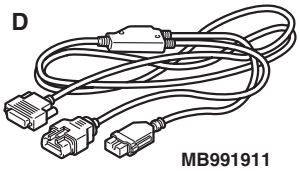
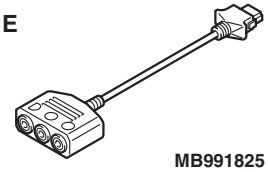
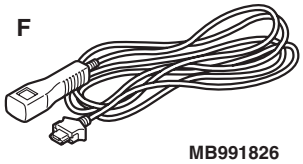
SERVICE SPECIFICATIONS

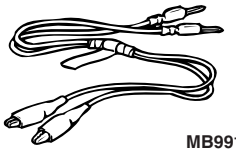
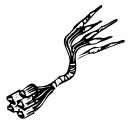
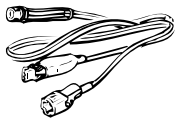
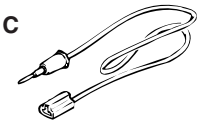
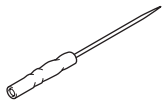
M1554000300083

Item		Standard value
Idle speed r/min	2000-Non-Turbo	750 ± 50
	2400	700 ± 50
Idle-up speed r/min		850 ± 50
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
Air gap (magnetic clutch) mm		0.3 – 0.5
A/C refrigerant temperature switch operating temperature °C	Less than 2 ohms	Slightly below 150
	No continuity	150 or more

SPECIAL TOOL

M1555000600140

Tool	Number	Name	Use
 B991502	MB991502	M.U.T.-II sub-assembly	Automatic A/C check
A  MB991824 B  MB991827 C  MB991910 D  MB991911 E  MB991825 F  MB991826 MB991955	MB991955 A: MB991824 B: MB991827 C: MB991910 D: MB991911 E: MB991825 F: MB991826	M.U.T.-III sub-assembly A: Vehicle Communication Interface (V. C. I.) B: M.U.T.-III USB cable C: M.U.T.-III main harness A (Vehicles with CAN communication system) D: M.U.T.-III main harness B (Vehicles without CAN communication system) E: M.U.T.-III measurement adapter F: M.U.T.-III trigger harness	Automatic A/C check **⚠ CAUTION** **M.U.T.-III main harness B (MB991911) should be used. M.U.T.-III main harness A should not be used for this vehicle.**

Tool	Number	Name	Use
 MB991529	MB991529	Diagnosis code check harness	Automatic A/C check with a voltmeter
A  B  C  D  DO NOT USE MB991223AZ	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
 MB992006	MB992006	Extra fine probe	Continuity check and voltage measurement at harness wire or connector

TROUBLESHOOTING

DIAGNOSIS TROUBLESHOOTING FLOW

M1554004700102

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

DIAGNOSIS FUNCTION

M1554004800176

How to read diagnosis code

Connect the M.U.T.-II/III 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

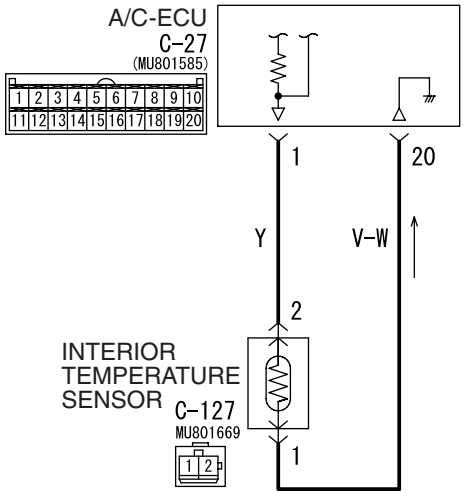
M1554004900140

Code No.	Diagnostic item	Reference page
11	Interior temperature senor system (open circuit)	P.55B-7
12	Interior temperature sensor system (short circuit)	
13	Outside thermo sensor system (open circuit)	P.55B-9
14	Outside thermo sensor system (short circuit)	
15	Heater water temperature sensor system (open circuit)	P.55B-11
16	Heater water temperature sensor system (short circuit)	
21	Air thermo sensor system (open circuit)	P.55B-13
22	Air thermo sensor system (short circuit)	
31	Air mixing damper control motor and potentiometer sensor system	P.55B-15
32	Mode selection damper control motor and potentiometer sensor system	P.55B-17
41	Air mixing damper control motor and potentiometer activating system	P.55B-19
42	Mode selection damper control motor and potentiometer activating system	P.55B-21

DIAGNOSTIC TROUBLE CODE PROCEDURES

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).

PROBABLE CAUSES

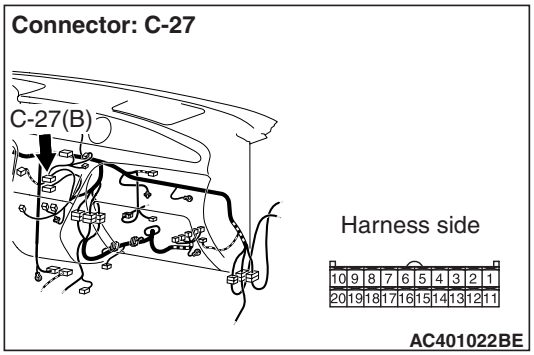
- Malfunction of the interior temperature sensor
- Damaged the wiring harness or connectors
- Malfunction of the automatic A/C control panel (A/C-ECU)

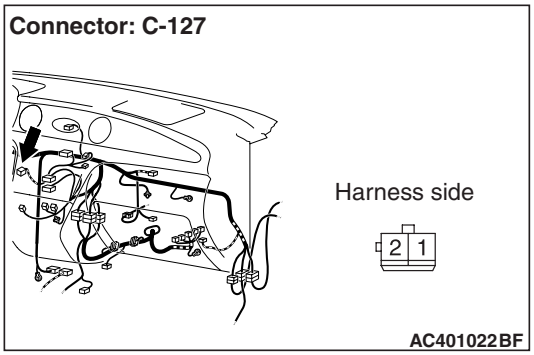
DIAGNOSIS PROCEDURE

STEP 1. Check the interior temperature sensor.
Refer to P.55B-90.

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

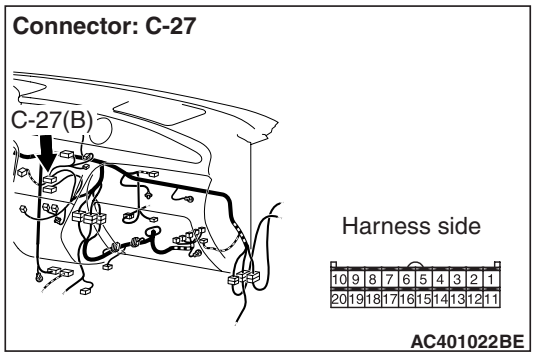
STEP 2. Connector check: C-27 A/C-ECU connector and C-127 interior temperature sensor connector

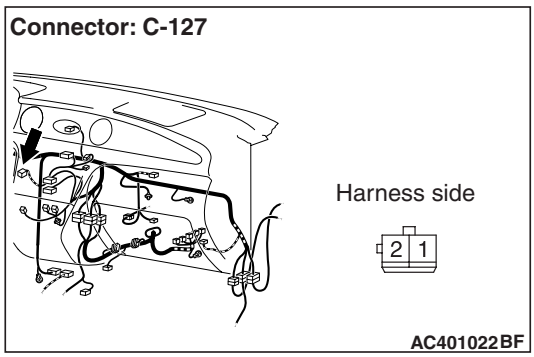




Q: Is the check result normal?
YES : Go to Step 3.
NO : Repair the connector.

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).



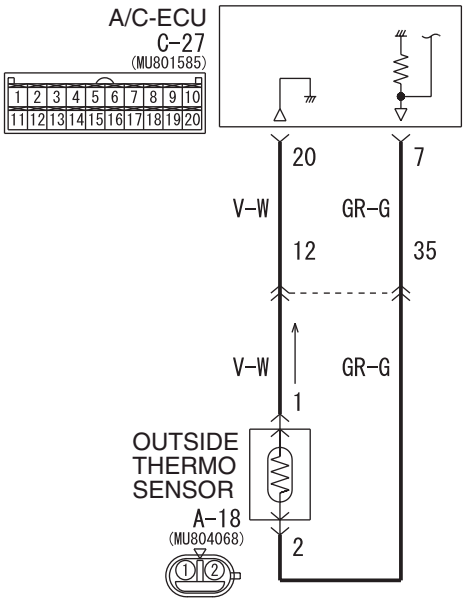


- Check the sensor signal line and earth line for open or short circuit.

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

Code No.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

W5Z55E008A
AC606236AB

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).

PROBABLE CAUSES

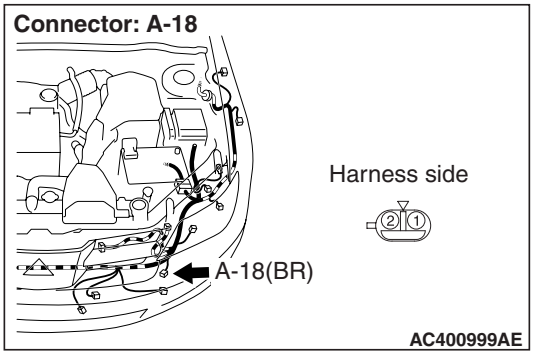
- Malfunction of the outside thermo sensor
- Damaged the wiring harness and connectors
- Malfunction of the automatic A/C control panel (A/C-ECU)

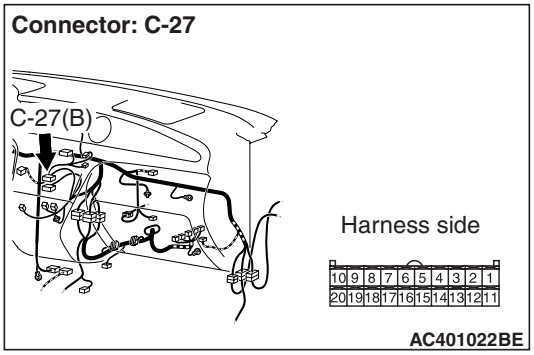
DIAGNOSIS PROCEDURE

STEP 1. Check the outside thermo sensor.
Refer to P.55B-92.

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

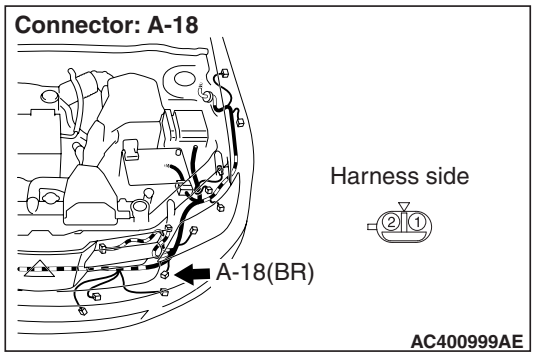
STEP 2. Connector check: A-18 outside thermo sensor connector and C-27 A/C-ECU connector

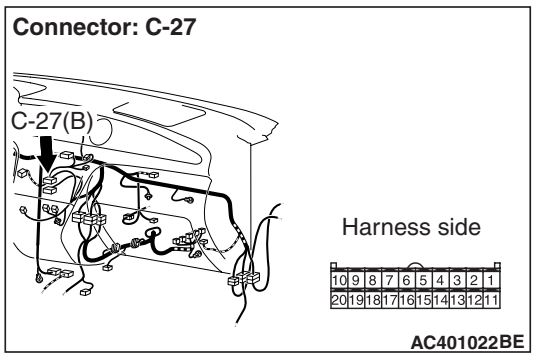




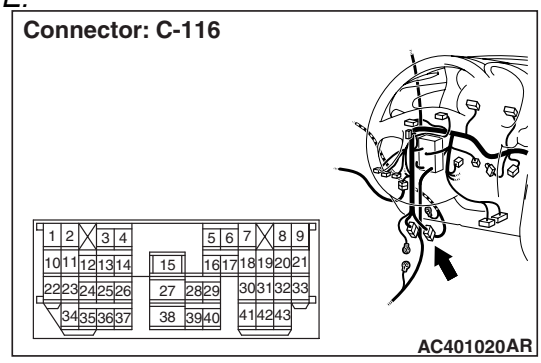
Q: Is the check result normal?
YES : Go to Step 3.
NO : Repair the connector.

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:



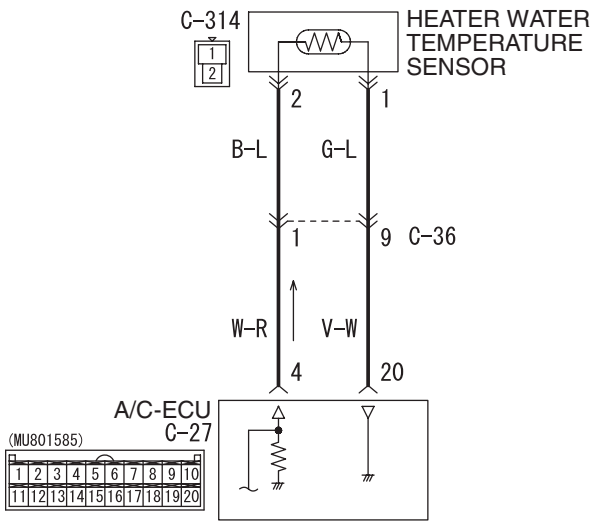
Prior to the wiring harness inspection, check intermediate connector C-116, and repair if necessary.

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

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

Code No.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).

PROBABLE CAUSES

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

DIAGNOSIS PROCEDURE

STEP 1. Check the heater water temperature sensor.

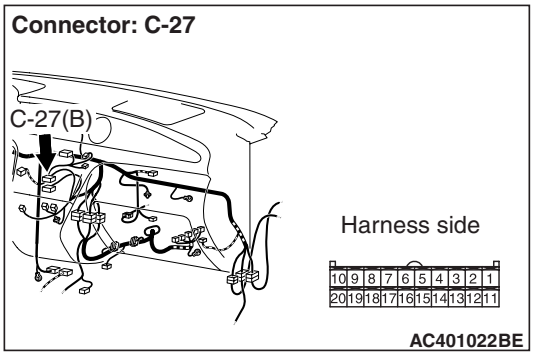
Refer to P.55B-90.

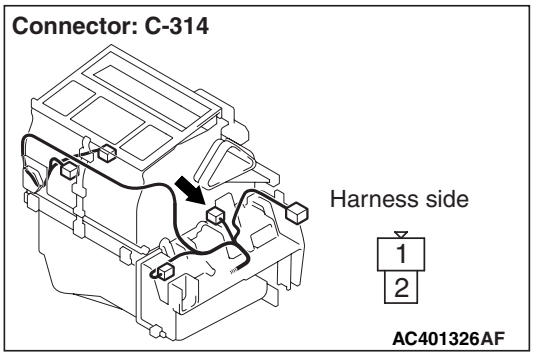
Q: Is the check result normal?

YES : Go to Step 2.

NO : Replace the heater water temperature sensor.

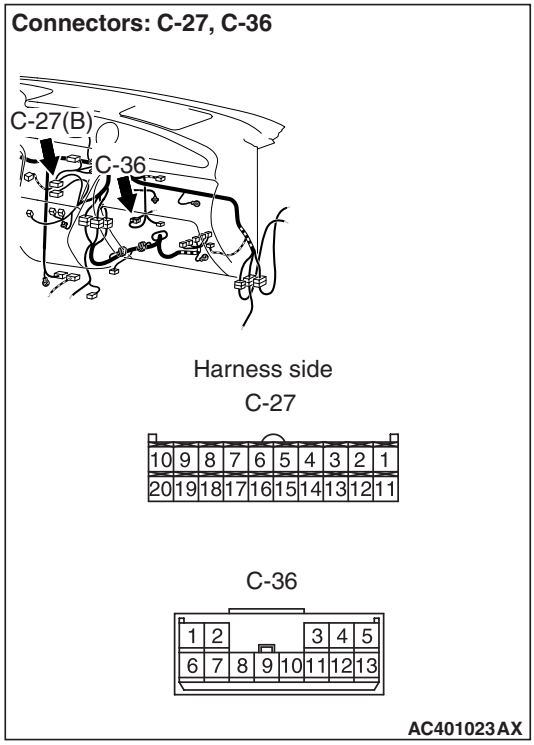
STEP 2. Connector check: C-27 A/C-ECU connector and C-314 heater water temperature connector

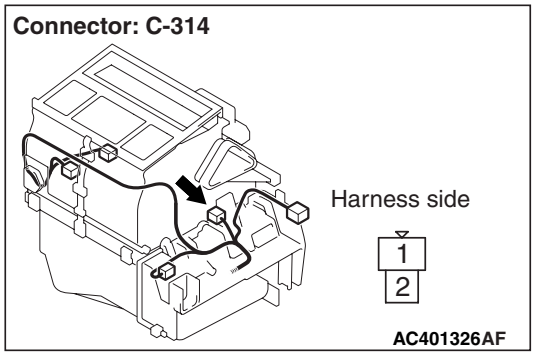




Q: Is the check result normal?
YES : Go to Step 3.
NO : Repair the connector.

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).





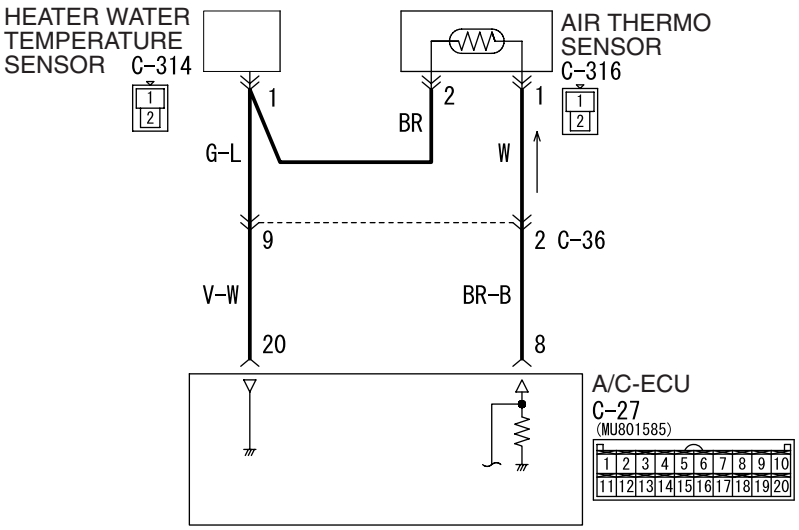
NOTE: Prior to the wiring harness inspection, check intermediate connector C-36, and repair if necessary.

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

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

Code No.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).

PROBABLE CAUSES

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

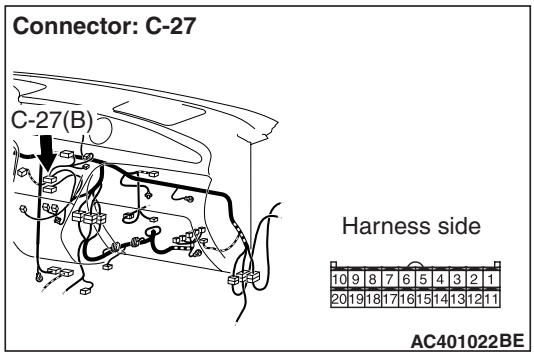
DIAGNOSIS PROCEDURE

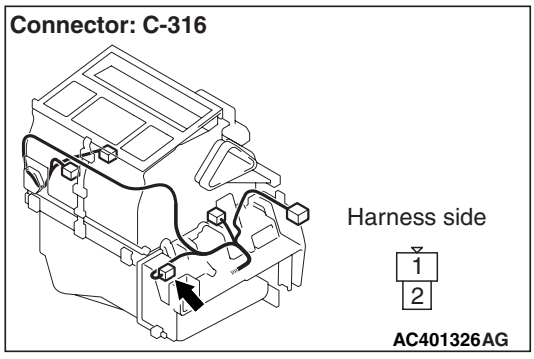
STEP 1. Check the air thermo sensor.

Refer to P.55B-92.

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

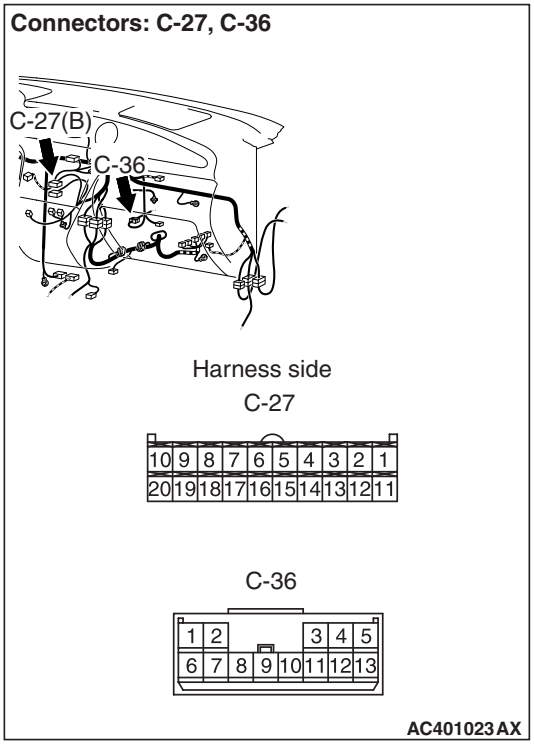
STEP 2. Connector check: C-27 A/C-ECU connector and C-316 air thermo sensor connector

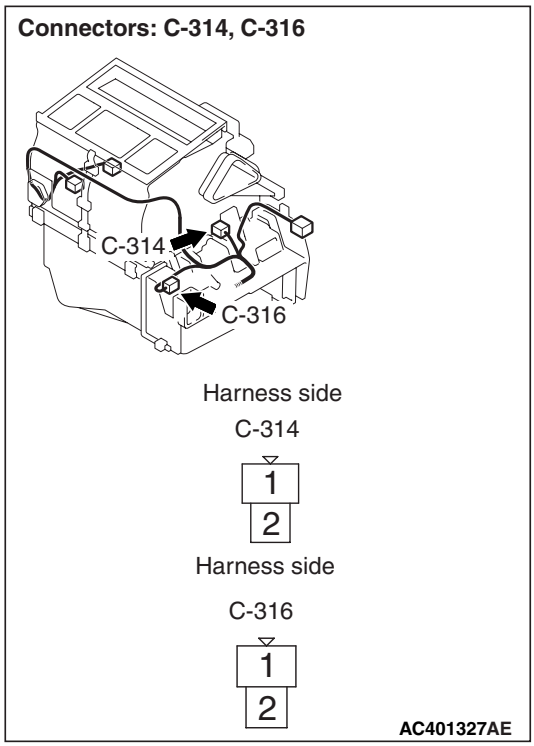




Q: Is the check result normal?
YES : Go to Step 3.
NO : Repair the connector.

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.

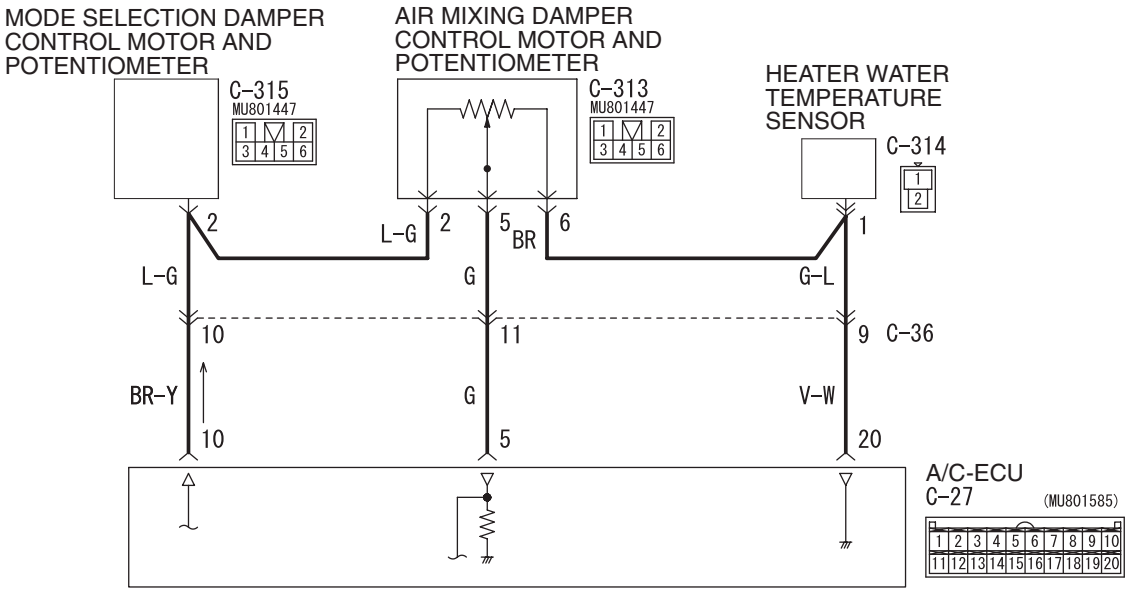
Q: Is the check result normal?

YES : Replace the automatic A/C control panel (A/C-ECU)

NO : Repair the wiring harness.

Code No.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.

PROBABLE CAUSES

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

DIAGNOSIS PROCEDURE

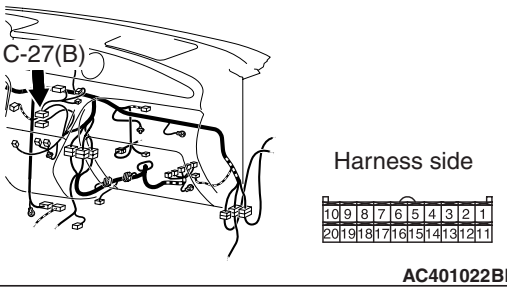
STEP 1. Check the air mixing damper control motor and potentiometer.

Refer to P.55B-88.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Replace the air mixing damper control motor and potentiometer.

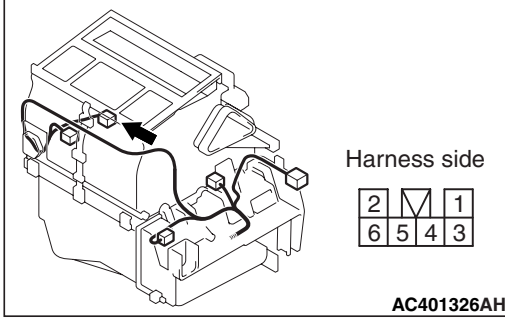
STEP 2. Connector check: C-27 A/C-ECU connector and C-313 air mixing damper control motor and potentiometer connector

Connector: C-27



AC401022BE

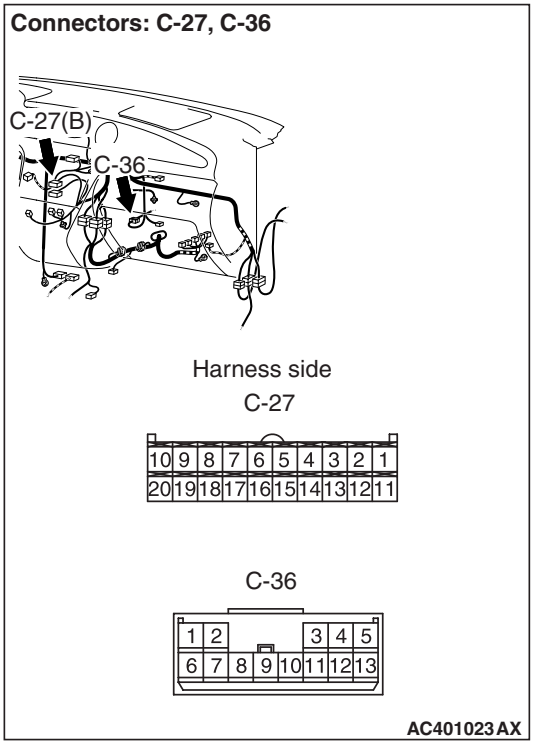
Connector: C-313

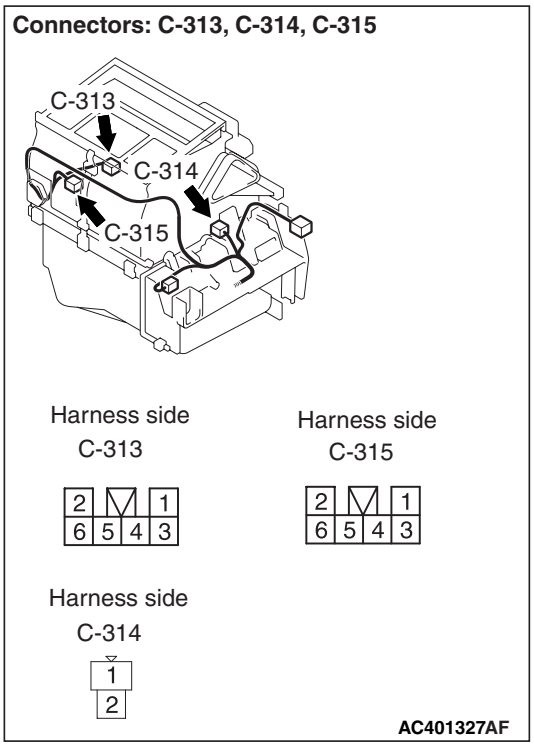


AC401326AH

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.

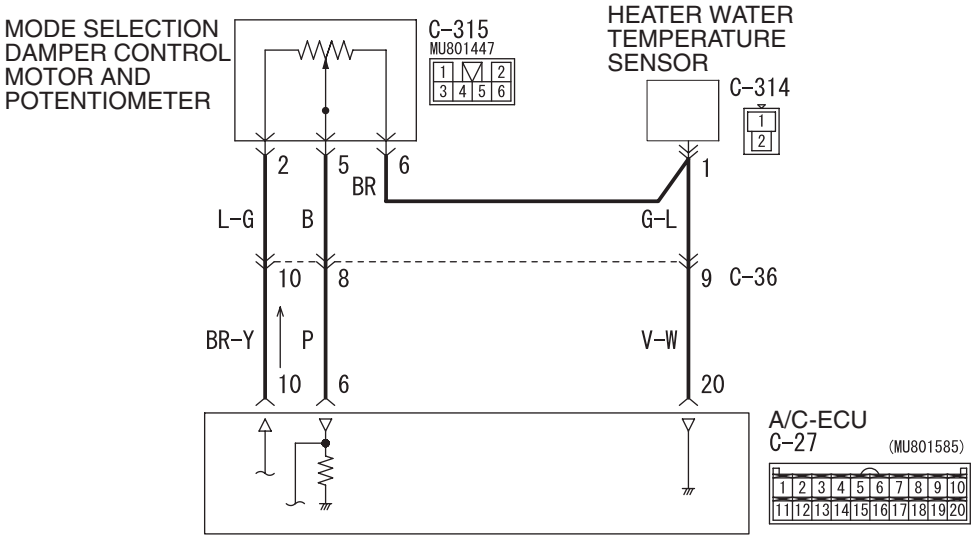
Q: Is the check result normal?

YES : Replace the automatic A/C control panel (A/C-ECU).

NO : Repair the wiring harness.

Code No.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.

PROBABLE CAUSES

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

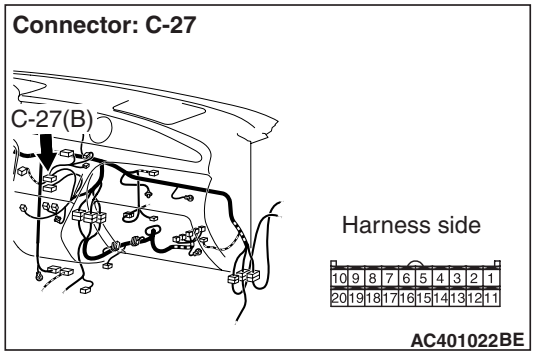
DIAGNOSIS PROCEDURE

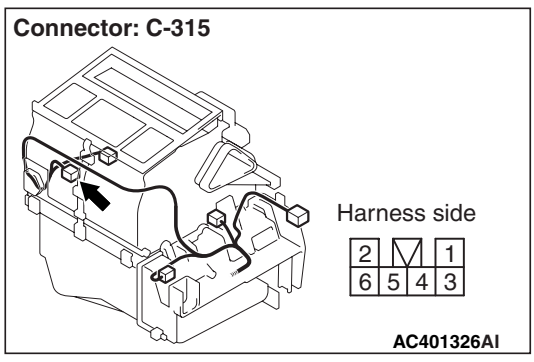
STEP 1. Check the mode selection damper control motor and potentiometer.

Refer to P.55B-88.

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

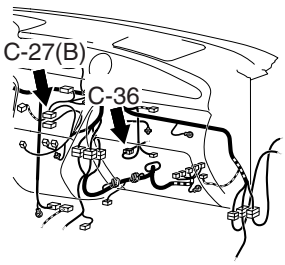




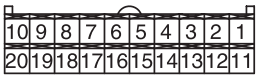
Q: Is the check result normal?
YES : Go to Step 3.
NO : Repair the connector.

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).

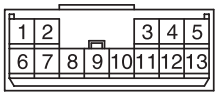
Connectors: C-27, C-36



Harness side
C-27

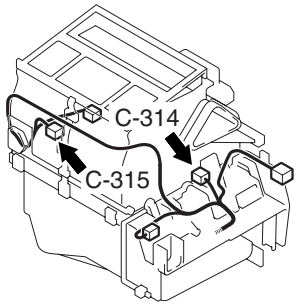


C-36



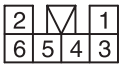
AC401023AX

Connectors: C-314, C-315



Harness side
C-314

Harness side
C-315



AC401327AG

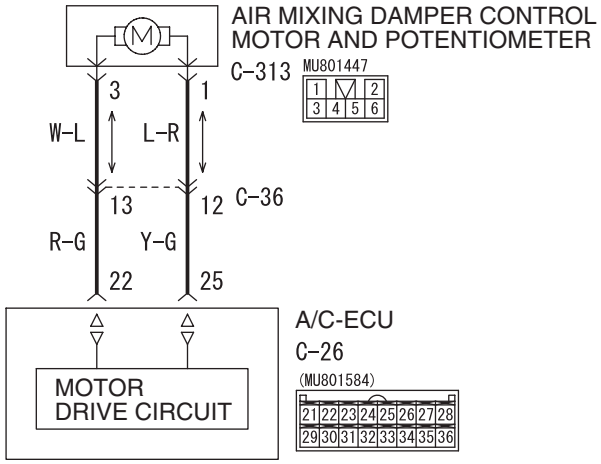
NOTE: Prior to the wiring harness inspection, check intermediate connector C-36 and heater water temperature sensor connector C-314, and repair if necessary.

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

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

Code No.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.

PROBABLE CAUSES

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

DIAGNOSIS PROCEDURE

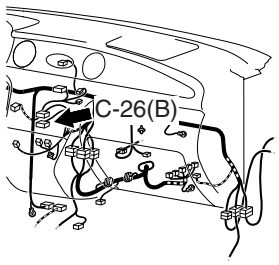
STEP 1. Check the air mixing damper control motor and potentiometer.

Refer to P.55B-88.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Replace the air mixing damper control motor and potentiometer.

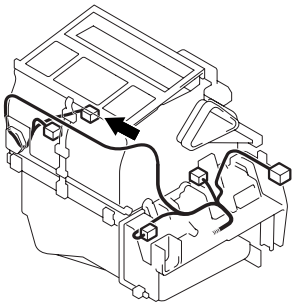
STEP 2. Connector check: C-26 A/C-ECU connector and C-313 air mixing damper control motor and potentiometer connector

Connector: C-26



AC401022BG

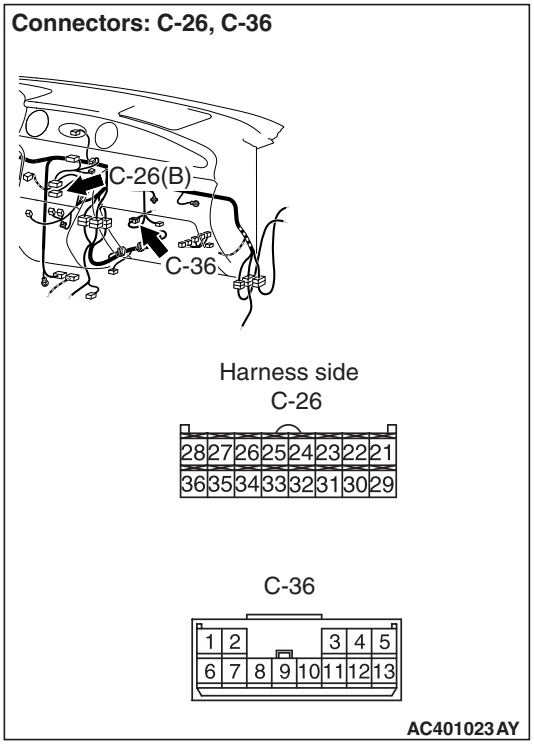
Connector: C-313

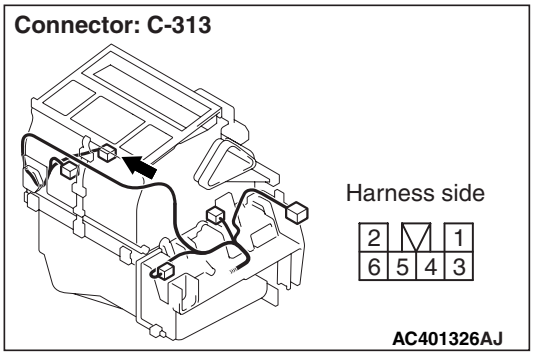


AC401326AJ

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.

