GROUP 55

HEATER, AIR CONDITIONING AND VENTILATION

CONTENTS

Continued on next page

WARNINGS REGARDING SERVICING OF SUPPLEMENTAL RESTRAINT SYSTEM (SRS) EQUIPPED VEHICLES

⚠ WARNING

- ***Improper service or maintenance of any component of the SRS, or any SRS-related component, can lead to personal injury or death to service personnel (from inadvertent firing of the air bag) or to the driver and passenger (from rendering the SRS inoperative).***
- ***Service or maintenance of any SRS component or SRS-related component must be performed only at an authorized MITSUBISHI dealer.***
- ***MITSUBISHI dealer personnel must thoroughly review this manual, and especially its GROUP 52B - Supplemental Restraint System (SRS) before beginning any service or maintenance of any component of the SRS or any SRS-related component.***

NOTE
The SRS includes the following components: SRS air bag control unit, SRS warning light, front impact sensors, air bag module, clock spring, and interconnecting wiring. Other SRS-related components (that may have to be removed/installed in connection with SRS service or maintenance) are indicated in the table of contents by an asterisk (*).

GENERAL DESCRIPTION

M1551000100079

The heater system uses a two-way-flow full-air-mix system that features high performance and low operating noise. It includes an independent face air blowing function and a cool air bypass function. The air conditioning (A/C) system is basically the same as the conventional system, but a new refrigerant system has been adopted as a response to restrictions on the use of chlorofluorocarbons.

ITEMS		SPECIFICATIONS
Heater unit	Type	Two-way-flow full-air-mix system
Heater control assembly		Dial type
Compressor	Model	Scroll type <MSC105C>
Dual pressure switch kPa (psi)	High-pressure switch	ON → OFF: 2,942 (426.7), OFF → ON: 2,354 (341.4)
	Low-pressure switch	ON → OFF: 196 (28.4), OFF → ON: 221 (32.1)
Refrigerant and quantity g (oz)		R-134a (HFC-134a), Approximately 650 – 680 (23 – 24)

SAFETY PRECAUTIONS

⚠ ***WARNING***

Wear safety goggles when servicing the refrigeration system to prevent severe damage to hands.

Because R-134a refrigerant is a hydrofluorocarbon (HFC) which contains hydrogen atoms in place of chlorine atoms, it will not cause damage to the ozone layer. Ozone filters out harmful radiation from the sun. To assist in protecting the ozone layer, Mitsubishi Motors Corporation recommends an R-134a refrigerant recycling device. Refrigerant R-134a is transparent and colorless in both the liquid and vapor state. Since it has a boiling point of –29.8°C (–21.6°F) at atmospheric pressure, it will be a vapor at all normal temperatures and pressures. The vapor is heavier than air, non-flammable, and non-explosive. The following precautions must be observed when handling R-134a.

⚠ ***WARNING***

Do not heat R-134a above 40°C (104°F) or it may catch fire and explode.

R-134a evaporates so rapidly at normal atmospheric pressures and temperatures that it tends to freeze anything it contacts. For this reason, extreme care must be taken to prevent any liquid refrigerant from contacting the skin and especially the eyes. Always wear safety goggles when servicing the refrigeration part of the A/C system. Keep a bottle of sterile mineral oil handy when working on the refrigeration system.

1. Should any liquid refrigerant get into the eyes, use a few drops of mineral oil to wash them out. R-134a is rapidly absorbed by the oil.
2. Next splash the eyes with plenty of cold water.
3. Call your doctor immediately even though irritation has ceased after treatment.

⚠ **CAUTION**

Keep R-134a containers upright when charging the system.

In most instances, moderate heat is required to bring the pressure of the refrigerant in its container above the pressure of the system when charging or adding refrigerant. A bucket or large pan of hot water not over 40°C (104°F) is all the heat required for this purpose. Do not heat the refrigerant container with a blow torch or any other means that would raise temperature and pressure above this temperature. Do not weld or steam clean on or near the system components or refrigerant lines.

⚠ *WARNING*

The leak detector for R-134a should be used to check for refrigerant gas leaks.

⚠ **CAUTION**

Do not allow liquid refrigerant to touch bright metal or it will be stained.

When metering R-134a into the refrigeration system keep the supply tank or cans in an upright position. If the refrigerant container is on its side or upside down, liquid refrigerant will enter the system and damage the compressor. Refrigerant will tarnish bright metal and chrome surfaces, and in combination with moisture can severely corrode all metal surfaces.

OPERATION

When the air conditioning is working under low loads (e.g. in winter), the PCM controls the A/C compressor, condenser fan and idle-up speed more effectively, resulting in good fuel economy and quiet engine operation. In addition, the condenser fan will always run for five minutes as initial check after the battery is reconnected.

Condenser fan control

- For the operation of each fan, refer to GROUP14, Diagnosis P.14-2.

Compressor and radiator fan control

When operating the air conditioning switch

- The automatic compressor controller stops the air compressor when the air thermo sensor detects a temperature of 3.2°C (38°F) or less. However, if the outside air temperature sensor detects a temperature of 10 – 20°C (50 – 68°F), the controller stops the air compressor when the air thermo sensor detects 6.2°C (43°F) or less. Because of this control, the compressor can work efficiently when the air conditioner is under low load.
- The PCM stops the air compressor when the engine coolant temperature sensor detects 115°C (239°F). In addition, the air compressor stops for five seconds when the accelerator position sensor input exceeds 80%. Moreover, the compressor stops during engine start and low engine speed. Because of this control, the engine load can be reduced.
- The dual pressure switch turns OFF when the refrigerant pressure becomes excessively high or low, thus protecting the compressor circuit. (See Table below.)
- When these two sensors are all activated, the dual pressure switch is ON, and the ignition switch, the blower switch, and the air conditioning switch are ON, the A/C compressor relay is energized.

When operating the air outlet changeover control knob

- When the air outlet changeover control knob is moved to "DEFROSTER" or "DEFROSTER/FOOT" position, the micro switch, which is connected in series to the air conditioning switch, is turned on. The other compressor control than the above is the same as that when operating the air conditioning switch.

A/C Compressor Relay ON Conditions

Ignition switch (IG2)		ON	Remarks (1) A/C compressor relay is de-energized when any one switch, sensor or control unit shown on the left turns off (HI). (2) *: Automatic compressor controller and PCM judges from input signals from the sensors.
Blower switch		ON	
Air conditioning switch or micro switch		ON	
Air thermo sensor		*	
Outside air temperature sensor		*	
Engine coolant temperature sensor		*	
Dual pressure switch	Low-pressure side 221 kPa (32.1 psi) or higher	ON	
	High-pressure side 2,942kPa (426.7 psi) or below	ON	
A/C compressor relay driving transistor (within automatic compressor controller and engine control module)		ON	

MANUAL A/C DIAGNOSIS

INTRODUCTION TO HEATER, AIR CONDITIONING AND VENTILATION DIAGNOSIS

M1552012200258

With this system, after the outside air or inside air is taken in through the damper, it is fed to the evaporator by the blower fan and motor and cooled. The air cooled by the air mix damper is mixed appropriately with the warmed air to achieve a comfortable temperature. If the A/C does not operate or the cooled air is not discharged, the machine components or relay may be faulty.

HEATER, AIR CONDITIONING AND VENTILATION DIAGNOSTIC TROUBLESHOOTING STRATEGY

M1552009600278

⚠ CAUTION

If the condenser fan does not run as the air conditioning is on under low load, disconnect the negative battery cable for a moment and then reconnect it. Then a trouble symptom can be checked for five minutes after the condenser starts running.

Use these steps to plan your diagnostic strategy. If you follow them carefully, you will be sure that you have exhausted most of the possible ways to find a heater, air conditioning and ventilation fault.

1. Gather information from the customer.
2. Verify that the condition described by the customer exists.
3. Find the malfunction by following the Symptom Chart.
4. Verify malfunction is eliminated.

