

## GROUP 55B

# AUTOMATIC AIR CONDITIONER

## CONTENTS

<b>SERVICE SPECIFICATIONS</b> .....	<b>55B-2</b>	<b>HEATER UNIT</b> .....	<b>55B-29</b>
<b>SPECIAL TOOL</b> .....	<b>55B-3</b>	REMOVAL AND INSTALLATION .....	55B-29
<b>TROUBLESHOOTING</b> .....	<b>55B-5</b>	DISASSEMBLY AND REASSEMBLY .....	55B-29
DIAGNOSIS TROUBLESHOOTING FLOW .....	55B-5	<b>AIR MIXING DOOR MOTOR, AIR OUTLET CHANGEOVER DAMPER MOTOR AND BLOWER MOTOR</b> ....	<b>55B-31</b>
DIAGNOSIS FUNCTION.....	55B-5	REMOVAL AND INSTALLATION0 .....	55B-31
DIAGNOSIS CODE CHART .....	55B-5	INSPECTION.....	55B-32
DIAGNOSTIC TROUBLE CODE PROCEDURES.....	55B-5	<b>ROOM TEMPERATURE SENSOR AND HEATER WATER TEMPERATURE SENSOR</b> .....	<b>55B-33</b>
TROUBLE SYMPTOM CHART.....	55B-9	REMOVAL AND INSTALLATION .....	55B-33
SYMPTOM PROCEDURES .....	55B-10	INSPECTION.....	55B-34
DATA LIST REFERENCE TABLE .....	55B-23	<b>OUTSIDE THERMO SENSOR</b> .....	<b>55B-35</b>
ACTUATOR TEST TABLE .....	55B-24	INSPECTION.....	55B-35
CHECK AT ENGINE-A/T ECU TERMINALS .....	55B-24	<b>EVAPORATOR ASSEMBLY</b> .....	<b>55B-36</b>
CHECK AT A/C-ECU TERMINALS.....	55B-26	REMOVAL AND INSTALLATION .....	55B-36
<b>AUTOMATIC A/C CONTROL PANEL (A/C-ECU)</b> .....	<b>55B-28</b>	INSPECTION.....	55B-38
REMOVAL AND INSTALLATION .....	55B-28	<b>OTHER PARTS</b> .....	<b>55B-39</b>
		OTHER PARTS.....	55B-39

---

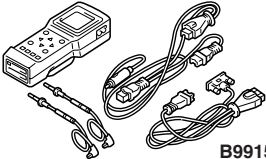
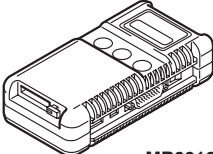
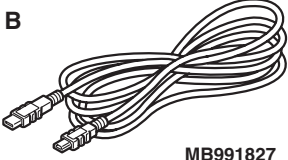

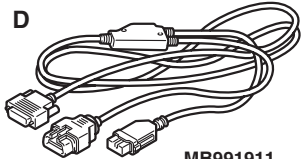
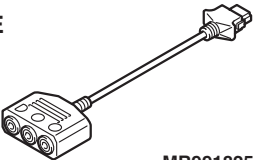
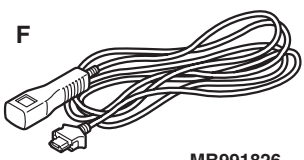
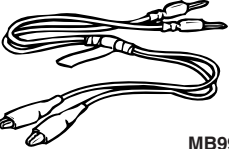
**SERVICE SPECIFICATIONS**


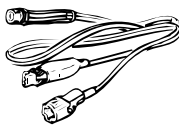
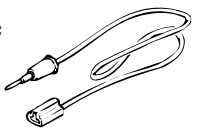

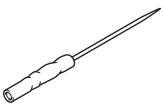
M1554000300180

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

## SPECIAL TOOL

M1555000600117

Tool	Number	Name	Use
 <p style="text-align: center;">B991502</p>	MB991502	M.U.T.-II sub-assembly	Automatic A/C check
<p><b>A</b></p>  <p style="text-align: center;">MB991824</p> <p><b>B</b></p>  <p style="text-align: center;">MB991827</p> <p><b>C</b></p>  <p style="text-align: center;">MB991910</p> <p><b>D</b></p>  <p style="text-align: center;">MB991911</p> <p><b>E</b></p>  <p style="text-align: center;">MB991825</p> <p><b>F</b></p>  <p style="text-align: center;">MB991826</p> <p style="text-align: center;">MB991955</p>	<p>MB991955</p> <p>A: MB991824</p> <p>B: MB991827</p> <p>C: MB991910</p> <p>D: MB991911</p> <p>E: MB991825</p> <p>F: MB991826</p>	<p>M.U.T.-III sub-assembly</p> <p>A: Vehicle Communication Interface (V. C. I.)</p> <p>B: M.U.T.-III USB cable</p> <p>C: M.U.T.-III main harness A (Vehicles with CAN communication system)</p> <p>D: M.U.T.-III main harness B (Vehicles without CAN communication system)</p> <p>E: M.U.T.-III measurement adapter</p> <p>F: M.U.T.-III trigger harness</p>	<p>Automatic A/C check</p> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p><b>⚠ CAUTION</b></p> </div> <p><b>M.U.T.-III main harness B (MB991911) should be used.</b></p> <p><b>M.U.T.-III main harness A should not be used for this vehicle.</b></p>
 <p style="text-align: center;">MB991529</p>	MB991529	Diagnosis code check harness	Automatic A/C check with a voltmeter

Tool	Number	Name	Use
<p>a</p>  <p>b</p>  <p>c</p>  <p>d</p>  <p>DO NOT USE MB991223</p>	<p>MB991223</p> <p>a. MB991219 b. MB991220 c. MB991221 d. MB991222</p>	<p>Harness set</p> <p>a. Check harness b. LED harness c. LED harness adapter d. Probe</p>	<p>Continuity check and voltage measurement at harness wire or connector</p> <p>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</p>
 <p>MB992006</p>	<p>MB992006</p>	<p>Extra fine probe</p>	<p>Continuity check and voltage measurement at harness wire or connector</p>

## TROUBLESHOOTING

### DIAGNOSIS TROUBLESHOOTING FLOW

M1554004700072

Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points [P.00-5](#).

### DIAGNOSIS FUNCTION

M1554004800091

#### How to read diagnosis code

Connect the M.U.T.-II to the 16-pin diagnosis connector to read diagnosis code (Refer to GROUP 00 How to Use Troubleshooting/Inspection Service Points [P.00-5](#)).

#### How to erase diagnosis code

Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points [P.00-5](#).

### DIAGNOSIS CODE CHART

M1554004900247

Code No.	Diagnostic item	Reference page
11	Interior temperature sensor system (open circuit)	<a href="#">P.55B-5</a>
12	Interior temperature sensor system (short circuit)	<a href="#">P.55B-5</a>
13	Outside thermo sensor system (open circuit)	<a href="#">P.55B-6</a>
14	Outside thermo sensor system (short circuit)	<a href="#">P.55B-6</a>
15	Heater water temperature sensor system (open circuit)	<a href="#">P.55B-6</a>
16	Heater water temperature sensor system (short circuit)	<a href="#">P.55B-6</a>
21	Air thermo sensor system (open circuit)	<a href="#">P.55B-7</a>
22	Air thermo sensor system (short circuit)	<a href="#">P.55B-7</a>
31	Air mixing door control motor and potentiometer sensor system	<a href="#">P.55B-7</a>
32	Mode selection damper control motor and potentiometer sensor system	<a href="#">P.55B-8</a>
41	Air mixing door control motor and potentiometer activating system	<a href="#">P.55B-8</a>
42	Mode selection damper control motor and potentiometer activating system	<a href="#">P.55B-9</a>

### DIAGNOSTIC TROUBLE CODE PROCEDURES

#### Code No.11, 12: Interior temperature sensor system

#### 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-34](#).

**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 1 and 2).**

- Check the input 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 13, 14: Outside thermo sensor system****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-35](#).**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).**

- Check the input line for open or short circuit.

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

**Q: Is the check result normal?****YES :** Replace the automatic A/C control panel (A/C-ECU)**NO :** Repair the wiring harness.**Code 15, 16: Heater water temperature sensor system****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-34](#).**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 input 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 21, 22: Air thermo sensor system**

**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-38](#).

**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 input 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 31: Air mixing door control motor and potentiometer sensor system**

**COMMENTS ON TROUBLE SYMPTOM**

This code is set when the air mixing door 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 door 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 door control motor and potentiometer**

Refer to [P.55B-32](#).