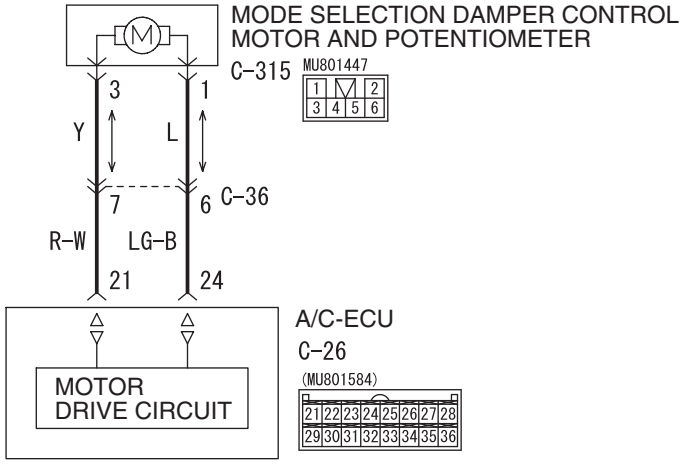
Q: Is the check result normal?

YES : Malfunction of the automatic A/C control panel (A/C-ECU)

NO : Repair the wiring harness.

Code No.42: Mode Selection Damper Control Motor and Potentiometer Activating 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.

PROBABLE CAUSES

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

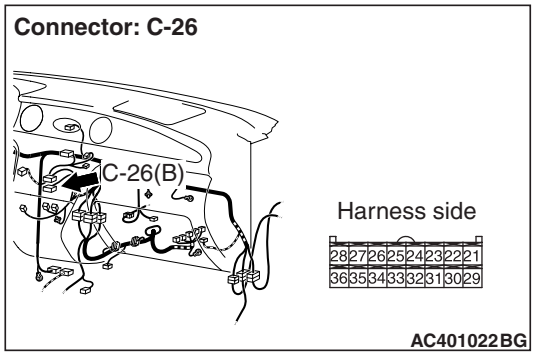
DIAGNOSIS PROCEDURE

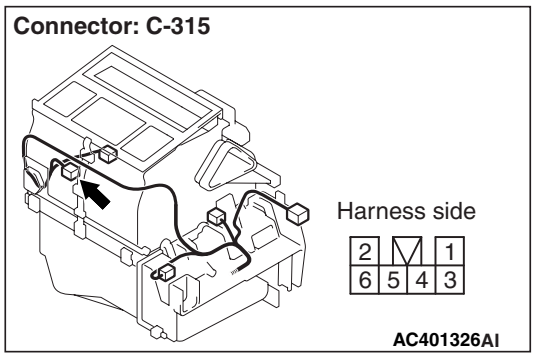
STEP 1. Check the mode selection damper control motor and potentiometer.

Refer to P.55B-88.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Replace the mode selection damper control motor and potentiometer.

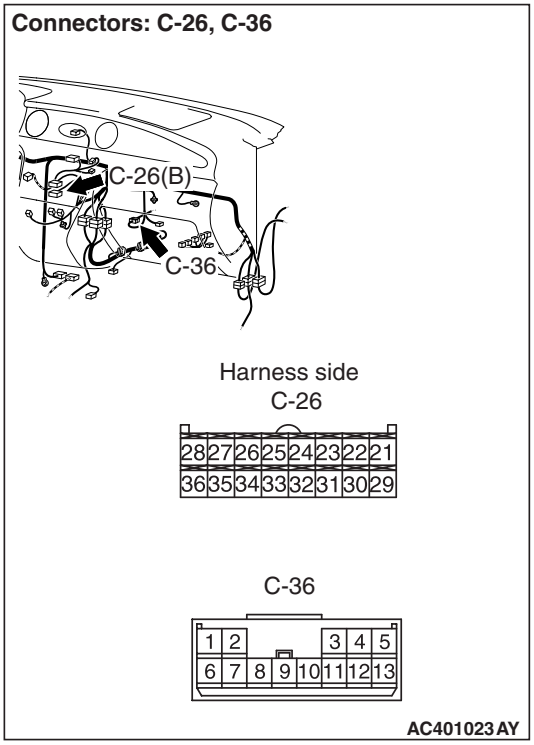
STEP 2. Connector check: C-26 A/C-ECU connector and C-315 mode selection damper control motor and potentiometer connector

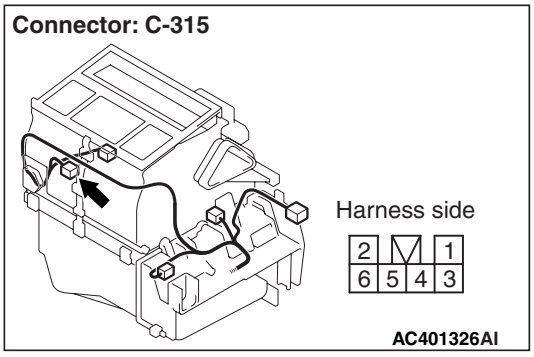




Q: Is the check result normal?
YES : Go to Step 3.
NO : Repair the connector.

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 automatic A/C control panel (A/C-ECU).

NO : Repair the wiring harness.

TROUBLE SYMPTOM CHART

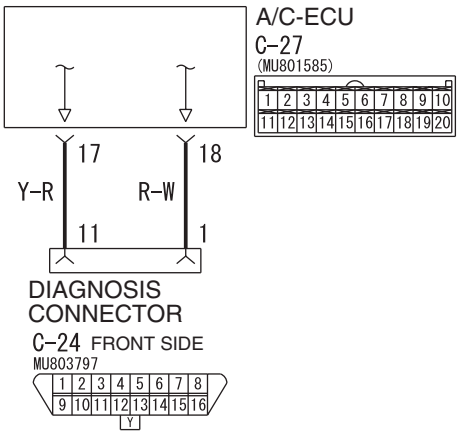
M1554005000377

Symptom	Inspection procedure number	Reference page
Communication with the M.U.T.-II/III is not possible.	1	P.55B-24
The A/C does not work at all.	2	P.55B-26 <2000-Non-Turbo>, P.55B-38 <2000-Turbo, 2400>
A/C outlet air temperature cannot be set.	3	P.55B-50
The blower does not work.	4	P.55B-51
The blower air volume cannot be changed.	5	P.55B-59
When sunlight intensity changes, air outlet temperature does not change.	6	P.55B-61
The A/C indicator flashes.	7	P.55B-63
The inside/outside air changeover is impossible.	8	P.55B-64
Defogger function does not operate.	9	P.55B-67
Malfunction of the A/C-ECU power supply system.	10	P.55B-74

SYMPTOM PROCEDURES

Inspection Procedure 1: Communication with the M.U.T.-II/III is not Possible.

Diagnosis 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 : Grey R : Red P : Pink V : Violet PU : Purple

W6Z55E000A

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 cannot communicate with the M.U.T.-II/III, the diagnosis line between the A/C-ECU and the diagnosis connector may be defective.

PROBABLE CAUSES

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

DIAGNOSIS PROCEDURE

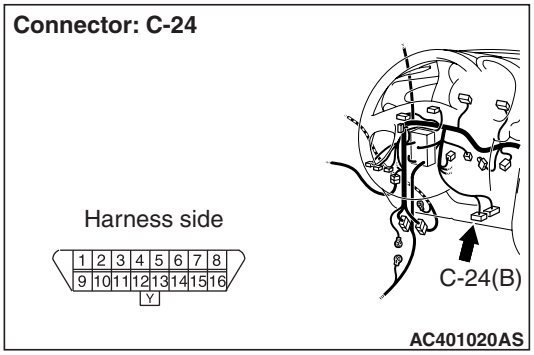
STEP 1. Check the communication with other systems.

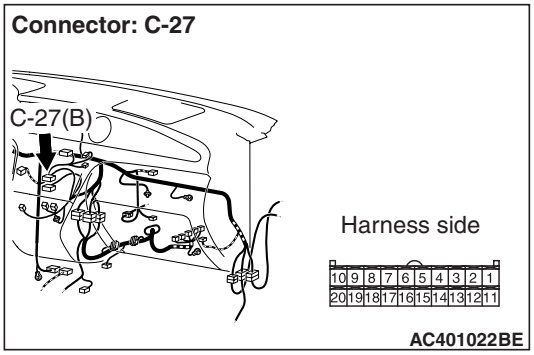
Q: Is the communication with the other systems possible using the M.U.T.-II/III?
YES : Go to Step 2.
NO : Check the diagnosis line using the M.U.T.-II/III, and repair if necessary.

STEP 2. Check operations of the A/C, rear window defogger and outside/inside air selection damper control motor.

Q: Does the A/C, rear window 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-74."

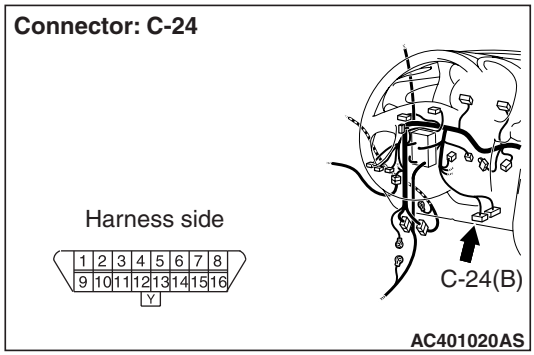
STEP 3. Connector check: C-27 A/C-ECU connector and C-24 diagnosis connector

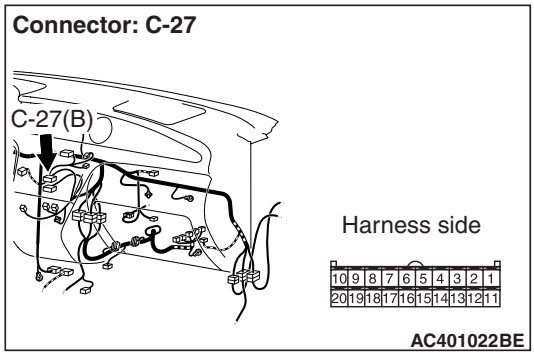




Q: Is the check result normal?
YES : Go to Step 4.
NO : Repair the connector.

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).



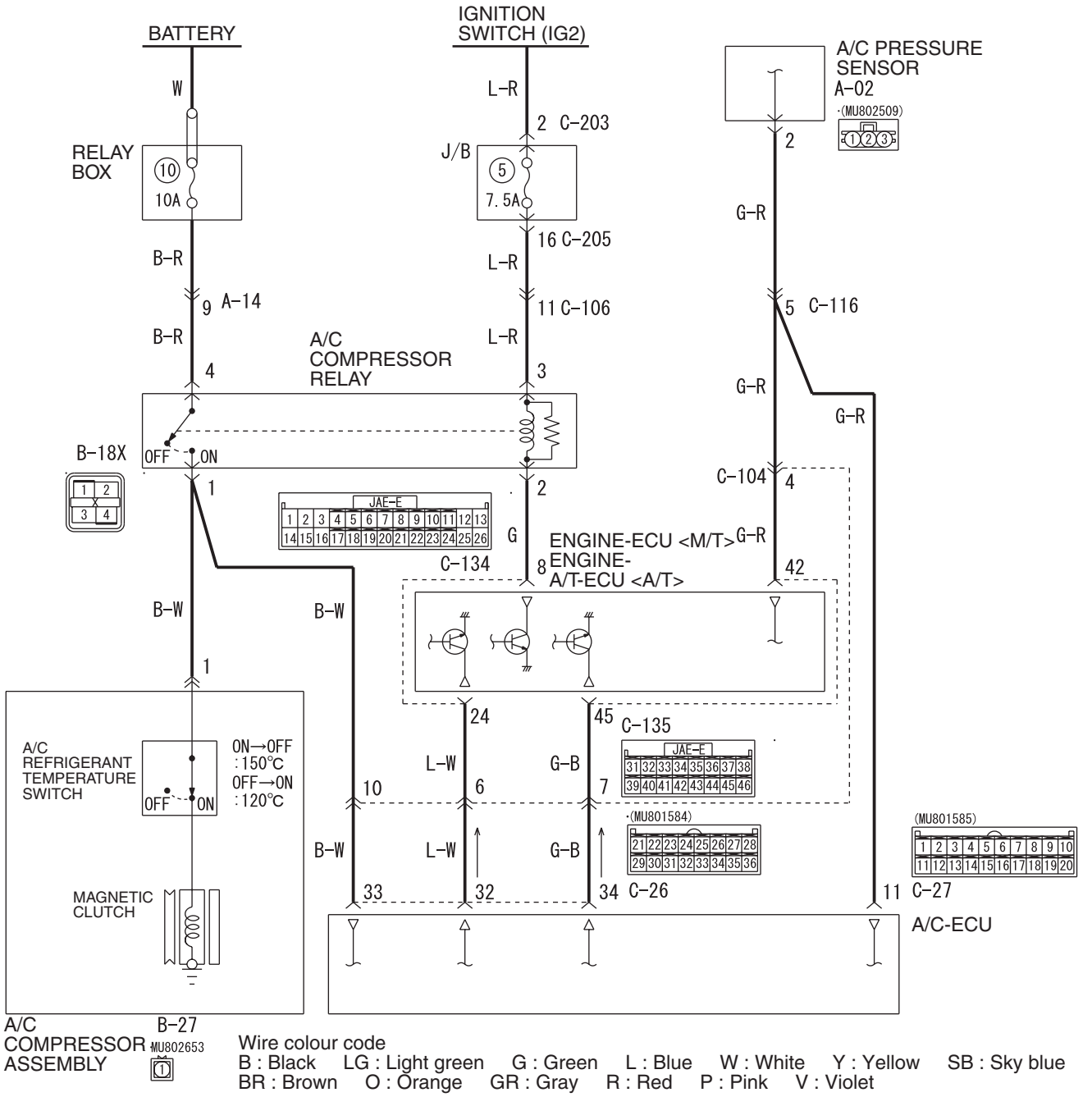


- Check the communication lines for open or short circuit.

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

Inspection Procedure 2: The A/C does not Work at all. <2000-Non-turbo>

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

W5Z55E002A

CIRCUIT OPERATION

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

PROBABLE 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 automatic A/C control panel (A/C-ECU)

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-II/III 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-6.

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 rear window defogger and outside/inside air selection damper control motor operation.

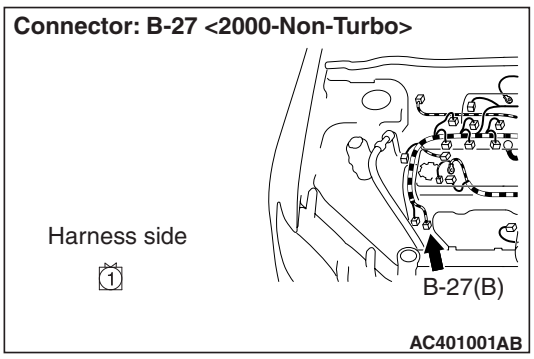
Q: Do the rear window defogger and outside/inside air selection damper control motor work normally?
YES : Go to Step 4.
NO : Refer to Inspection procedure 10 "Malfunction of the A/C-ECU power supply system P.55B-74."

STEP 4. Check the A/C compressor.

Check the A/C compressor for compressor oil leaks.

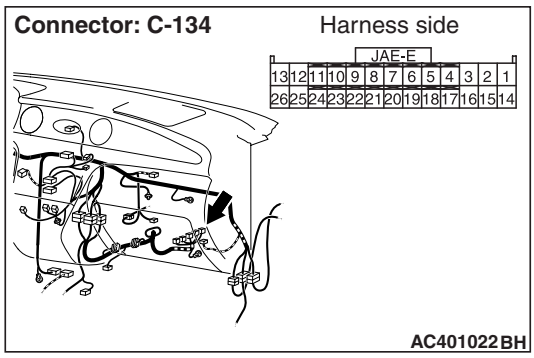
Q: Is the check result satisfactory?
YES : Go to Step 5.
NO : Replace the A/C compressor or the expansion valve.

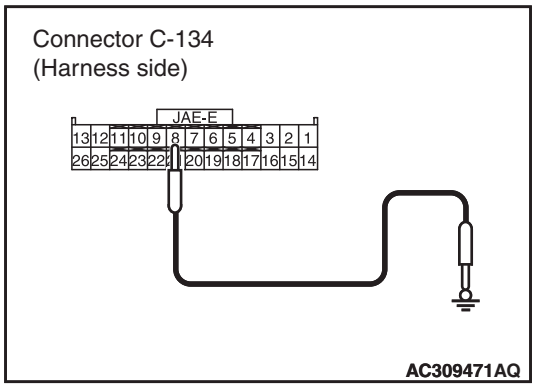
STEP 5. Voltage measurement at B-27 A/C compressor connector.



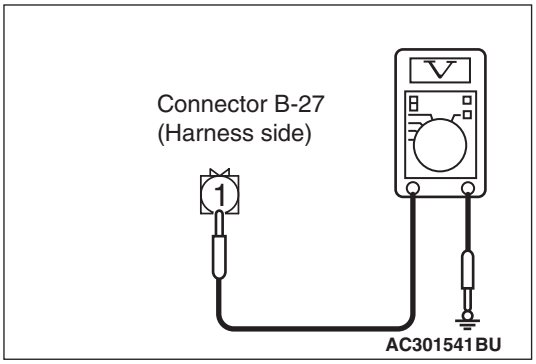
(1) Disconnect the connector, and measure at the wiring harness side.

(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

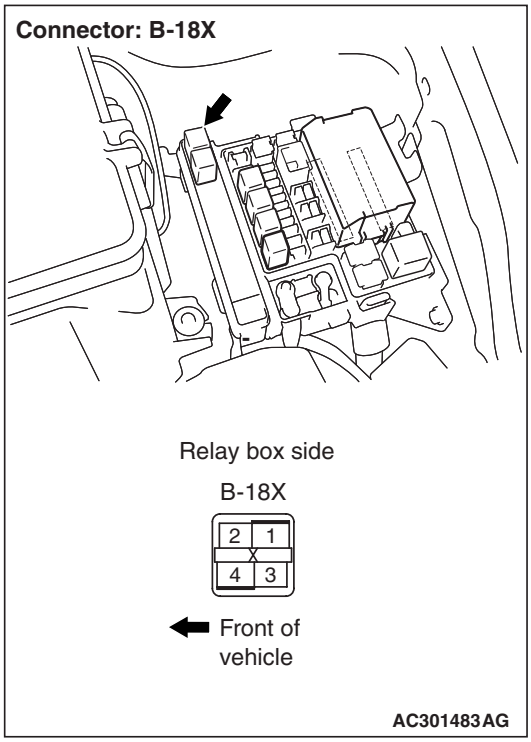
Q: Is the check result normal?
YES : Go to Step 17.
NO : Go to Step 6.

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

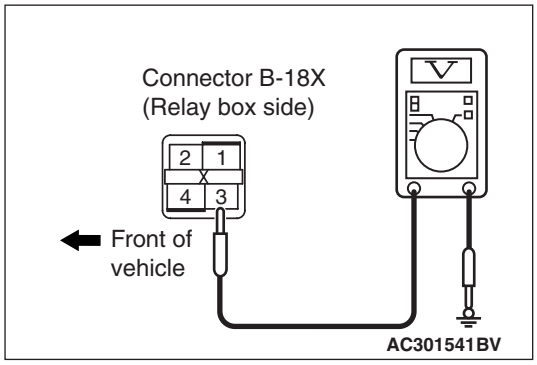
Refer to GROUP 55A - On vehicle service, power relay P.55A-55.

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

STEP 7. Voltage measurement 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.

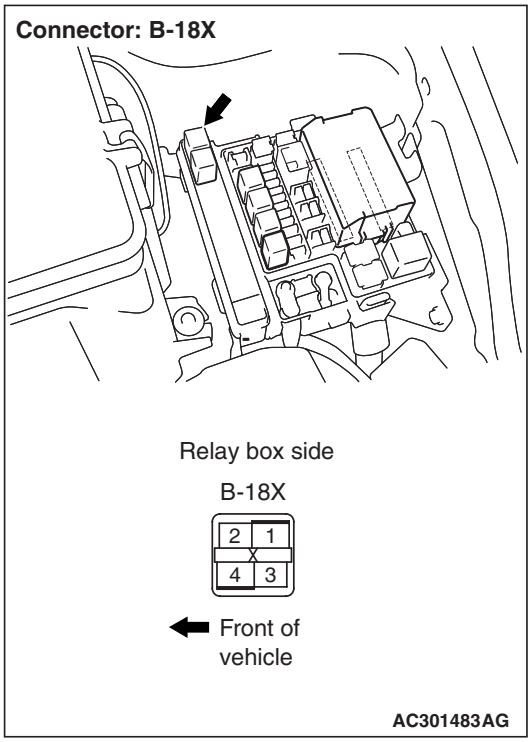


(3) Voltage between terminal 3 and body earth.

OK: System voltage

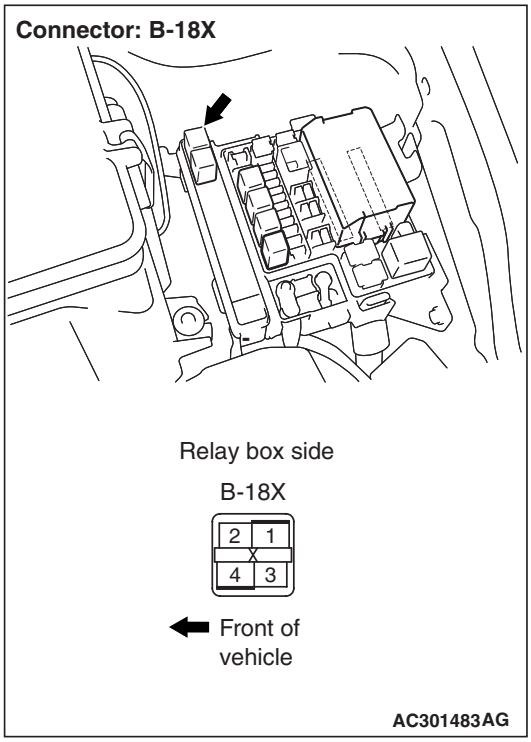
Q: Is the check result normal?
YES : Go to Step 10.
NO : Go to Step 8.

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

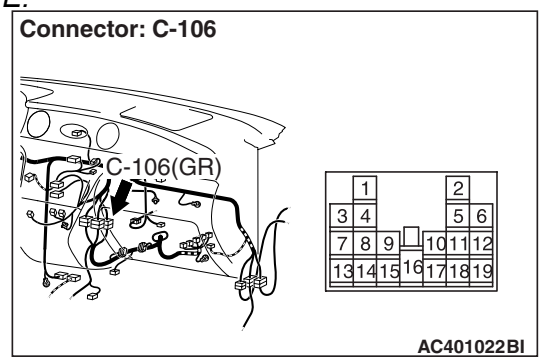


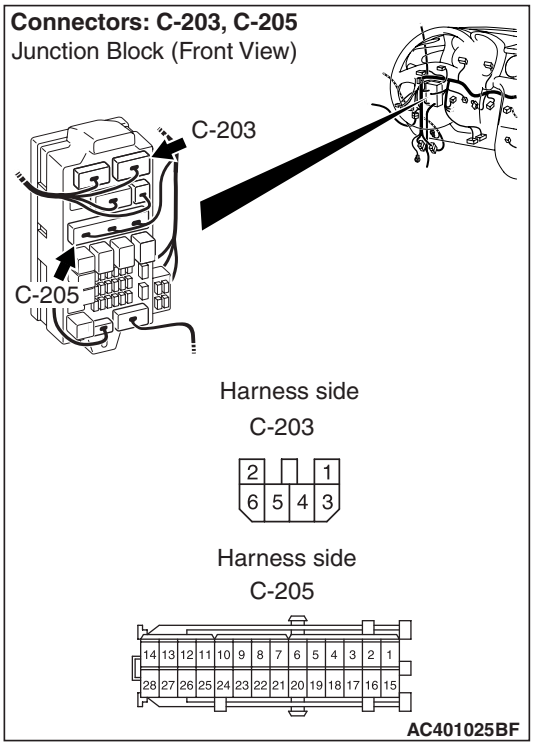
Q: Is the check result normal?
YES : Go to Step 9.
NO : Repair the connector.

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-205, C-203 and intermediate connector C-106, and repair if necessary.

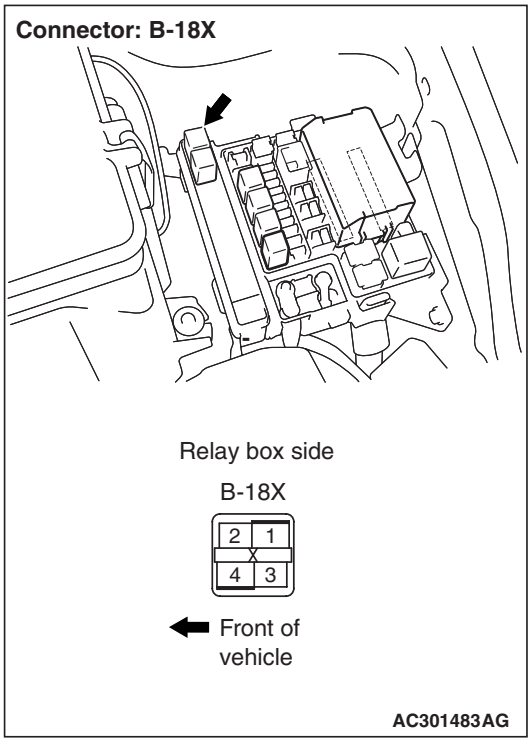
- Check the A/C compressor relay power supply line for open circuit.

Q: Is the check result normal?

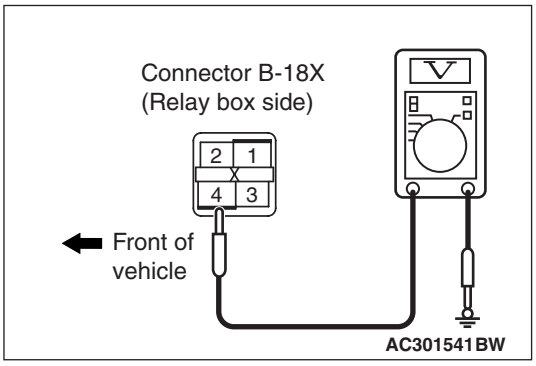
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-6).

NO : Repair the wiring harness.

STEP 10. Voltage measurement 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.

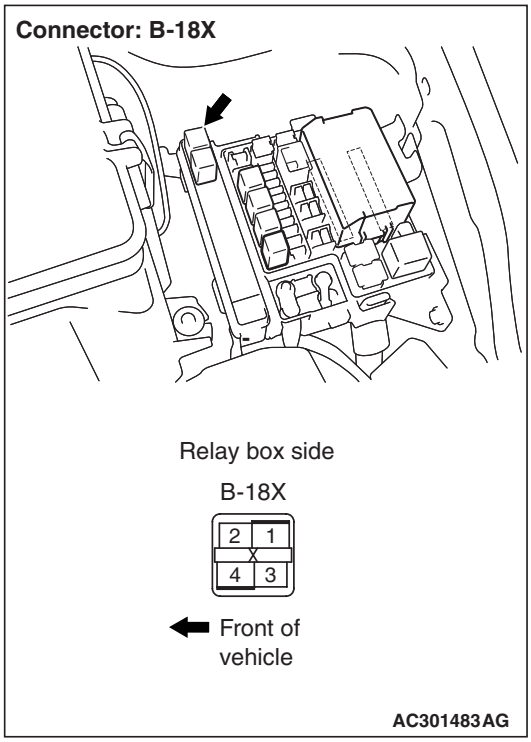
OK: System voltage

Q: Is the check result normal?

YES : Go to Step 13.

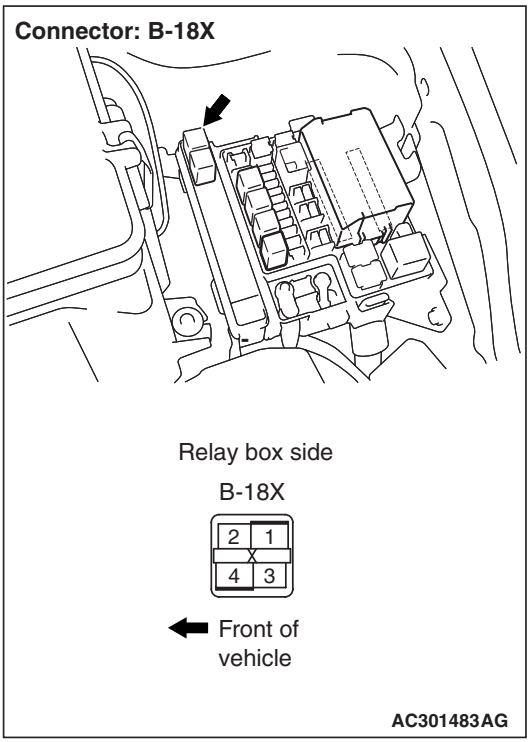
NO : Go to Step 11.

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

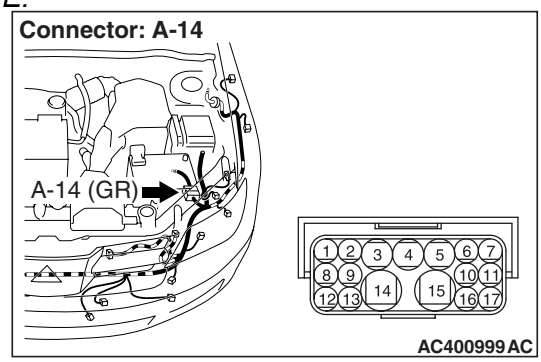


Q: Is the check result normal?
YES : Go to Step 12.
NO : Repair the connector.

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



NOTE:

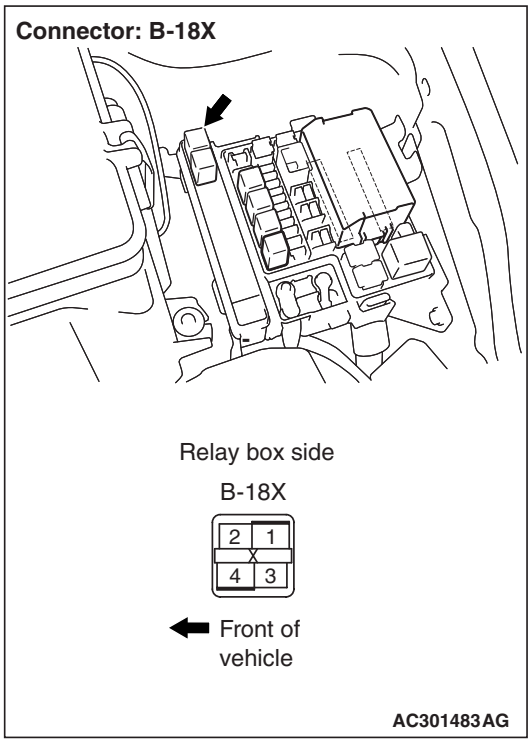


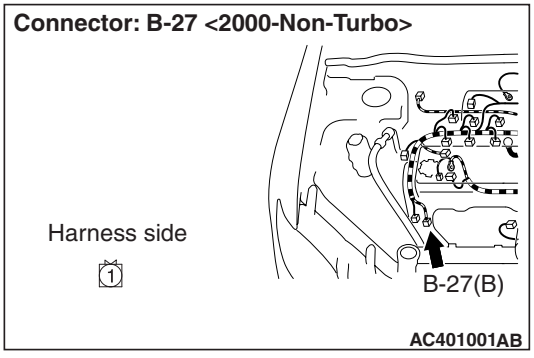
Prior to the wiring harness inspection, check intermediate connector A-14, and repair if necessary.

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

Q: Is the check result normal?
YES : Check that the A/C works normally.
NO : Repair the wiring harness. Check that the A/C works normally.

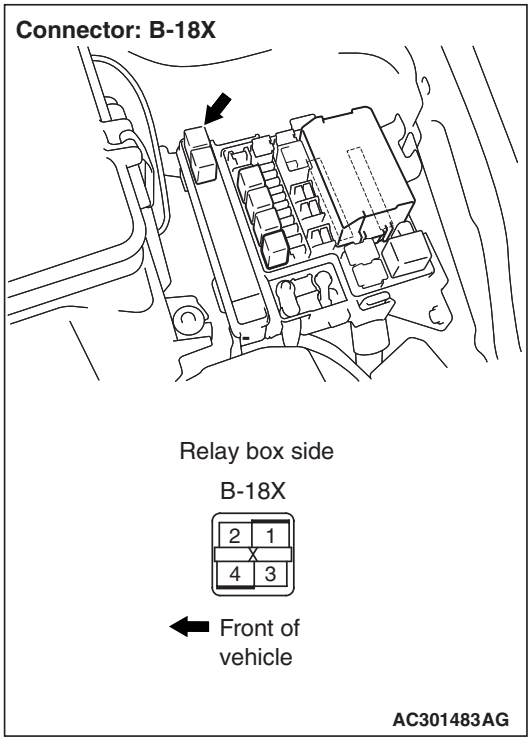
STEP 13. Connector check: B-18X A/C compressor relay connector and B-27 A/C compressor connector

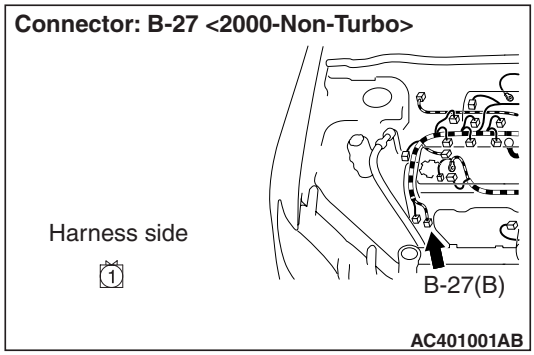




Q: Is the check result normal?
YES : Go to Step 14.
NO : Repair the connector.

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.

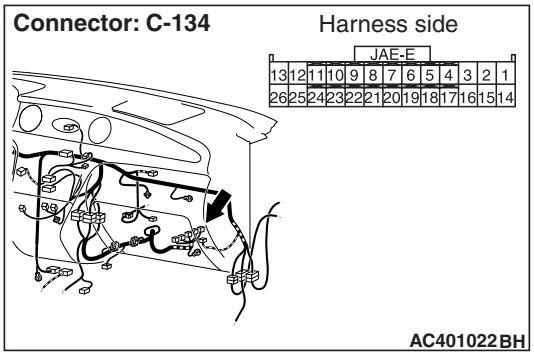


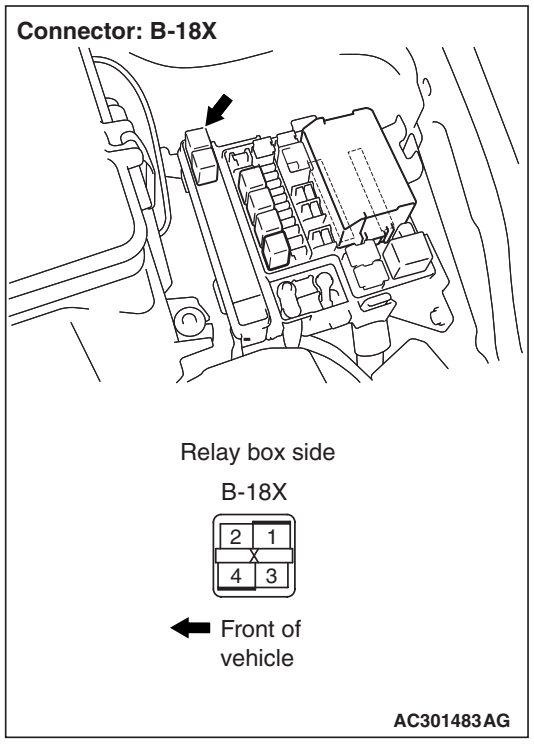


- Check the A/C compressor relay power supply line for open circuit.