SYMPTOM CHART

M1552009900321

SYMPTOMS	INSPECTION PROCEDURE	REFERENCE PAGE
When the ignition switch is ON, the A/C does not operate.	1	P.55-6
When the air outlet changeover control knob is moved to DEFROSTER or DEFROSTER/FOOT position, the A/C or the inside/outside air changeover damper motor does not operate.	2	P.55-9
When the A/C is operating, temperature inside the passenger compartment does not decrease (cool air is not emitted).	3	P.55-9
Blower fan and motor does not operate.	4	P.55-11
Blower fan and motor does not stop operating.	5	P.55-13
When the A/C is operating condenser fan does not operate.*	6	P.55-15
Even when the rear heater switch is pressed, the blower fan does not turn.	7	P.55-16
The rear heater air volume cannot be controlled in two steps.	8	P.55-18

NOTE: For symptoms marked with an asterisk the condenser fan might not operate when there is an air conditioning low load from the air conditioning condenser control, so remove the negative battery terminal and then check the symptoms 5 minutes after initial start control reconnection.

SYMPTOM PROCEDURES

INSPECTION PROCEDURE 1: When the Ignition Switch is ON, the A/C does not Operate.

DIAGNOSIS

STEP 1. Check for refrigerant leaks.

Q: Is the refrigerant leaking?

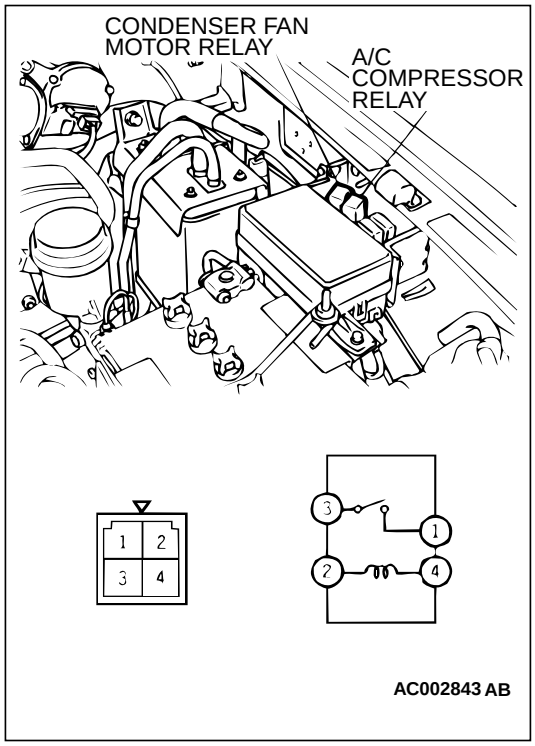
YES : Repair the leak. Then go to Step 10.
NO : Go to Step 2.

STEP 2. Check for excessive refrigerant.

Q: Is the refrigerant in good condition?

YES : Go to Step 3.
NO : Use the refrigerant recovery station to remove all of the refrigerant, and then calculate the amount of the refrigerant and charge it. Then go to Step 10.

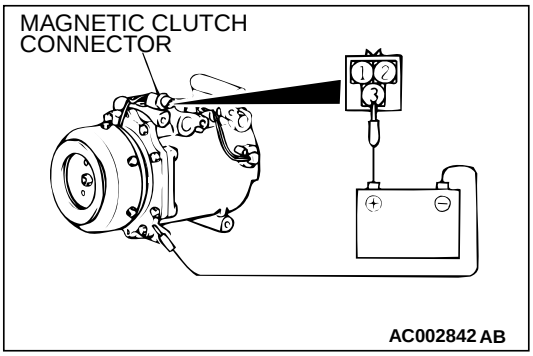
STEP 3. Check the A/C compressor relay continuity.
Remove the A/C compressor relay and continuity check.



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

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

YES : Go to Step 4.
NO : Replace. Then go to Step 10.



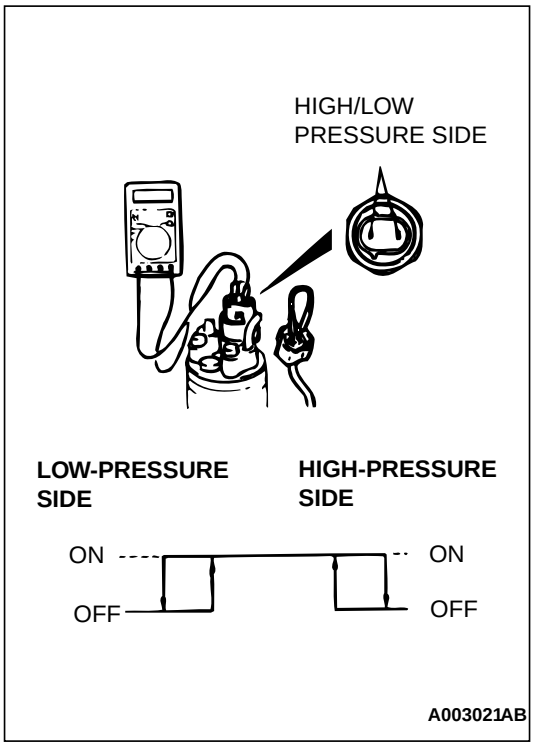
STEP 4. Check the magnetic clutch operation.

Connect the battery (+) terminal to the compressor magnetic clutch connector terminal 3 and ground the battery (-) terminal to the body of the compressor.

Q: Can the sound of the magnetic clutch (click) be heard?

YES : Go to Step 5.

NO : Replace. Then go to Step 10.



STEP 5. Check the dual pressure switch operation.

(1) Remove the dual pressure switch connector and connect the high/low pressure side terminals located on the harness side as shown in the illustration.

(2) Install a gauge manifold to the high-pressure side service valve of the refrigerant line. (Refer to P.55-23.)

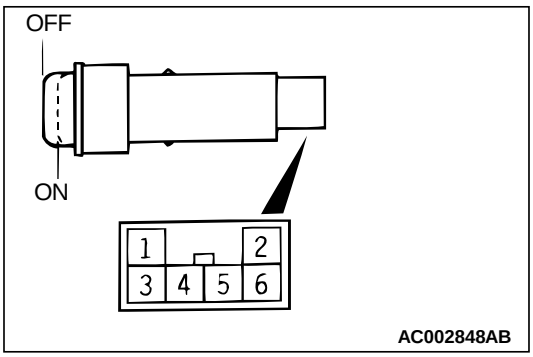
(3) When the high/low pressure sides of the dual pressure switch are at operation pressure (ON) and the resistance is less than two ohms between the respective terminals, then the condition is normal. If open loop, replace the switch.

ITEMS	DUAL PRESSURE SWITCH	
	FROM OFF TO ON	FROM ON TO OFF
Low-pressure side kPa (psi)	221 (32.1)	196 (28.4)
High-pressure side kPa (psi)	2,354 (341.4)	2,942 (426.7)

Q: Is the dual pressure switch operating properly?

YES : Go to Step 6.

NO : Replace the switch. Then go to Step 10.



STEP 6. Check the A/C switch continuity.

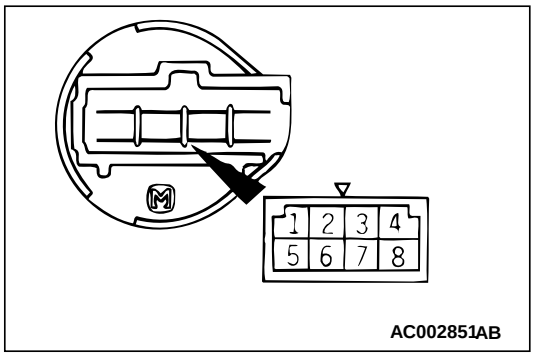
Remove the A/C switch and check the continuity.

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
At the OFF position	1 – 4	Open circuit
At the ON position	1 – 4	Less than 2 ohms

Q: Is there continuity at the A/C switch?

YES : Go to Step 7.

NO : Replace. Then go to Step 10.



STEP 7. Check the blower switch continuity.
Remove the blower switch and check continuity.