**Q: Is the check result normal?**

**YES :** Go to Step 2.

**NO :** Replace the air mixing door control motor and potentiometer

**STEP 2. Connector check: C-27 A/C-ECU connector and C-313 air mixing door control motor and potentiometer connector****Q: Is the check result normal?****YES :** Go to Step 3.**NO :** Repair the connector.**STEP 3. Check the wiring harness between C-27 A/C-ECU connector (terminals 10, 5 and 20) and C-313 air mixing door 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 sensor power supply, sensor 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 32: Mode selection damper control motor and potentiometer sensor system****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-32](#).**Q: Is the check result normal?****YES :** Go to Step 2.**NO :** Replace the mode selection damper control motor and potentiometer**STEP 2. Connector check: C-27 A/C-ECU connector and C-315 mode selection damper control motor and potentiometer connector****Q: Is the check result normal?****YES :** Go to Step 3.**NO :** Repair the connector.**STEP 3. Check the wiring harness between C-27 A/C-ECU connector (terminals 10, 6 and 20) and C-315 mode selection damper control motor and potentiometer connector (terminals 2, 5 and 6).***NOTE: Prior to the wiring harness inspection, check intermediate connector C-36 and heater water temperature sensor connector C-314, and repair if necessary.*

- Check the sensor power supply, sensor 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 41: Air mixing door control motor and potentiometer activating system****COMMENTS ON TROUBLE SYMPTOM**

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

**PROBABLE CAUSES**

- Malfunction of the air mixing door 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 door control motor and potentiometer

Refer to [P.55B-32](#).

**Q: Is the check result normal?**

**YES :** Go to Step 2.

**NO :** Replace the air mixing door control motor and potentiometer

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

**Q: Is the check result normal?**

**YES :** Go to Step 3.

**NO :** Repair the connector.

### STEP 3. Check the wiring harness between C-26 A/C-ECU connector (terminals 22 and 25) and C-313 air mixing door 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 output 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 42: Mode selection damper control motor and potentiometer activating system

### 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-32](#).

**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 output 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

M1554005000407

Symptom	Inspection procedure number	Reference page
Communication with the M.U.T.-II/III is not possible.	1	<a href="#">P.55B-10</a>
The A/C does not work at all.	2	<a href="#">P.55B-11</a>
A/C outlet air temperature cannot be set.	3	<a href="#">P.55B-14</a>
The blower does not work.	4	<a href="#">P.55B-14</a>

Symptom	Inspection procedure number	Reference page
The blower air volume cannot be changed.	5	P.55B-17
When sunlight intensity changes, air outlet temperature does not change.	6	P.55B-17
The A/C indicator flashes.	7	P.55B-18
The outside/inside air changeover is impossible.	8	P.55B-18
Defogger function does not operate.	9	P.55B-19
Malfunction of the A/C-ECU power supply system.	10	P.55B-22

## SYMPTOM PROCEDURES

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

#### COMMENTS ON TROUBLE SYMPTOM

If communication with all other systems is not possible, there is a high possibility that there is a malfunction of the diagnosis line. If only the A/C system can not communicate with the 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, defogger and outside/inside air selection damper control motor.

**Q: Does the A/C, 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-22."

##### 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 input and output 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.**

**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. Use the M.U.T.-II/III to confirm a diagnosis code.**

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

**Q: Is the check result normal?**

**YES :** Go to Step 2.

**NO :** Refer to diagnosis code chart [P.55B-5](#).

**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 5 "The blower motor air volume be changed [P.55B-17](#)."

**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-22](#)."

**STEP 4. Check the A/C compressor.**

Check the A/C compressor for compressor oil leaks.

**Q: Is the check result satisfactory?**

**YES :** Go to Step 5.

**NO :** Replace the A/C compressor or the expansion valve.

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

- (1) Disconnect A/C compressor connector B-27 and measure the voltage at the relay box side.
- (2) Turn the ignition switch to the "ON" position.
- (3) Disconnect engine-A/T-ECU connector C-112, and earth terminal 21. <Except MIVEC>
- (4) Disconnect engine-A/T-ECU connector C-134, and earth terminal 16. <MIVEC Except for GCC and argentina>
- (5) Disconnect engine-A/T-ECU connector C-134, and earth terminal 8. <MIVEC Vehicles for GCC and argentina>
- (6) Measure the voltage between terminal 1 and earth.

**OK: System voltage**

**Q: Is the check result normal?**

**YES :** Go to Step 19.

**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-27](#).

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

**YES :** Go to Step 7.

**NO :** Replace the A/C compressor relay.

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

- (1) Disconnect A/C compressor connector B-18X and measure the voltage at the relay box side.
- (2) Turn the ignition switch to the "ON" position.
- (3) Measure the voltage between terminal 3 and earth.

**OK: System voltage**

**Q: Is the check result normal?**

**YES :** Go to Step 10.

**NO :** Go to Step 8.

---

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

**Q: Is the check result normal?**

**YES :** Go to Step 9.

**NO :** Repair the connector.

---

**STEP 9. Check the wiring harness between A/C compressor relay connector B-18X (terminal 3) and the ignition switch (IG2).**

*NOTE: Prior to the wiring harness inspection, check junction block connectors C-203, C-205 <L.H. drive vehicles>, C-202 <R.H. drive vehicles> and intermediate connector C-106, and repair if necessary.*

**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.00-5](#)).

**NO :** Repair the wiring harness.

---

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

- (1) Disconnect A/C compressor connector B-18X and measure the voltage at the wiring harness side.
- (2) Measure the voltage between terminal 4 and earth.

**OK: System voltage**

**Q: Is the check result normal?**

**YES :** Go to Step 13.

**NO :** Go to Step 11.

---

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

**Q: Is the check result normal?**

**YES :** Go to Step 12.

**NO :** Repair the connector.

---

**STEP 12. Check the wiring harness between A/C compressor relay connector B-18X (terminal 4) and the battery.**

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

**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: A/C compressor relay connector B-18X and A/C compressor connector B-27**

**Q: Is the check result normal?**

**YES :** Go to Step 14.

**NO :** Repair or replace the connector.

---

**STEP 14. Check the wiring harness between A/C compressor relay connector B-18X (terminal 1) and A/C compressor connector B-27 (terminal 1).**

**Q: Is the check result normal?**

**YES <Except MIVEC> :** Go to Step 15.

**YES <MIVEC> :** Go to Step 17.

**NO :** Repair the wiring harness.

---

**STEP 15. Connector check: engine-A/T-ECU connector C-112 and A/C compressor relay connector B-18X**

**Q: Is the check result normal?**

**YES :** Go to Step 16.

**NO :** Repair the connector.

---

**STEP 16. Check the wiring harness between engine-A/T-ECU connector C-112 (terminal 21) and A/C compressor relay connector B-18X (terminal 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.00-5](#)).

**NO :** Repair the wiring harness.

---

**STEP 17. Connector check: engine-A/T-ECU connector C-134 and A/C compressor relay connector B-18X**

**Q: Is the check result normal?**

**YES :** Go to Step 18.

**NO :** Repair the connector.

---

**STEP 18. Check the wiring harness between engine-A/T-ECU connector C-134 (terminal 16 <Except for GCC and argentina> or 8 <Vehicles for GCC and argentina>) and A/C compressor relay connector B-18X (terminal 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.00-5](#)).

**NO :** Repair the wiring harness.

---

**STEP 19. Measure the voltage at A/C-ECU connector C-26.**

- (1) Disconnect A/C-ECU connector C-26 and measure the voltage at the relay box side.
- (2) Turn the ignition switch to the "ON" position.
- (3) Disconnect engine-A/T-ECU connector C-112, and earth terminal 21. <Except MIVEC>
- (4) Disconnect engine-A/T-ECU connector C-134, and earth terminal 16. <MIVEC Except for GCC and argentina>
- (5) Disconnect engine-A/T-ECU connector C-134, and earth terminal 8. <MIVEC Vehicles for GCC and argentina>
- (6) Measure the voltage between terminal 33 and earth.

**OK: System voltage**

**Q: Is the check result normal?**

**YES :** Go to Step 22.

**NO :** Go to Step 20.

---

**STEP 20. Connector check: A/C compressor relay connector B-18X and A/C-ECU connector C-26**

**Q: Is the check result normal?**

**YES :** Go to Step 21.

**NO :** Repair or replace the connector.

---

**STEP 21. Check the wiring harness between A/C compressor relay connector B-18X (terminal 1) and A/C-ECU connector C-26 (terminal 33).**

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

**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.00-5](#)).

**NO :** Repair the wiring harness.

---

**STEP 22. Check the magnetic clutch operation.**

Refer to [P.55A-21](#).