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

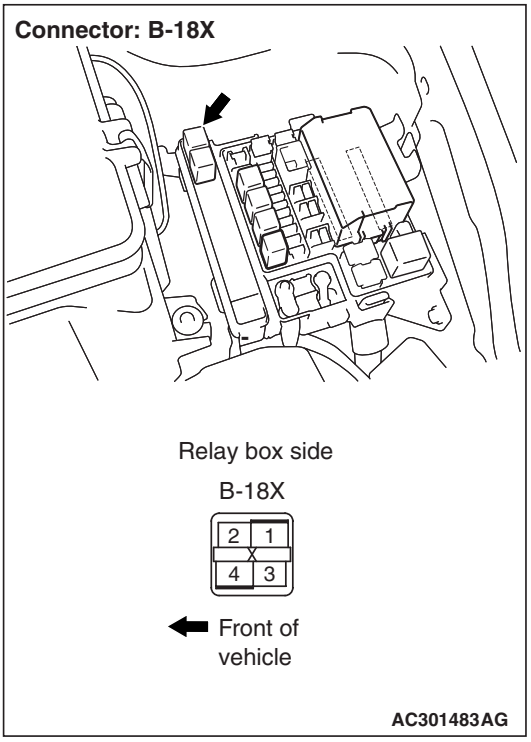


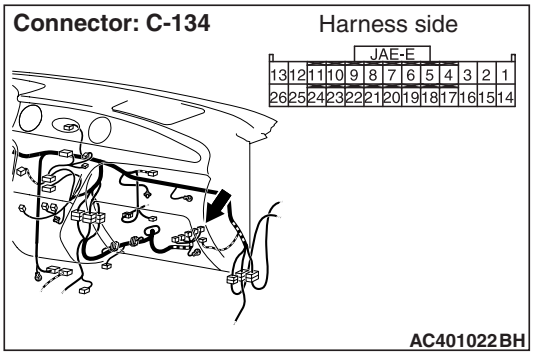


- Check the A/C compressor relay earth line for open circuit.

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

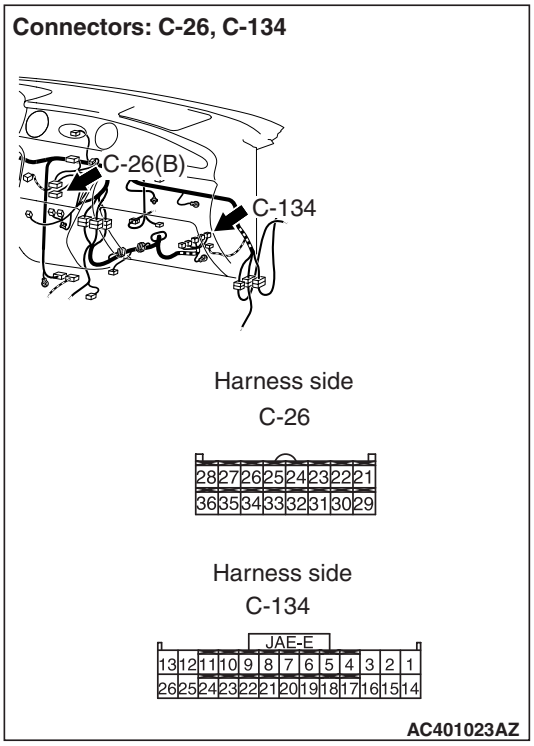
STEP 16. Check the wiring harness between C-134 engine-ECU connector terminal No.8 and B-18X A/C compressor relay connector terminal No.2.





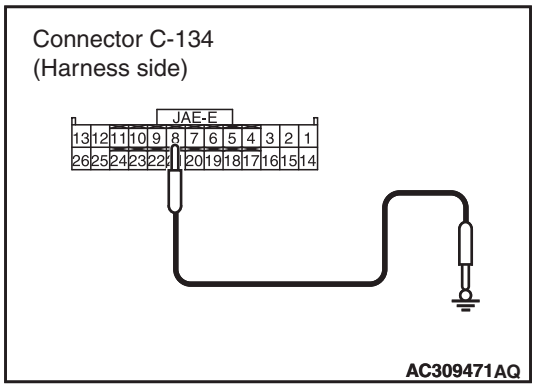
Q: Is the check result normal?
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-6).
NO : Repair the wiring harness.

STEP 17. Voltage measurement at C-26 A/C-ECU connector.

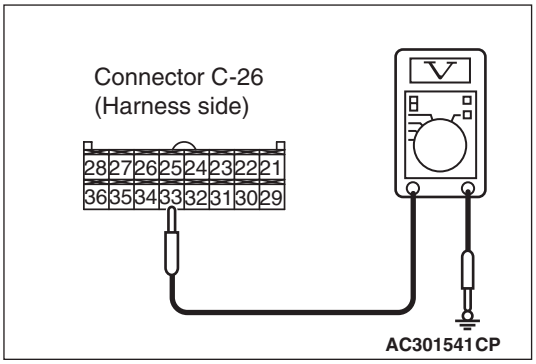


(1) Disconnect the connector, and measure at the wiring harness side.

(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.

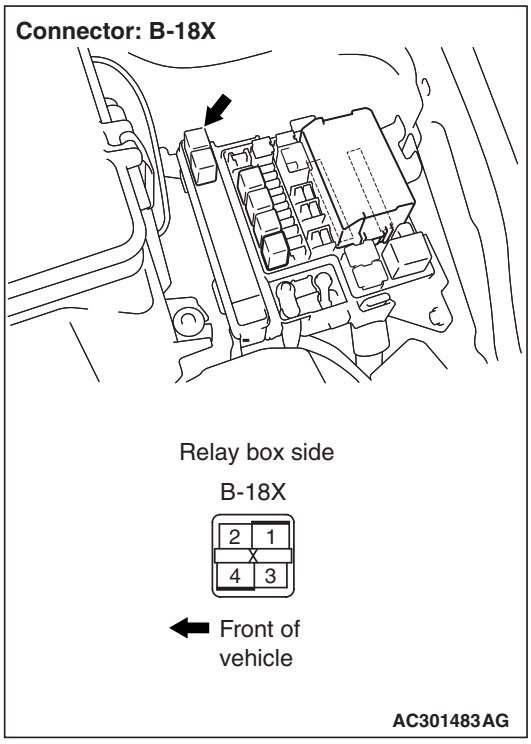
OK: System voltage

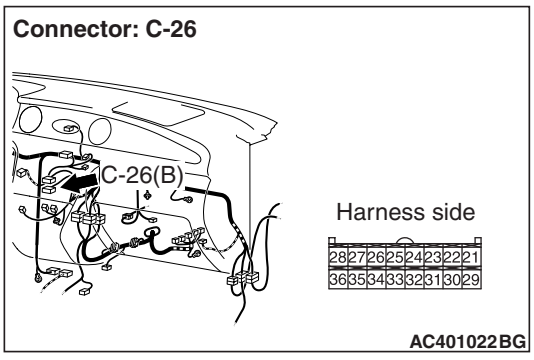
Q: Is the check result normal?

YES : Go to Step 20.

NO : Go to Step 18.

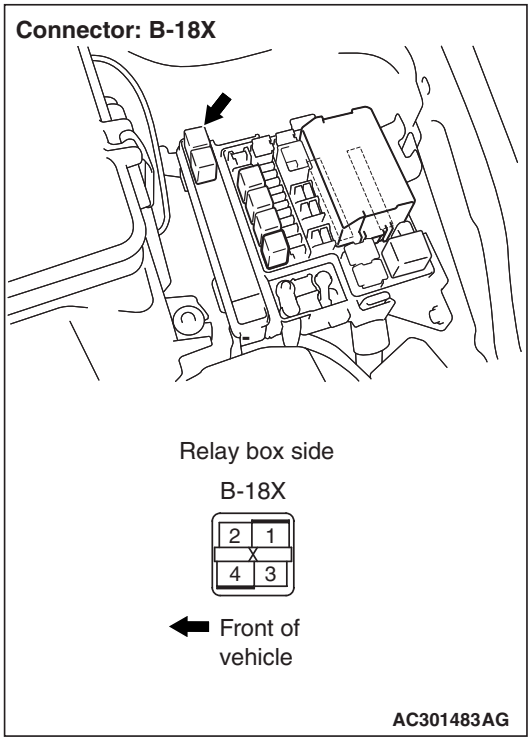
STEP 18. Connector check: B-18X A/C compressor relay connector and C-26 A/C-ECU connector

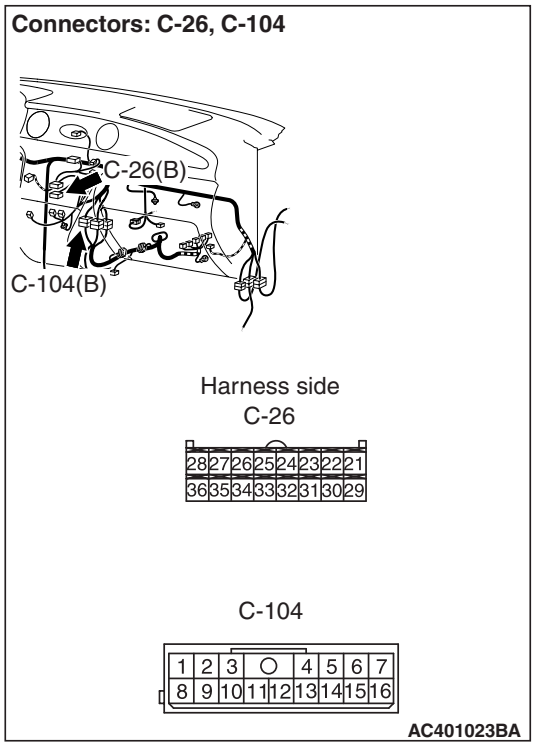




Q: Is the check result normal?
YES : Go to Step 19.
NO : Repair the connector.

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-49.

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.55B-97.

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

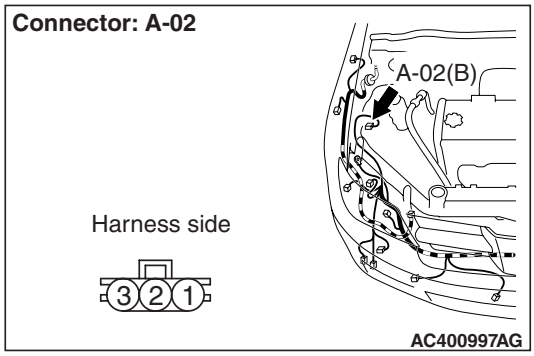
STEP 22. Check the refrigerant level.
Refer to P.55A-49.

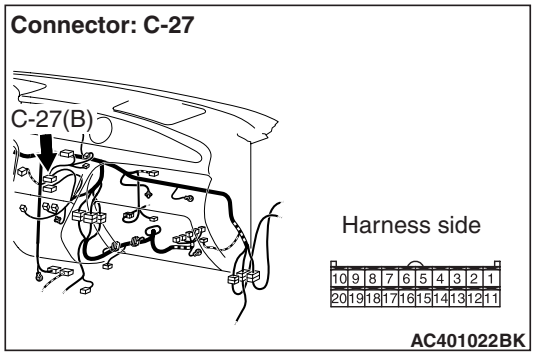
Q: Is the refrigerant level correct?
YES : Go to Step 23.
NO : Correct the refrigerant level (Refer to On-vehicle Service P.55A-50).

STEP 23. Check the A/C pressure sensor operation.
Refer to P.55A-50.

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

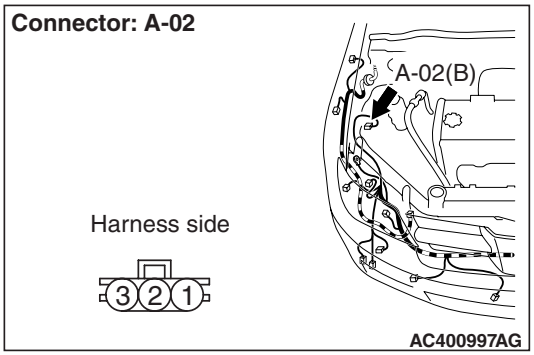
STEP 24. Connector check: A-02 A/C pressure sensor connector and C-27 A/C-ECU connector

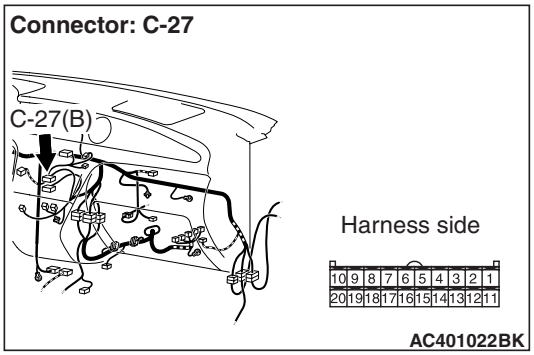




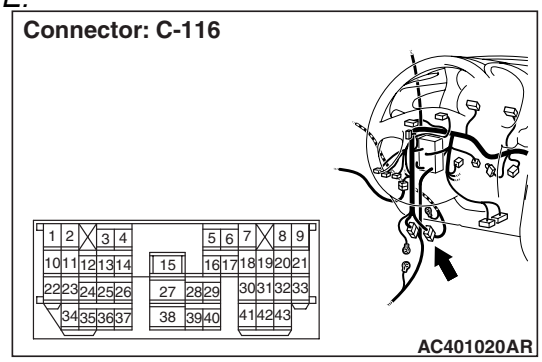
Q: Is the check result normal?
YES : Go to Step 25.
NO : Repair the connector.

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:

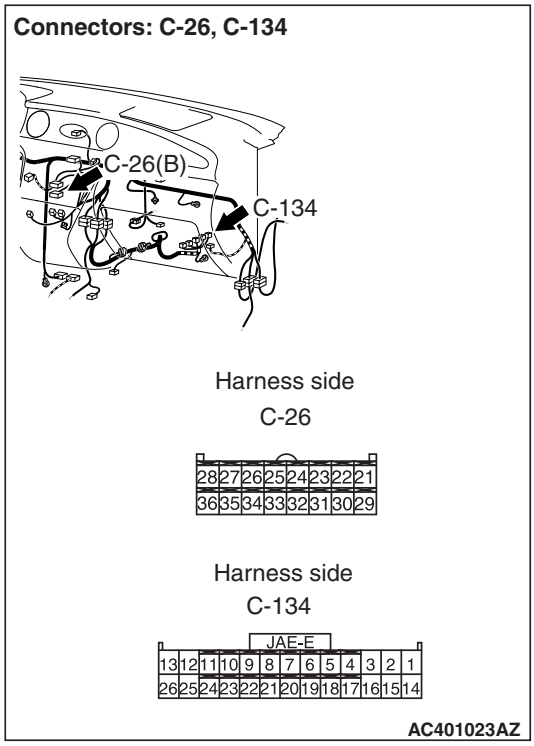


Prior to the wiring harness inspection, check intermediate connector C-116, and repair if necessary.

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

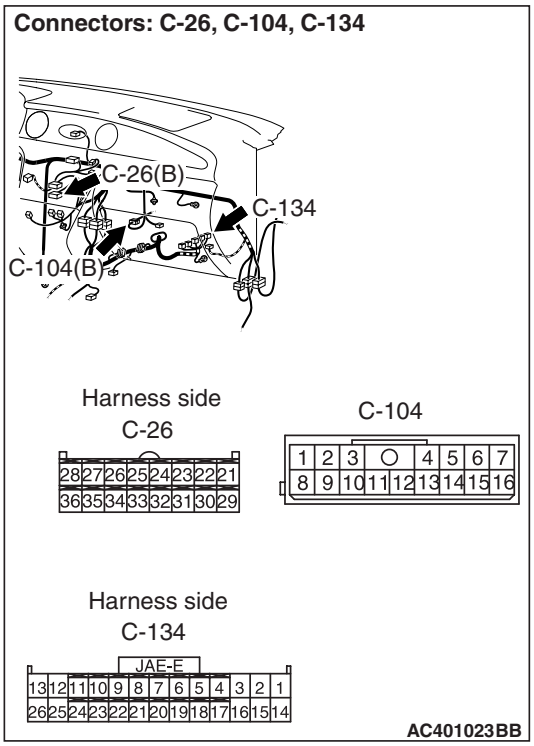
Q: Is the check result normal?
YES : Go to Step 26.
NO : Repair the wiring harness.

STEP 26. Connector check: C-134 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.

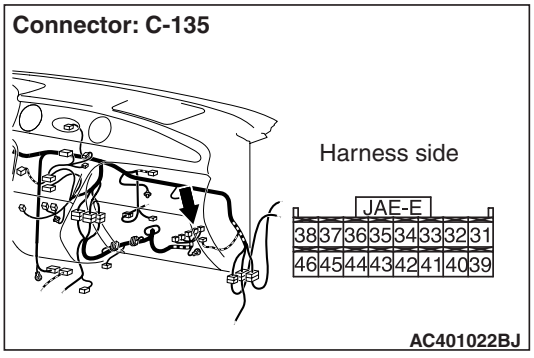


NOTE: Prior to the wiring harness inspection, check intermediate connector C-104, and repair if necessary.

- Check the communication line for open circuit.

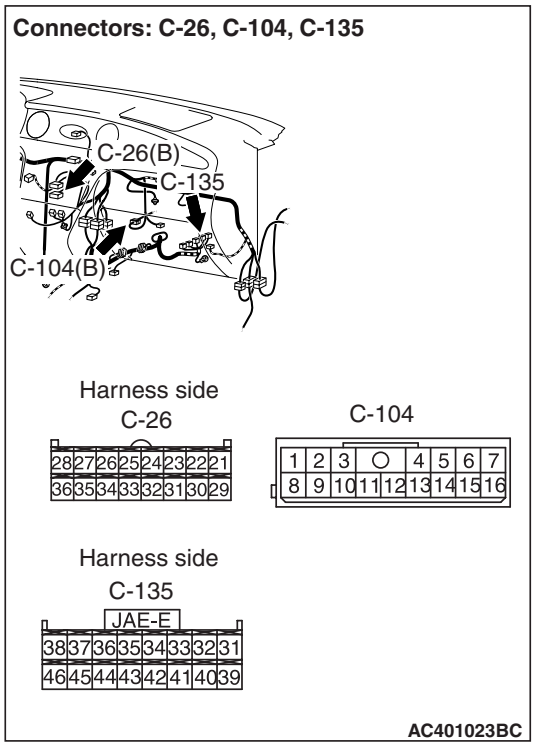
Q: Is the check result normal?
YES : Go to Step 28.
NO : Repair the wiring harness.

STEP 28. Connector check: C-135 engine-ECU connector



Q: Is the check result normal?
YES : Go to Step 29.
NO : Repair the connector.

STEP 29. Check the wiring harness between C-135 engine-ECU connector terminal No.45 and C-26 A/C-ECU connector terminal No.34.



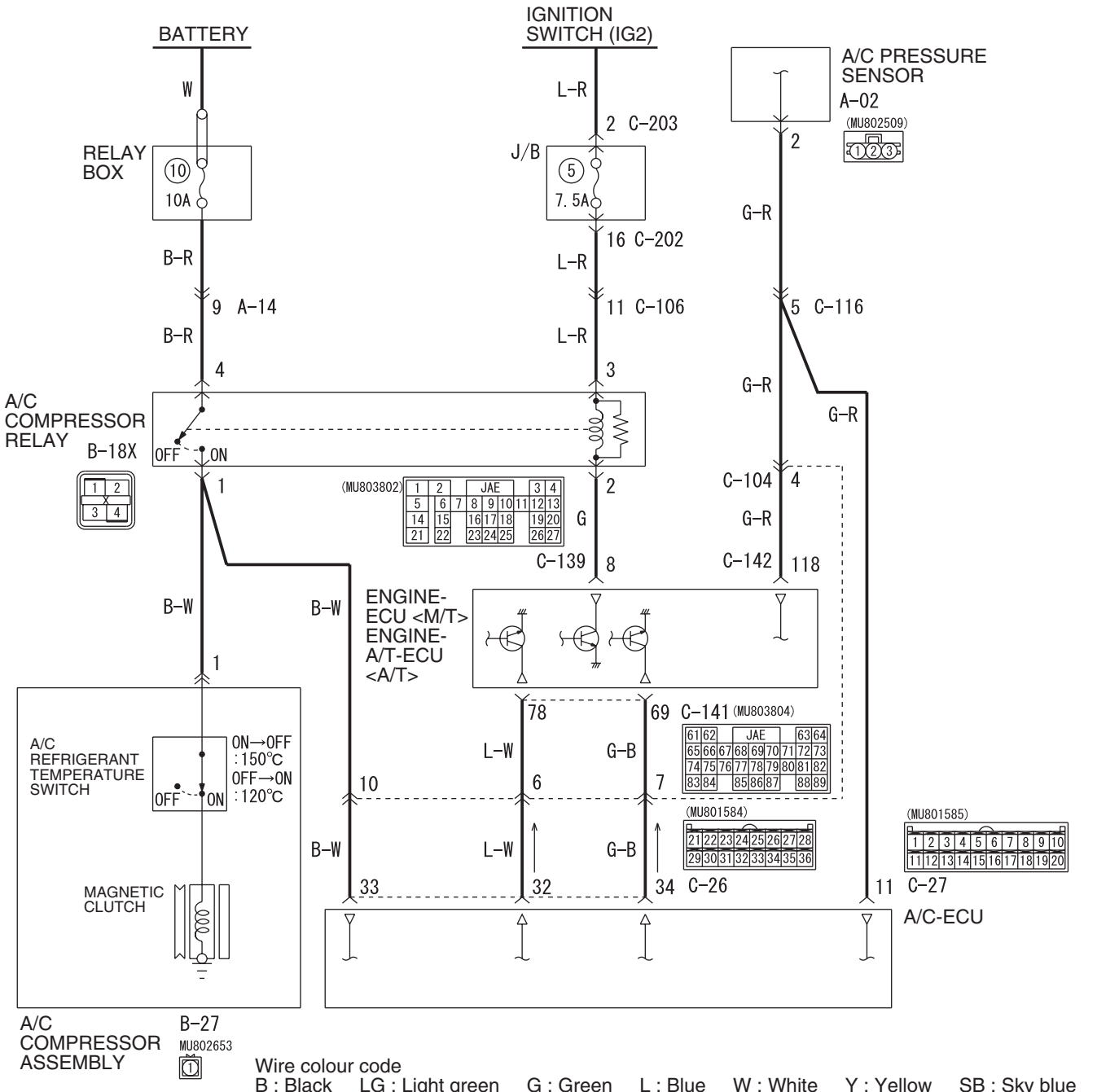
NOTE: Prior to the wiring harness inspection, check intermediate connector C-104, and repair if necessary.

- 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 2: The A/C does not Work at all. <2000-Turbo, 2400>

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

W5Z55E004A

CIRCUIT OPERATION

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

PROBABLE 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 automatic A/C control panel (A/C-ECU)

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-II/III 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-6.

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."

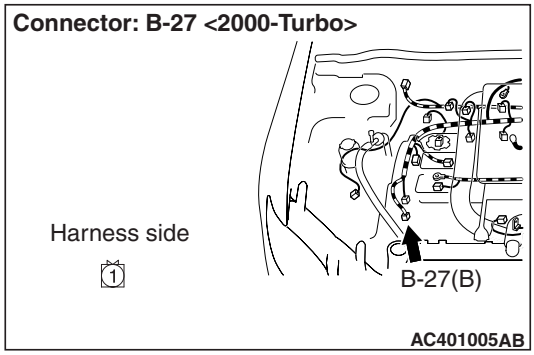
STEP 3. Check the rear window defogger and outside/inside air selection damper control motor operation.

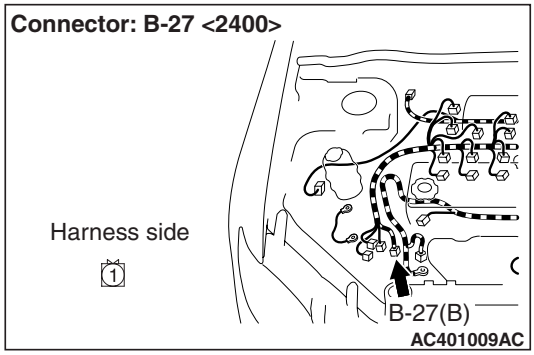
Q: Do the rear window defogger and outside/inside air selection damper control motor work normally?
YES : Go to Step 4.
NO : Refer to Inspection procedure 10 "Malfunction of the A/C-ECU power supply system P.55B-74."

STEP 4. Check the A/C compressor.
Check the A/C compressor for compressor oil leaks.

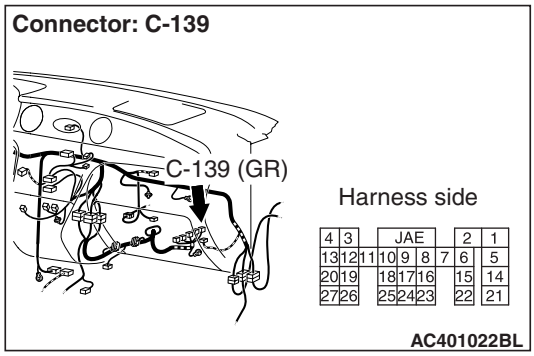
Q: Is the check result satisfactory?
YES : Go to Step 5.
NO : Replace the A/C compressor or the expansion valve.

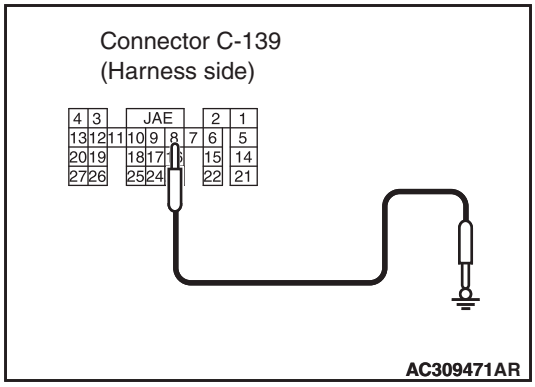
STEP 5. Voltage measurement at B-27 A/C compressor connector.



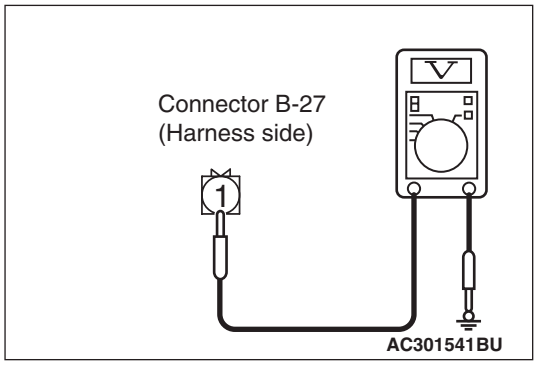


(1) Disconnect the connector, and measure at the wiring harness side.
(2) Turn the ignition switch to the "ON" position.





(3) Disconnect engine-ECU connector C-139 and earth terminal 8.



(4) Voltage between terminal 1 and body earth.

OK: System voltage

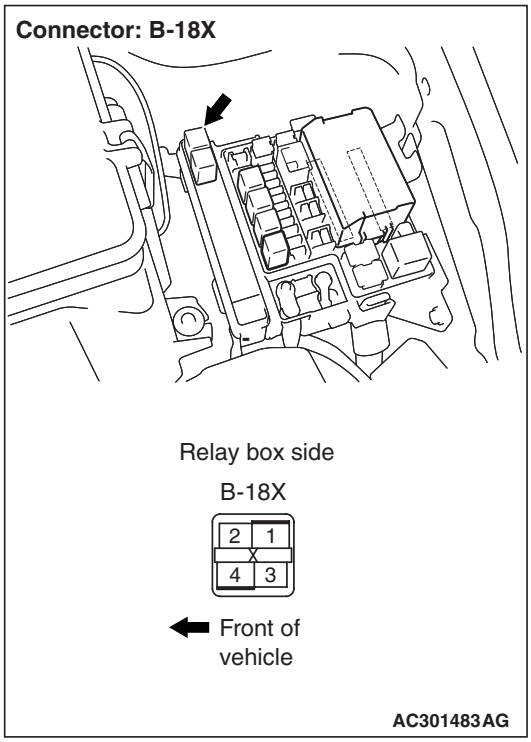
Q: Is the check result normal?
YES : Go to Step 17.
NO : Go to Step 6.

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

Refer to GROUP 55A, On-vehicle Service, Power Relay P.55A-55.

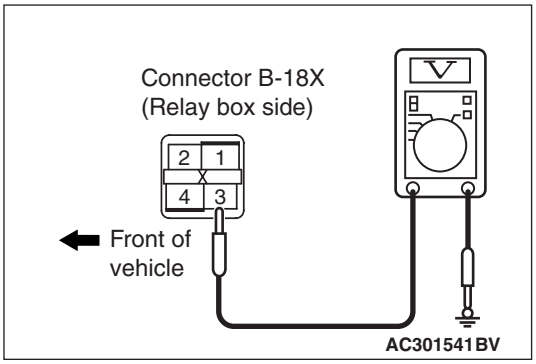
Q: Is the A/C compressor relay in good condition?
YES : Go to Step 7.
NO : Replace the A/C compressor relay.

STEP 7. Voltage measurement 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.

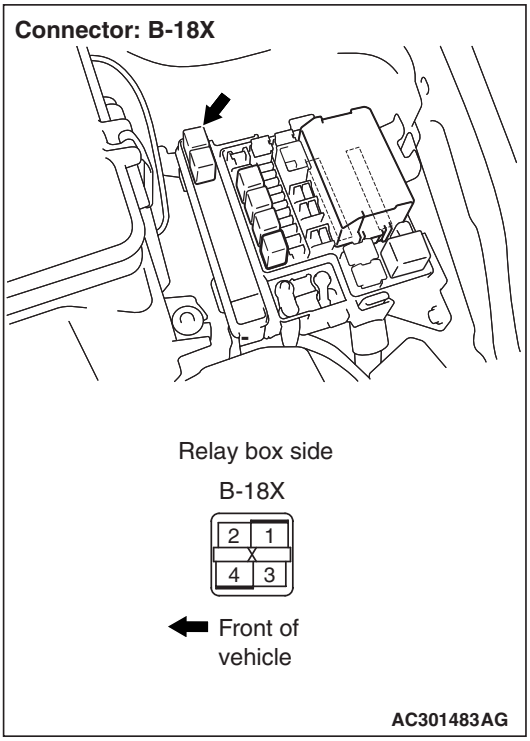


(3) Voltage between terminal 3 and body earth.

OK: System voltage

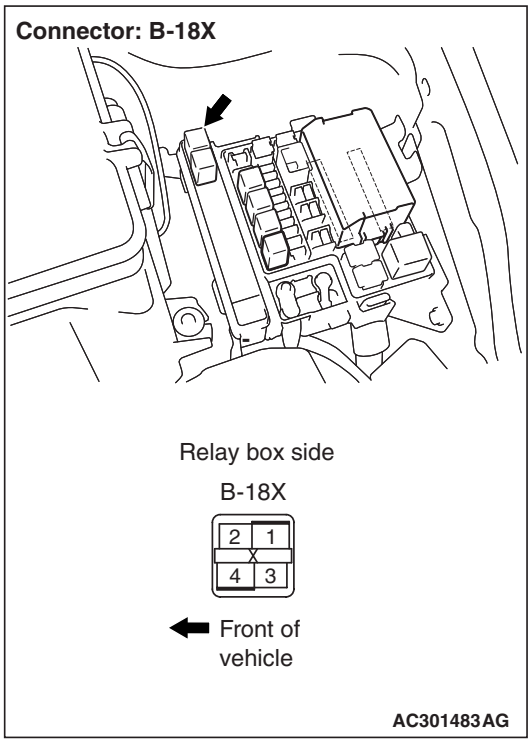
Q: Is the check result normal?
YES : Go to Step 10.
NO : Go to Step 8.

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

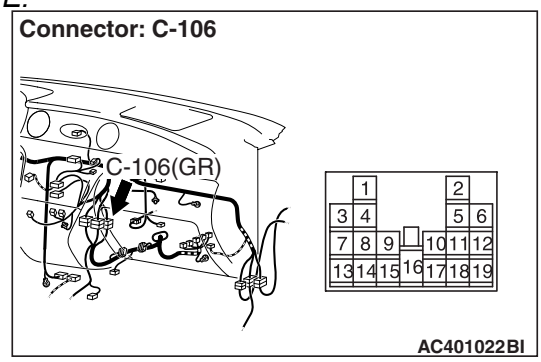


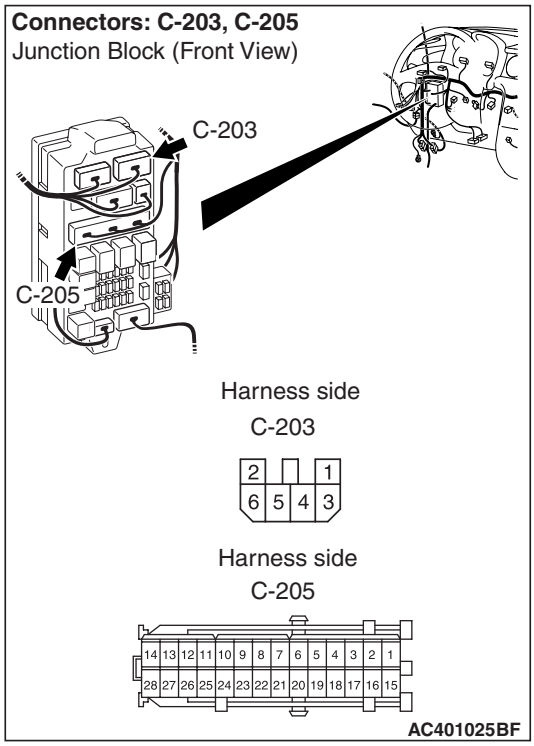
Q: Is the check result normal?
YES : Go to Step 9.
NO : Repair the connector.

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-205, C-203 and intermediate connector C-106, and repair if necessary.

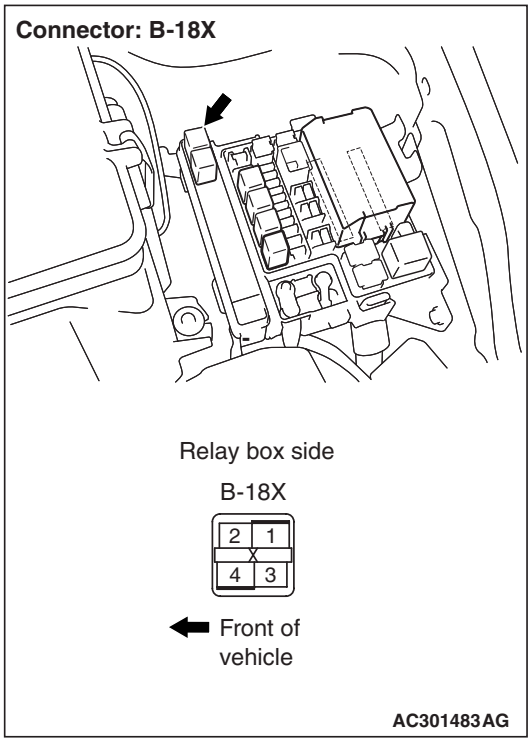
- Check the A/C compressor relay power supply line for open circuit.

Q: Is the check result normal?

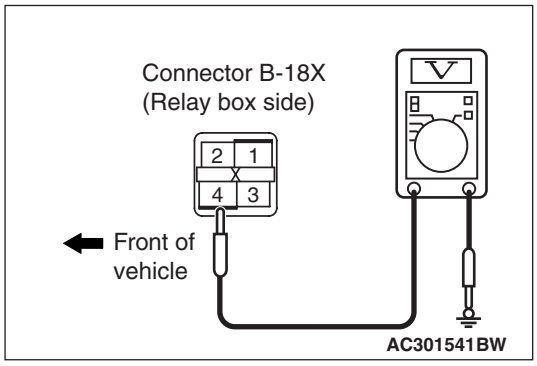
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-6).