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
At the "OFF" position	1 – 8 2 – 5 3 – 5 5 – 6 5 – 7	Open circuit
At the "LO" position	3 – 5 1 – 8	Less than 2 ohms
At the "ML" position	5 – 6 1 – 8	Less than 2 ohms
At the "MH" position	2 – 5 1 – 8	Less than 2 ohms
At the "HI" position	5 – 7 1 – 8	Less than 2 ohms

Q: Is there continuity at the blower switch?
YES : Go to Step 8.
NO : Replace. Then go to Step 10.

STEP 8. Measure the automatic compressor controller terminal voltage.
Refer to P.55-20.

Q: Is the automatic compressor controller terminal voltage correct?
YES : Go to Step 9.
NO : Replace. Then go to Step 10.

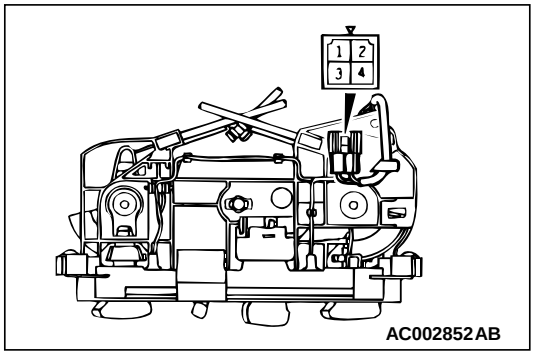
STEP 9. Measure the powertrain control module terminal voltage.
Refer to GROUP 13A, Diagnosis – Check at the Powertrain Control Module (PCM).

Q: Is the terminal voltage correct?
YES : Go to Step 10.
NO : Replace. Then go to Step 10.

STEP 10. Retest the system.

Q: Is the A/C operating properly?
YES : The procedure is complete. (If no malfunctions are found in all steps, an intermittent malfunction is suspected. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction P.00-6.)
NO : Go to Step 1.

INSPECTION PROCEDURE 2: When the Air Outlet Changeover Control Knob is Moved to Defroster or Defroster/foot Position, the Air Conditioning or the Inside/outside Air Changeover Damper Motor does not Operate.



DIAGNOSIS

STEP 1. Check the defroster switch continuity.

AIR OUTLET CHANGEOVER CONTROL KNOB POSITION	TESTER CONNECTION	SPECIFIED CONDITION
DEFROSTER, DEFROSTER/ FOOT	1 – 3	Less than 2 ohms
OTHER POSITION	1 – 3	Open circuit

Q: Is the defroster switch in good condition?

YES : Go to Step 2.
NO : Replace. Then go to Step 2.

STEP 2. Check each A/C part.

Q: Does A/C operate normally?

YES : The procedure is complete. (If no malfunctions are not found in all steps, an intermittent malfunction is suspected. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction P.00-6.)
NO : Go to Inspection Procedure 1.

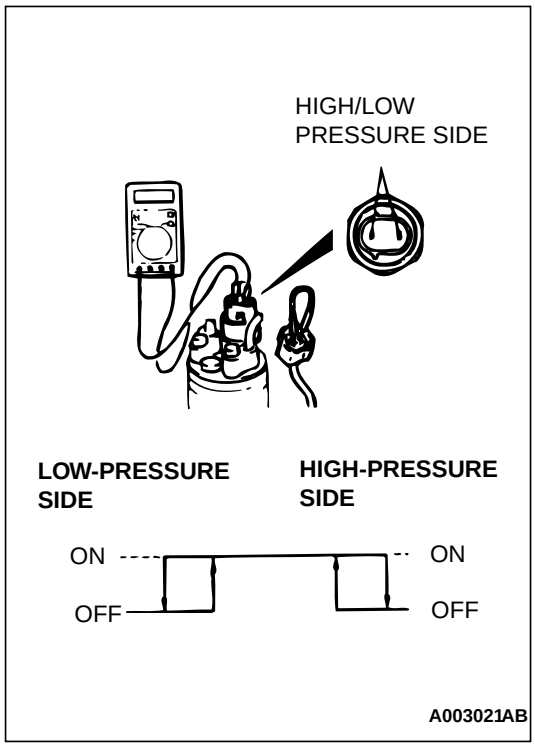
INSPECTION PROCEDURE 3: When The A/C is Operating, Temperature inside the Passenger Compartment does not Decrease (Cool Air is not Emitted).

DIAGNOSIS

STEP 1. Check for refrigerant leaks.

Q: Is the refrigerant leaking?

YES : Repair. Then go to Step 5.
NO : Go to Step 2.



STEP 2. Check the dual pressure switch operation.

(1) Remove the dual pressure switch connector and connect the high/low pressure side terminals located on the harness side as shown in the illustration.
(2) Install a gauge manifold to the high-pressure side service valve of the refrigerant line. (Refer to P.55-23.)
(3) When the high/low pressure sides of the dual pressure switch are at operation pressure (ON) and there is continuity between the respective terminals.

ITEMS	DUAL PRESSURE SWITCH	
	FROM OFF TO ON	FROM ON TO OFF
Low-pressure side kPa (psi)	221 (32.1)	196 (28.4)
High-pressure side kPa (psi)	2,354 (341.4)	2,942 (426.7)

Q: When the high/low pressure sides of the dual pressure switch are at operation pressure (ON), is there continuity between the respective terminals?

YES : Go to Step 3.
NO : Replace the switch. Then go to Step 5.

STEP 3. Measure the automatic compressor controller terminal voltage.

Refer to P.55-20.

Q: Is the automatic compressor controller terminal voltage correct?

YES : Go to Step 4.
NO : Replace. Then go to Step 5.

STEP 4. Measure the powertrain control module terminal voltage.

Refer to GROUP 13A, Diagnosis – Check at the Powertrain Control Module (PCM) P.13Ab-21.

Q: Is the voltage correct?

YES : Go to Step 5.
NO : Replace. Then go to Step 5.

STEP 5. Retest the system.

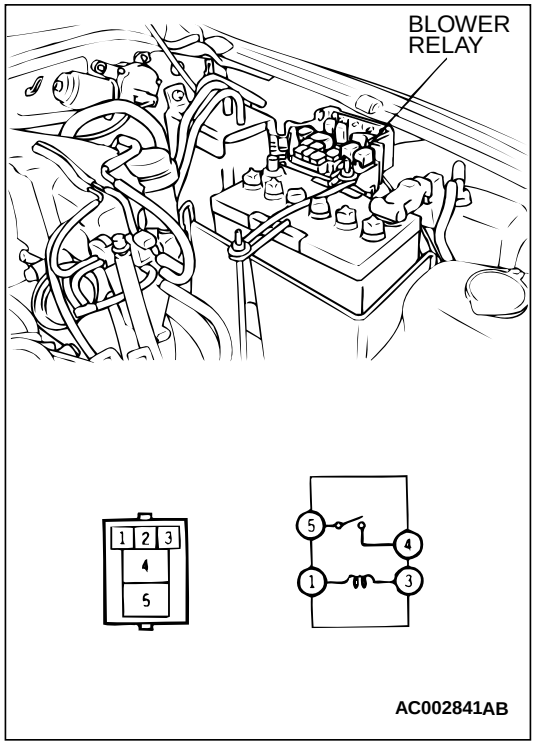
Q: Does the system produce cool air?

YES : The procedure is complete. (If no malfunctions are found in all steps, an intermittent malfunction is suspected. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction P.00-6.)
NO : Go to Step 1.

INSPECTION PROCEDURE 4: Blower Fan and Motor do not Operate.

DIAGNOSIS

STEP 1. Check the blower relay continuity.
Remove the blower relay and check continuity.

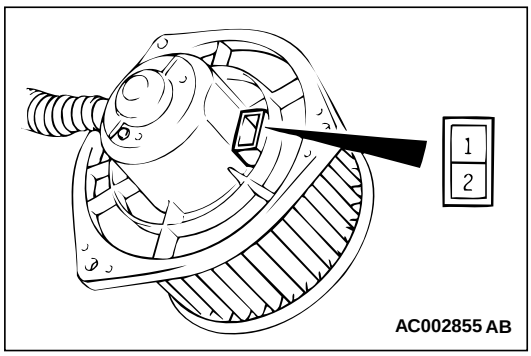


BATTERY CONNECTION	TESTER CONNECTION	SPECIFIED CONDITION
Not applied	4 – 5	Open circuit
• Connect terminal 3 to the positive battery terminal • Connect terminal 1 to the negative battery terminal	4 – 5	Less than 2 ohms

Q: Is the blower relay continuity in good condition?