**Q: Is the check result normal?**

**YES :** Go to Step 23.

**NO :** Replace the compressor magnet clutch.

---

**STEP 23. Check the refrigerant temperature switch.**

Refer to [P.55A-47](#).

**Q: Is the check result normal?**

**YES :** Go to Step 24.

**NO :** Replace the refrigerant temperature switch.

---

**STEP 24. Check the refrigerant level.**

Refer to [P.55A-21](#).

**Q: Is the refrigerant level correct?**

**YES :** Go to Step 25.

**NO :** Correct the refrigerant level (Refer to On-vehicle Service [P.55A-22](#)).

---

**STEP 25. Check the A/C pressure sensor operation.**

Refer to [P.55A-22](#).

**Q: Is the A/C pressure sensor operating properly?**

**YES :** Go to Step 26.

**NO :** Replace the A/C pressure sensor.

---

**STEP 26. Connector check: A/C pressure sensor connector A-02 and A/C-ECU connector C-27**

**Q: Is the check result normal?**

**YES :** Go to Step 27.

**NO :** Repair the connector.

---

**STEP 27. Check the wiring harness between A/C pressure sensor connector A-02 (terminal 2) and A/C-ECU connector C-27 (terminal 11).**

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

**Q: Is the check result normal?**

**YES <Except MIVEC> :** Go to Step 28.

**YES <MIVEC> :** Go to Step 30.

**NO :** Repair the wiring harness.

---

**STEP 28. Connector check: engine-A/T-ECU connector C-111, C-110 and A/C-ECU connector C-26**

**Q: Is the check result normal?**

**YES :** Go to Step 29.

**NO :** Repair or replace the connector.

**STEP 29. Check the wiring harness between engine-A/T-ECU connectors C-111 (terminal 61), C-110 (terminal 83) and A/C-ECU connector C-26 (terminals 32 and 34).**

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

**Q: Is the check result normal?**

**YES :** Replace the A/C-ECU or engine-A/T-ECU.

**NO :** Repair the wiring harness.

**STEP 30. Connector check: engine-A/T-ECU connector C-136 and A/C-ECU connector C-26**

**Q: Is the check result normal?**

**YES :** Go to Step 31.

**NO :** Repair or replace the connector.

**STEP 31. Check the wiring harness between engine-A/T-ECU connectors C-136 (terminal 78 and 69) and A/C-ECU connector C-26 (terminals 32 and 34).**

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

**Q: Is the check result normal?**

**YES :** Replace the A/C-ECU or engine-A/T-ECU.

**NO :** Repair the wiring harness.

---

### Inspection Procedure 3: A/C outlet air temperature cannot be set.

---

#### COMMENTS ON TROUBLE SYMPTOM

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

#### PROBABLE CAUSE

- Malfunction of the A/C-ECU

#### DIAGNOSIS PROCEDURE

**Read diagnosis code by using the M.U.T.-II/III.**

**Q: Is the diagnosis code set?**

**YES :** Refer to diagnosis code chart [P.55B-5](#).

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

---

### Inspection Procedure 4: The blower does not work.

---

#### 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.

- 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. Measure the voltage at the C-32 blower motor connector.

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



(3) 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

[P.55A-27](#).

**Q: Is the blower relay in good condition?**

**YES :** Go to Step 4.

**NO :** Replace the blower relay.

---

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

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

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

(3) Voltage between terminal 1 and body earth

**OK: System voltage**

**Q: Is the check result normal?**

**YES :** Go to Step 7.

**NO :** Go to Step 5.

---

**STEP 5. Connector check: C-207 blower relay connector**

**Q: Is the check result normal?**

**YES :** Go to Step 6.

**NO :** Repair the connector.

---

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

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

- Check the 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.00-5](#)).

**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-307 blower relay connector terminal No.5 and fusible link (1).**

*NOTE: Prior to the wiring harness inspection, check intermediate connectors C-116 <L.H. drive vehicles>, C-125 <R.H. drive vehicles>, A-14 <R.H. drive vehicles> and junction block connector C-204, and repair if necessary.*

- Check the 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.00-5](#)).

**NO :** Repair the wiring harness.

---

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

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

(2) Continuity between terminal 3 and body earth.

**OK: 2Ω or less**

**Q: Is the check result normal?**

**YES :** Go to Step 13.

**NO :** Go to Step 11.

---

**STEP 11. Connector check: C-207 blower relay connector**

**Q: Is the check result normal?**

**YES :** Go to Step 12.

**NO :** Repair the connector.

---

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

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

- Check the 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.00-5](#)).

**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 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.00-5](#)).

**NO :** Repair the wiring harness.

---

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

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

(2) Continuity between terminal 3 and body earth.

**OK: 2Ω or less**

**Q: Is the check result normal?**

**YES :** . Go to Step 18.

**NO :** . Go to Step 16.

---

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

**Q: Is the check result normal?**

**YES :** Go to Step 17.

**NO :** Repair the connector.

---

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

- Check the 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.00-5](#)).

**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 motor connector terminal No.5.**

- Check the input 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.**

**COMMENTS ON TROUBLE SYMPTOM**

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

**PROBABLE 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.

- 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. 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 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 input 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 6: When sunlight intensity changes, air outlet temperature does not Change.**

**CIRCUIT OPERATION**

When the blower air temperature can not 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-22](#)."

**STEP 2. Use the M.U.T.-II/III to confirm a diagnosis code.**

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

**Q: Is the check result normal?**

**YES :** Go to Step 3.

**NO :** Carry the diagnosis code procedures. Refer to [P.55B-5](#).

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

- Item 14: Photo sensor

**OK: Check that the volume of insolation takes inverse proportion with the M.U.T.-II 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: A/C-ECU connector C-27 and photo sensor connector C-123.****Q: Is the check result normal?****YES :** Go to Step 5.**NO :** Repair or replace the connector.**STEP 5. Check the wiring harness between photo sensor connector C-123 (terminal 1, 2) and A/C-ECU connector C-27 (terminal 19, 9).****Q: Is the check result normal?****YES :** Replace the Photo sensor.**NO :** Repair the wiring harness.**Inspection Procedure 7: The A/C indicator flashes.****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-22](#).

**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-35](#).

**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-21](#).

**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-26](#)).**Inspection Procedure 8: The outside/inside air changeover is impossible.****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.

- 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) Ignition switch: ON

(3) 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 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.00-5](#)).

**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-39](#).

**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 input and output 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.**

**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-22](#)."

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

- (1) Disconnect rear window defogger connector F-04, and measure the voltage at the harness side.
- (2) Disconnect C-27 A/C-ECU connector, and earth terminal 16.
- (3) Measure the voltage between terminal 1 and 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-27](#).

**Q: Is the rear window defogger relay continuity in good condition?**

**YES :** Go to Step 4.

**NO :** Replace the rear window defogger relay.

---

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

- (1) Disconnect rear window defogger relay connector C-206, and measure the voltage at the junction block side.
- (2) Measure the voltage between terminal 5 and earth.

**OK: System voltage**

**Q: Is the check result normal?**

**YES :** Go to Step 7.

**NO :** Go to Step 5.

---

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

**Q: Is the check result normal?**

**YES :** Go to Step 6.

**NO :** Repair or replace the connector.

---

**STEP 6. Check the wiring harness between rear window defogger relay connector C-206 (terminal 5) and the fusible link (1).**

*NOTE: Prior to the wiring harness inspection, check intermediate connectors C-116 <L.H. drive vehicles>, C-125 <R.H. drive vehicles>, A-14 <R.H. drive vehicles> and junction block connector C-204, and repair if necessary.*

**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.00-5](#)).

**NO :** Repair the wiring harness.

---

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

- (1) Disconnect rear window defogger relay connector C-206, and measure the voltage at the junction block side.
- (2) Turn the ignition switch to the "ON" position.
- (3) Measure the voltage between terminal 1 and earth.