NO : Repair the wiring harness.

STEP 10. Voltage measurement at B-18X A/C compressor relay connector.



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

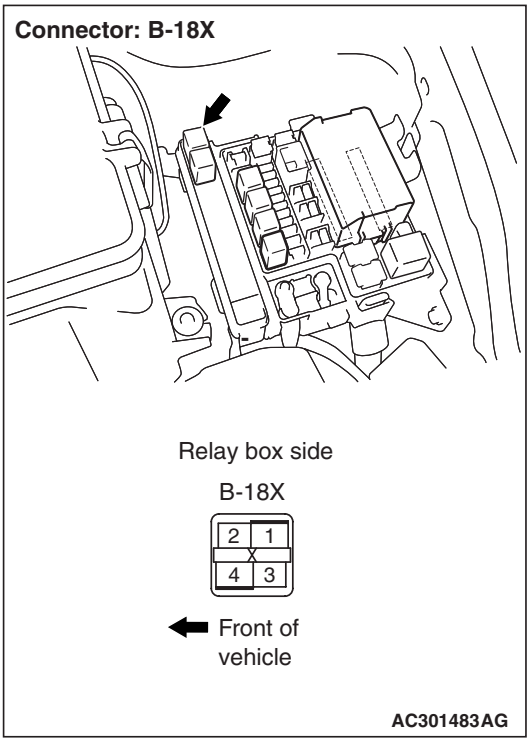


(2) Voltage between terminal 4 and body earth.

OK: System voltage

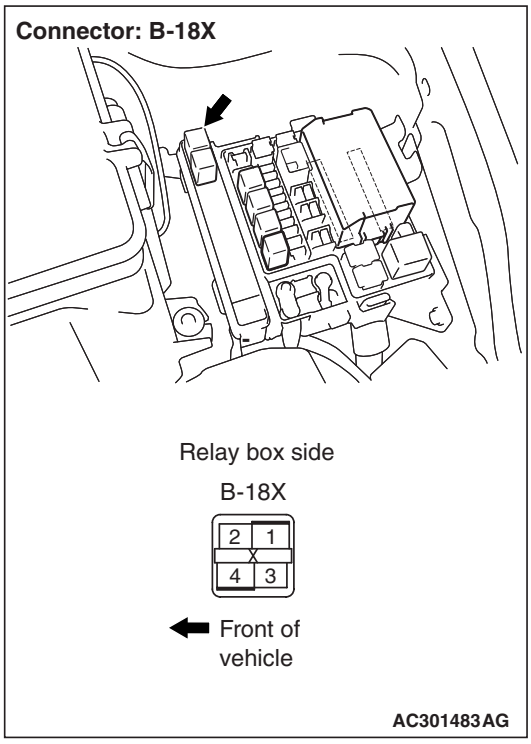
Q: Is the check result normal?
YES : Go to Step 13.
NO : Go to Step 11.

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

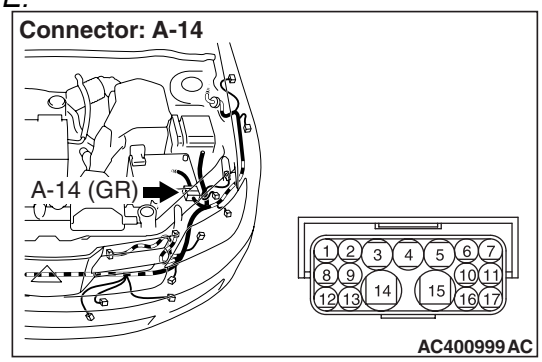


Q: Is the check result normal?
YES : Go to Step 12.
NO : Repair the connector.

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



NOTE:

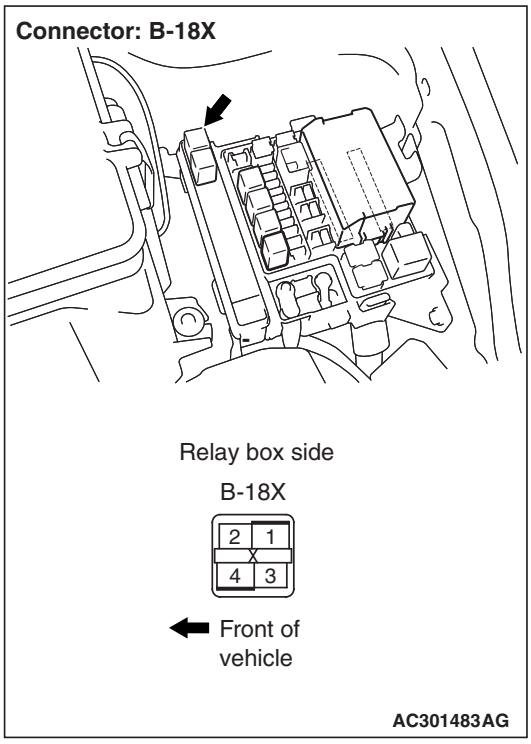


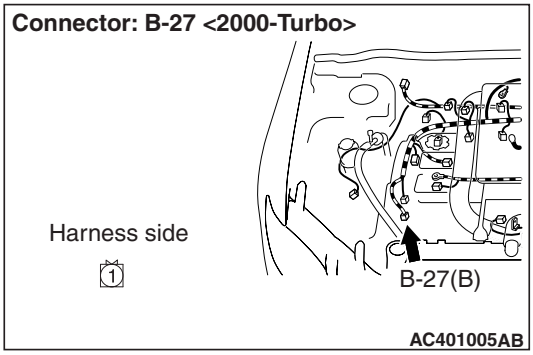
Prior to the wiring harness inspection, check intermediate connector A-14, and repair if necessary.

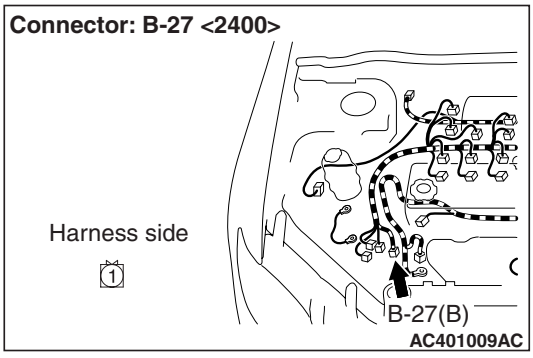
- Check the A/C compressor relay power supply line for open circuit.

Q: Is the check result normal?
YES : Check that the A/C works normally.
NO : Repair the wiring harness. Check that the A/C works normally.

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

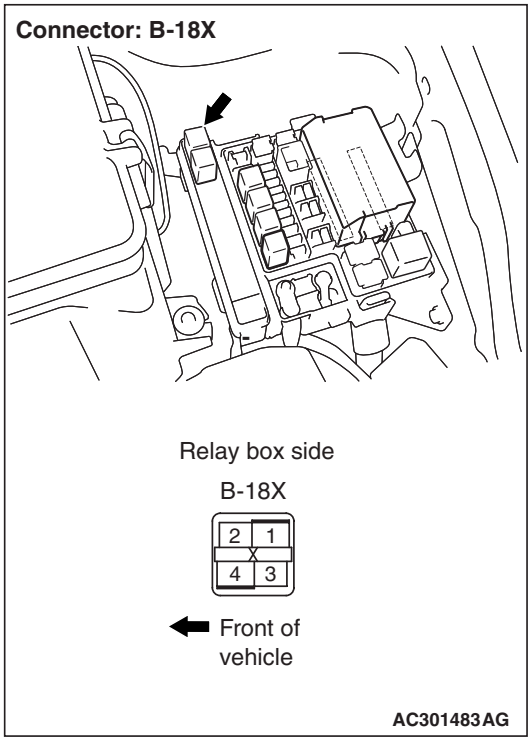


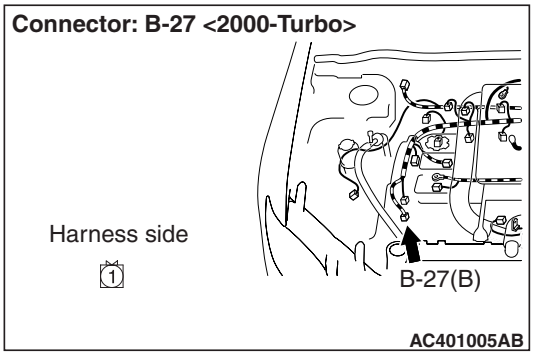


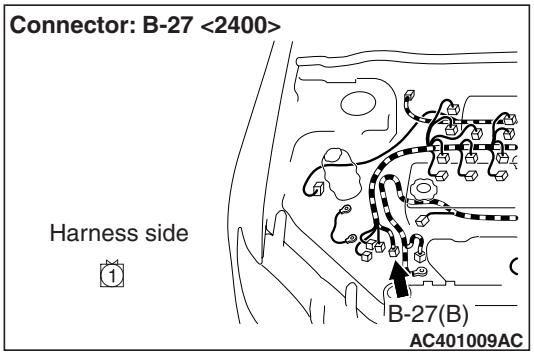


Q: Is the check result normal?
YES : Go to Step 14.
NO : Repair the connector.

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.



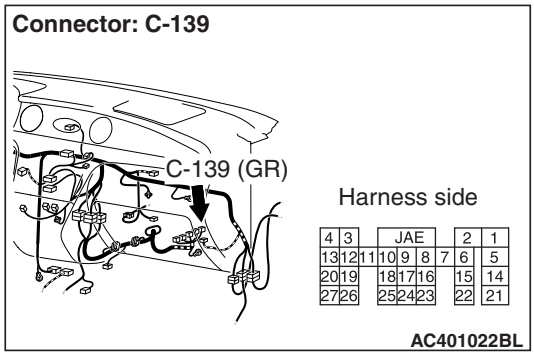


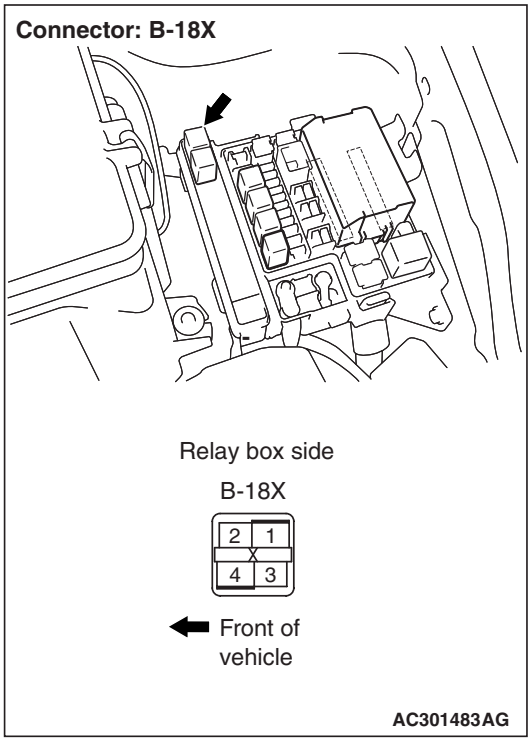


- Check the A/C compressor relay power supply line for open circuit.

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

STEP 15. Connector check: C-139 engine-ECU connector and B-18X A/C compressor relay connector

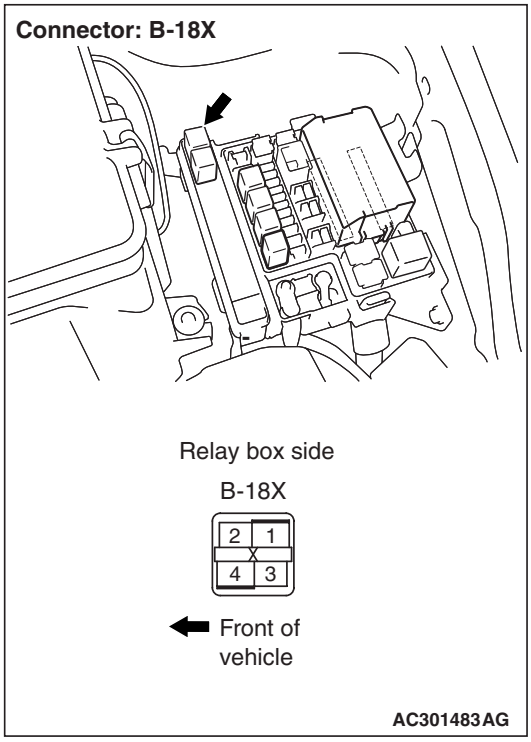


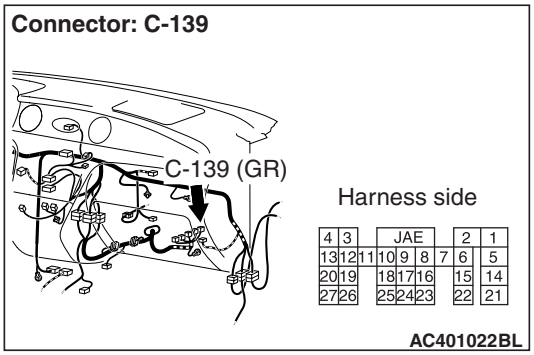


- Check the A/C compressor relay earth line for open circuit.

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

STEP 16. Check the wiring harness between C-139 engine-ECU connector terminal No.8 and B-18X A/C compressor relay connector terminal No.2.



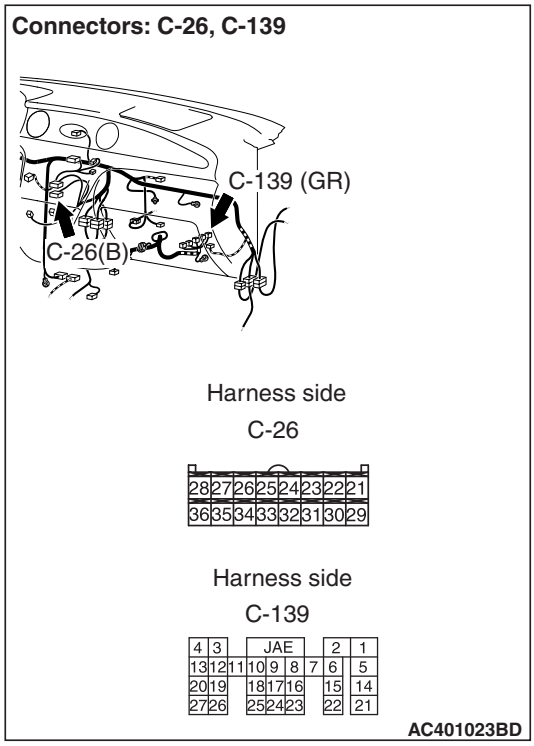


Q: Is the check result normal?

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

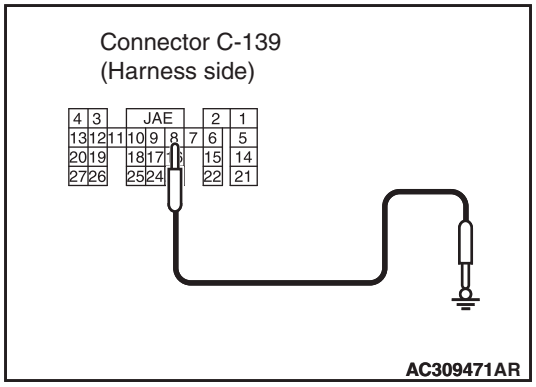
NO : Repair the wiring harness.

STEP 17. Voltage measurement at C-26 A/C-ECU connector.

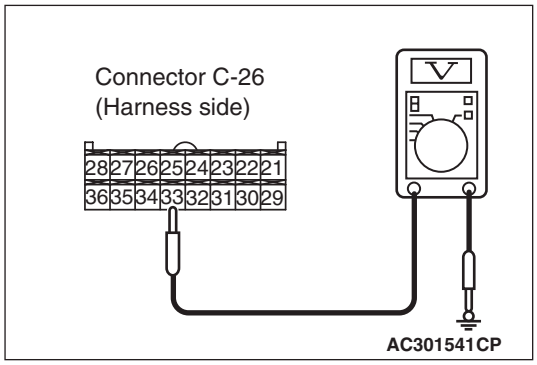


(1) Disconnect the connector, and measure at the wiring harness side.

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



(3) Disconnect engine-ECU connector C-139 and earth terminal 8.

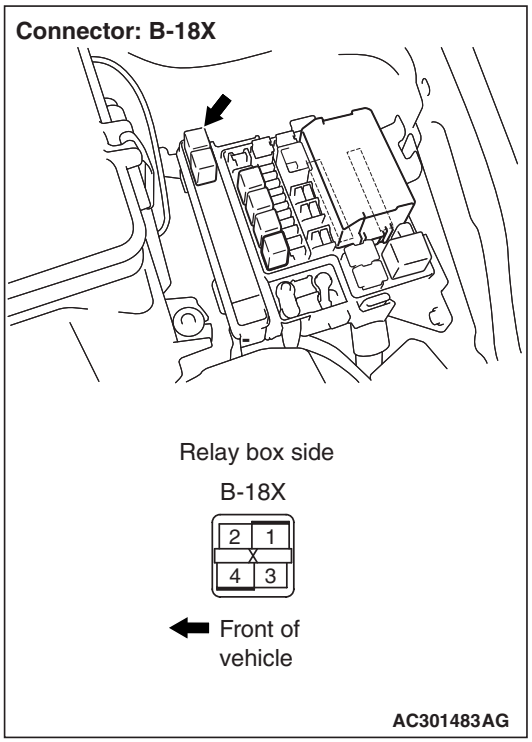


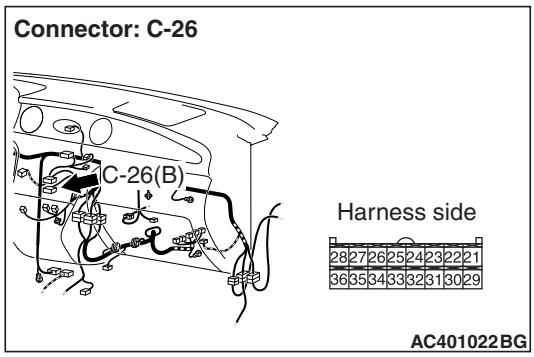
(4) Continuity between terminal 33 and body earth.

OK: System voltage

Q: Is the check result normal?
YES : Go to Step 20.
NO : Go to Step 18.

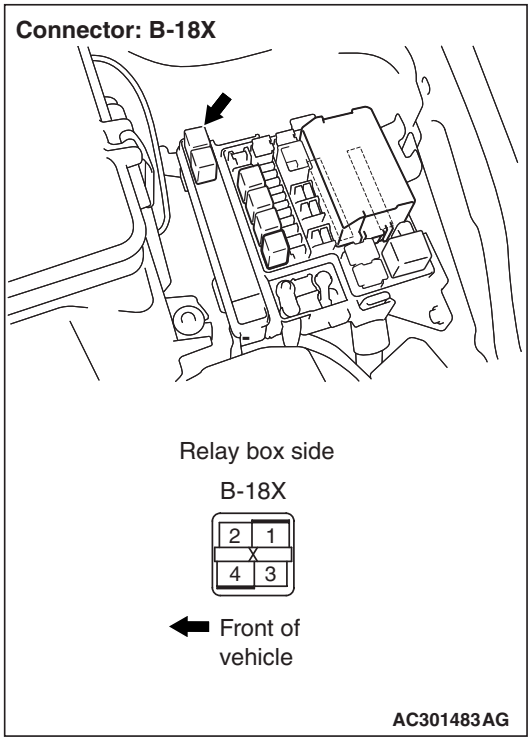
STEP 18. Connector check: B-18X A/C compressor relay connector and C-26 A/C-ECU connector

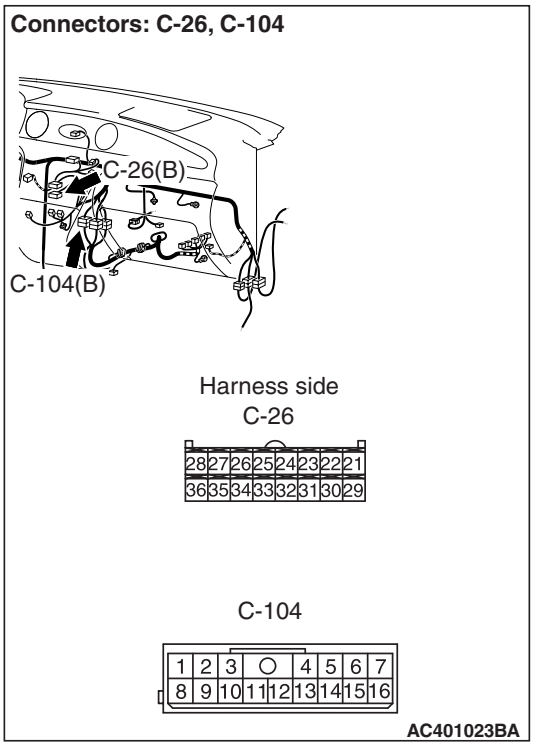




Q: Is the check result normal?
YES : Go to Step 19.
NO : Repair the connector.

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-49.

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.55B-97.

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

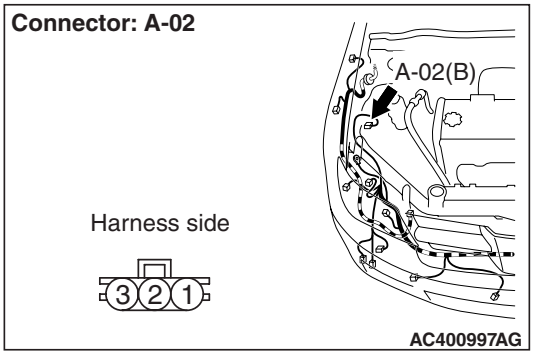
STEP 22. Check the refrigerant level.
Refer to P.55A-49.

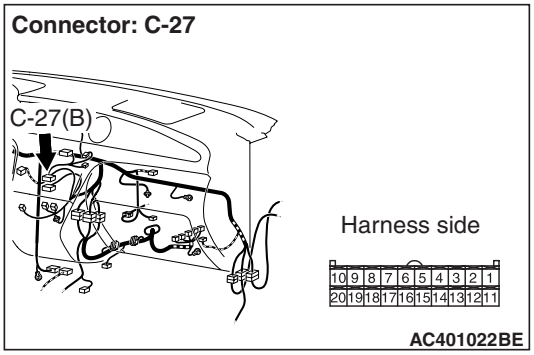
Q: Is the refrigerant level correct?
YES : Go to Step 23.
NO : Correct the refrigerant level (Refer to On-vehicle Service P.55A-50).

STEP 23. Check the A/C pressure sensor operation.
Refer to P.55A-50.

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

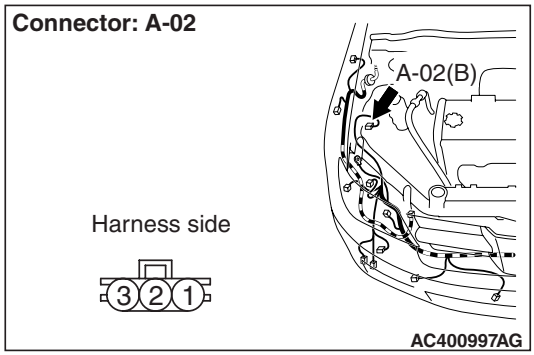
STEP 24. Connector check: A-02 A/C pressure sensor connector and C-27 A/C-ECU connector

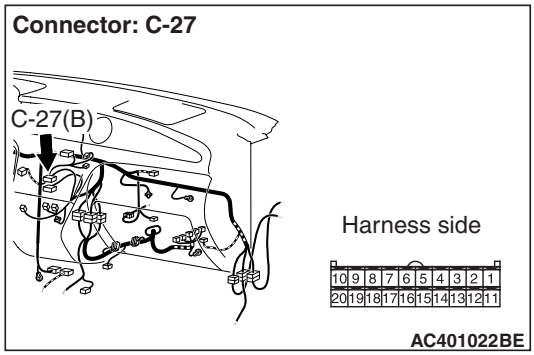




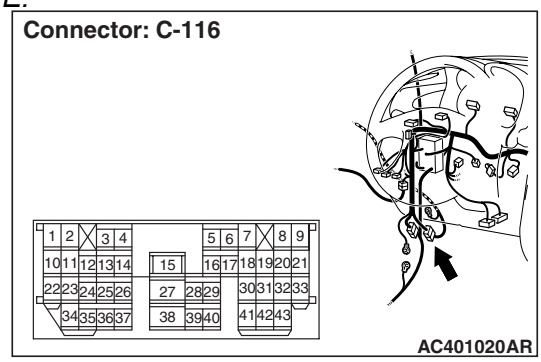
Q: Is the check result normal?
YES : Go to Step 25.
NO : Repair the connector.

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:

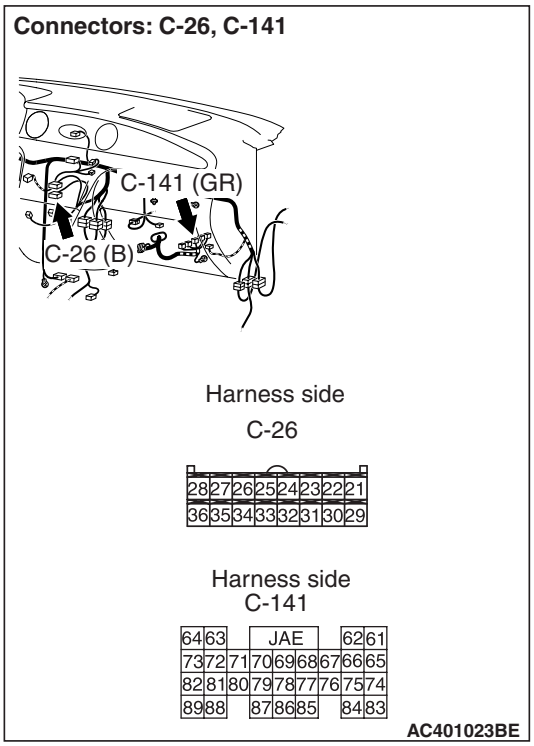


Prior to the wiring harness inspection, check intermediate connector C-116, and repair if necessary.

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

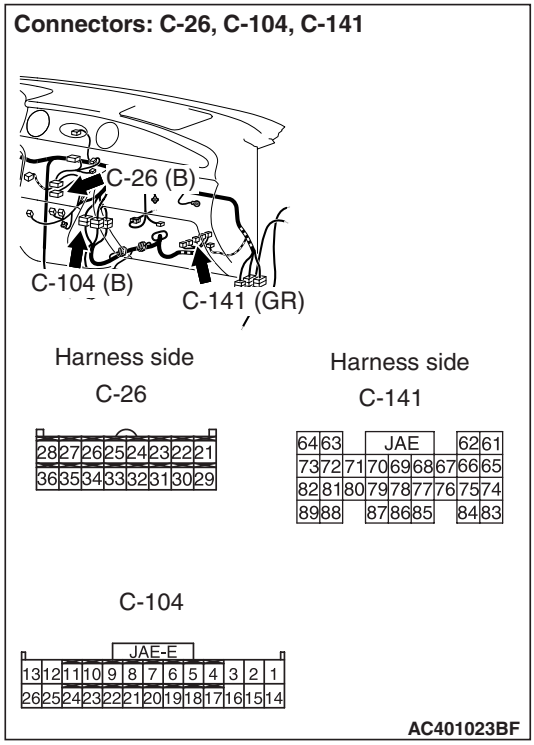
Q: Is the check result normal?
YES : Go to Step 26.
NO : Repair the wiring harness.

STEP 26. Connector check: C-141 engine-ECU <M/T> or engine-A/T-ECU <A/T> 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-141 engine-ECU <M/T> or engine-A/T-ECU <A/T> connector terminal No.78 and C-26 A/C-ECU connector terminal No.32.

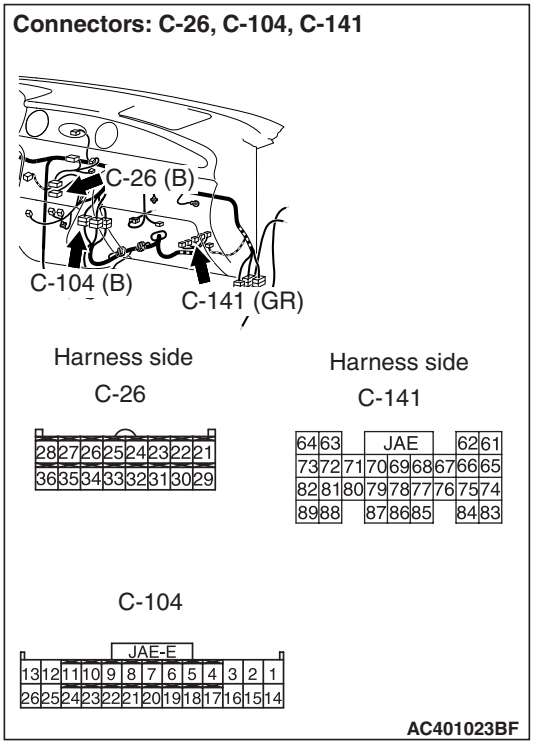


NOTE: Prior to the wiring harness inspection, check intermediate connector C-104, and repair if necessary.

- 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-141 engine-ECU <M/T> or engine-A/T-ECU <A/T> connector terminal No.69 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 <M/T> or engine-A/T-ECU <A/T>.

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 cannot 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.

PROBABLE CAUSE

- Malfunction of the A/C-ECU

DIAGNOSIS PROCEDURE

M.U.T.-II/III diagnosis code

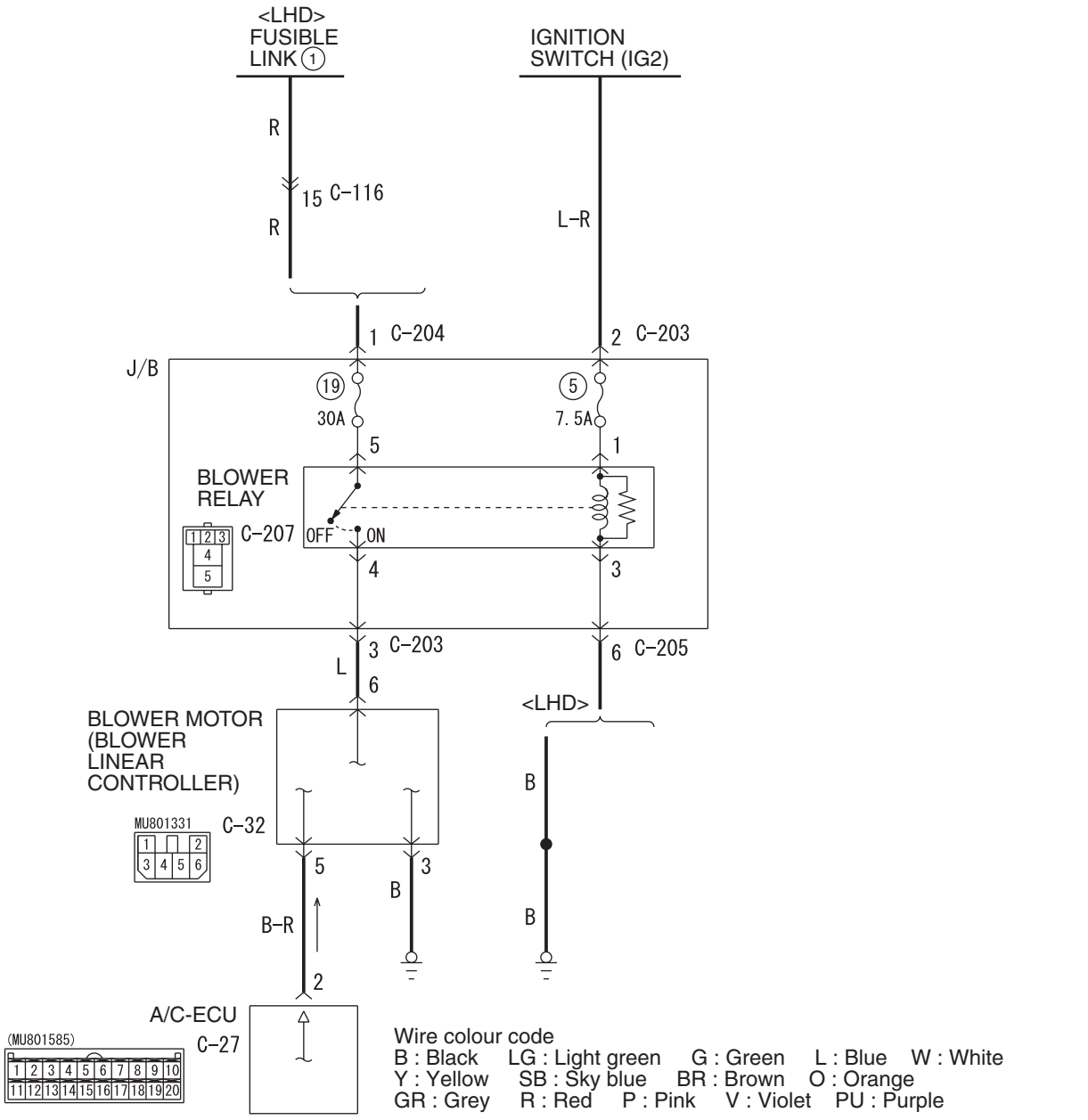
Q: Is the diagnosis code set?

YES : Refer to diagnosis code chart P.55B-6.

NO : Replace the automatic A/C control panel (A/C-ECU).

Inspection Procedure 4: The Blower does not work.

Blower Circuit



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AC605812AB

COMMENTS ON TROUBLE SYMPTOM

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

PROBABLE CAUSES

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

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-II/III actuator test

Carry out the actuator test. (Refer to P.55B-79)

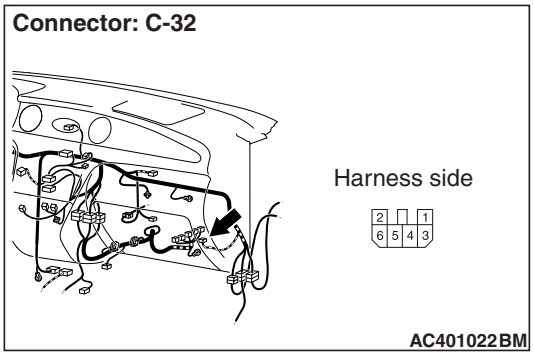
- Item 01, 02, 03, 04: Blower motor

Q: Does the blower motor work normally?

YES : Replace the automatic A/C control panel (A/C-ECU).

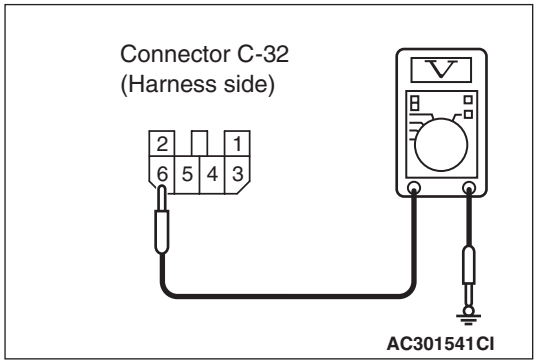
NO : Go to Step 2.

STEP 2. Voltage measurement 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.

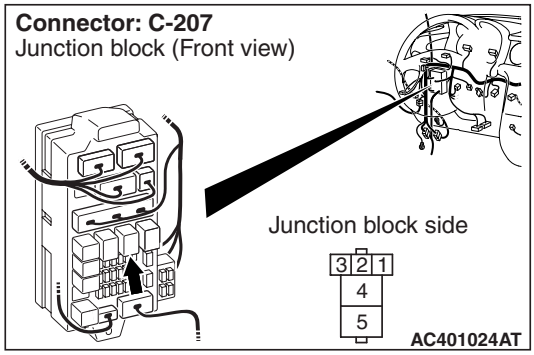
Refer to GROUP 55A, On-vehicle Service – Power relay check P.55A-55.

Q: Is the blower relay in good condition?

YES : Go to Step 4.