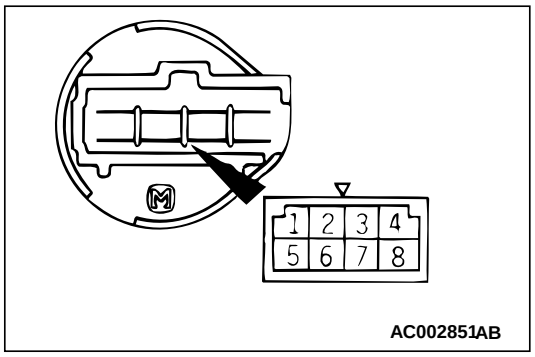
YES : Go to Step 2.
NO : Replace. Then go to Step 5.

STEP 2. Check the blower fan and motor operation.
When battery voltage is applied between the terminals, check that the motor operates.



Q: Is there any abnormal noise?

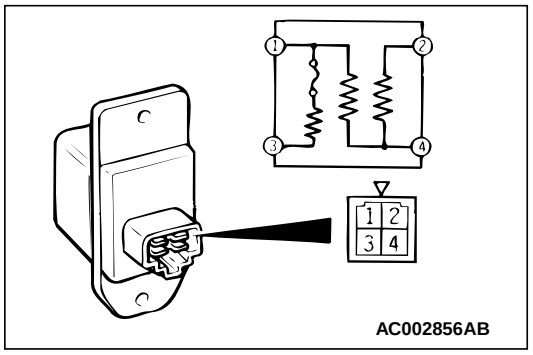
YES : Go to Step 3.
NO : Replace. Then go to Step 5.



STEP 3. Check the blower switch continuity.
Remove the blower switch and check continuity.

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
At the "OFF" position	1 – 8 2 – 5 3 – 5 5 – 6 5 – 7	Open circuit
At the "LO" position	3 – 5 1 – 8	Less than 2 ohms
At the "ML" position	5 – 6 1 – 8	Less than 2 ohms
At the "MH" position	2 – 5 1 – 8	Less than 2 ohms
At the "HI" position	5 – 7 1 – 8	Less than 2 ohms

Q: Is there continuity at the blower switch?
YES : Go to Step 4.
NO : Replace. Then go to Step 5.



STEP 4. Check the resistor resistance value.
Use an ohmmeter to measure the resistance between the terminals as indicated below. Check that the measured value is at the standard value.

MEASUREMENT TERMINAL	STANDARD VALUE Ω
Between terminals 2 and 3 (LO)	2.0
Between terminals 3 and 4 (ML)	1.1
Between terminals 3 and 1 (MH)	0.37

Q: Is the measured value at the standard value?
YES : Go to Step 5.
NO : Replace. Then go to Step 5.

STEP 5. Retest the system.

Q: Do the blower fan and motor operate?
YES : The procedure is complete. (If no malfunctions are found in all steps, an intermittent malfunction is suspected. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction P.00-6.)
NO : Go to Step 1.

INSPECTION PROCEDURE 5: Blower Fan and Motor do not Stop Operating.

DIAGNOSIS

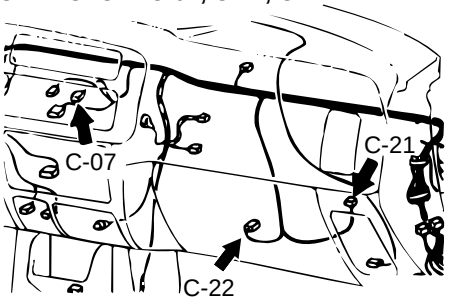
STEP 1. Check the harness wires between the blower switch connector C-07 (terminal No.2, 3 and 6), blower resistor connector C-22 (terminal No.1, 2, 3, and 4), and the blower fan motor connector C-21 (terminal No.2).

Q: Are the harness wires between the blower fan and motor switch connector C-07 (terminal No.2, 3 and 6), blower resistor connector C-22 (terminal No.1, 2, 3, and 4), and the blower fan motor connector C-21 (terminal No.2) in good condition?

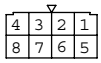
YES : Go to Step 2.

NO : Repair it. Then go to Step 4.

CONNECTOR: C-07, C-21, C-22



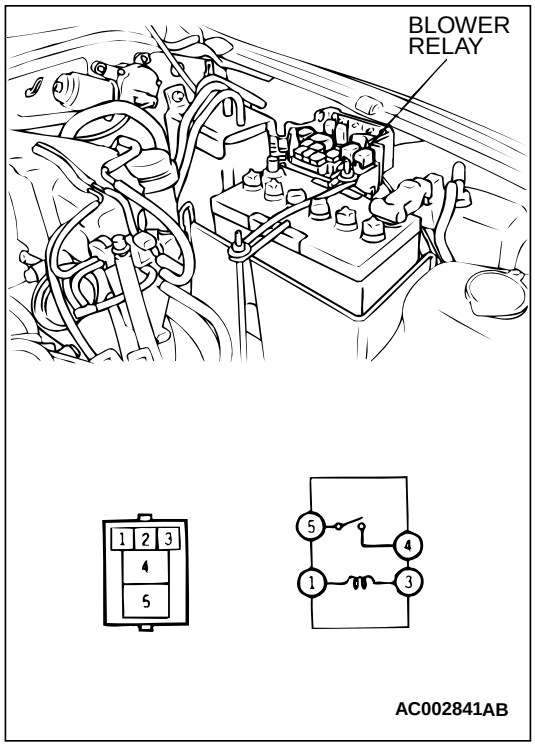
C-07
HARNESS SIDE



C-21
HARNESS SIDE

C-22
HARNESS SIDE

AC200770 AB



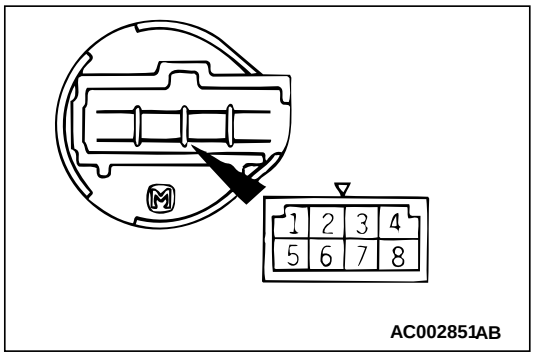
STEP 2. Check the blower relay continuity.

BATTERY CONNECTION	TESTER CONNECTION	SPECIFIED CONDITION
Not applied	4 – 5	Open circuit
• Connect terminal 3 to the positive battery terminal • Connect terminal 1 to the negative battery terminal	4 – 5	Less than 2 ohms

Q: Is there continuity at the blower relay?

YES : Go to Step 3.

NO : Replace. Then go to Step 4.



STEP 3. Check the blower switch continuity.

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
OFF	1 – 8 2 – 5 3 – 5 5 – 6 5 – 7	Open circuit
LO	3 – 5 1 – 8	Less than 2 ohms
ML	5 – 6 1 – 8	Less than 2 ohms
MH	2 – 5 1 – 8	Less than 2 ohms
HI	5 – 7 1 – 8	Less than 2 ohms

Q: Is there continuity at the blower switch?

YES : Go to Step 4.

NO : Replace. Then go to Step 4.

STEP 4. Retest the system.

Q: Does the blower motor stop operating?

YES : The procedure is complete. (If no malfunctions are found in all steps, an intermittent malfunction is suspected. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction P.00-6.)