**OK: System voltage**

**Q: Is the check result normal?**

**YES :** Go to Step 10.

**NO :** Go to Step 8.

---

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

**Q: Is the check result normal?**

**YES :** Go to Step 9.

**NO :** Repair or replace the connector.

---

**STEP 9. Check the wiring harness between rear window defogger relay connector C-206 (terminal 1) and ignition switch (IG2).**

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

**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.00-5](#)).

**NO :** Repair the wiring harness.

---

**STEP 10. Connector check: rear window defogger relay connector C-206 and A/C-ECU connector C-27 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Is the check result normal?**

**YES :** Go to Step 11.

**NO :** Repair or replace the connector.

---

**STEP 11. Check the wiring harness between rear window defogger relay connector C-206 (terminal 3) and A/C-ECU connector C-27 (terminal 16).**

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

**Q: Is the check result normal?**

**YES :** Go to Step 12.

**NO :** Repair the wiring harness.

---

**STEP 12. Check rear window defogger relay connector C-206 and rear window defogger connector F-04 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Is the check result normal?**

**YES :** Go to Step 13.

**NO :** Repair or replace the connector.

---

**STEP 13. Check the wiring harness between rear window defogger relay connector C-206 (terminal 4) and rear window defogger connector F-04 (terminal 1).**

*NOTE: Prior to the wiring harness inspection, check junction block connector C-209 <L.H. drive vehicles> or C-221 <R.H. drive vehicles>, and repair if necessary.*

**Q: Is the check result normal?**

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

**NO :** Repair the wiring harness.

---

**STEP 14. Measure at rear window defogger connector F-01 to check the earth circuit to the rear window defogger connector.**

(1) Disconnect rear window defogger connector F-01, and measure at the wiring harness side.

(2) Measure the resistance value between terminal 1 and earth.

**OK: 2 ohms or less**

**Q: Is the check result normal?**

**YES :** Go to Step 17.

**NO :** Go to Step 15.

---

**STEP 15. Connector check: rear window defogger connector F-01**

**Q: Is the check result normal?**

**YES :** Go to Step 16.

**NO :** Repair the connector.

---

**STEP 16. Check the wiring harness between rear window defogger connector F-01 (terminal 1) and earth.**

**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.00-5](#)).

**NO :** Repair or replace the wiring harness.

---

**STEP 17. Check the rear window defogger.**

Refer to GROUP 54A, Defogger [P.54A-107](#).

**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.00-5](#)).

**NO :** Repair the rear window defogger.

---

**Inspection Procedure 10: Malfunction of the A/C-ECU power supply system.**

---

**CIRCUIT OPERATION**

The A/C-ECU power system may be defective if the A/C, rear window 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. Measure the voltage at A/C-ECU connector C-26.**

- (1) Disconnect A/C-ECU connector C-26 and measure the voltage at the harness side.
- (2) Turn the ignition switch to the "ON" position.
- (3) Measure the voltage between terminal 28 and earth.

**OK: System voltage**

**Q: Is the check result normal?**

**YES :** Go to Step 4.

**NO :** Go to Step 2.

---

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

**Q: Is the check result normal?**

**YES :** Go to Step 3.

**NO :** Repair or replace the connector.

---

**STEP 3. Check the wiring harness between A/C-ECU connector C-26 (terminal 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.*

**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.00-5](#)).

**NO :** Repair the wiring harness.

---

**STEP 4. Measure the resistance at A/C-ECU connector C-26 in order to check the earth circuit to the A/C-ECU.**

- (1) Disconnect A/C-ECU connector C-26, and measure at the wiring harness side.

- (2) Measure the resistance between terminal 27 and 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: A/C-ECU connector C-26**

**Q: Is the check result normal?**

**YES :** Go to Step 6.

**NO :** Repair or replace the connector.

---

**STEP 6. Check the wiring harness between A/C-ECU connector C-26 (terminal 27) and the earth.**

**Q: Is the check result normal?**

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

**NO :** Repair the wiring harness.

---

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

- (1) Disconnect A/C-ECU connector C-27 and measure the voltage at the 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: A/C-ECU connector C-27.**

**Q: Is the check result normal?**

**YES :** Go to Step 9.

**NO :** Repair or replace the connector.

---

**STEP 9. Check the wiring harness between A/C-ECU connector C-27 (terminal 3) and battery.**

*NOTE: . Prior to the wiring harness inspection, check intermediate connector C-116 and joint connector C-02, and repair if necessary.*

**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.00-5](#)).

**NO :** Repair the wiring harness.



**DATA LIST REFERENCE TABLE**

M1554005100181

Item No.	Check items	Inspection conditions	Normal condition
11	Interior temperature sensor	Ignition switch: ON	Room temperature is the same as M.U.T.-II/III displayed temperature.
13	Outside air temperature sensor	Ignition switch: ON	Outside temperature is the same as M.U.T.-II/III displayed temperature.
15	Heater water temperature sensor	Ignition switch: ON	Heater core wall surface temperature is the same as M.U.T.-II/III displayed temperature.
21	Air thermo sensor	Ignition switch: ON	Evaporator outlet temperate is the same as M.U.T.-II/III displayed temperature
25	Photo sensor	<ul style="list-style-type: none"> <li>• Ignition switch: ON</li> <li>• Change the volume of insolation.</li> </ul>	The volume of insolation takes inverse proportion with the M.U.T.-II/III displayed voltage.
31	Potentiometer for air mixing door	<ul style="list-style-type: none"> <li>• Ignition switch: ON</li> <li>• Door position: MAX HOT</li> </ul>	Opening angle: approximately 100%
		<ul style="list-style-type: none"> <li>• Ignition switch: ON</li> <li>• Door position: MAX COOL</li> </ul>	Opening angle: approximately 0%
32	Potentiometer for mode selection damper	<ul style="list-style-type: none"> <li>• Ignition switch: ON</li> <li>• Damper position: FACE</li> </ul>	Opening angle: approximately 0%
		<ul style="list-style-type: none"> <li>• Ignition switch: ON</li> <li>• Damper position: FOOT</li> </ul>	Opening angle: approximately 60%
		<ul style="list-style-type: none"> <li>• Ignition switch: ON</li> <li>• Damper position: FOOT/DEF</li> </ul>	Opening angle: approximately 80%
		<ul style="list-style-type: none"> <li>• Ignition switch: ON</li> <li>• Damper position: DEF</li> </ul>	Opening angle: approximately 100%
42	A/C pressure sensor	<ul style="list-style-type: none"> <li>• Ignition switch: ON</li> </ul>	Refrigerant pressure is the same as M.U.T.-II/III displayed pressure.

## ACTUATOR TEST TABLE

M1554005200177

Item No.	Check items	Drive content
01	Blower motor	Stop
02		Low speed
03		Middle speed
04		High speed
05	Motor for Air mixing door	Open angle: Approximately 0% (MAX COOL)
06		Opening angle: approximately 50%
07		Open angle: Approximately 100% (MAX HOT)
08	Motor for mode selection damper	FACE
09		FOOT
10		DEF
11	Compressor output	OFF
12		ON
13	Motor for outside/inside air selection damper	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

M1554005400278

&lt;Except MIVEC&gt;

&lt;C-112&gt;

1	2	3	4		5	6	7	8
9	10	11	12	13	14	15	16	17
18	19	20	21	22	23	24	25	26
27	28	29	30	31	32	33	34	35

&lt;C-111&gt;

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

&lt;C-110&gt;

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

AC300194

Terminal No.	Check items	Check conditions	Normal conditions
18	Output to fan controller	A/C switch: OFF	4.9 – 5.1 V
		A/C switch: ON	0 V
21	Output to A/C compressor	A/C compressor relay: OFF	System voltage
		A/C compressor relay: ON	0 V
46	A/C pressure sensor power supply	Always	4.9 – 5.1 V
57	A/C pressure sensor earth	Always	0 V
61	Input from A/C-ECU (A/C2)	When the A/C is under low load	System voltage
62	Input from A/C pressure sensor	2.6 MPa	3.9 V
83	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



**<MIVEC>**

<C-134>

1	2	JAE						3	4
5	6	7	8	9	10	11	12	13	
14	15	16	17	18	19	20			
21	22	23	24	25	26	27			

<C-136>

61	62	JAE						63	64
65	66	67	68	69	70	71	72	73	
74	75	76	77	78	79	80	81	82	
83	84	85	86	87	88	89			

<C-137>

91	92	JAE						93	94	95
96	97	98	99	100	101	102	103	104		
105	106	107	108	109	110	111	112	113	114	115
116	117	118	119	120	121	122	123	124	125	126

AC504474AB

Terminal No.	Check items	Check conditions	Normal conditions
8*1	Output to A/C compressor	A/C compressor relay: OFF	System voltage
		A/C compressor relay: ON	0 V
16*2	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/C1)	When the A/C is in operation (When the air thermo sensor detects 3°C or more).	System voltage
78	Input from A/C-ECU (A/C2)	When the A/C is under low load	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

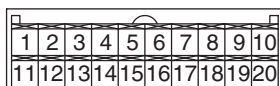
NOTE: \*1: Except vehicles for GCC and Argentina

NOTE: \*2: Vehicles for GCC and Argentina

## CHECK AT A/C-ECU TERMINALS

M1554005400193

&lt;C-27&gt;