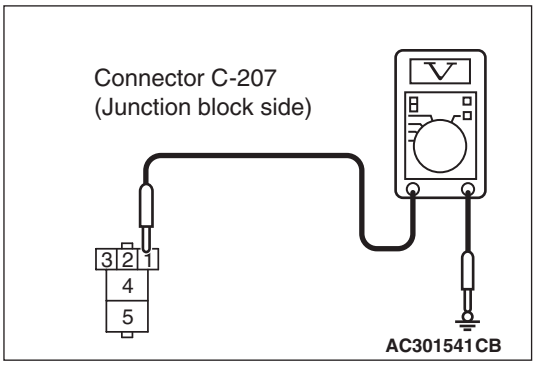
NO : Replace the blower relay.

STEP 4. Voltage measurement 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.

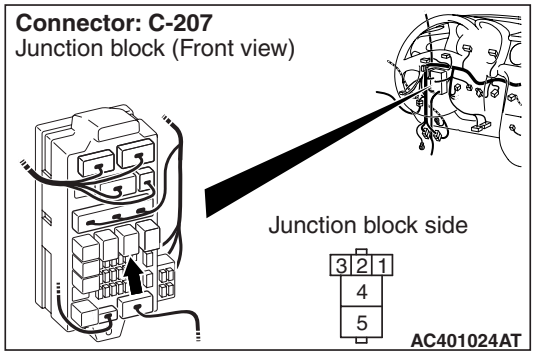
OK: System voltage

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

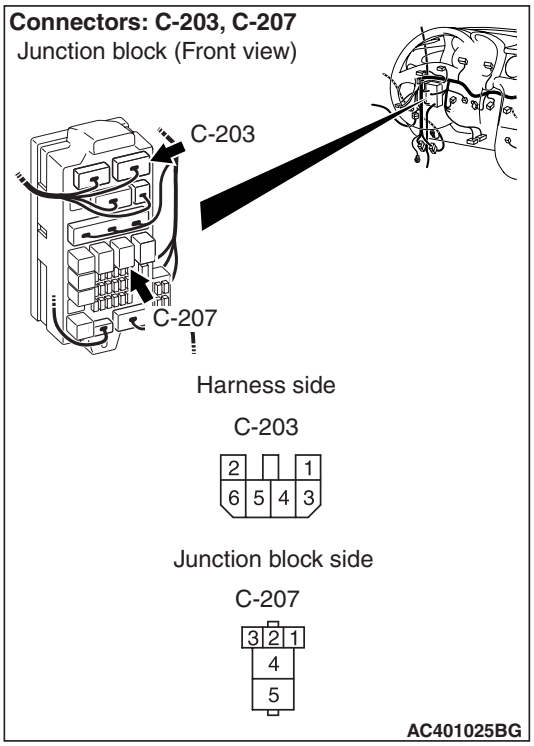


Q: Is the check result normal?

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.

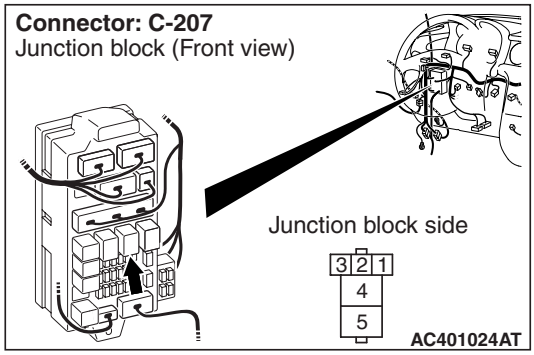
- Check the blower relay power supply line for open circuit.

Q: Is the check result normal?

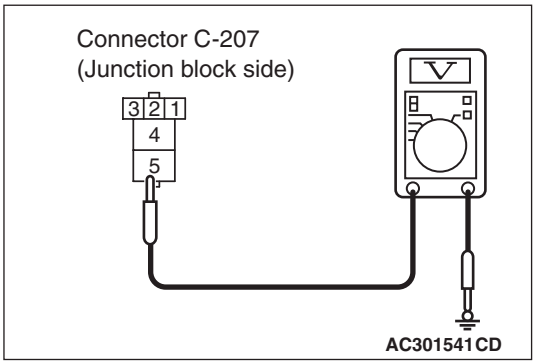
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-6).

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.

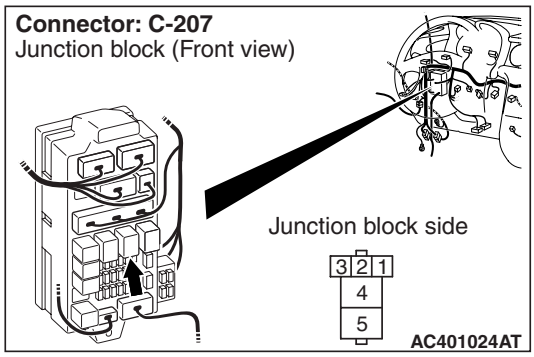
OK: System voltage

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

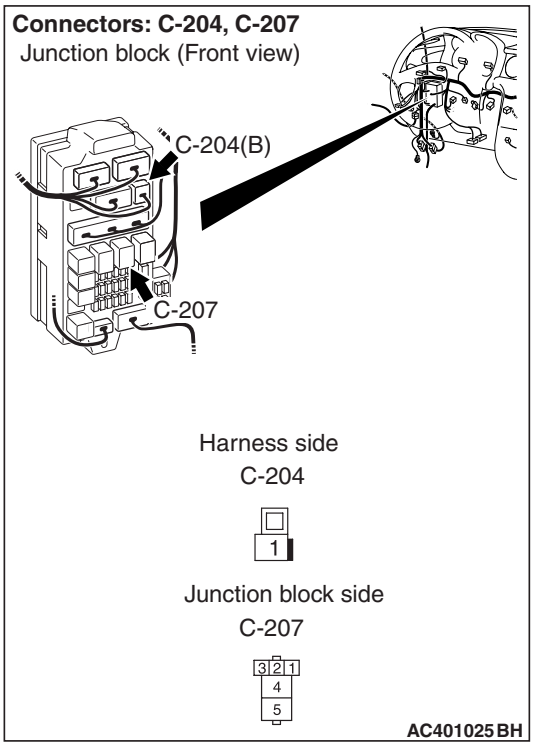


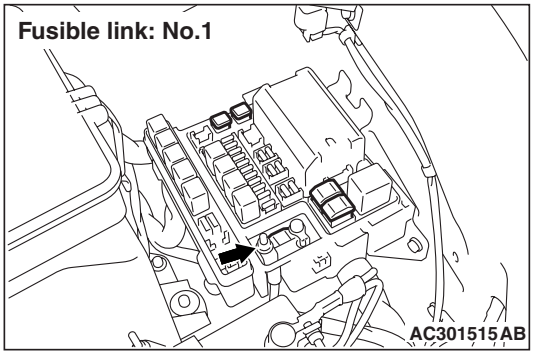
Q: Is the check result normal?

YES : Go to Step 9.

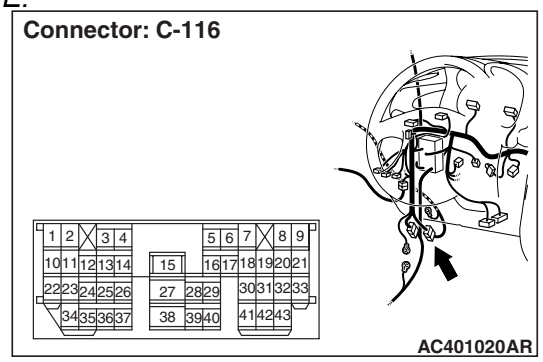
NO : Repair the connector.

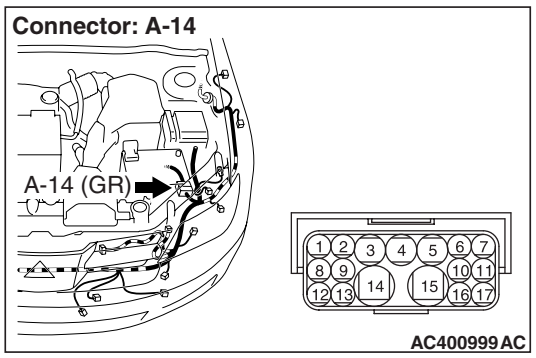
STEP 9. Check the wiring harness between C-207 blower relay connector terminal No.5 and fusible link (1).





NOTE:





Prior to the wiring harness inspection, check intermediate connectors C-116 <LHD>, A-14, C-122 <RHD> and junction block connector C-204, and repair if necessary.

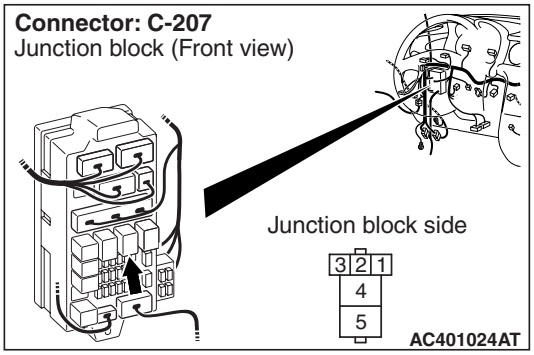
- Check the blower relay power supply line for open circuit.

Q: Is the check result normal?

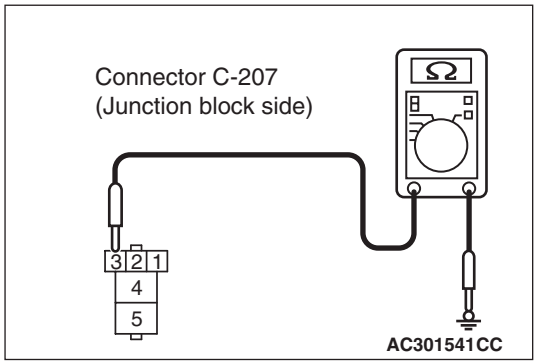
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-6).

NO : Repair the wiring harness.

STEP 10. Resistance measurement at C-207 blower relay connector.



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

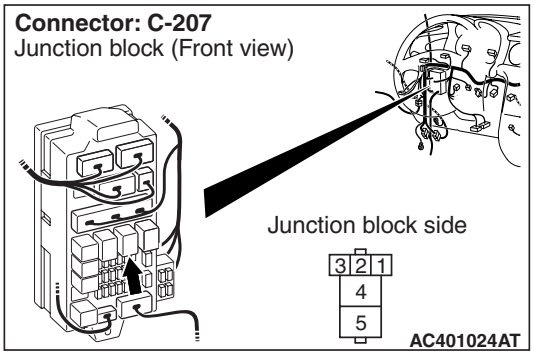


(2) Measure the resistance between terminal 3 and body earth

OK: Continuity (Less than 2 Ω)

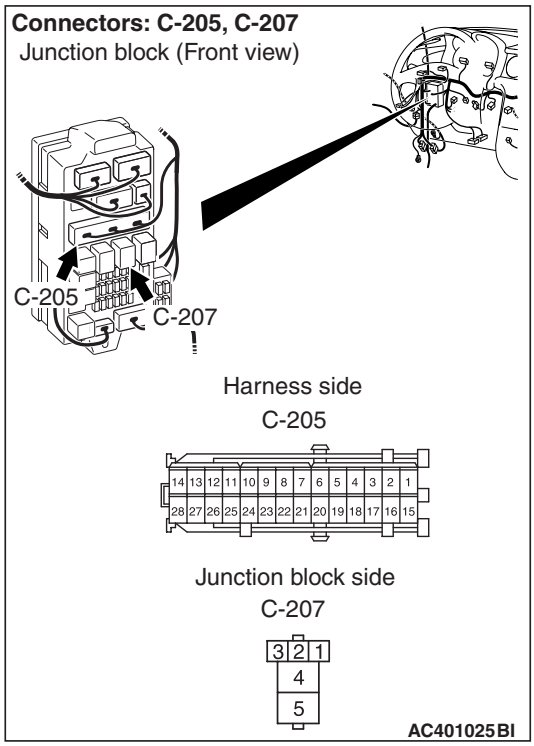
Q: Is the check result normal?
YES : Go to Step 13.
NO : Go to Step 11.

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.

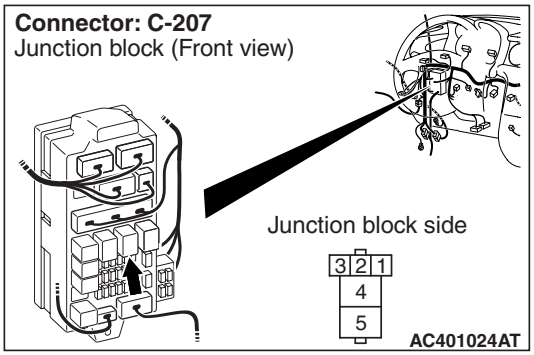


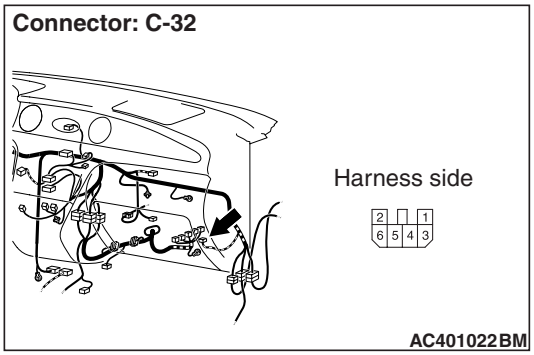
NOTE: Prior to the wiring harness inspection, check junction block connector C-205, and repair if necessary.

- 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.

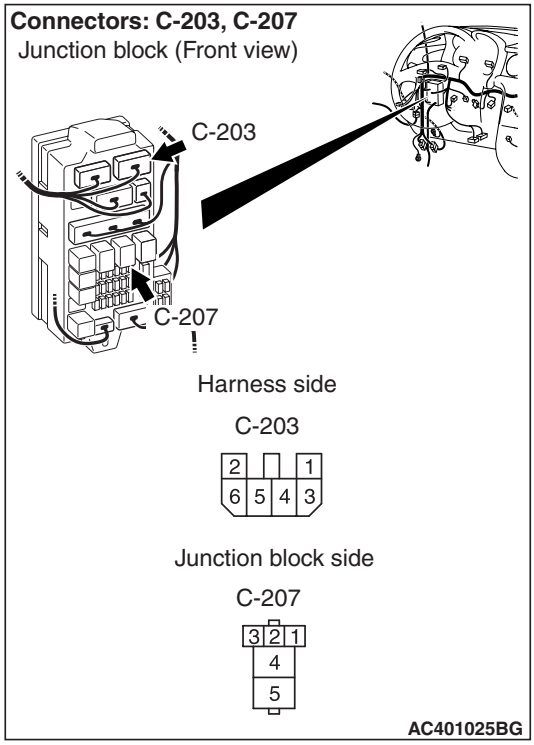
STEP 13. Connector check: C-207 blower relay connector and C-32 blower linear controller connector

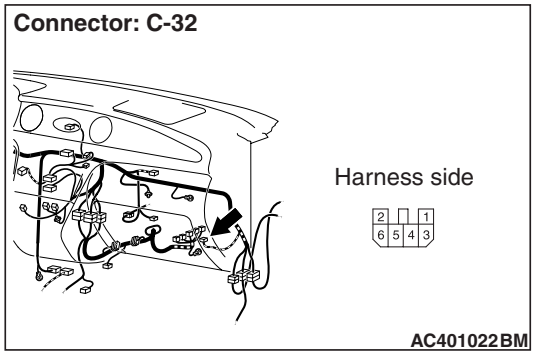




Q: Is the check result normal?
YES : Go to Step 14.
NO : Repair the connector.

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.



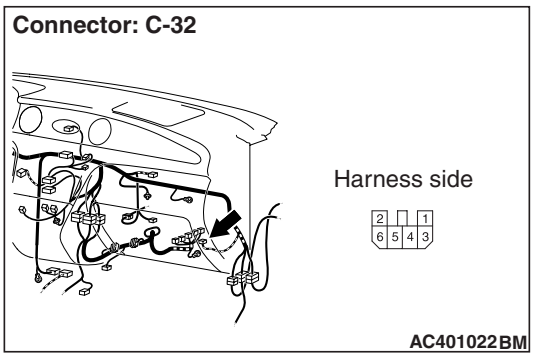


NOTE: Prior to the wiring harness inspection, check junction block connector C-203, and repair if necessary.

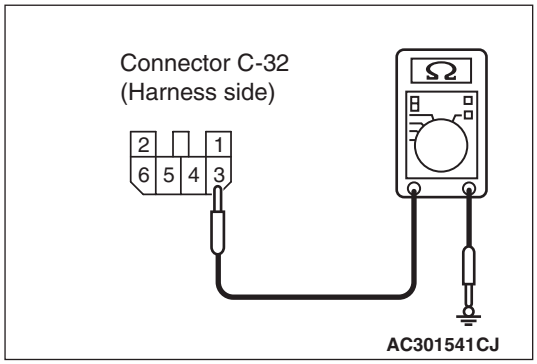
- Check the blower linear controller power supply line for open circuit.

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. Resistance measurement at the C-32 blower linear controller connector.



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

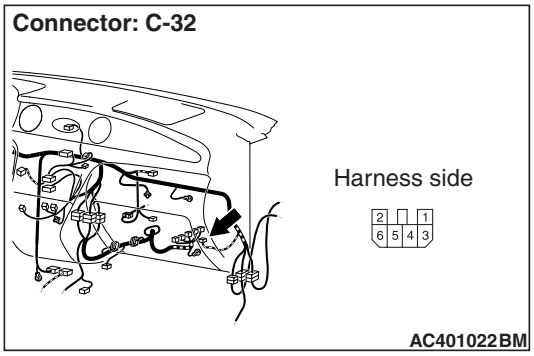


(2) Continuity between terminal 3 and body earth

OK: Continuity (Less than 2 Ω)

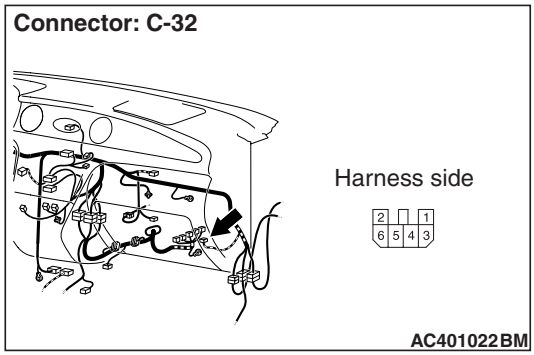
Q: Is the check result normal?
YES : Go to Step 18.
NO : Go to Step 16.

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



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

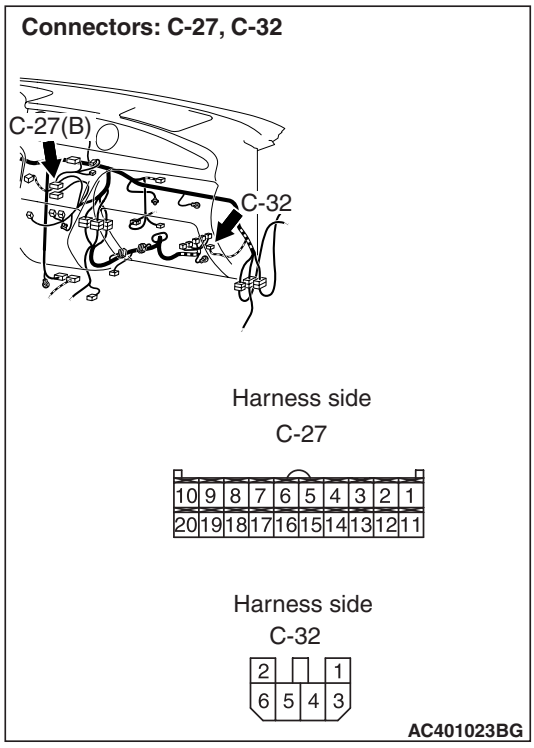
STEP 17. Check the wiring harness between C-32 blower linear controller connector terminal No.3 and body earth.



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

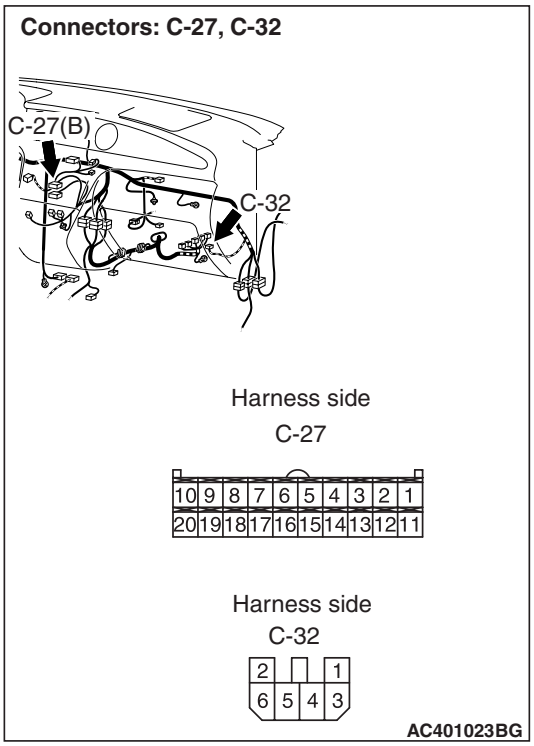
Q: Is the check result normal?
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-6).
NO : Repair the wiring harness.

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.

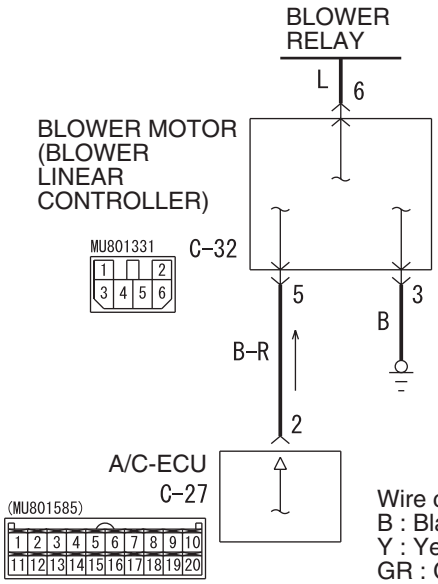
Q: Is the check result normal?

YES : Replace the A/C 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 : Grey R : Red P : Pink V : Violet PU : Purple

W6Z55E002A

COMMENTS ON TROUBLE SYMPTOM

If the blower air volume cannot be changed when the blower switch is operated, the circuit between blower motor (blower linear controller) and A/C-ECU may be defective.

POSSIBLE CAUSES

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

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-II/III actuator test

Carry out the actuator test.

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

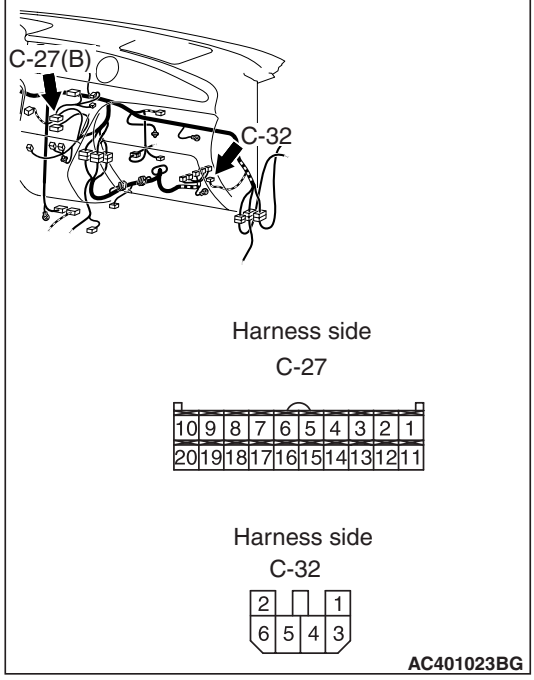
Q: Does the blower motor work normally?

YES : Replace the automatic A/C 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

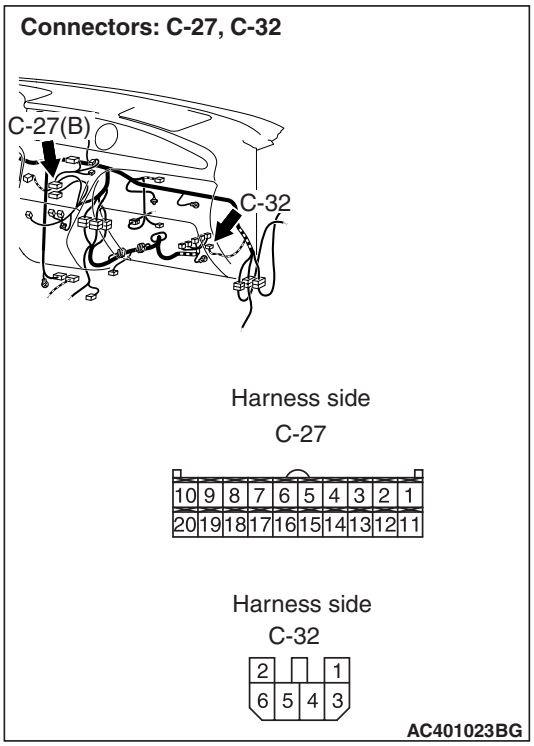


Q: Is the check result normal?

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.



- Check the communication line for open or short circuit.

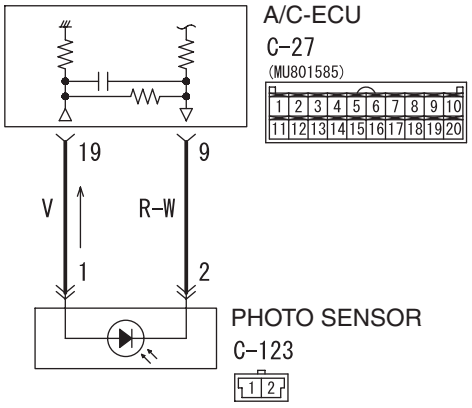
Q: Is the check result normal?

YES : Replace the automatic A/C 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 cannot be changed even if the preset temperature is changed, the sensors may be defective.

PROBABLE CAUSES

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

DIAGNOSIS PROCEDURE

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

Q: Do the rear window 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-74."

STEP 2. M.U.T.-II/III 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-6.

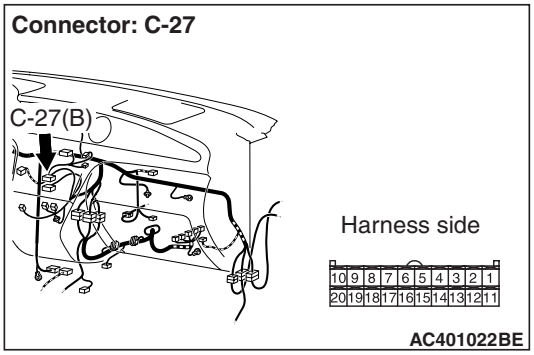
STEP 3. M.U.T.-II/III data list

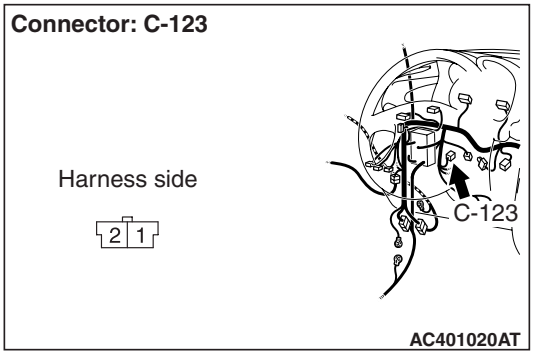
- Item 25: Photo sensor

OK: Check that the volume of insolation takes inverse proportion with the M.U.T.-II/III displayed voltage.

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

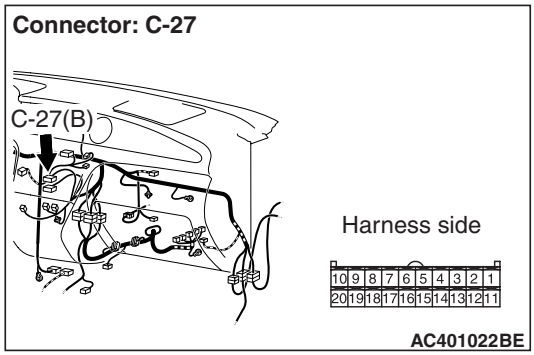
STEP 4. Connector check: C-27 A/C-ECU connector and C-123 photo sensor connector.

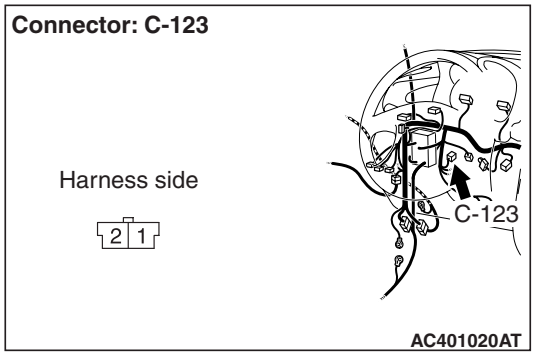




Q: Is the check result normal?
YES : Go to Step 5.
NO : Repair or replace the connector.

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).



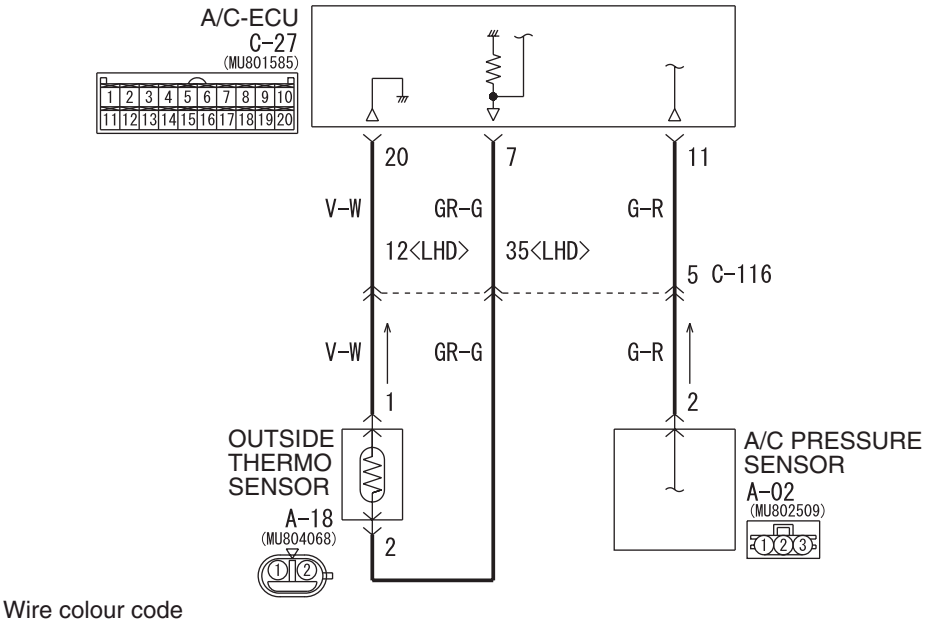


- Check the photo sensor signal lines for open or short circuit.

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

Inspection Procedure 7: The A/C indicator flashes.

Outside Thermo Sensor and A/C Pressure 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

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AC605838AB

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.

PROBABLE CAUSES

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

DIAGNOSIS PROCEDURE

STEP 1. Check the A/C pressure sensor operation.

Refer to GROUP 55A, On vehicle service – A/C pressure sensor check P.55A-50.

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-92.

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

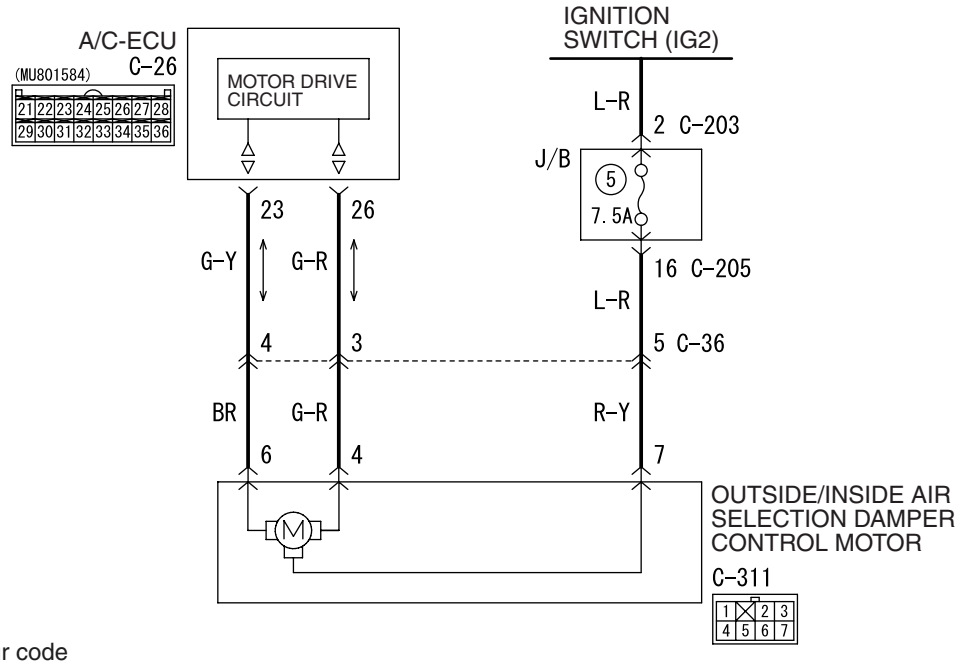
STEP 3. Check the refrigerant level.

Refer to GROUP 55A, On vehicle service – sight glass refrigerant level test P.55A-49.

Q: Is the refrigerant level correct?
YES : Replace the automatic A/C control panel (A/C-ECU).
NO : Correct the refrigerant level. (Refer to GROUP 55A, On-vehicle Service P.55A-54).

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.

PROBABLE CAUSES

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

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-II/III actuator test

Carry out the actuator test. (Refer to P.55B-79)

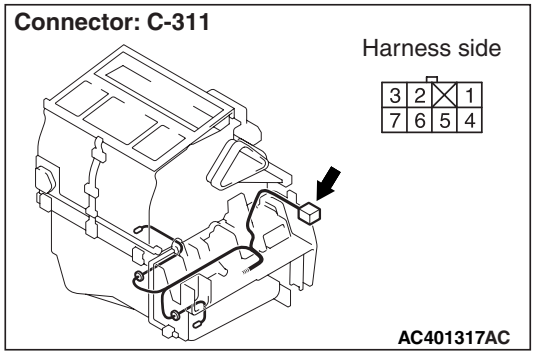
- Item 13, 14: outside/inside air selection damper control motor

Q: Does the blower motor work normally?

YES : Replace the automatic A/C control panel (A/C-ECU)

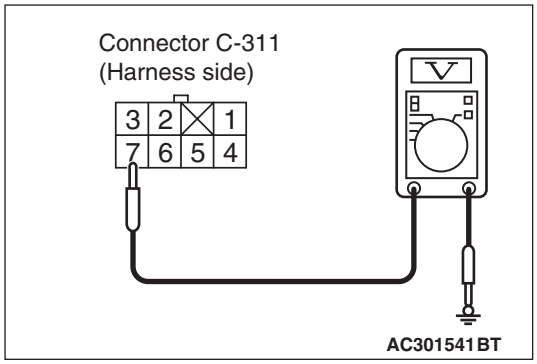
NO : Go to Step 2.

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.

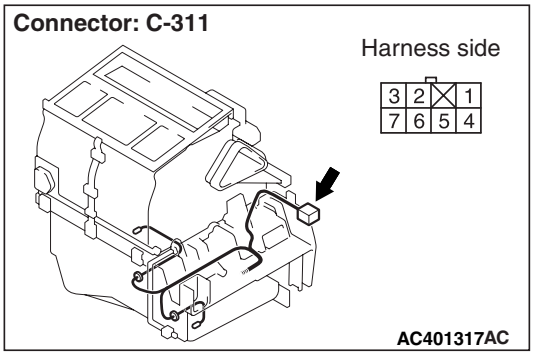


(3) Measure the voltage between terminal 7 and body earth.

OK: System voltage

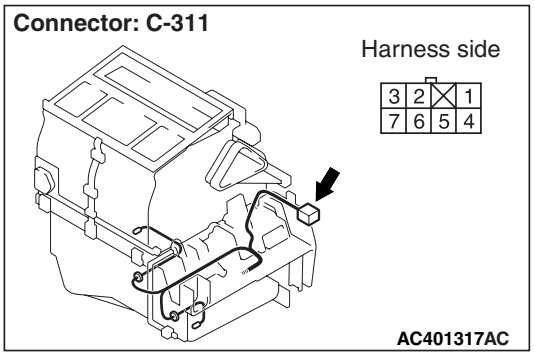
Q: Is the check result normal?
YES : Go to Step 5.
NO : Go to Step 3.