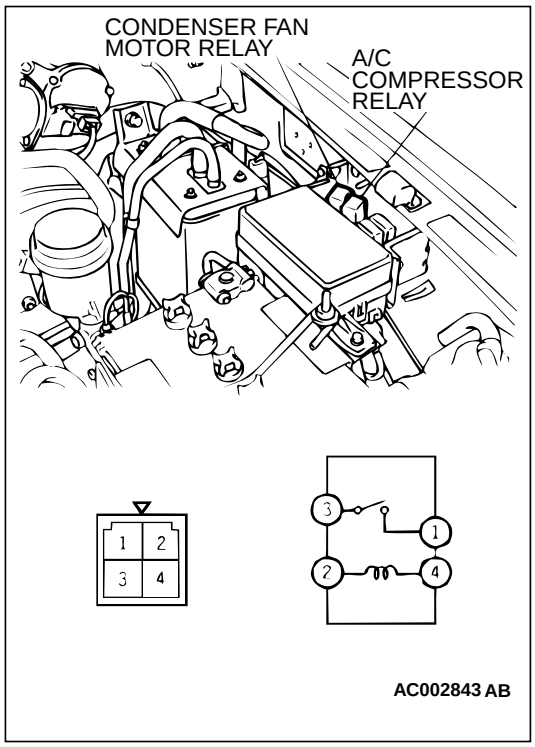
NO : Go to Step 1.

INSPECTION PROCEDURE 6: When the A/C is Operating, Condenser Fan do not Operate.

DIAGNOSIS

STEP 1. Check the condenser fan motor relay continuity.

Remove the condenser fan motor relay and check continuity.



BATTERY CONNECTION	TESTER CONNECTION	SPECIFIED CONDITION
Not applied	4 – 5	Open circuit
• Connect terminal 3 to the positive battery terminal • Connect terminal 1 to the negative battery terminal	4 – 5	Less than 2 ohms

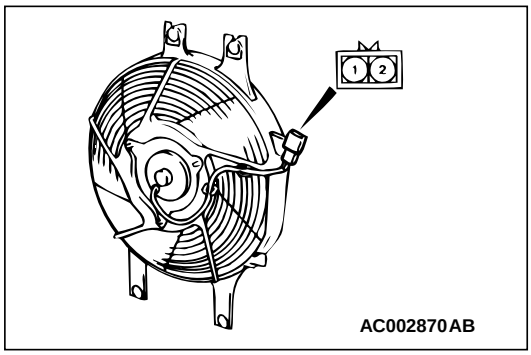
Q: Is there continuity at the condenser fan motor relay?

YES : Go to Step 2.

NO : Replace. Then go to Step 4.

STEP 2. Check the condenser fan motor operation.

Remove the condenser fan motor and check continuity.



BATTERY CONNECTION	MOTOR OPERATION
• Connect terminal 2 to the positive battery terminal • Connect terminal 1 to the negative battery terminal	Rotates

Q: Is the condenser fan motor operating correctly?

YES : Go to Step 3.

NO : Replace. Then go to Step 3.

TSB Revision

STEP 3. Measure the PCM terminal voltage.
Refer to GROUP 13A, Check at PCM terminals P.13Ab-43.

Q: Is the PCM voltage correct?

YES : Go to Step 4.
NO : Replace. Then go to Step 4.

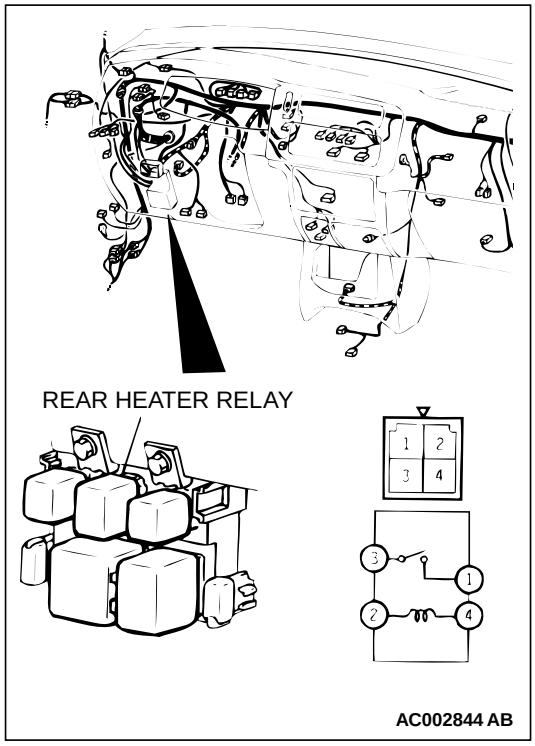
STEP 4. Retest the system.

NOTE: The condenser fan might not operate when there is an air conditioning low load from the air conditioning condenser control, so remove the negative battery terminal and then check the symptoms after 5 minutes since initial start control after reconnection.

Q: Is the condenser fan operating correctly?

YES : The procedure is complete. (If no malfunctions are found in all steps, an intermittent malfunction is suspected. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction P.00-6.)
NO : Go to Step 1.

INSPECTION PROCEDURE 7: Even when the Rear Heater Switch is Pressed, the Blower Fan does not Turn.



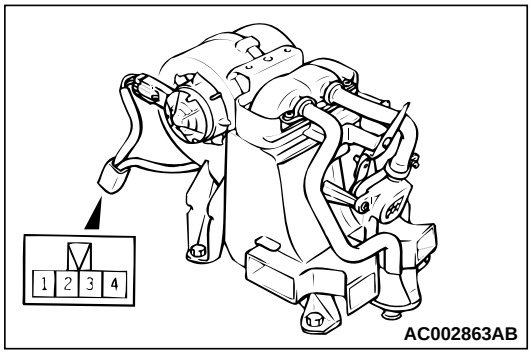
DIAGNOSIS

STEP 1. Check the rear heater relay continuity.
Remove the rear heater relay and check continuity.

BATTERY CONNECTION	TESTER CONNECTION	SPECIFIED CONDITION
Not applied	4 – 5	Open circuit
• Connect terminal 3 to the positive battery terminal • Connect terminal 1 to the negative battery terminal	4 – 5	Less than 2 ohms

Q: Is there continuity at the rear heater relay?

YES : Go to Step 2.
NO : Replace. Then go to Step 5.



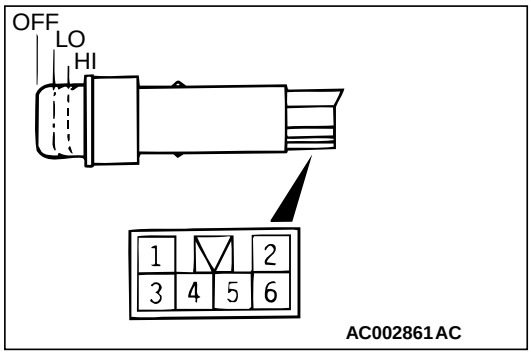
STEP 2. Check the rear blower motor operation.

When battery voltage is applied between the terminals, check that the motor operates. Also, check that there is no abnormal noise.

BATTERY CONNECTION	SPECIFIED CONDITION
• Connect terminal 1 to the positive battery terminal • Connect terminal 3 to the negative battery terminal	Blower motor rotates (HI)
• Connect terminal 1 to the positive battery terminal • Connect terminal 4 to the negative battery terminal	Blower motor rotates (LO)

Q: Is the rear blower motor operating correctly?

YES : Go to Step 3.
NO : Replace. Then go to Step 5.



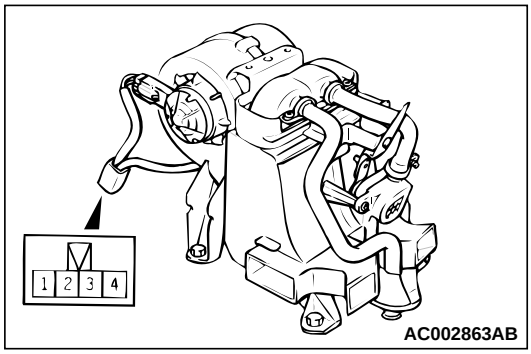
STEP 3. Check the rear heater switch continuity.

Remove the rear heater switch and check continuity.