&lt;C-26&gt;



AC300196AB

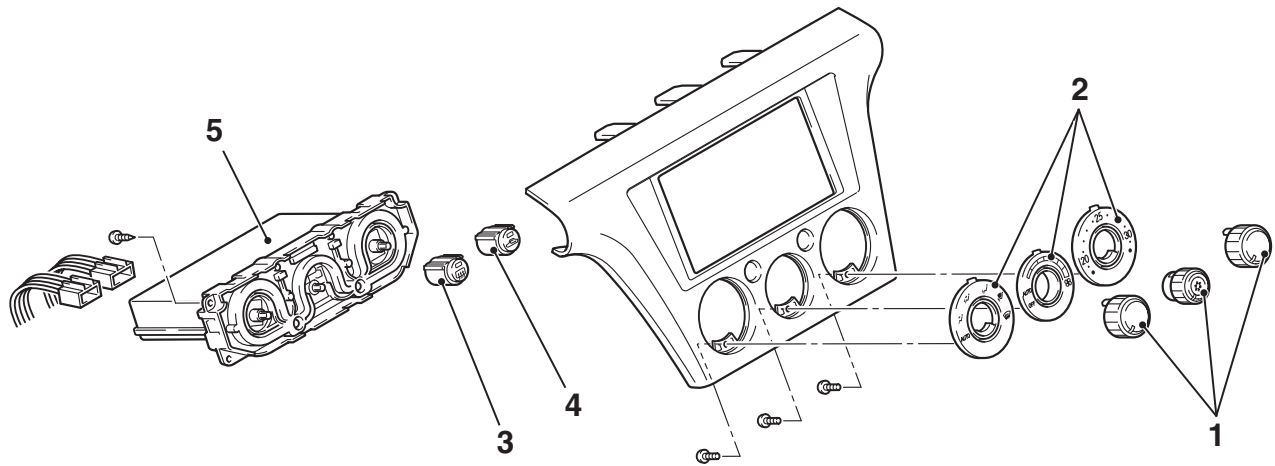
Terminal No.	Check items	Check conditions	Normal conditions
1	Interior temperature sensor	Sensor temperature: 25°C (4 kΩ)	2.1 – 2.7 V
2	Output to blower pulse controller	When the blower is operating.	0 – 2.5 V (Effective alternating voltage)
3	Back-up power supply	Always	System voltage
4	Input from heater water temperature sensor	Sensor temperature: 25°C (4 kΩ)	2.1 – 2.7 V
5	Input from air mixing door 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 (4 kΩ)	2.1 – 2.7 V
8	Input from the air thermo sensor	Sensor temperature: 25°C (4 kΩ)	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)

<b>Terminal No.</b>	<b>Check items</b>	<b>Check conditions</b>	<b>Normal conditions</b>
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 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 door 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 intake position	10 V (When the motor is stopped)
27	Earth	Always	Continuity exists.
28	IG2 power supply	Ignition switch: ON	System voltage
29	Illumination earth	Always	Continuity exists.
30	ILL power supply	Lighting switch: ON	System voltage
31	-	-	-
32	Input from the engine-A/T-ECU (A/C2)	When the A/C is under low load	System voltage
33	Input from the compressor relay	Compressor: ON	System voltage
34	Input from the engine-A/T-ECU (A/C1)	When the A/C is stopped	0 V
		When the A/C is operating (When the compressor is operating)	System voltage
35	-	-	-
36	ACC power supply	Ignition switch: ACC	System voltage

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

## REMOVAL AND INSTALLATION

M1554010900105



AC300408 AB

**Removal steps**

- Centre panel (Refer to GROUP 52A, Instrumental Panel <LHD>[P.52A-3](#) or Instrument Panel <RHD>[P.52A-9](#)).
1. Knob

**Removal steps (Continued)**

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

## HEATER UNIT

### REMOVAL AND INSTALLATION

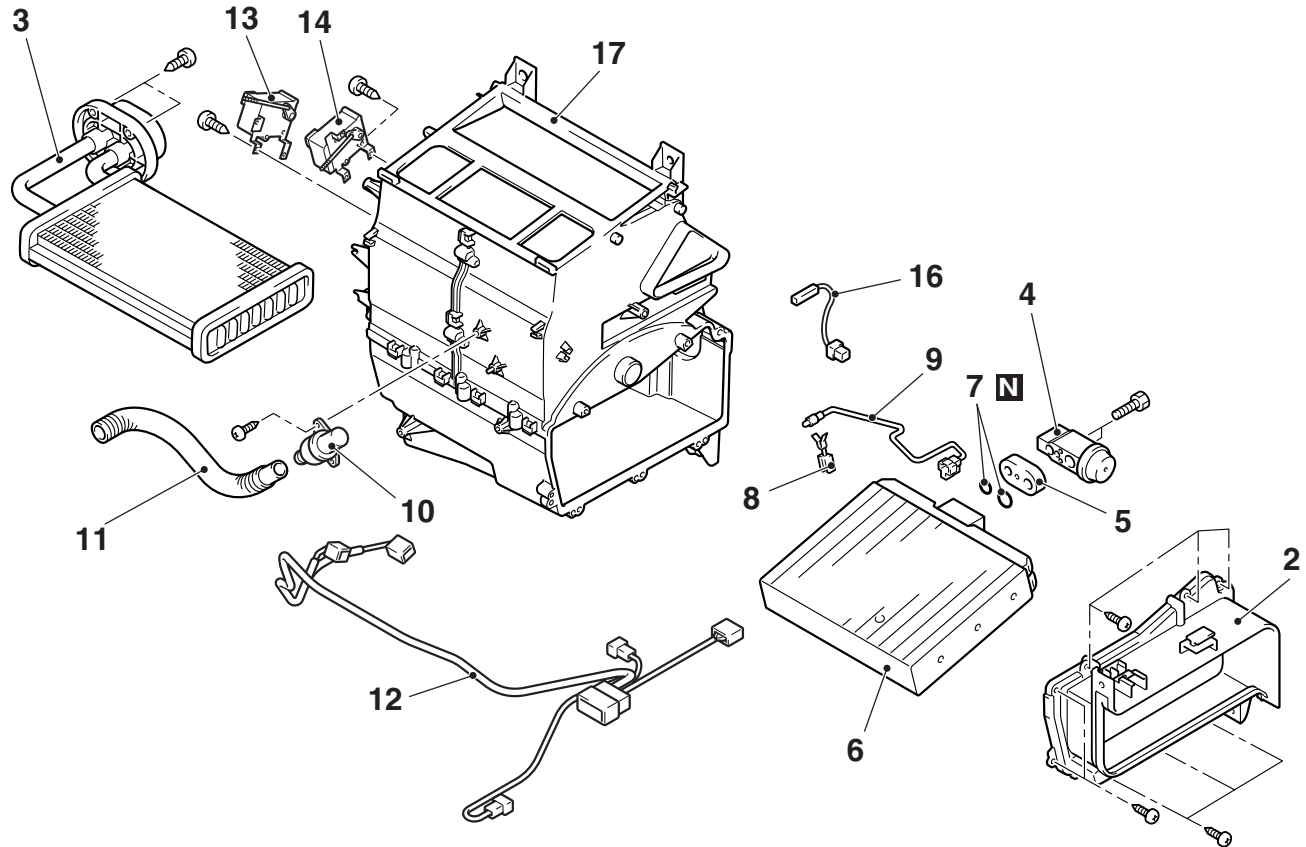
M1554009100161

The removal of heater unit is the same as it for the heater, A/C and ventilation. (Refer to GROUP 55A [P.55A-34](#)).