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

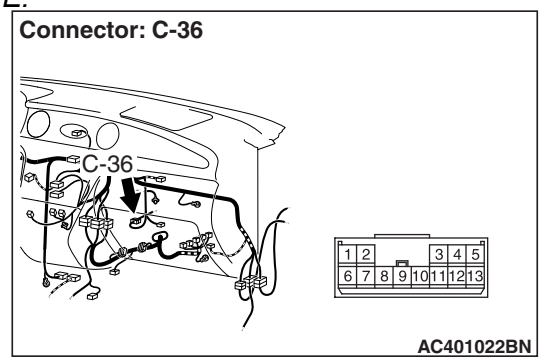


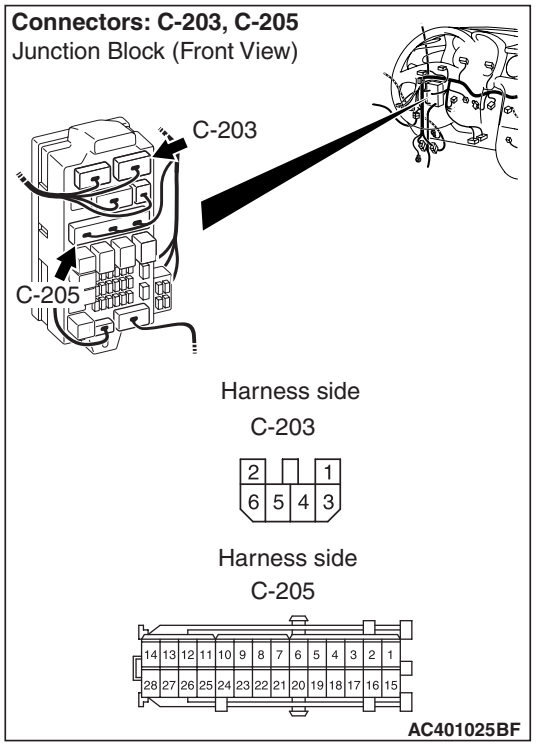
Q: Is the check result normal?
YES : Go to Step 4.
NO : Repair the connector.

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.

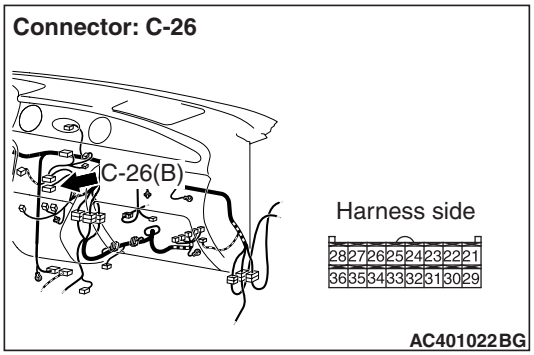
Q: Is the check result normal?
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-6).
NO : Repair the wiring harness.

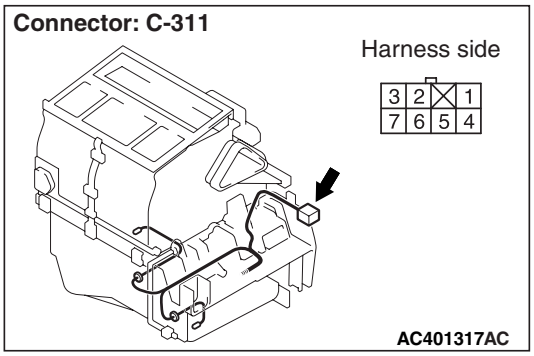
STEP 5. Check the outside/inside air selection damper control motor

Refer to GROUP 55A, Resistor, blower motor and inside/outside air selection damper control motor P.55A-66.

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

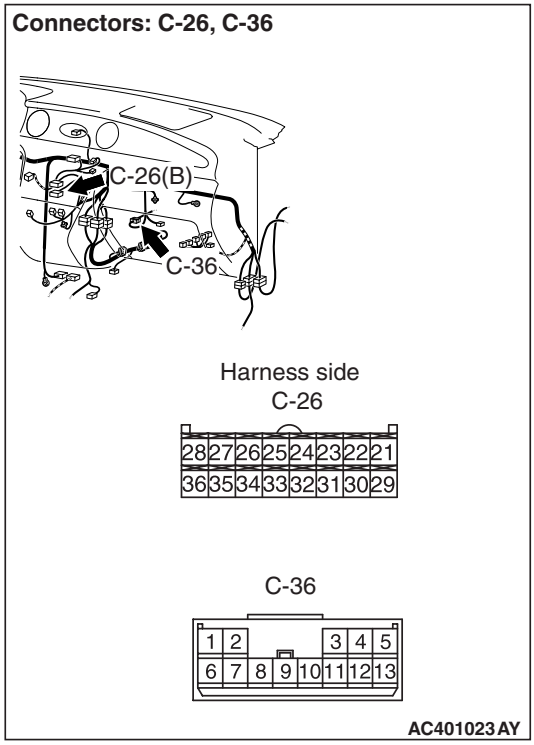
STEP 6. Connector check: C-26 A/C-ECU connector and C-311 outside/inside air selection damper control motor connector

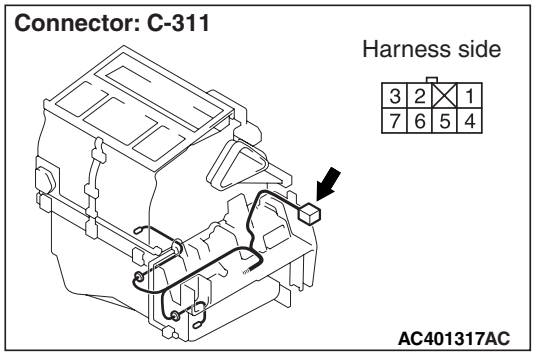




Q: Is the check result normal?
YES : Go to Step 7.
NO : Repair the connector.

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).





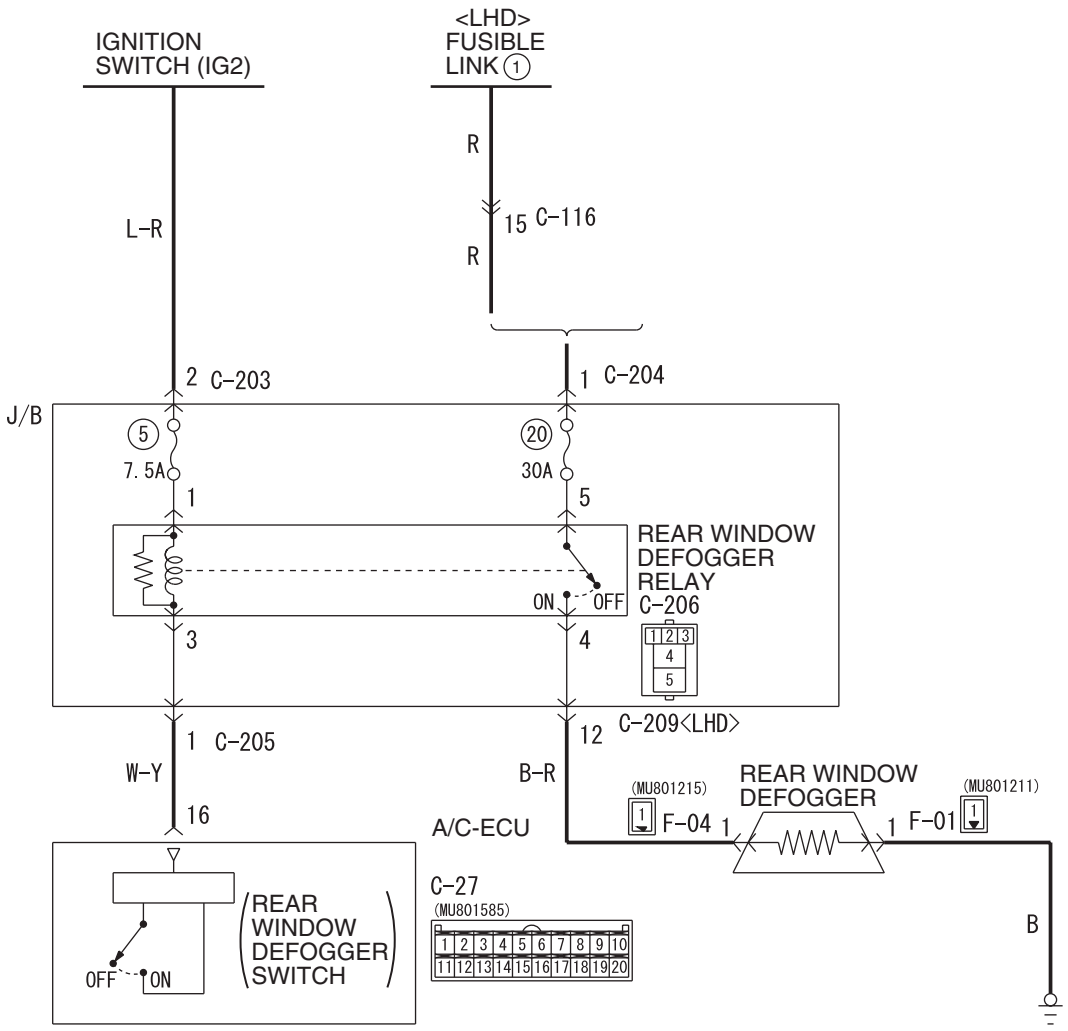
NOTE: Prior to the wiring harness inspection, check intermediate connector C-36, and repair if necessary.

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

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

Inspection Procedure 9: Rear Window Defogger function does not operate.

Rear Window 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

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AC606303AB

CIRCUIT OPERATION

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

PROBABLE CAUSES

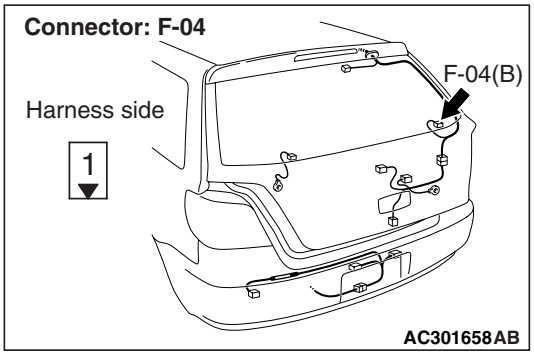
- Malfunction of the A/C-ECU
- Malfunction of the rear window defogger relay
- Damaged the wiring harness or connectors
- Malfunction of the rear window defogger

DIAGNOSIS PROCEDURE

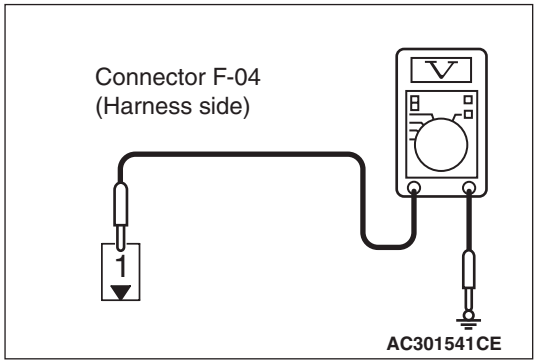
STEP 1. Check the A/C and outside/inside air selection damper control motor operation.

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-74."

STEP 2. Voltage measurement at F-04 rear window defogger connector.



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



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

OK: System voltage

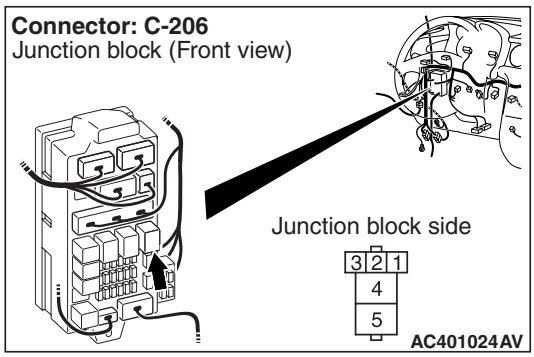
Q: Is the check result normal?
YES : Go to Step 14.
NO : Go to Step 3.

STEP 3. Check the rear window defogger relay continuity.

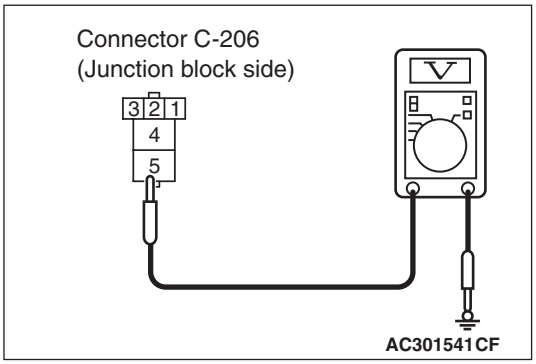
Refer to P.55A-55.

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

STEP 4. Voltage measurement at C-206 rear window defogger relay connector.



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

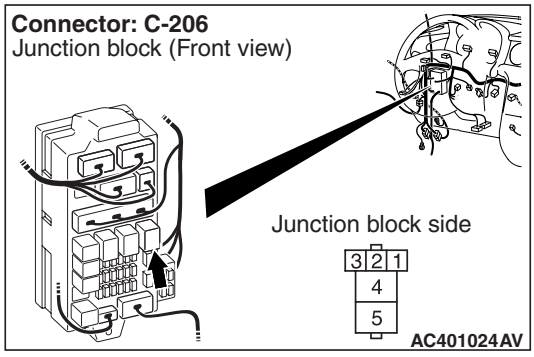


(2) Measure the voltage between terminal 5 and body earth.

OK: System voltage

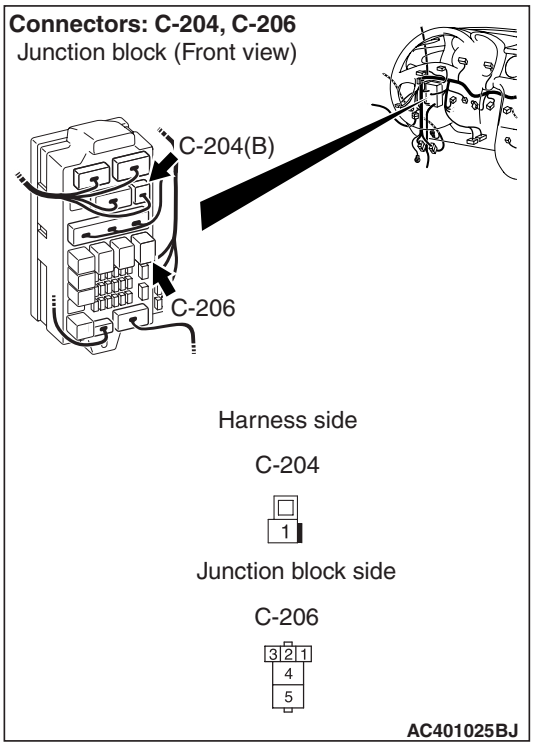
Q: Is the check result normal?
YES : Go to Step 7.
NO : Go to Step 5.

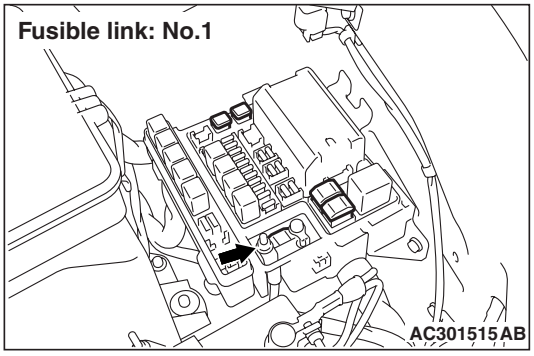
STEP 5. Connector check: C-206 rear window defogger relay connector



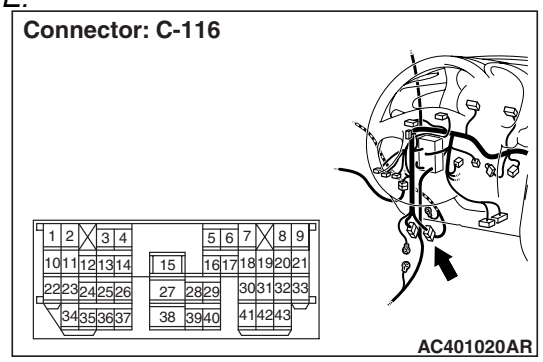
Q: Is the check result normal?
YES : Go to Step 6.
NO : Repair the connector.

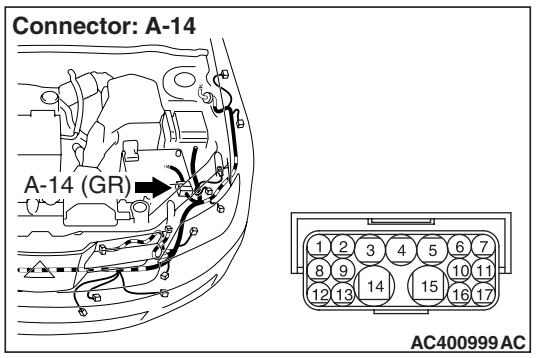
STEP 6. Check the wiring harness between C-206 rear window defogger relay connector terminal No.5 and the fusible link (1).





NOTE:





Prior to the wiring harness inspection, check intermediate connectors C-116 <LHD>, A-14, C-122 <RHD> and junction block connector C-204, and repair if necessary.

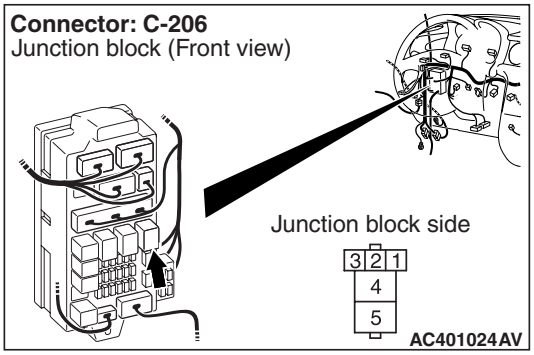
- Check the rear window defogger relay power supply line for open or short circuit.

Q: Is the check result normal?

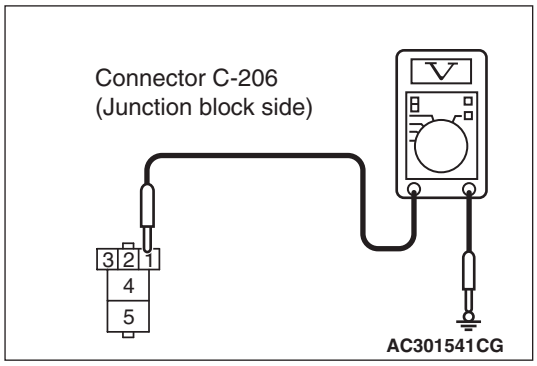
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-6).

NO : Repair the wiring harness.

STEP 7. Voltage measurement at C-206 rear window defogger relay connector.



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

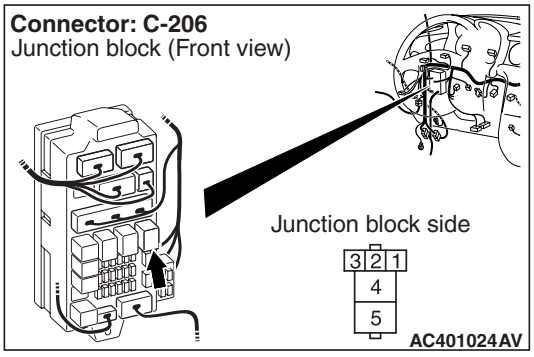


(3) Voltage between terminal 1 and body earth.

OK: System voltage

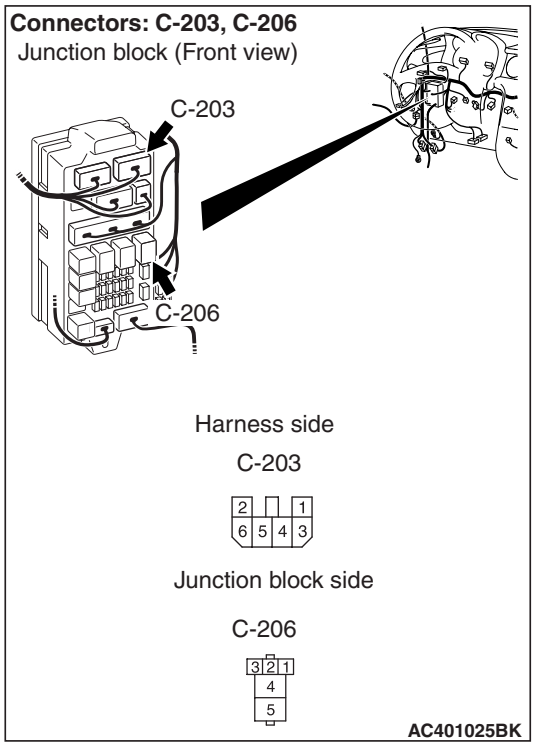
Q: Is the check result normal?
YES : Go to Step 10.
NO : Go to Step 8.

STEP 8. Connector check: C-206 rear window 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 rear window defogger relay connector No.1 and ignition switch (IG2).

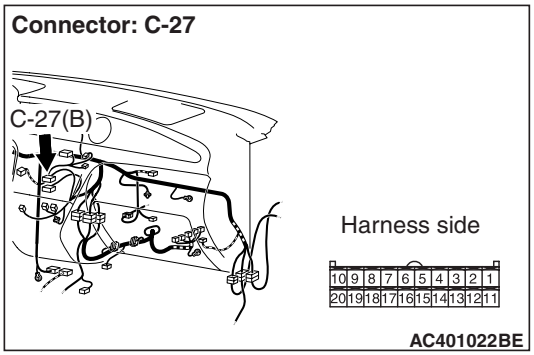


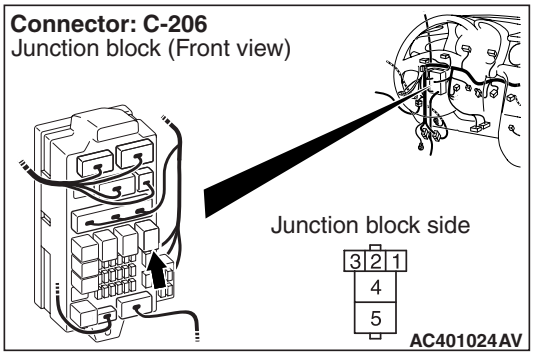
NOTE: Prior to the wiring harness inspection, check junction block connector C-203, and repair if necessary.

- Check the rear window 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.

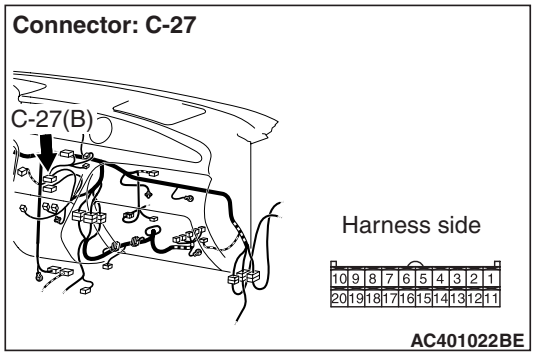
STEP 10. Connector check: C-206 rear window defogger relay connector and C-27 A/C-ECU connector

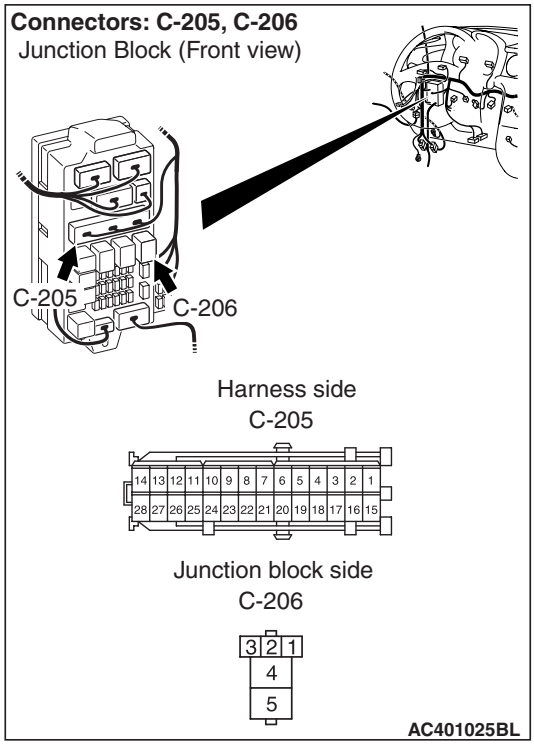




Q: Is the check result normal?
YES : Go to Step 11.
NO : Repair the connector.

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



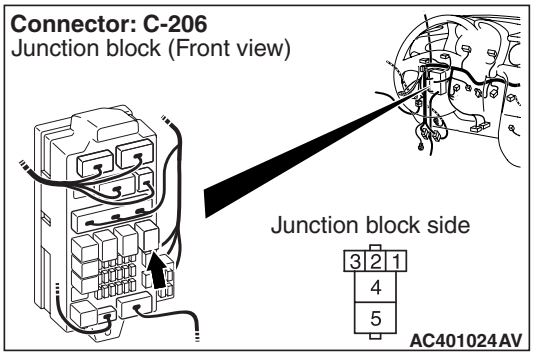


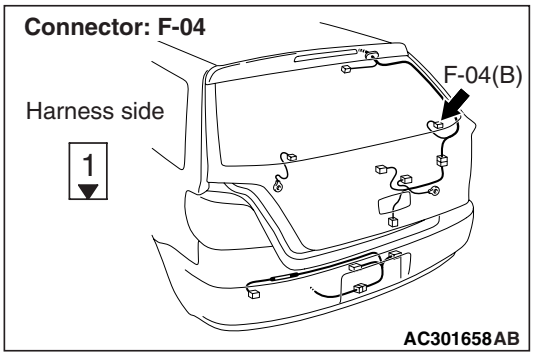
NOTE: Prior to the wiring harness inspection, check junction block connector C-205, and repair if necessary.

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

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

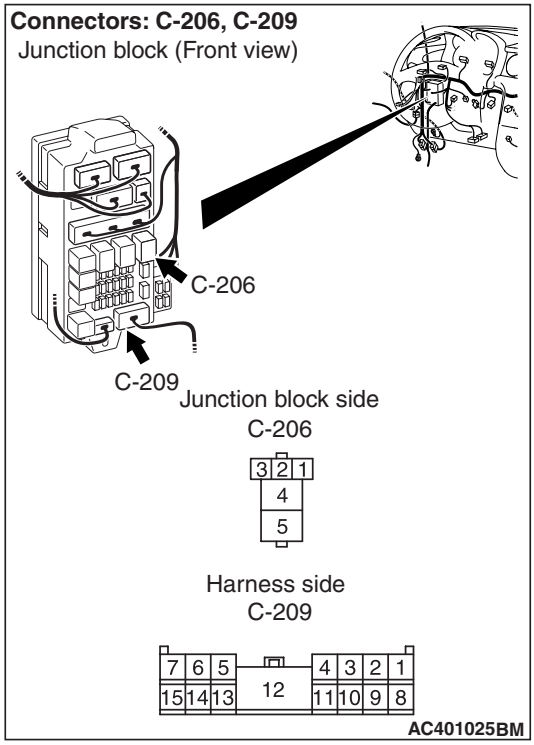
STEP 12. Connector check: C-206 rear window defogger relay connector and F-04 rear window defogger connector

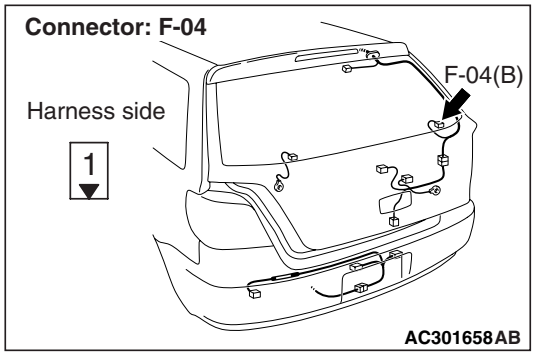




Q: Is the check result normal?
YES : Go to Step 13.
NO : Repair the connector.

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



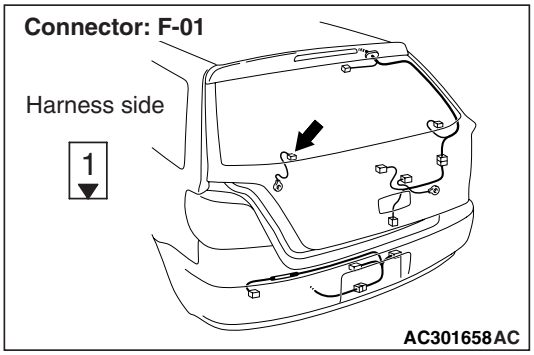


NOTE: Prior to the wiring harness inspection, check junction block connector C-209 , and repair if necessary.

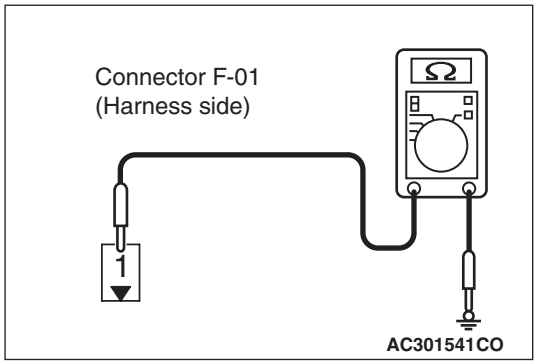
- Check the rear window defogger power supply line for open or short circuit.

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

STEP 14. Resistance measurement at F-01 rear window defogger connector.



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

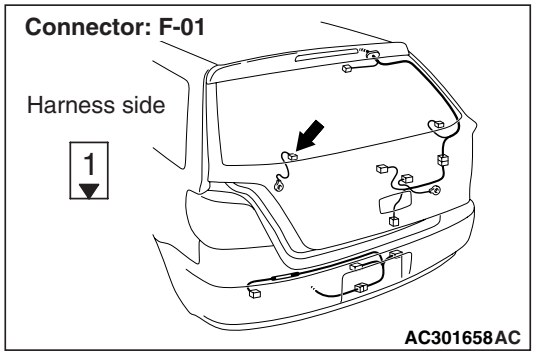


(2) Continuity between terminal 1 and body earth.

OK: Continuity (Less than 2 Ω)

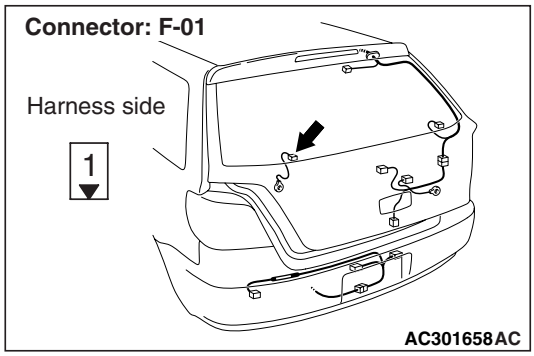
Q: Is the check result normal?
YES : Go to Step 17.
NO : Go to Step 15.

STEP 15. Connector check: F-01 rear window 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 rear window defogger connector terminal No.1 and earth.



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

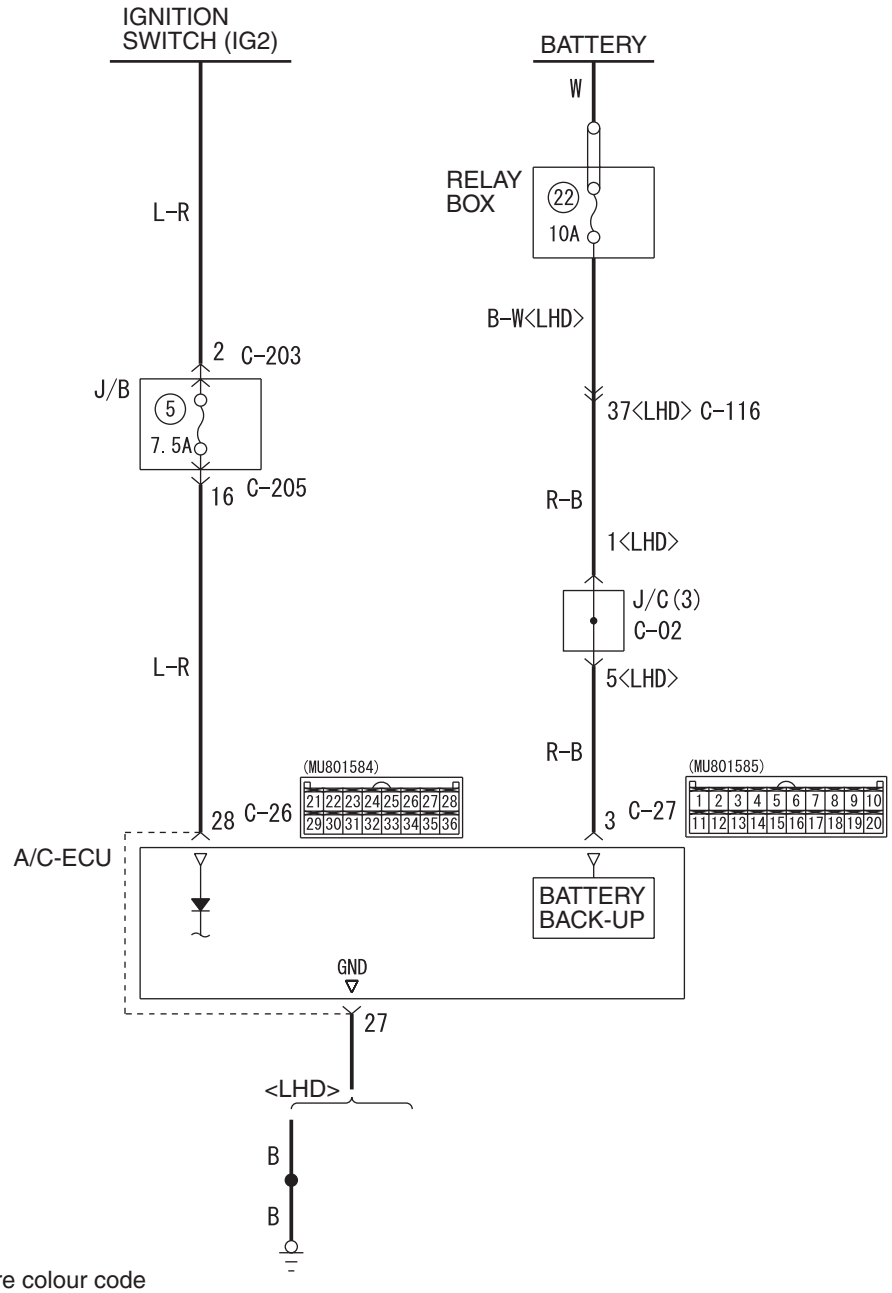
Q: Is the check result normal?
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-6).
NO : Repair or replace the wiring harness.

STEP 17. Check the rear window defogger.
Refer to GROUP 54A, Rear Window Defogger Switch Inspection P.54A-96.

Q: Does the rear window 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 rear window 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

W5Z55E007A
AC605846AB

CIRCUIT OPERATION

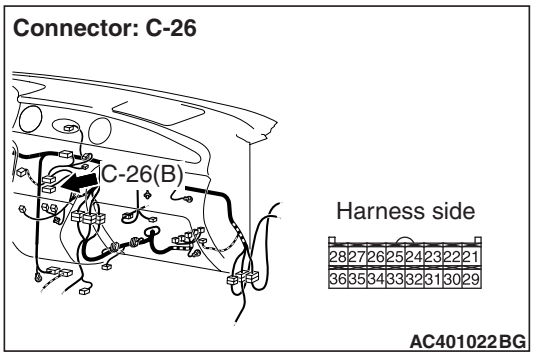
The A/C-ECU power system may be defective if the A/C, defogger, and outside/inside air selection damper motor all do not operate normally.