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
At the "OFF" position	1 – 4 2 – 4	Open circuit
At the "LO" position	2 – 4	Less than 2 ohms
At the "HI" position	1 – 4	Less than 2 ohms

Q: Is the rear heater switch normal?

YES : Go to Step 4.
NO : Replace. Then go to Step 5.



STEP 4. Check the resister resistance value.

Use an ohmmeter to check the resistance between terminals number 3 and 4. Check that the measured value is at the standard value.

Standard value: 3.9Ω

Q: Is the resistance value correct?

YES : The procedure is complete. (If no malfunctions are found in all steps, an intermittent malfunction is suspected. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction P.00-6.)

NO : Replace. Then go to Step 5.

STEP 5. Retest the system.

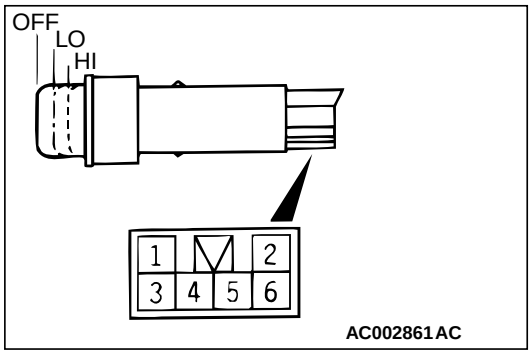
NOTE: The condenser fan might not operate when there is an air conditioning low load from the air conditioning condenser control, so remove the negative battery terminal and then check the symptoms after 5 minutes since initial start control after reconnection.

Q: Is the condenser fan operating correctly?

YES : The procedure is complete. (If no malfunctions are not found in all steps, an intermittent malfunction is suspected. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction P.00-6.)

NO : Go to Step 1.

INSPECTION PROCEDURE 8: The Rear Heater Air Volume cannot be Controlled in Two Steps.



DIAGNOSIS

STEP 1. Check the rear heater switch continuity.

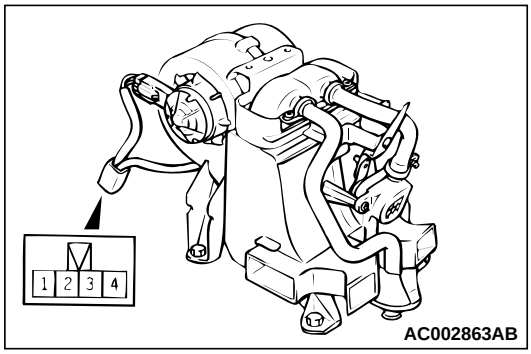
Remove the rear heater switch and check continuity.

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
At the "OFF" position	1 – 4 2 – 4	Open circuit
At the "LO" position	2 – 4	Less than 2 ohms
At the "HI" position	1 – 4	Less than 2 ohms

Q: Is the rear heater switch normal?

YES : Go to Step 2.

NO : Replace. Then go to Step 3.



STEP 2. Check the resister resistance value.

Use an ohmmeter to check the resistance between terminals number 3 and 4. Check that the measured value is at the standard value.

Standard value: 3.9 Ω

Q: Is the resistance value correct?

YES : The procedure is complete. (If no malfunctions are found in all steps, an intermittent malfunction is suspected. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction P.00-6.)

NO : Replace. Then go to Step 3.

STEP 3. Retest the system.

NOTE: The condenser fan might not operate when there is an air conditioning low load from the air conditioning condenser control, so remove the negative battery terminal and then check the symptoms after 5 minutes since initial start control after reconnection.

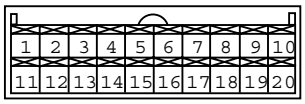
Q: Is the condenser fan operating correctly?

YES : The procedure is complete. (If no malfunctions are found in all steps, an intermittent malfunction is suspected. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction P.00-6.)

NO : Go to Step 1.

INSPECTION AT THE AUTOMATIC COMPRESSOR CONTROLLER TERMINAL

M1552010300301

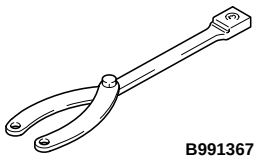
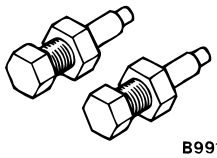
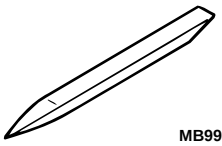


AC000026 AB

TERMINAL NO.	CHECK ITEM	CHECKING REQUIREMENTS	NORMAL CONDITION
1	IG2 power supply	Ignition switch ON	Battery positive voltage
2	A/C switch input	A/C switch OFF or blower switch OFF	0 V
		A/C switch ON Ignition switch ON Blower switch ON	Battery positive voltage
4	Air conditioning output	A/C compressor relay OFF	0 V
		A/C compressor relay ON	Battery positive voltage
8	Ground	At all times	Continuity
9	Ground	At all times	Continuity
14	Air thermo sensor power supply	At all times	4.8 – 5.2 V
15	Air thermo sensor input	Sensor temperature 25°C (77°F) (4 kΩ)	2.3 – 2.9 V
16	Outside air temperature sensor power supply	At all times	4.8 – 5.2 V
17	Outside air temperature sensor input	Sensor temperature 25°C (77°F) (4 kΩ)	2.3 – 2.9 V
18	Backup power supply	At all times	Battery positive voltage
19	Outside air temperature output	Sensor temperature 15°C (52°F) or more	Battery positive voltage
		Sensor temperature 18°C (64°F) or more	2 V or more

SPECIAL TOOLS

M1552000600248

TOOL	TOOL NUMBER AND NAME	SUPER SESSION	APPLICATION
 B991367	MB991367 Special spanner	MB991367-01	Armature mounting nut of compressor removal and installation
 B991386	MB991386 Pin	MIT217213	
 MB990784	MB990784 Ornament remover	General service tool	Meter bezel assembly removal

ON-VEHICLE SERVICE

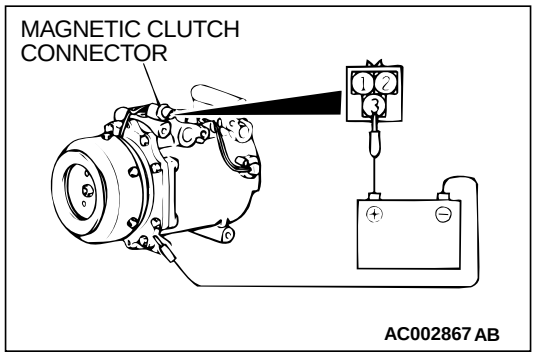
REFRIGERANT LEVEL TEST

M1552008400271

Use the refrigerant recovery station to remove all of the refrigerant, and then calculate the amount of the refrigerant and charge it.

MAGNETIC CLUTCH TEST

M1552008500320



1. Disconnect the magnetic clutch connector to the magnetic clutch.
2. Connect positive battery voltage directly to the connector for the magnetic clutch.
3. If the magnetic clutch is normal, there will be a "click." If the pulley and armature do not make contact ("click"), there is a malfunction.

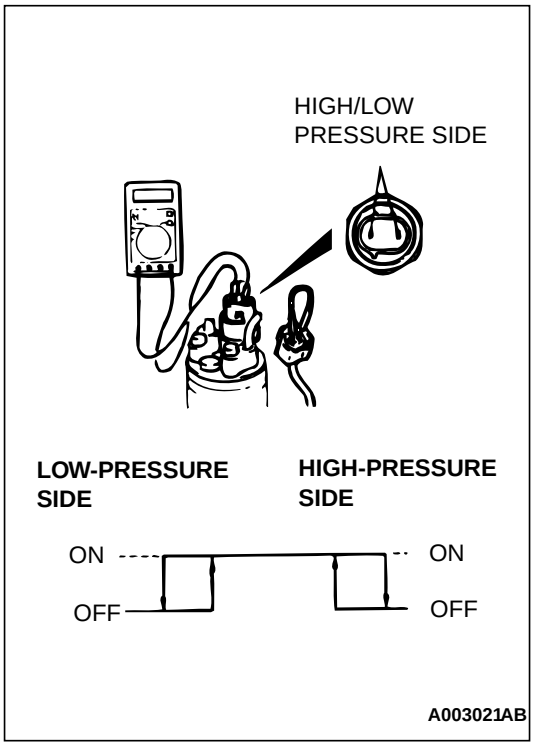
RECEIVER DRIER TEST

M1552008600220

Turn the A/C on. Check the temperature by touching the receiver drier outlet and inlet pipes. If there is a difference in the temperatures of the two pipes, the receiver assembly is restricted. Replace the receiver assembly.