### DISASSEMBLY AND REASSEMBLY

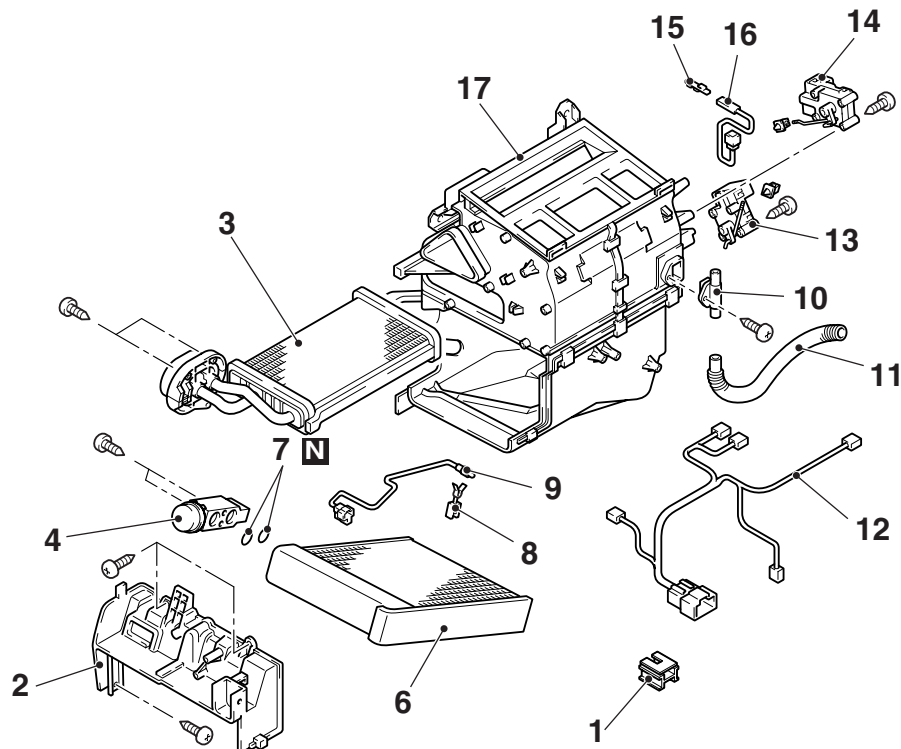
M1554009200146

<L.H. drive vehicles>



AC301506AB

&lt;R.H. drive vehicles&gt;



AC103687AC

**Disassembly steps**

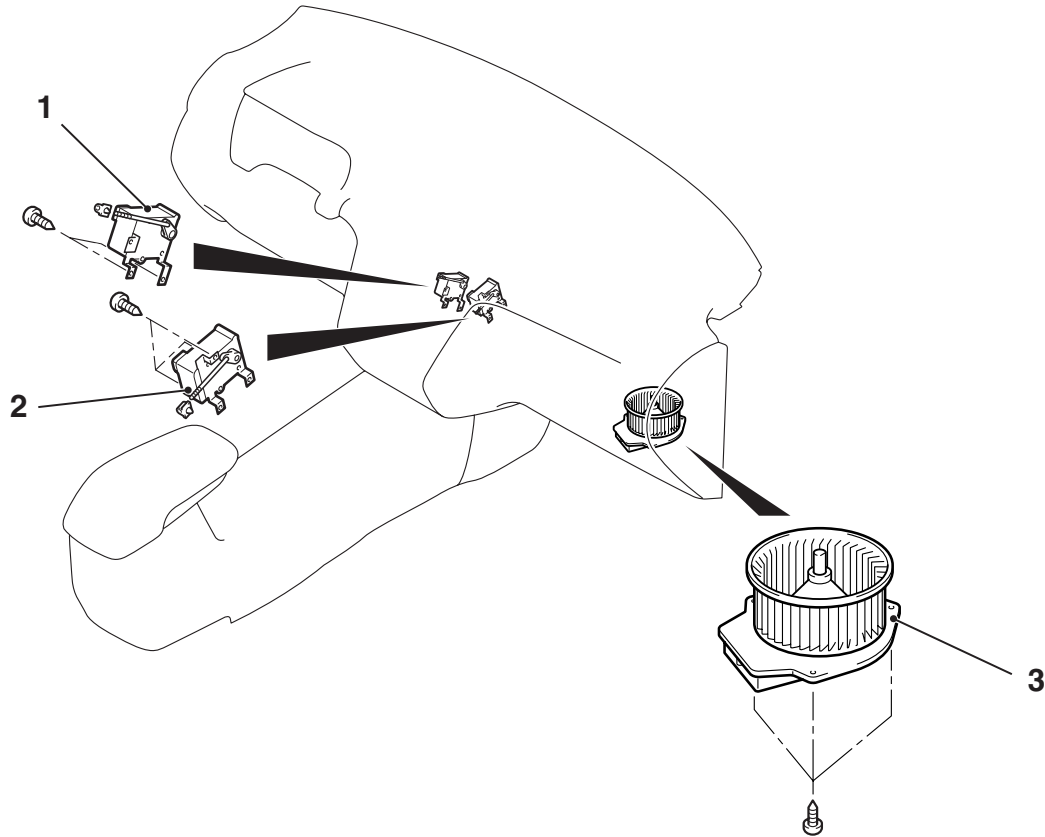
1. Bracket
2. Evaporator cover
3. Heater core
4. Expansion valve
5. Joint
6. Evaporator
7. O-ring
8. Air thermo sensor clip
9. Air thermo sensor
10. Aspirator

**Disassembly steps (Continued)**

11. Aspirator hose
12. Wiring harness
13. Air mixing door control motor and potentiometer
14. Mode selection damper control motor and potentiometer
15. Heater water temperature sensor clip
16. heater water temperature sensor
17. Heater case

# AIR MIXING DOOR MOTOR, AIR OUTLET CHANGEOVER DAMPER MOTOR AND BLOWER MOTOR REMOVAL AND INSTALLATION0

M1554011100102



AC301512AB

## **Air mixing damper control motor and potentiometer removal steps**

- Foot duct <driver's side> (Refer to GROUP 55A, Ventilator [P.55A-53](#))
1. Air mixing damper control motor and potentiometer

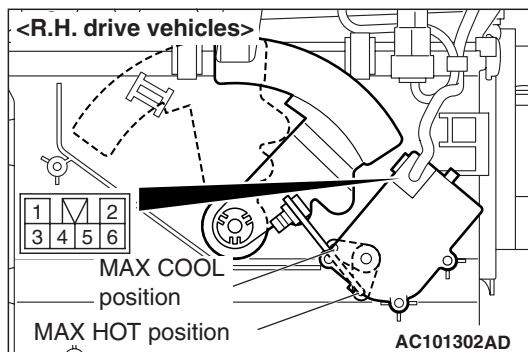
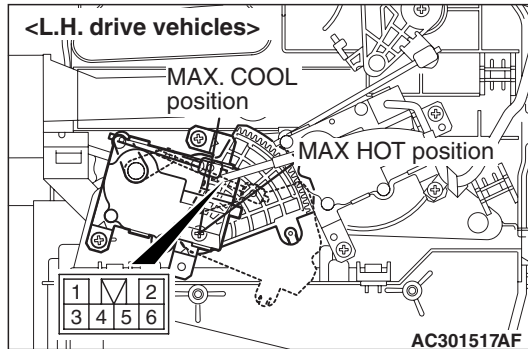
## **Mode selection damper control motor and potentiometer removal**

2. Mode selection damper control motor and potentiometer
- ## **Blower motor removal**
3. Blower motor

## INSPECTION

M1554011200091

## CHECK THE AIR MIXING DOOR CONTROL MOTOR AND POTENTIOMETER



## CHECK THE AIR MIXING DOOR CONTROL MOTOR

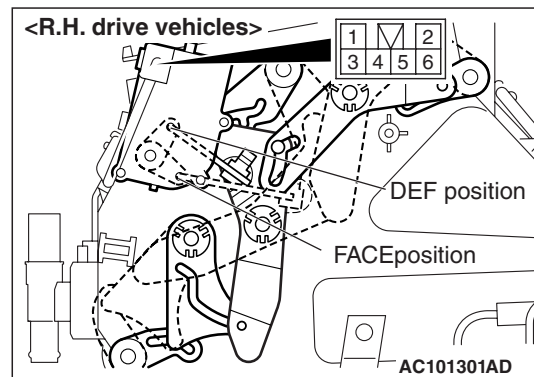
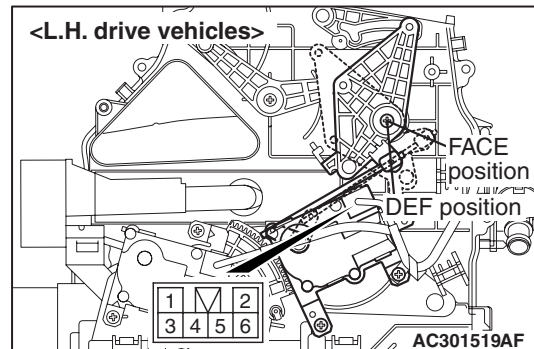
Battery connection (+) terminal	Battery connection (-) terminal	Lever operation
1	3	Rotate to the HOT position.
3	1	Rotate to the COOL position.