PROBABLE CAUSES

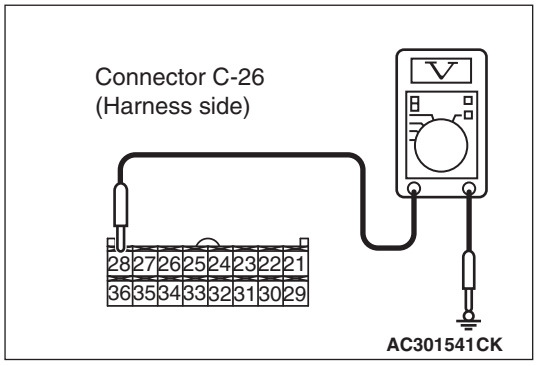
- Damaged the wiring harness or connectors
- Malfunction of the A/C-ECU

DIAGNOSIS PROCEDURE

STEP 1. Voltage measurement 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.

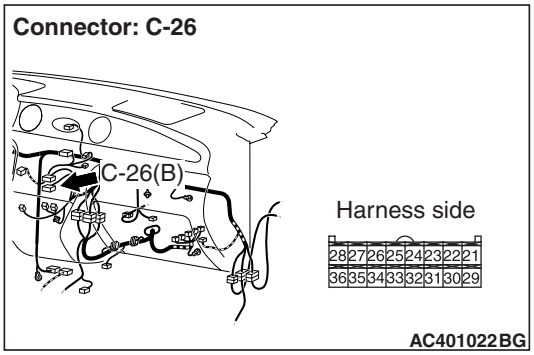


(3) Measure the voltage between terminal 28 and body earth.

OK: System voltage

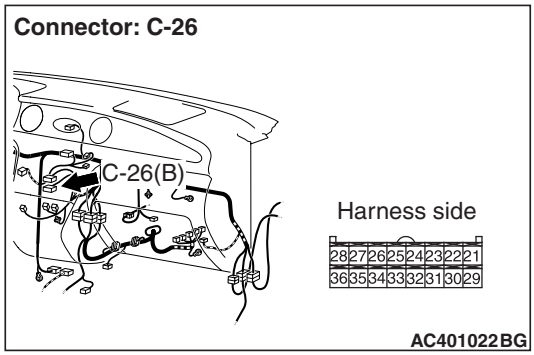
Q: Is the check result normal?
YES : Go to Step 4.
NO : Go to Step 2.

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

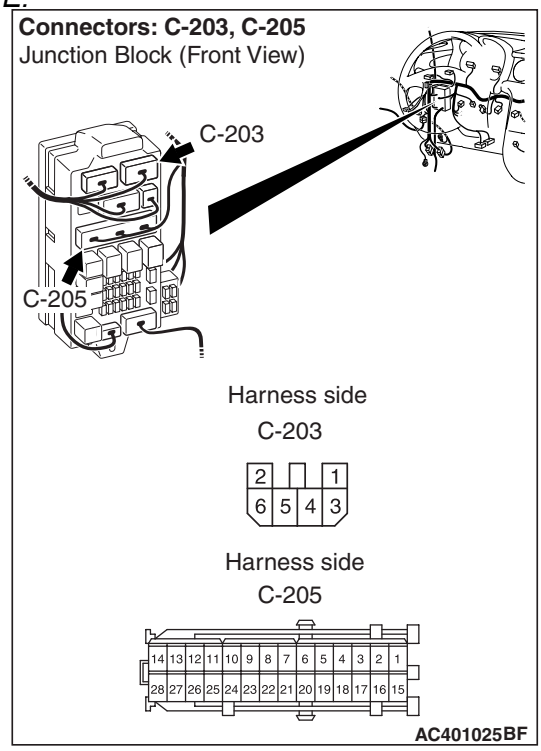


Q: Is the check result normal?
YES : Go to Step 3.
NO : Repair the connector.

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



NOTE:

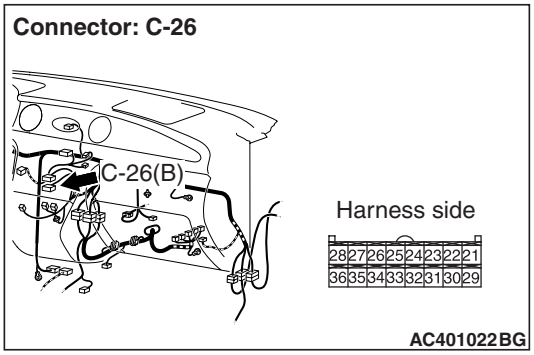


Prior to the wiring harness inspection, check junction block connectors C-205 and C-203, and repair if necessary.

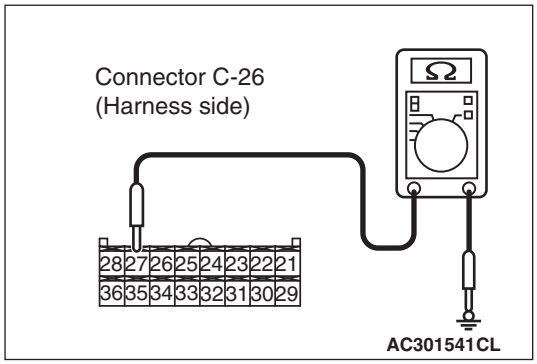
- Check the A/C-ECU power supply line for open or short circuit.

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. Resistance measurement at C-26 A/C-ECU connector.



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

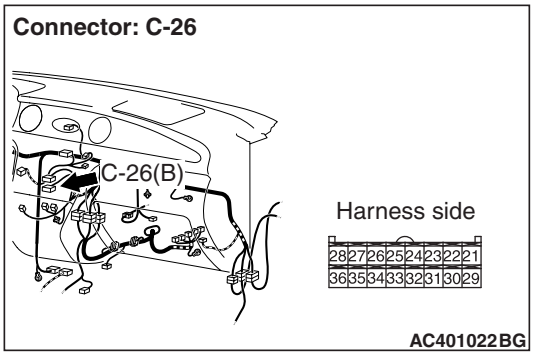


(2) Continuity between terminal 27 and body earth.

OK: 2 ohms or less

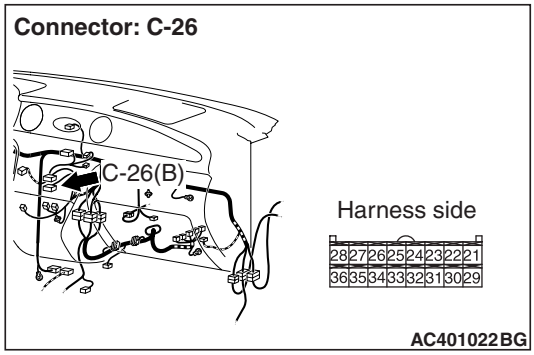
Q: Is the check result normal?
YES : Go to Step 7.
NO : Go to Step 5.

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.

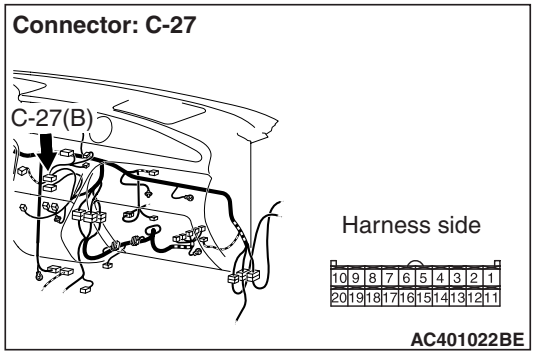
STEP 6. Check the wiring harness between C-26 A/C-ECU connector terminal No.27 and the earth.



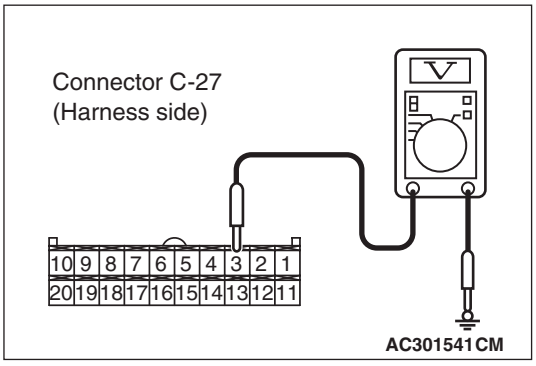
- Check the A/C-ECU earth line for open or short circuit.

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

STEP 7. Voltage measurement at C-27 A/C-ECU connector.



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

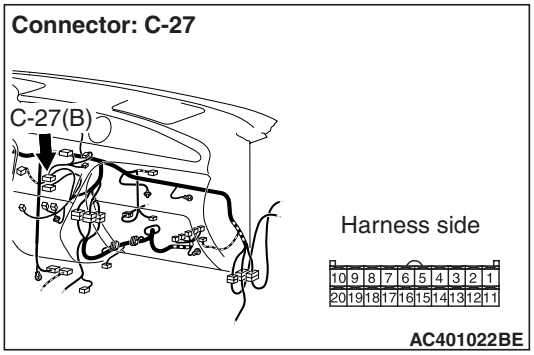


(2) Measure the voltage between terminal 3 and earth.

OK: System voltage

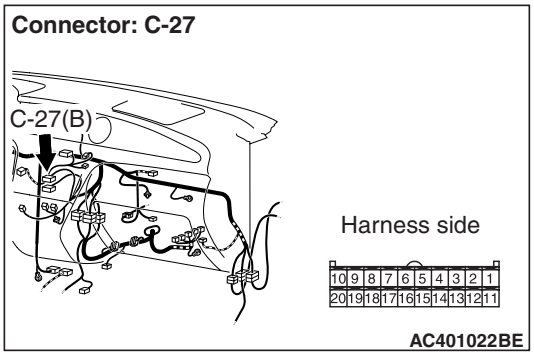
Q: Is the check result normal?
YES : Replace the automatic A/C control panel (A/C-ECU).
NO : Go to Step 8.

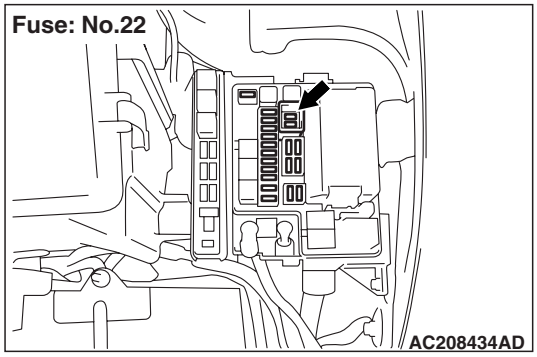
STEP 8. Connector check: C-27 A/C-ECU connector



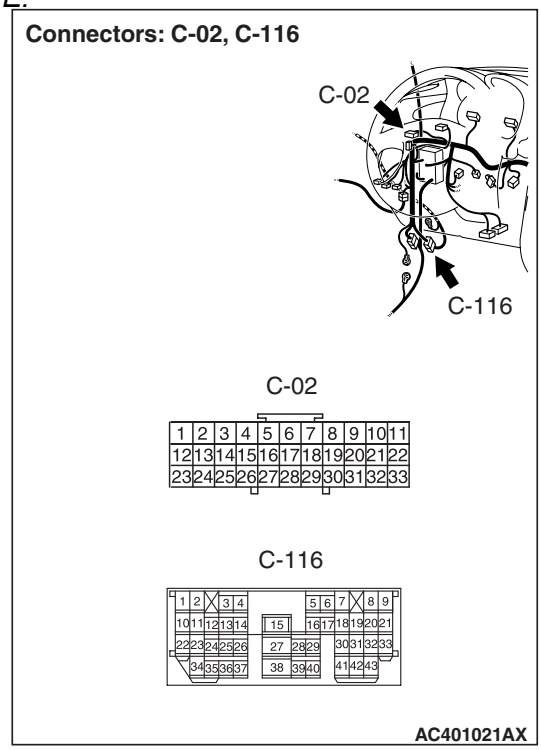
Q: Is the check result normal?
YES : Go to Step 9.
NO : Repair the connector.

STEP 9. Check the wiring harness between C-27 A/C-ECU connector terminal No.3 and relay box fuse No.22.





NOTE:



Prior to the wiring harness inspection, check intermediate connector 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

M1554005100170

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 M.U.T.-II/III displayed temperature.
13	Outside thermo sensor	Turn the ignition switch to the ON position.	Outside temperature is the same as M.U.T.-II/III displayed temperature.
15	Heater water temperature sensor	Turn the ignition switch to the ON position.	Heater core wall surface temperature is the same as M.U.T.-II/III displayed temperature.
21	Air thermo sensor	Turn the ignition switch to the ON position.	Evaporator outlet temperate is the same as M.U.T.-II/III displayed temperature
25	Photo sensor	• Turn the ignition switch to the ON position. • Change the volume of insolation.	The volume of insolation takes inverse proportion with the M.U.T.-II/III displayed voltage.
31	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 COOL	Opening angle: approximately 0%
32	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%
42	A/C pressure sensor	Turn the ignition switch to the ON position.	A/C refrigerant pressure is the same as M.U.T.-II/III displayed pressure.

ACTUATOR TEST TABLE

M1554005200166

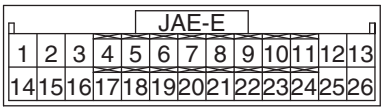
Item No.	Check items	Drive content
01	Blower motor	Stop
02		Low speed
03		Middle speed
04		High speed
05	Air mixing damper control motor	Open angle: Approximately 0% (MAX COOL)
06		Opening angle: approximately 50%
07		Open angle: Approximately 100% (MAX HOT)
08	Mode selection damper control motor	FACE
09		FOOT
10		DEF
11	Compressor output	OFF
12		ON
13	Outside/inside air selection damper control motor	Outside air
14		Inside air
38	Idle-up	OFF (A/C high pressure)
39		ON (A/C low pressure)

CHECK AT ENGINE-A/T ECU TERMINALS

M1554005400212

<2000-NON-TURBO>

<C-134>



<C-135>

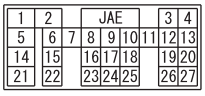
<C-137>

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	A/C switch: OFF	4.9 – 5.1 V
		A/C 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

<2000-TURBO OR 2400>

<C-139>



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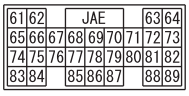

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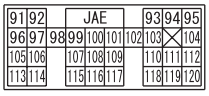


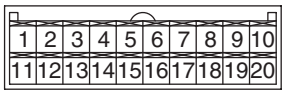
AC309402AB

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
17	Output to fan controller	A/C switch: OFF	4.9 – 5.1 V
		A/C switch: ON	0 V
69	Input from A/C-ECU (A/C2)	When the A/C is under low load	System voltage
78	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
96	A/C pressure sensor earth	Always	0 V
97	A/C pressure sensor power supply	Always	4.9 – 5.1 V
118	Input from A/C pressure sensor	2.6MPa	3.9 V

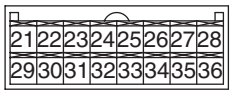
CHECK AT A/C-ECU TERMINALS

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

ON-VEHICLE SERVICE

IDLE-UP OPERATION CHECK

M1552001600542

1. Before inspection and adjustment, set vehicle in the following condition:
   - Engine coolant temperature: 80 – 90 °C
   - Lamps, electric cooling fan and accessories: Set to OFF
   - Transmission: Neutral ("N" or "P" for vehicles with A/T)
   - Steering wheel: Straightforward
2. Check whether or not the idle speed is the standard value.

   Refer to GROUP 11C, On-vehicle Service – Basic Idle Speed Adjustment P.11C-12. <2000-Turbo>

   Standard value:
   750 ± 50 r/min <2000-Turbo>
3. When the A/C is running after turning the A/C switch to ON, and the blower knob to the Maximum air volume position, check to be sure that the idle speed is at the standard value.

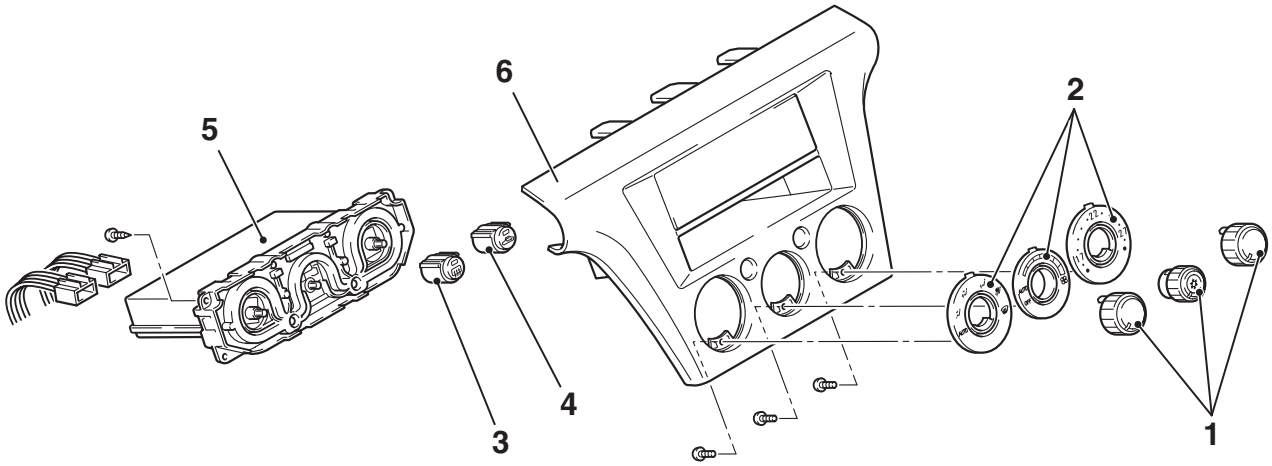
   Standard value: 850 ± 50 r/min

   NOTE: It is not necessary to make an adjustment, because the idling speed is automatically adjusted by the ISC system. If, however, a deviation from the standard value occurs for some reason, check the ISC system.

AUTOMATIC A/C CONTROL PANEL (A/C-ECU)

REMOVAL AND INSTALLATION

M1554010900086



AC301496AD

Removal steps

- Centre panel (Refer to GROUP 52A, Instrument Panel <LHD>P.52A-2 or Instrument Panel <RHD>P.52A-2).

1. Knob

Removal steps (Continued)

2. Panel
3. Rear defogger knob
4. Outside/inside air selection knob
5. A/C-ECU
6. Automatic A/C control panel

HEATER UNIT

REMOVAL AND INSTALLATION <2000-TURBO>

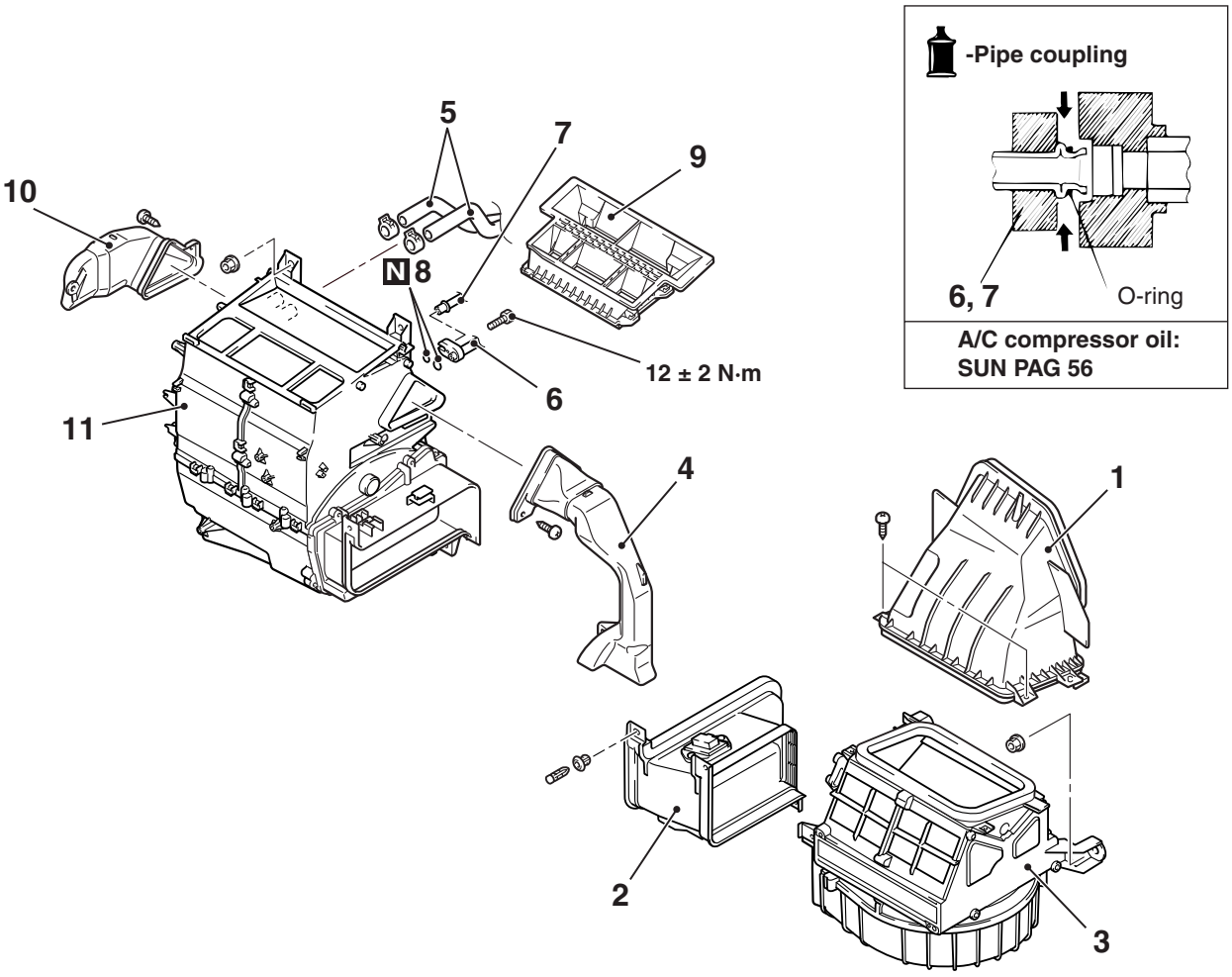
M1552011600628

NOTE: For removal of the heater unit, heater core, blower assembly and evaporator unit for 2000-Non-Turbo and 2400, refer to GROUP 55A, Heater Unit, Heater Core, Blower Assembly and Evaporator Unit P.55A-61.

⚠ ***WARNING***

When removing and installing the heater unit, do not let it bump against the SRS-ECU or the components.

Pre-removal and Post-installation Operation
- Refrigerant draining and Refilling (Refer to Charging P.55A-50 and Discharging P.55A-53).
- Engine coolant Draining and Refilling (Refer to GROUP 14, On vehicles service P.14-17).
- Instrument Panel Removal and Installation (Refer to GROUP 52A, Instrument Panel P.52A-2 .
- Air cleaner cover and air flow sensor assembly Removal and Installation (Refer to GROUP 15, Air cleaner P.15-7 <2000-Turbo>).



AC200906AF

Removal steps
1. Intake duct
2. Joint duct
3. Blower assembly
4. Foot duct <front passenger's side>
5. Heater hose connection

<<A>>
6. Liquid pipe B connection

<<A>>

Removal steps (Continued)
7. Flexible suction hose connection
8. O-ring
9. Centre duct
10. Foot duct <driver's side>
11. Heater unit

REMOVAL SERVICE POINT

<<A>> FLEXIBLE SUCTION HOSE AND LIQUID PIPE B DISCONNECTION

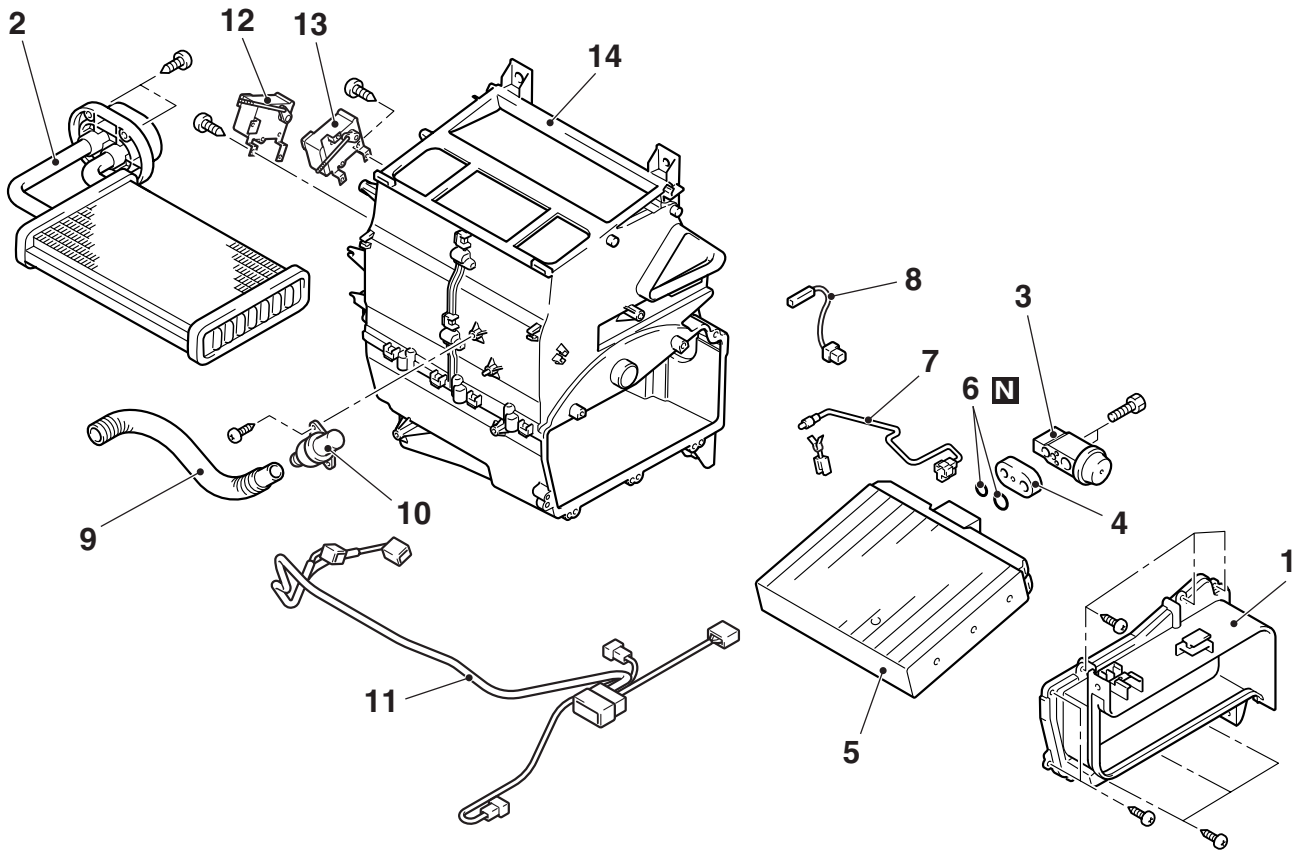
⚠ CAUTION

As the compressor oil and receiver are highly moisture absorbent, use a non-porous material to plug the hose and nipples.

To prevent the entry of dust or other foreign bodies, plug the dismantled hose and the nipples of the expansion valves.

DISASSEMBLY AND REASSEMBLY

M1554009200157



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

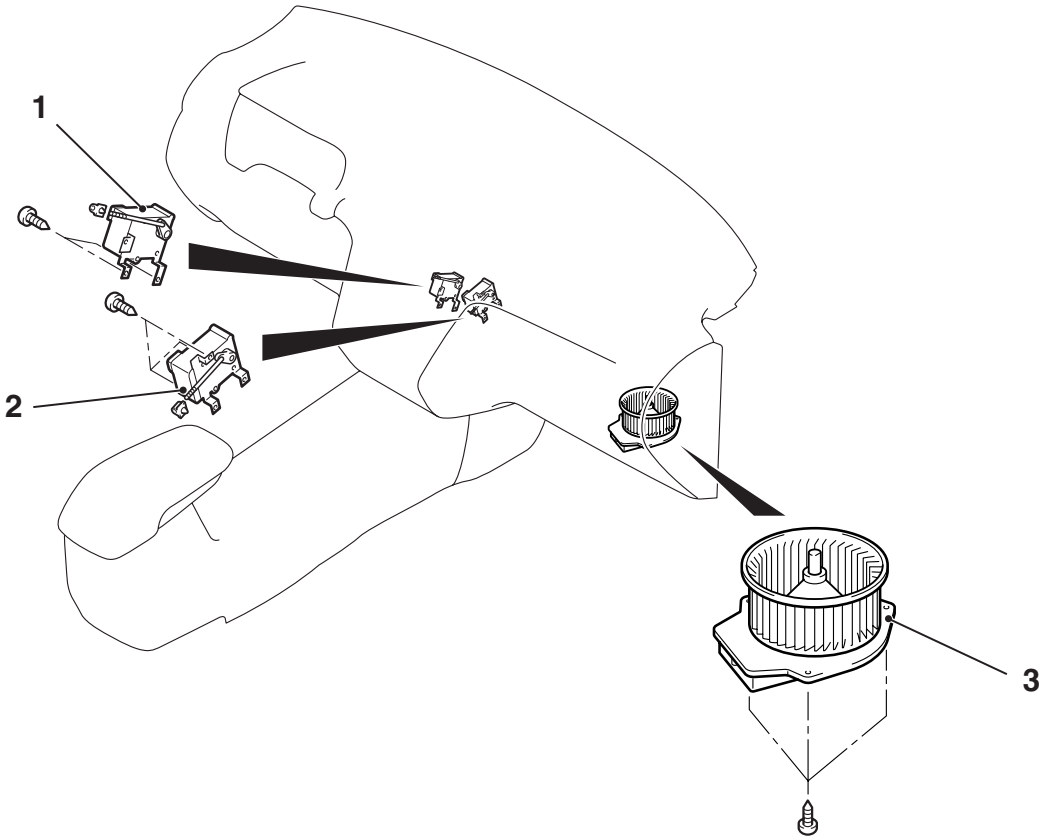
Disassembly steps (Continued)

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

M1554011100083



AC301512AB

Air mixing damper control motor and potentiometer removal steps

- Foot duct <driver's side> (Refer to GROUP 55A, Ventilator P.55A-79)

1. Air mixing damper control motor and potentiometer

Mode selection damper control motor and potentiometer removal

2. Mode selection damper control motor and potentiometer

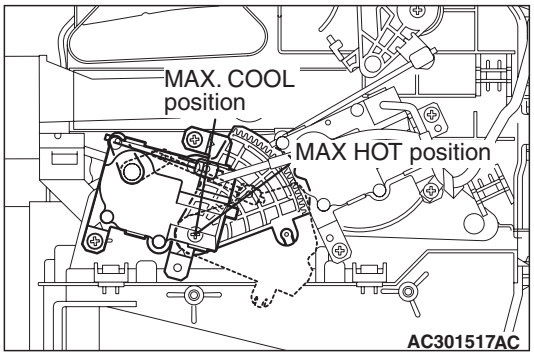
Blower motor removal

3. Blower motor

INSPECTION

M1552014301287

CHECK THE AIR MIXING DAMPER CONTROL MOTOR AND POTENTIOMETER



CHECK THE AIR MIXING DAMPER CONTROL MOTOR

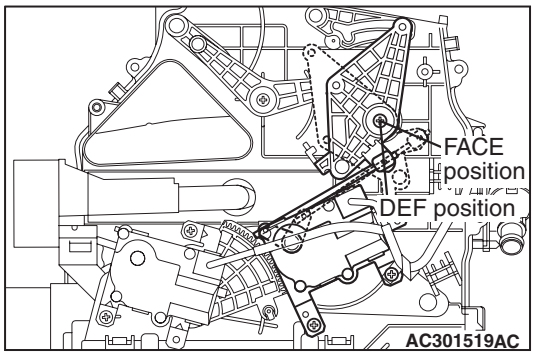
Battery connection (+) terminal	Battery connection (-) terminal	Lever operation
1	3	Rotate to the HOT position.
3	1	Rotate to the COOL position.

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

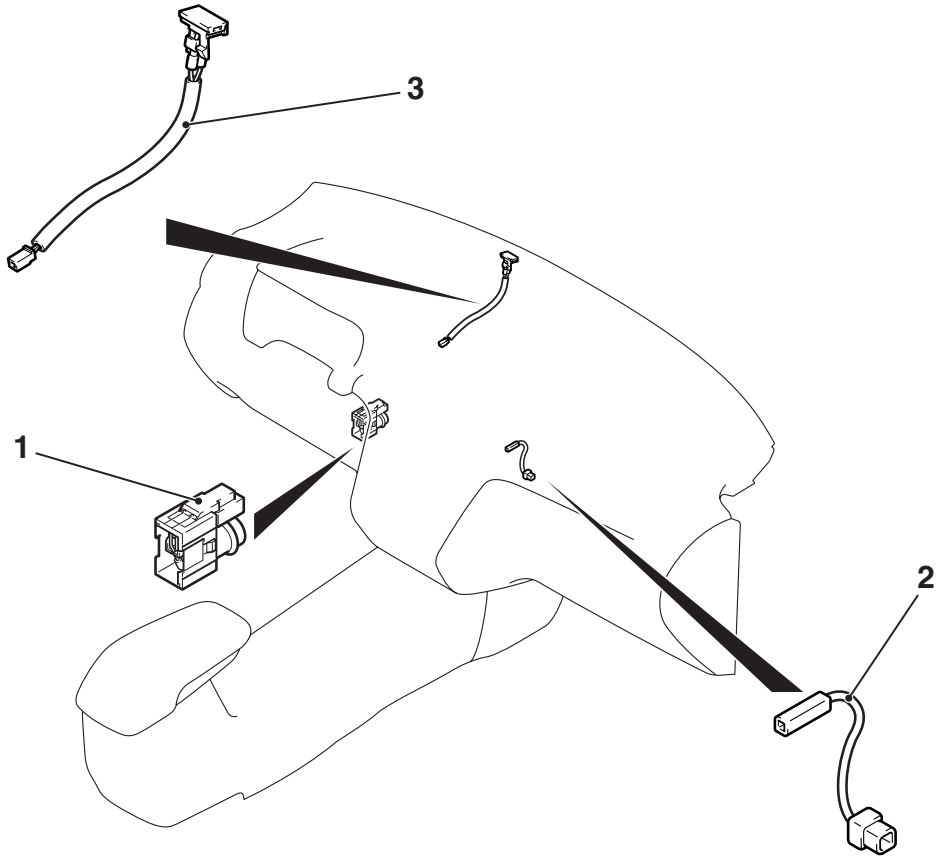
BLOWER MOTOR CHECK

Execute actuator test item No.01 to 04 by using M.U.T.-II/III with the vehicle body, and check that the blower motor works normally. (Refer to P.55B-79).

SENSORS

REMOVAL AND INSTALLATION

M1554001900334



AC301526AB

Interior temperature sensor removal steps

- Instrument lower panel (Refer to GROUP 52A, Instrument 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-79).

2. Heater water temperature sensor

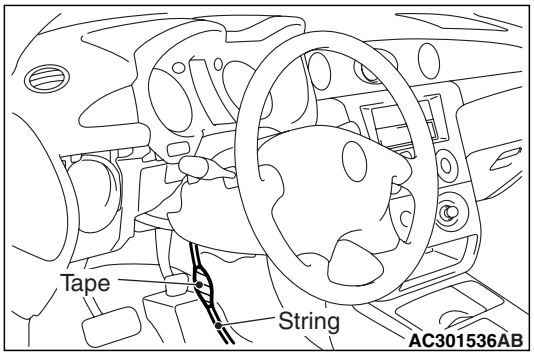
Photo sensor removal steps

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

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

REMOVAL SERVICE POINT

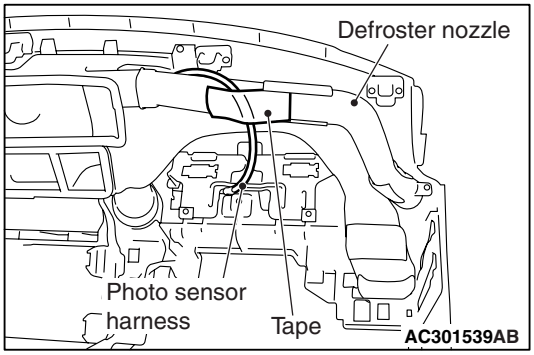
<<A>> PHOTO SENSOR REMOVAL



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

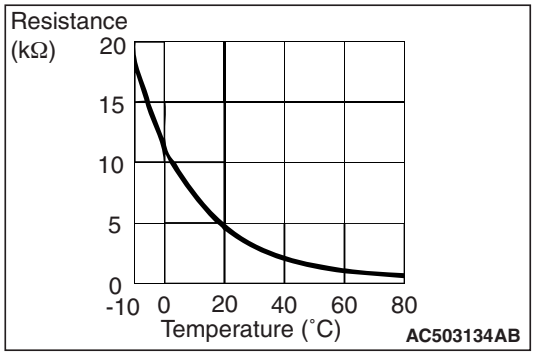


Tape the photo sensor under the defroster nozzle.