DUAL PRESSURE SWITCH CHECK

M1552010400245



1. Remove the dual pressure switch connector and connect the high/low pressure side terminals located on the harness side as shown in the illustration.
2. Install a gauge manifold to the high-pressure side service valve of the refrigerant line. (Refer to P.55-23.)
3. When the high/low pressure sides of the dual pressure switch are at operation pressure (ON) and there is continuity between the respective terminals, then the condition is normal. If there is no continuity, replace the switch.

ITEMS	FROM OFF TO ON	FROM ON TO OFF
Low-pressure side kPa (psi)	221 ± 27 (32.1 ± 3.9)	196 ± 20 (28.4 ± 2.9)
High-pressure side kPa (psi)	2,354 ± 200 (341.4 ± 29)	2,942 ± 200 (426.7 ± 29)

COMPRESSOR DRIVE BELT ADJUSTMENT

M1552001000249

Refer to GROUP 00, Maintenance Service – Drive Belts P.00-43.

CHARGING

M1552001200254

Use the refrigerant recovery station to charge the refrigerant.

METHOD BY USING REFRIGERANT RECOVERY AND RECYCLING UNIT

Using the refrigerant recovery and recycling unit, refill the refrigerant.

NOTE: Refer to the Refrigerant Recovery and Recycling Unit Instruction Manual for operation of the unit.

DISCHARGING SYSTEM

Use the refrigerant recovery unit to discharge refrigerant gas from the system.

NOTE: Refer to the Refrigerant Recovery and Recycling Unit Instruction Manual for operation of the unit.

REFILLING OF OIL IN THE A/C SYSTEM

Too little oil will provide inadequate compressor lubrication and cause a compressor failure. Too much oil will increase discharge air temperature.
When a compressor is installed at the factory, it contains 170 cm^3 (5.7 floz) of refrigerant oil. While the A/C system is in operation, the oil is carried through the entire system by the refrigerant. Some of this oil will be trapped and retained in various parts of the system.
When the following system components are replaced, it is necessary to add oil to the system to replace the oil being removed with the component.

Compressor oil: SUN PAG 56

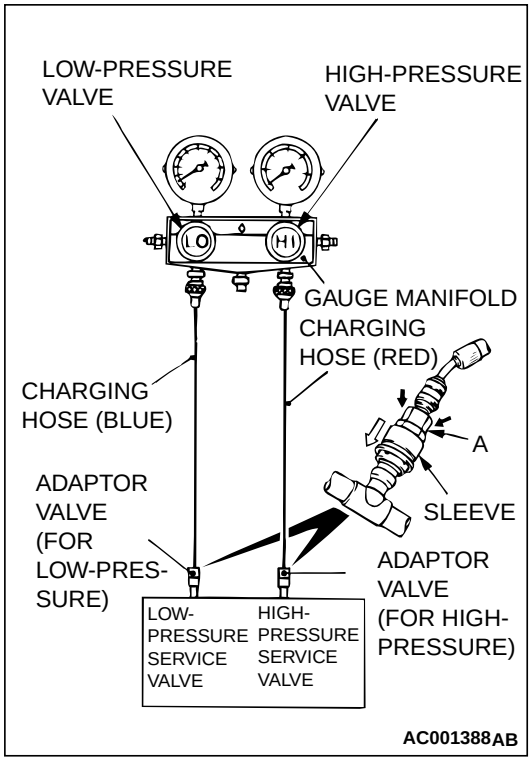
Quantity:

- **Evaporator: 20 cm^3 (0.7 floz)**
- **Condenser: 70 cm^3 (2.4 floz)**
- **Suction hose: 10 cm^3 (0.3 floz)**
- **Receiver: 10 cm^3 (0.3 floz)**

PERFORMANCE TEST

M1552001400247

1. The vehicle to be tested should be in a place that is not in direct sunlight.
2. Close the high and low-pressure valve of the gauge manifold.
3. Connect the charging hose (blue) to the low-pressure valve and connect the charging hose (red) to the high-pressure valve of the gauge manifold.
4. Install the quick joint (for low-pressure) to the charging hose (blue), and connect the quick joint (for high-pressure) to the charging hose (red).



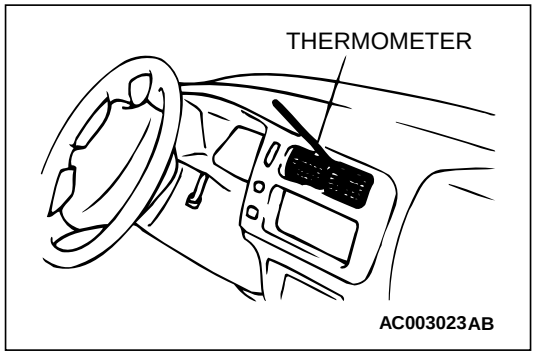
⚠ CAUTION

- **To connect the quick joint, press section A firmly against the service valve until a click is heard.**
- **When connecting, run your hand along the hose while pressing to ensure that there are no bends in the hose.**

5. Connect the quick joint (for low-pressure) to the low-pressure service valve and connect the quick joint (for high-pressure) to the high-pressure service valve.

   NOTE: The high-pressure service valve is on A/C pipe and the low-pressure service valve is on the suction hose.

6. Start the engine.
7. Set the A/C controls as follows:
   - A/C switch: A/C – ON position
   - Mode selection: FACE position
   - Temperature control: MAXIMUM COOLING position
   - Air selection: RECIRCULATION position
   - Blower switch: HI position
8. Adjust engine speed to 1,000 r/min with A/C clutch engaged.



9. Engine should be warmed up with doors and windows closed.
10. Insert the thermistor-type thermometer into the discharge port shown left and measure the discharge air temperature.
11. Note the discharge air temperature.

NOTE: If the clutch cycles, take the reading before the clutch disengages.

Performance Temperature Chart

GARAGE AMBIENT TEMPERATURE °C (°F)	**20 (68)**	**25 (77)**	**35 (95)**	**40 (104)**
Discharge air temperature °C (°F)	4.9 – 6.5 (40.1 – 43.7)	5.0 – 7. 0 (41.0 – 44.6)	7.2 – 9.2 (45.0 – 48.6)	8.5 – 10.5 (47.3 – 50.9)
Compressor high pressure kPa (psi)	830 – 1,130 (120 – 164)	1,000 – 1,300 (145 –189)	1,200 – 1,500 (174 – 218)	1,550 – 1850 (225 – 268)
Compressor low pressure kPa (psi)	95 – 195 (14 – 28)	105 – 209 (15 – 30)	125 – 229 (18 – 33)	145 – 245 (21 – 36)

REFRIGERANT LEAK REPAIR

M1552001500222

LOST CHARGE

If the system has lost all charge due to a leak:

1. Evacuate the system. (See procedure.)
2. Charge the system with approximately 0.453 kg (1 pound) of refrigerant.
3. Check for leaks.
4. Discharge the system.
5. Repair leaks.

⚠ CAUTION

Replacement filter-drier units must be sealed while in storage. The drier used in these units will saturate water quickly upon exposure to the atmosphere. When installing a drier, have all tools and supplies ready for quick assembly to avoid keeping the system open any longer than necessary.

6. Replace receiver drier.
7. Evacuate and charge system.

LOW CHARGE

If the system has not lost all of its refrigerant charge, locate and repair all leaks. If it is necessary to increase the system pressure to find the leak (because of an especially low charge) add refrigerant. If it is possible to repair the leak without discharging the refrigerant system, use the procedure for correcting low refrigerant level.