**Potentiometer check**

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

**Standard value: Approximately 0.65(MAX COOL) – 5.35(MAX HOT) 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(DEF position) – 5.35(FACE position) kΩ**

## BLOWER MOTOR CHECK

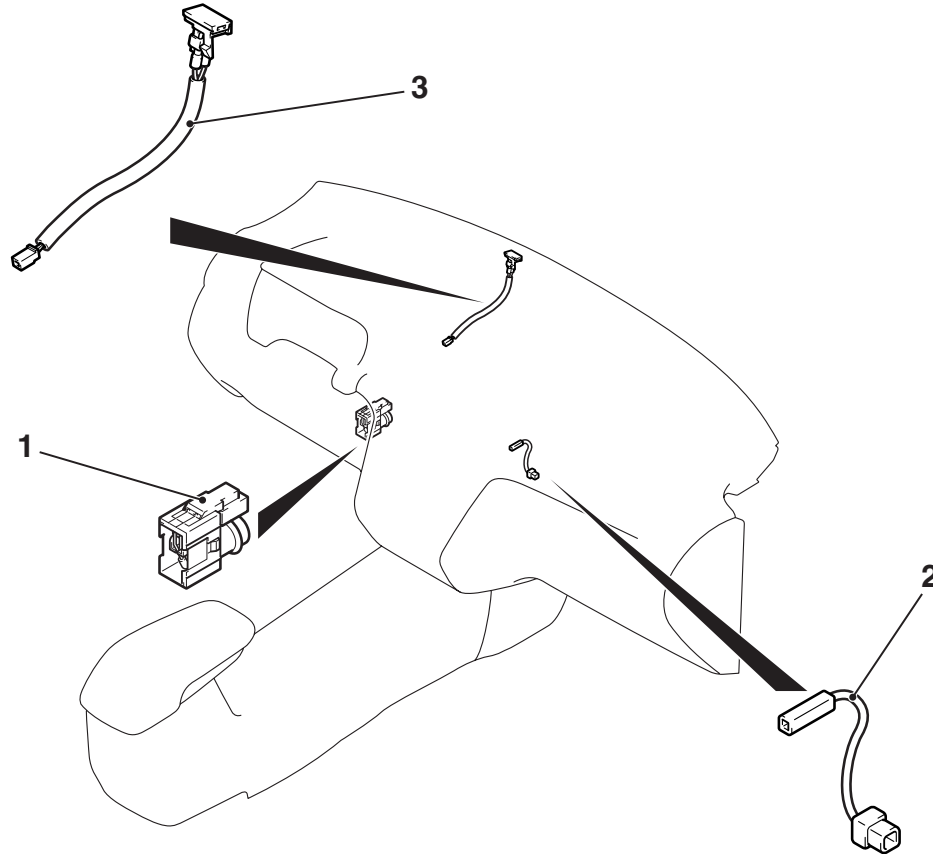
Execute actuator test item No.01 to 04 by using M.U.T.-II with the vehicle body, and check that the blower motor works normally (Refer to [P.55B-24](#)).



# ROOM TEMPERATURE SENSOR AND HEATER WATER TEMPERATURE SENSOR

## REMOVAL AND INSTALLATION

M1554011700063



AC301526AB

### Interior temperature sensor removal steps

- Instrument lower panel (Refer to GROUP 52A, Instrument Panel <LHD>P.52A-3 or Instrument Panel <RHD>P.52A-9).
1. Interior temperature sensor

### Heater water temperature sensor removal steps

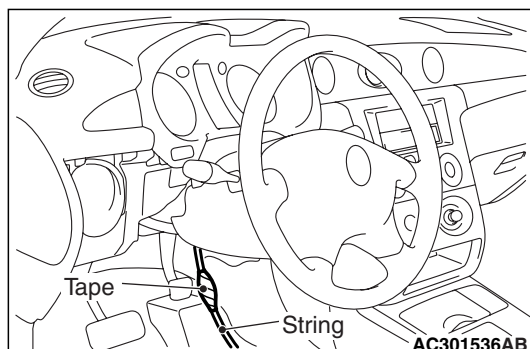
- Foot duct <front passenger's side> (Refer to GROUP 55A, Ventilator P.55A-53).

### Photo sensor removal steps

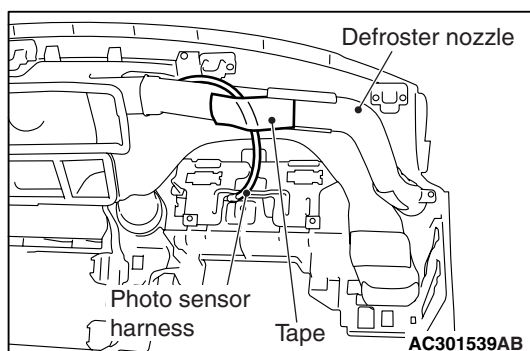
- Instrument lower panel (Refer to GROUP 52A, Instrument Panel <LHD>P.52A-3 or Instrument Panel <RHD>P.52A-9).

&lt;&lt;A&gt;&gt; &gt;&gt;A&lt;&lt;

3. Photo sensor

**REMOVAL SERVICE POINT****<<A>> PHOTO SENSOR REMOVAL**

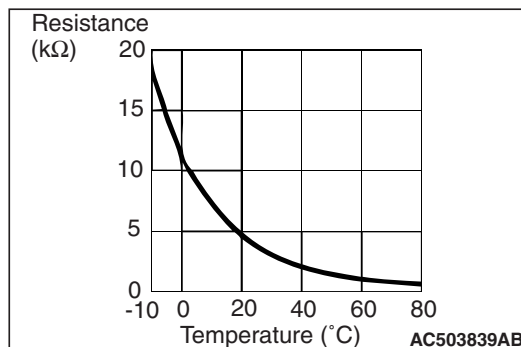
Binding the photo sensor connector with a cord and rapping a tape around the connector as its surface is flatly to pull out the photo sensor toward the instrument panel upper.

**INSTALLATION SERVICE POINTS****>>A<< PHOTO SENSOR INSTALLATION**

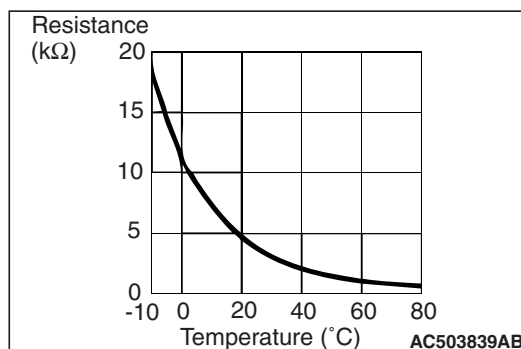
Tape the photo sensor under the defroster nozzle.

**INSPECTION**

M1554011800037

**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.

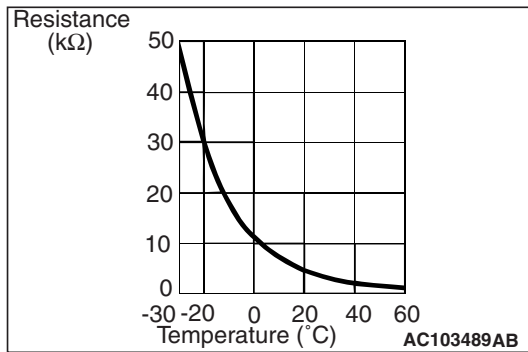
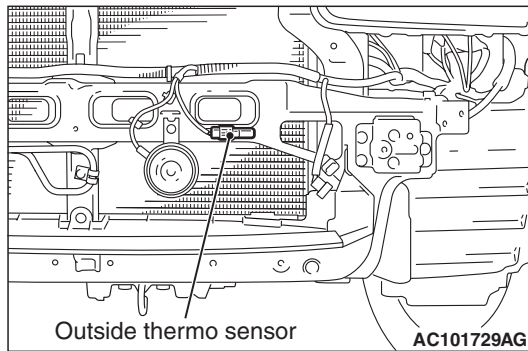
**PHOTO SENSOR CHECK**

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.

## OUTSIDE THERMO SENSOR

### INSPECTION

M1552014300660



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.

## EVAPORATOR ASSEMBLY

## REMOVAL AND INSTALLATION

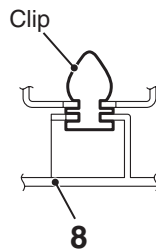
M1552003600474

**Pre-removal and Post-installation Operation**

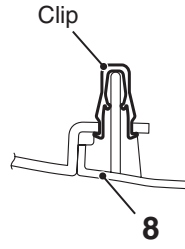
- Refrigerant draining and Refilling (Refer to Charging [P.55A-22](#) and Discharging [P.55A-25](#)).
- Air cleaner cover and air flow sensor assembly Removal and Installation (Refer to GROUP 15, Air cleaner [P.15-3](#) <Except MIVEC>, [P.15-4](#) <MIVEC>).