INSPECTION

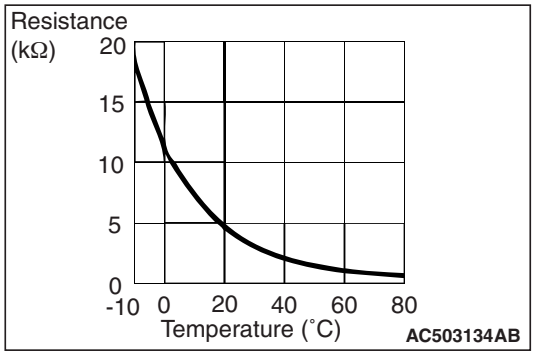
M1552014300767

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

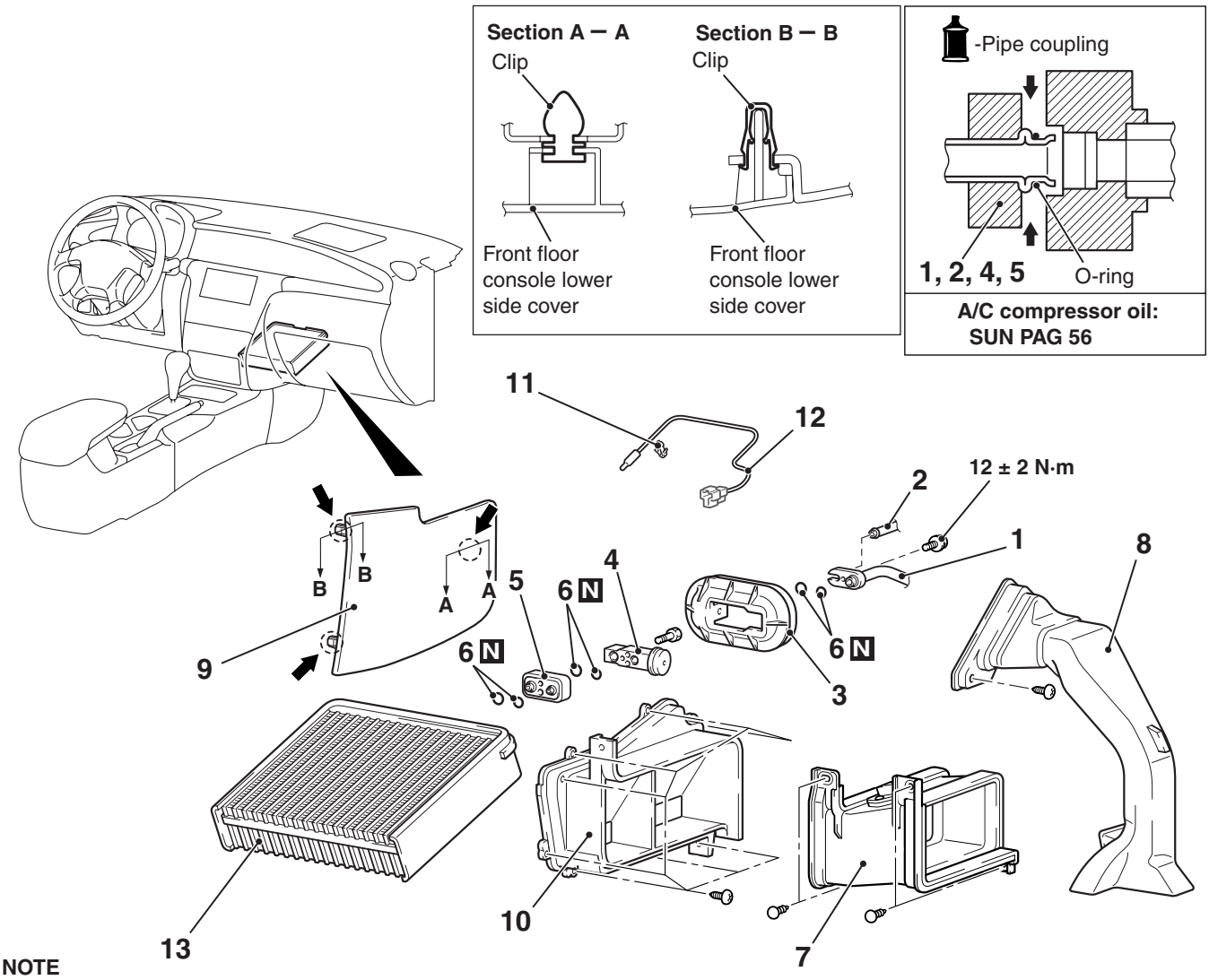
Check that the blower rotation comes down if the photo sensor is covered with hands, when the automatic A/C is operating (in summer sunbeam). If not the rotation comes down, replace the photo sensor.

EVAPORATOR ASSEMBLY

REMOVAL AND INSTALLATION

M1552003600690

Pre-removal and Post-installation Operation
- Refrigerant draining and Refilling (Refer to Charging P.55A-50 and Discharging P.55A-53).
- Air cleaner cover and air flow sensor assembly Removal and Installation (Refer to GROUP 15, Air cleaner P.15-6 <2000-Non-Turbo>, P.15-7 <2000-Turbo> or P.15-8 <2400>).



NOTE
◀ : Clip position

AC401399AD

Removal steps
<<A>> 1. Flexible suction hose connection
<<A>> 2. Liquid pipe B connection
3. Expansion valve cover
4. Expansion valve
5. Joint
6. O-ring
- Glove box (Refer to GROUP 52A, Instrument Panel P.52A-2 .

Removal steps (Continued)
7. Joint duct
8. Foot duct <front passenger's side>
9. Front floor console lower side cover
10. Evaporator cover
11. Air thermo sensor clip
12. Air thermo sensor
13. Evaporator

REMOVAL SERVICE POINT

<<A>> FLEXIBLE SUCTION HOSE/LIQUID PIPE B DISCONNECTION

⚠ CAUTION

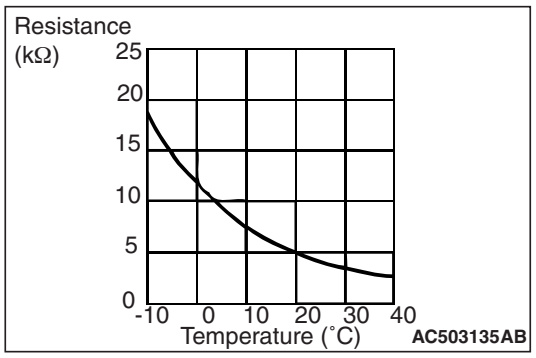
As the compressor oil and receiver are highly moisture absorbent, use a non-porous material to plug the hose and nipples.

To prevent the entry of dust or other foreign bodies, plug the dismantled hose and the nipples of the expansion valves.

INSPECTION

M1552014300734

AIR THERMO SENSOR CHECK



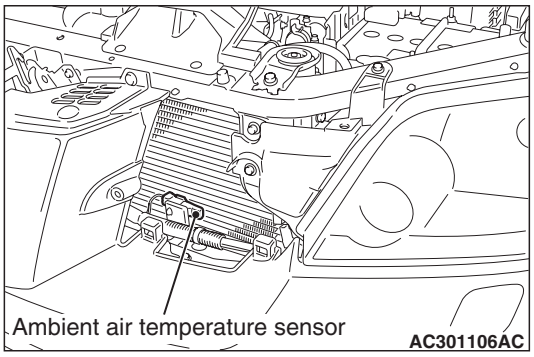
Check to see that the resistance shown in the graph is almost satisfied when measuring the resistance between the terminals under two or more different temperature conditions.

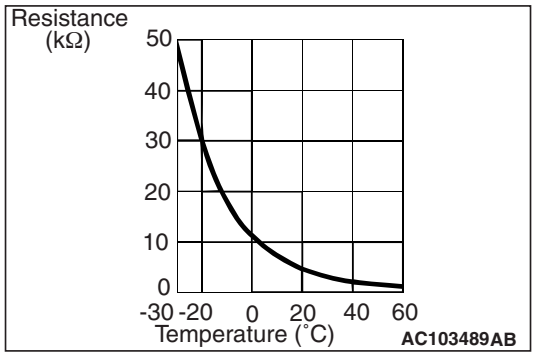
NOTE: The temperature should be within the shown range.

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.

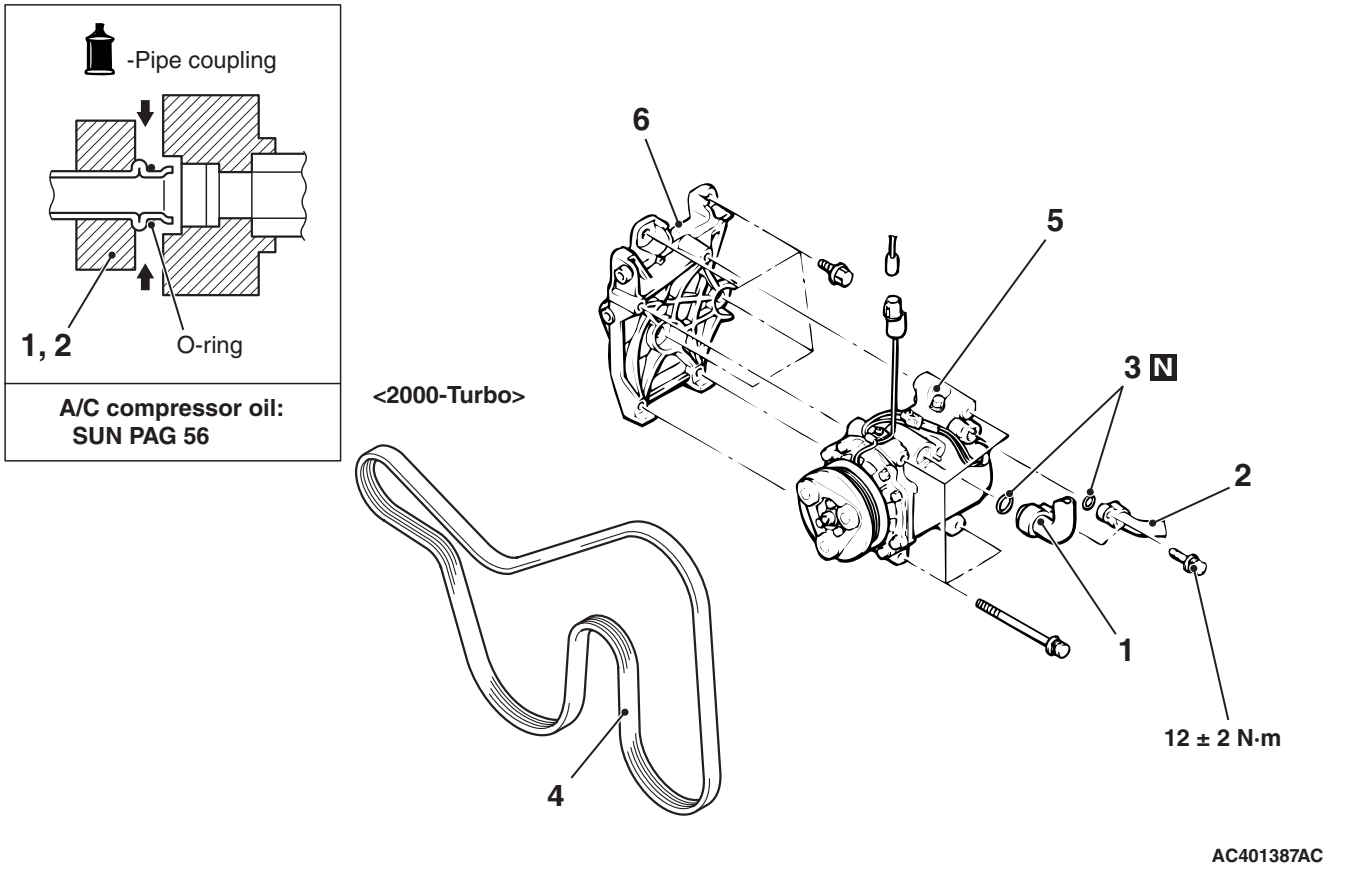
COMPRESSOR ASSEMBLY AND TENSION PULLEY

REMOVAL AND INSTALLATION
<2000-TURBO>

M1552004100449

NOTE: For removal of the compressor assembly and tension pulley for 2000-Non-Turbo and 2400, refer to GROUP 55A, Compressor Assembly and Tension Pulley P.55A-69.

Pre-removal Operation	Post-installation Operation
• Refrigerant Discharging (Refer to P.55A-53).	• Drive Belt Tension Adjustment (Refer to GROUP 11C, On-vehicles Service – Drive Belt Tension Check P.11A-7 <2000-Turbo>). • Refrigerant Charging (Refer to P.55A-50).



AC401387AC

		Removal steps			Removal steps (Continued)
<<A>>	1.	Flexible suction hose connection	<<B>>	4.	Drive belt
<<A>>	2.	Flexible discharge hose connection	<<C>> >>A<<	5.	A/C compressor
	3.	O-ring		6.	A/C compressor bracket

REMOVAL SERVICE POINTS

<<A>> FLEXIBLE SUCTION HOSE/FLEXIBLE DISCHARGE HOSE DISCONNECTION

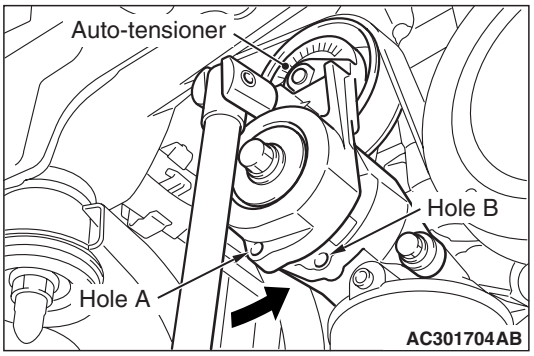
⚠ CAUTION

As the compressor oil and receiver are highly moisture absorbent, use a non-porous material to plug the hose and nipples.

To prevent the entry of dust or other foreign bodies, plug the dismantled hoses and compressor nipples.

<<B>> DRIVE BELT REMOVAL

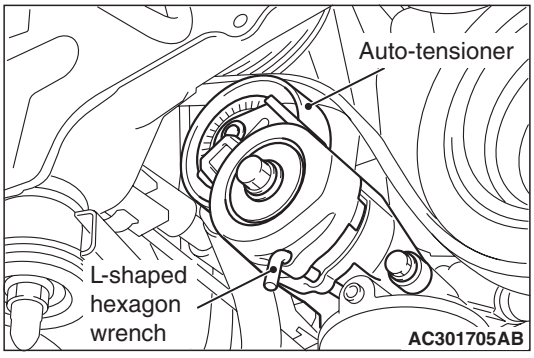
The following operations will be needed due to the introduction of the serpentine drive system with the drive belt auto-tensioner.



1. Securely insert the spindle handle or ratchet handle with a 12.7 mm insertion angle into the jig hole of the auto-tensioner.
2. Rotate the auto-tensioner anti-clockwise and align hole A with hole B.

⚠ CAUTION

To reuse the drive belt, draw an arrow indicating the rotating direction (clockwise) on the back of the belt using chalk, etc.



3. Insert an L-shaped hexagon wrench, etc. into the hole to fix and then remove the drive belt.

<<C>> A/C COMPRESSOR REMOVAL

Take care not to spill any compressor oil when removing the compressor.

INSTALLATION SERVICE POINT

>>A<< A/C COMPRESSOR INSTALLATION

If a new compressor is installed, first adjust the amount of oil according to the procedures described below, and then install the compressor.

1. Measure the amount (X mL) of oil within the removed compressor.
2. Drain (from the new compressor) the amount of oil calculated according to the following formula, and then install the new compressor.

   New compressor oil amount = 120 mL

   120 mL−X mL = Y mL

NOTE: Y mL indicates the amount of oil in the refrigerant line, the condenser, the evaporator, etc.

NOTE: When replacing the following parts at the same times as the compressor, subtract the rated oil amount of the each part from Y mL and discharge from the new compressor.

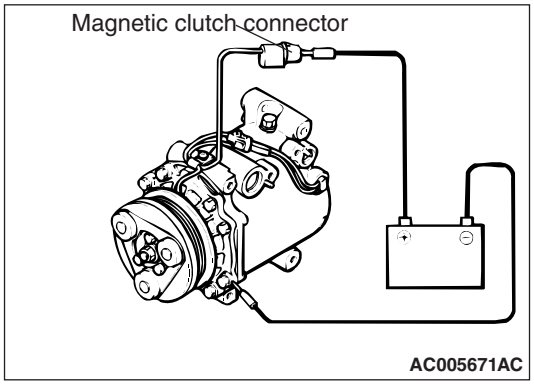
Quantity:

- **Evaporator: 60 mL**
- **Condenser: 15 mL**
- **Suction hose: 10 mL**
- **Receiver: 10 mL**

INSPECTION

M1552014300701

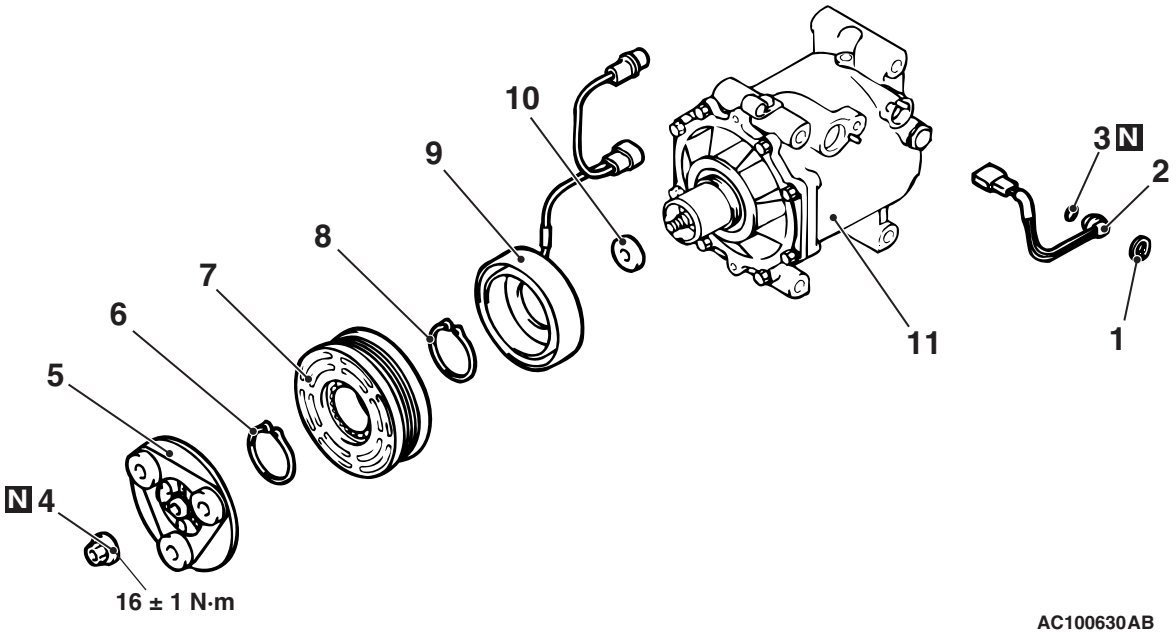
COMPRESSOR MAGNETIC CLUTCH OPERATION CHECK



Connect the compressor connector terminal to the battery positive (+) terminal and earth the battery's negative (−) terminal to the compressor unit. At that time, the magnetic clutch should make a definite operating sound.

DISASSEMBLY AND REASSEMBLY

M1552004600671



AC100630AB

A/C refrigerant temperature switch disassembly steps

1. Snap ring
2. A/C refrigerant temperature switch
3. O-ring

Magnetic clutch disassembly steps

>>**D**<< • Air gap adjustment

<<**A**>> >>**C**<< 4. Self-locking nut

Magnetic clutch disassembly steps (Continued)

5. Armature

>>**B**<< 6. Snap ring

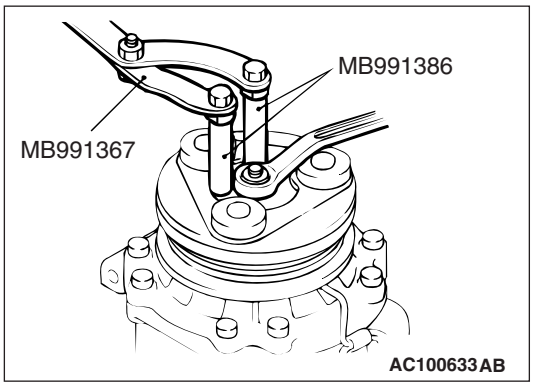
7. Rotor
8. Snap ring

>>**A**<< 9. Field core

10. Shim
11. A/C compressor

DISASSEMBLY SERVICE POINT

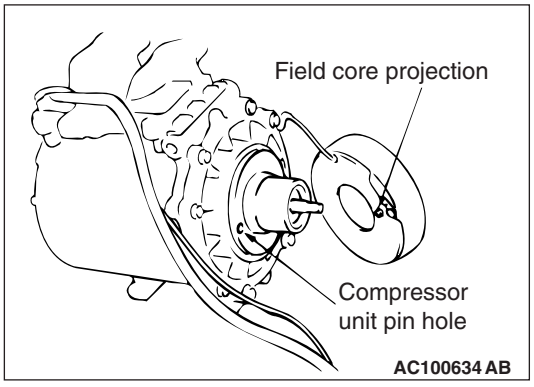
<<A>> SELF-LOCKING NUT REMOVAL



Use the special tools to remove the self-locking nut.
- Special spanner (MB991367)
- Pin (MB991386)

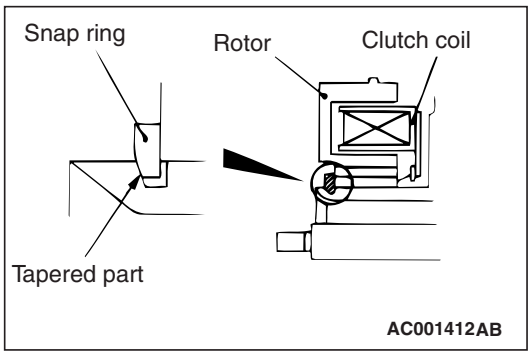
REASSEMBLY SERVICE POINTS

>>A<< FIELD CORE ATTACHMENT



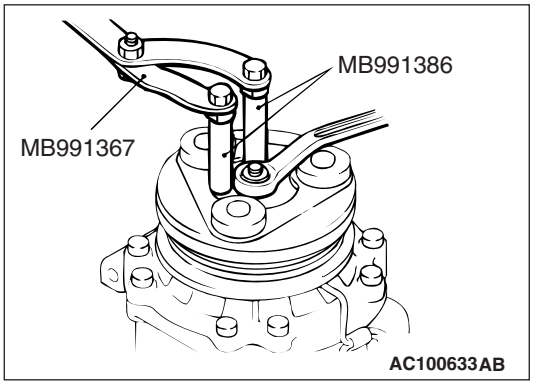
Line up the pin hole on the compressor unit with the field core projection and attach.

>>B<< SNAP RING INSTALLATION



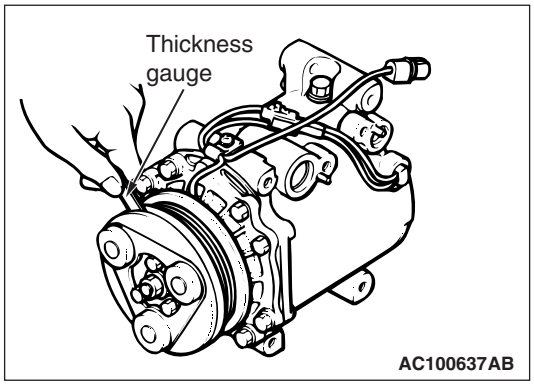
Using snap ring pliers, fit the snap ring so that the snap ring's tapered part is on the outside.

>>C<< SELF-LOCKING NUT INSTALLATION



Use the special tools to install the self-locking nut.
- Special spanner (MB991367)
- Pin (MB991386)

>>D<< AIR GAP ADJUSTMENT



Check that the clutch air gap is inside the standard value. If outside the standard value, use a shim to adjust the gap.

Standard value: 0.3 – 0.5 mm

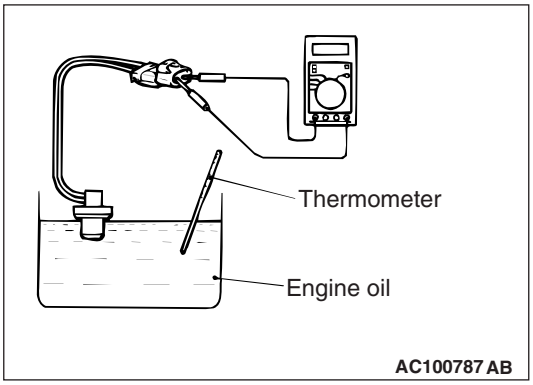
INSPECTION

M1552014301265

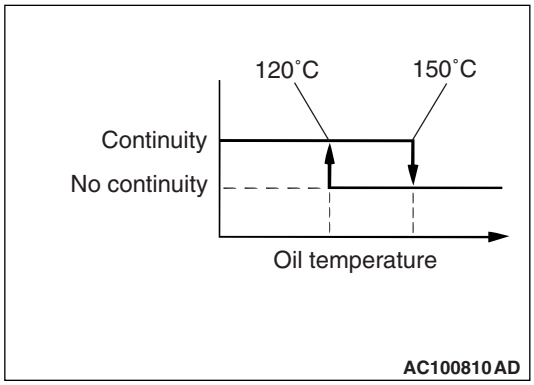
A/C REFRIGERANT TEMPERATURE SWITCH

⚠ CAUTION

Do not heat more than necessary.



1. Dip the metal part of the A/C refrigerant temperature switch into engine oil and increase the oil temperature using a gas burner or similar.



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

   Standard value:

Item	Temperature
Less than 2 ohms	Slightly below 150°C
No continuity	150°C or more

NOTE: When the oil temperature is 150°C or more and there is no continuity, the resistance will not be 2 ohms or lower until the oil temperature reduces to 120°C or less.

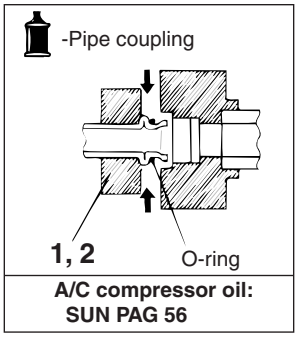
CONDENSER AND CONDENSER FAN MOTOR

REMOVAL AND INSTALLATION
<2000-TURBO>

M1552006700544

NOTE: For removal of the condenser and condenser fan motor for 2000-Non-Turbo and 2400, refer to GROUP 55A, Condenser and Condenser Fan Motor P.55A-74.

Pre-removal and Post-installation Operation
- Refrigerant draining and Refilling (Refer to Charging P.55A-50 and Discharging P.55A-53).
- Air cleaner cover and air flow sensor assembly Removal and Installation (Refer to GROUP 15, Air cleaner P.15-7 <2000-Turbo>).



<2000-Turbo>

AC401382AC

Condenser removal steps
- <<A>> 1. Liquid pipe A connection
- <<A>> 2. Flexible discharge hose connection
- 3. O-ring
- >>A<< 4. Condenser assembly
- 5. Receiver
- 6. Clamp

Condenser removal steps
- 7. O-ring
- 8. Condenser

Fan shroud assembly removal steps
- 9. Fan shroud assembly
- 10. Fan

Fan shroud assembly removal steps (Continued)

11. Fan motor
12. Heat protector
13. Fan shroud

Air guide panel removal steps

- Front bumper (Refer to 51, Front bumper P.51-3).

14. Air guide panel

REMOVAL SERVICE POINT

<<A>> LIQUID PIPE A/FLEXIBLE SUCTION HOSE DISCONNECTION

⚠ CAUTION

As the compressor oil and receiver are highly moisture absorbent, use a non-porous material to plug the hose and nipples.

To prevent the entry of dust or other foreign bodies, plug the dismantled hose and condenser assembly nipples.

INSTALLATION SERVICE POINT

>>A<< CONDENSER INSTALLATION

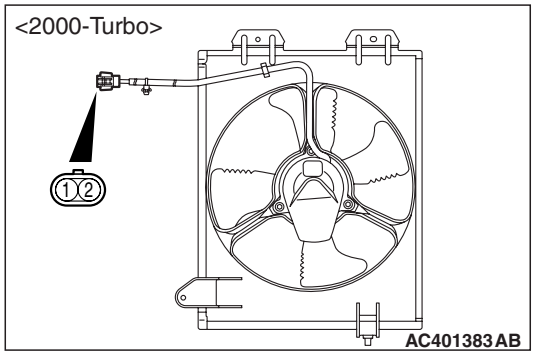
When replacing the condenser, refill it with a specified amount of compressor oil and install it. (to the vehicle).

Compressor oil: SUN PAG 56
Quantity: 15 mL

INSPECTION

M1552014301759

CONDENSER FAN MOTOR CHECK



Check to be sure that the condenser fan motor operates when battery voltage is applied to terminal 2 and terminal 1 earthed.

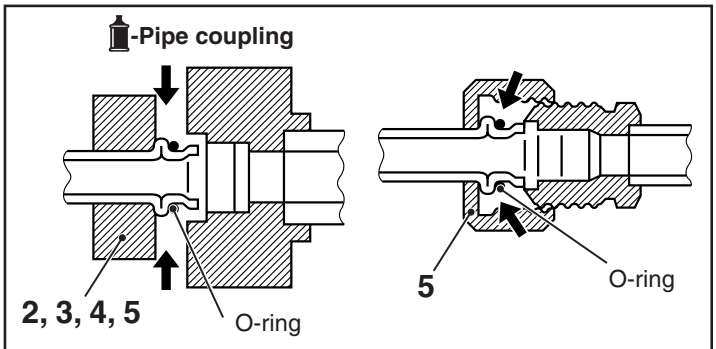
REFRIGERANT LINE

REMOVAL AND INSTALLATION <2000-TURBO>

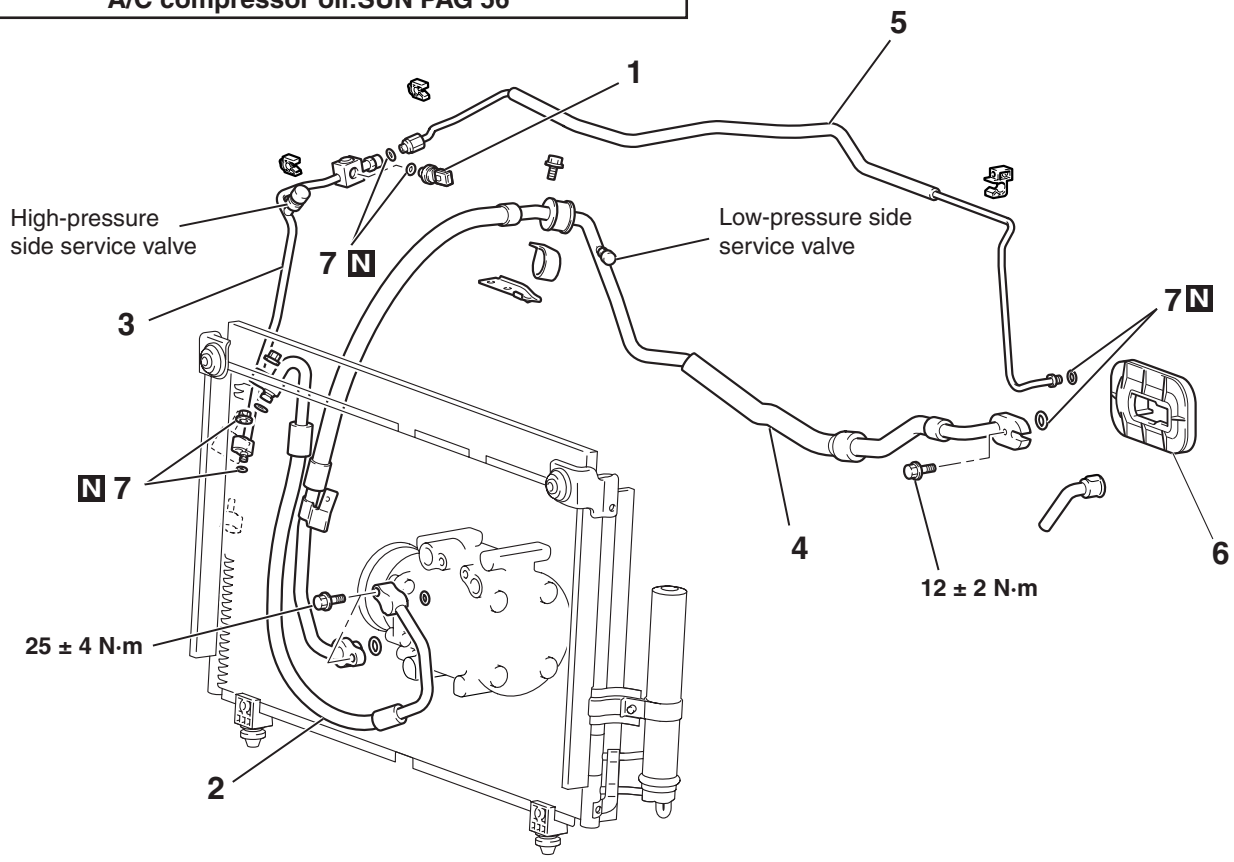
M1552006400781

NOTE: For removal of the refrigerant line for 2000-Non-Turbo and 2400, refer to GROUP 55A, Refrigerant Line P.55A-77.

Pre-removal and Post-installation Operation
- Refrigerant Draining and Refilling (Refer to Charging and Discharging P.55A-50).
- Air cleaner cover and air flow sensor assembly Removal and Installation (Refer to GROUP 15, Air cleaner P.15-7 <2000-Turbo>).
- Radiator Grille Removal and Installation (Refer to GROUP 51, Radiator Grille P.51-10).



A/C compressor oil:SUN PAG 56



AC309406AD

Removal steps

<<A>> 1. A/C pressure sensor
<<A>> 2. Flexible discharge hose
<<A>> 3. Liquid pipe A

Removal steps (Continued)

<<A>> >>A<< 4. Flexible suction hose
<<A>> 5. Liquid pipe B
6. Evaporator cover
7. O-ring

REMOVAL SERVICE POINT

<<A>> A/C PRESSURE SEBSOR/HOSE/PIPE DISCONNECTION

⚠ CAUTION

As the compressor oil and receiver are highly moisture absorbent, use a non-porous material to plug the hose and nipples.

To prevent the entry of other foreign bodies, plug the condenser, compressor, and expansion valve nipples.

INSTALLATION SERVICE POINT

>>A<< FLEXIBLE SUCTION HOSE INSTALLATION

When replacing the suction hose, refill them with a specified amount of compressor oil, and then install them.

Compressor oil: SUN PAG 56

Quantity: Suction hose: 10 cm^3

OTHER PARTS

OTHER PARTS

M1554004000158

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-49
	Magnetic clutch test	P.55A-49
	Compressor drive belt adjustment	P.55A-49
	A/C pressure sensor simple check	P.55A-50
	Charging	P.55A-50
	Correcting low refrigerant level in case the service can in used	P.55A-52
	Discharging system	P.55A-53
	Refilling of oil in the A/C system	P.55A-53
	Performance test	P.55A-53
	Refrigerant leak repair procedure	P.55A-54
	Compressor noise check	P.55A-55
	Power relay continuity check	P.55A-55
	Idle-up operation check	P.55B-83
	Clean air filter replacement procedure	P.55A-57

Item	Reference page
Heater unit and blower assembly <2000-Non-Turbo and 2400>	P.55A-61
Outside/inside air selection damper control motor	P.55A-65
A/C compressor <2000-Non-Turbo and 2400>	P.55B-93
Condenser and condenser fan motor <2000-Non-Turbo and 2400>	P.55B-98
Refrigerant liner <2000-Non-Turbo and 2400>	P.55B-100
Ventilators	P.55A-79