&lt;L.H. drive vehicles&gt;

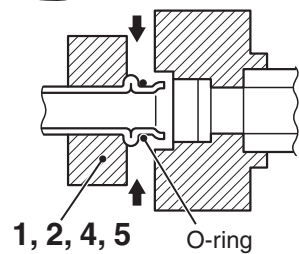
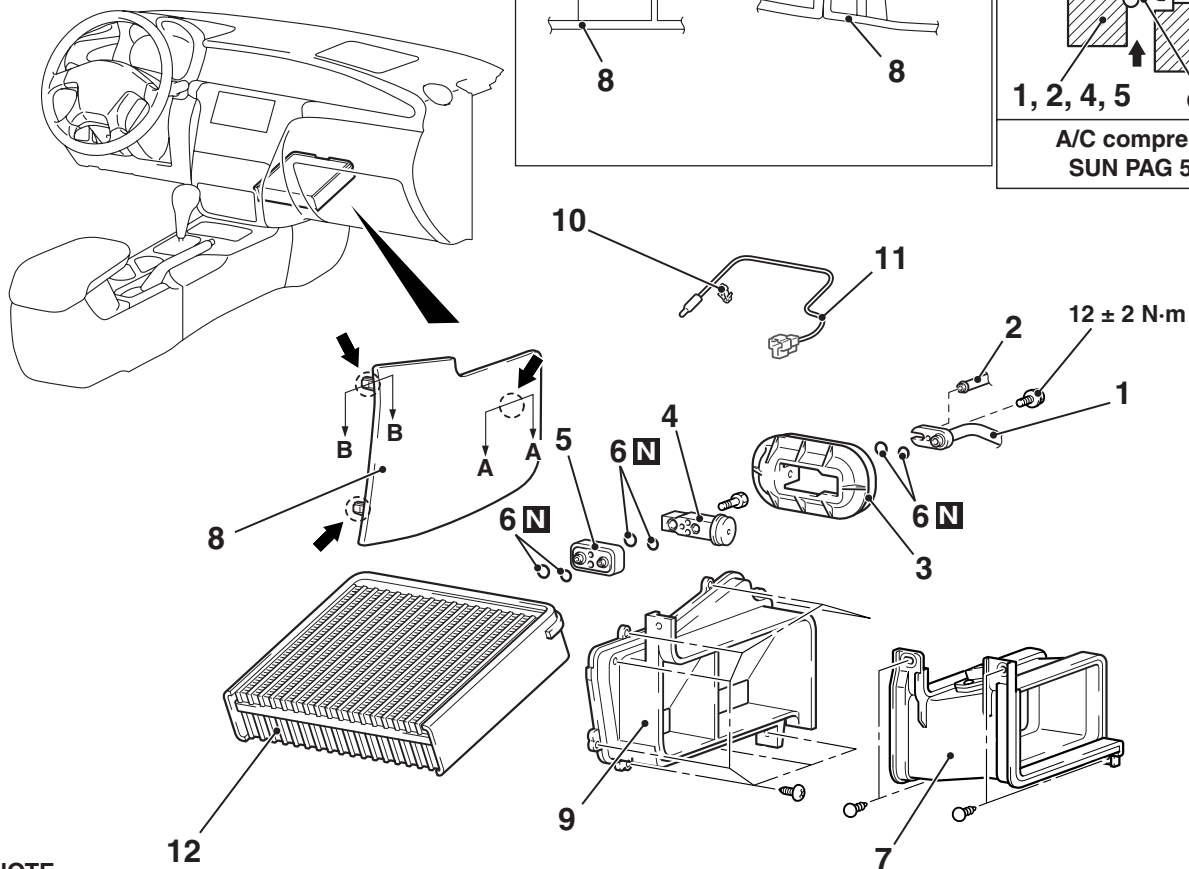
Section A — A



Section B — B



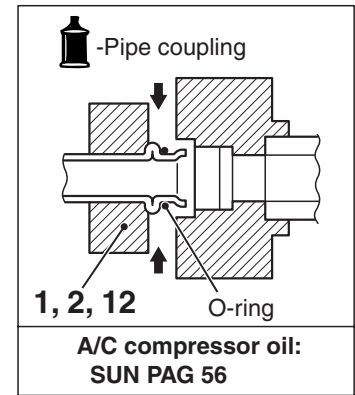
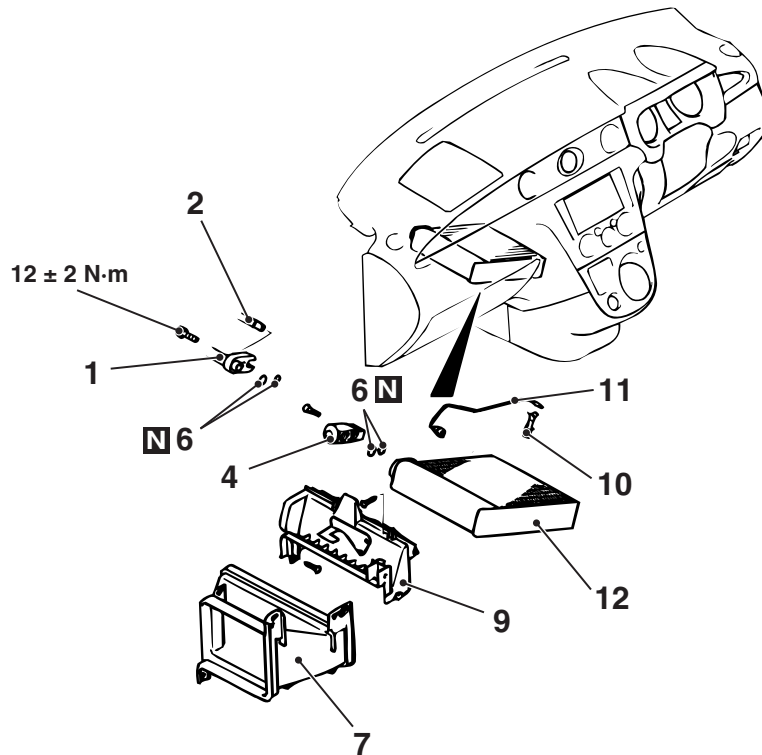
-Pipe coupling

A/C compressor oil:  
SUN PAG 56**NOTE**

: Clip positions

AC401399AE

<R.H. drive vehicles>



AC101304AD

<<A>>  
<<A>>

**Removal steps**

1. Flexible suction hose connection
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 <LHD>P.52A-3 or Instrument Panel <RHD>P.52A-9).

**Removal steps (Continued)**

7. Joint duct
- Foot duct <front passenger's side>
8. Front floor console lower side cover
9. Evaporator cover
10. Air thermo sensor clip
11. Air thermo sensor
12. Evaporator

## REMOVAL SERVICE POINT

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

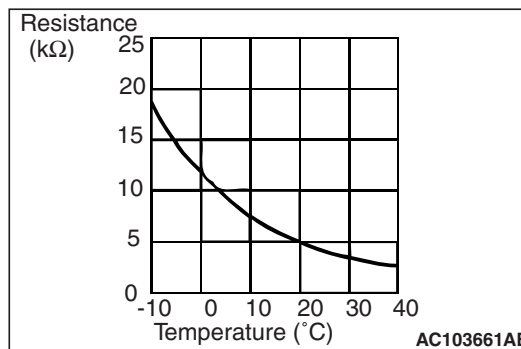
As the compressor oil and receiver are highly moisture absorbent, use a non-porous material to plug the hose and nipples.

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

## INSPECTION

M1552014301801

## AIR THERMO SENSOR INSPECTION



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.*

## OTHER PARTS

### OTHER PARTS

M1554004000277

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-21
	Magnetic clutch test	P.55A-21
	Compressor drive belt adjustment	P.55A-21
	A/C pressure sensor simple check	P.55A-22
	Charging	P.55A-22
	Correcting low refrigerant level in case the service can in used	P.55A-24
	Discharging system	P.55A-25
	Refilling of oil in the A/C system	P.55A-25
	Performance test	P.55A-25
	Refrigerant leak repair procedure	P.55A-26
	Compressor noise check	P.55A-27
	Power relay continuity check	P.55A-27
	Idle-up operation check	P.55A-29
	Clean air filter replacement procedure	P.55A-29

Item	Reference page
Heater unit and blower assembly	P.55A-34
Blower assembly	P.55A-37
Blower motor and outside/inside air selection damper control motor	P.55A-38
A/C compressor	P.55A-44
Condenser and condenser fan motor	P.55A-49
Refrigerant line	P.55A-51
Ducts	P.55A-53

---

## NOTES