HANDLING TUBING AND FITTINGS

Kinks in the refrigerant tubing or sharp bends in the refrigerant hose lines will greatly reduce the capacity of the entire system. High pressures are produced in the system when it is operating. Extreme care must be exercised to make sure that all connections are pressure tight. Dirt and moisture can enter the system when it is opened for repair or replacement of lines or components. The following precautions must be observed. The system must be completely discharged before opening any fitting of connection in the refrigeration system. Open fittings with caution even after the system has been discharged. If any pressure is noticed as a fitting is loosened, allow trapped pressure to bleed off very slowly.

Never attempt to rebend formed lines to fit. Use the correct line for the installation you are servicing. A good rule for the flexible hose lines is keep the radius of all bends at least 10 times the diameter of the hose.

Sharper bends will reduce the flow of refrigerant. The flexible hose lines should be routed so that they are at least 80 mm (3.1 inches) from the exhaust manifold. It is good practice to inspect all flexible hose lines at least once a year to make sure they are in good condition and properly routed.

On standard plumbing fittings with O-rings, these O-rings are not reusable.

COMPRESSOR NOISE CHECK

M1552008700216

You must first know the conditions when the noise occurs. These conditions are: weather, vehicle speed, in gear or neutral, engine temperature or any other special conditions. Noises that develop during A/C operation can often be misleading. For example: what sounds like a failed front bearing or connecting rod, may be caused by loose bolts, nuts, mounting brackets, or a loose clutch assembly. Verify accessory drive belt tension (power steering or generator). Improper accessory drive belt tension can cause a misleading noise when the compressor is engaged and little or no noise when the compressor is disengaged. Drive belts are speed-sensitive. That is, at different engine speeds, and depending upon belt tension, belts can develop unusual noises that are often mistaken for mechanical problems within the compressor.

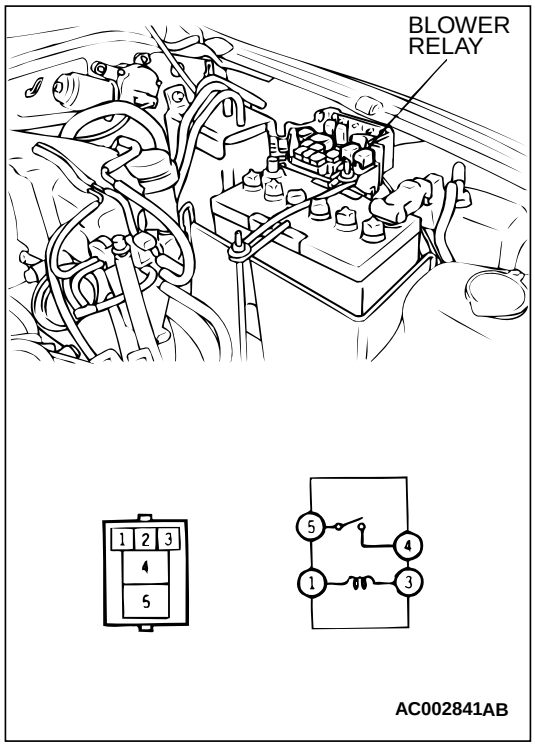
ADJUSTMENT

1. Select a quiet area for testing. Duplicate conditions as much as possible. Switch compressor on and off several times to clearly identify compressor noise. To duplicate high ambient conditions (high head pressure), restrict air flow through condenser. Install manifold gauge set to make sure discharge pressure doesn't exceed 2,070 kPa (300 psi).
2. Tighten all compressor mounting bolts, clutch mounting bolt, and compressor drive belt. Check to assure clutch coil is tight (no rotation or wobble).
3. Check refrigerant hoses for rubbing or interference that can cause unusual noises.
4. Check refrigerant charge. (Refer to P.55-22.)
5. Recheck compressor noise as in Step 1.
6. If noise still exists, loosen compressor mounting bolts and re torque. Repeat Step 1.
7. If noise continues, replace compressor and repeat Step 1.

POWER RELAY CHECK

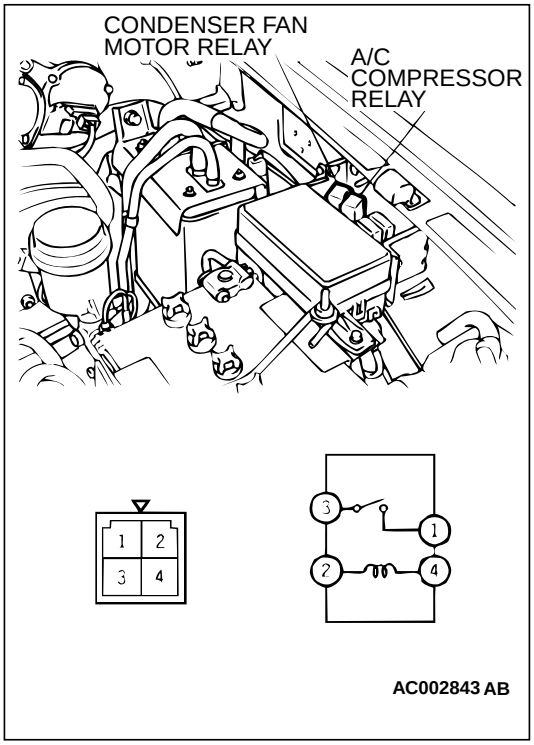
M1552008800224

BLOWER RELAY



BATTERY CONNECTION	TESTER CONNECTION	SPECIFIED CONDITION
Not applied	4 – 5	Open circuit
• Connect terminal 3 to the positive battery terminal • Connect terminal 1 to the negative battery terminal	4 – 5	Less than 2 ohms

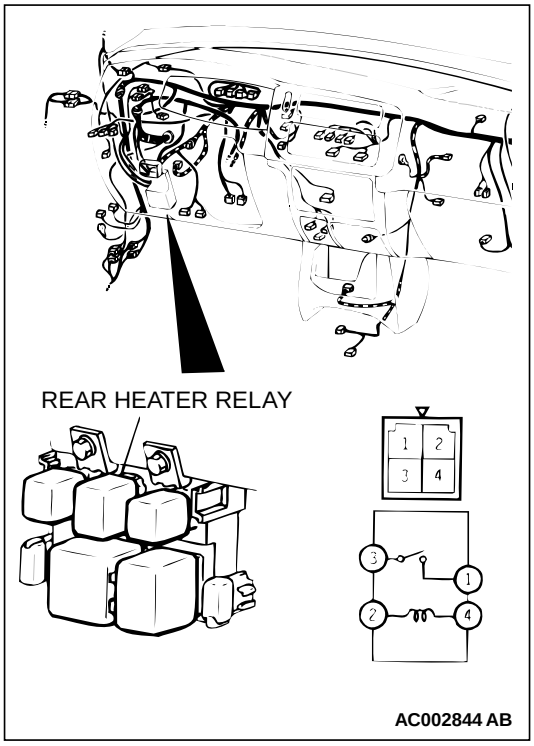
A/C COMPRESSOR RELAY, CONDENSER FAN MOTOR RELAY



AC002843 AB

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

REAR HEATER RELAY



AC002844 AB

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

IDLE-UP OPERATION CHECK

M1552001600241

1. Before inspection and adjustment, set vehicle in the following condition:
   - Engine coolant temperature: 80 – 90 °C (176 – 194 °F)
   - Lights, electric cooling fan and accessories: Set to OFF
   - Transmission: " N " or " P " position
   - Steering wheel: Straightforward
2. Check whether or not the idling speed is the standard value.

   Standard value: 700 ± 100 r/min

   NOTE: There is no necessity to make an adjustment, because the idling speed is automatically adjusted by the idle speed control system. If, however, there occurs a deviation from the standard value for some reason, check the idle speed control system. Refer to GROUP 13A, On-vehicle Service P.13Aa-14.
3. When the A/C is running after turning the A/C switch to ON, and the blower switch to the MH or HI position, check to be sure that the idle speed is at the standard value.

   Standard value:

VEHICLE CONDITION	IDLE-UP SPEED r/min
When the air conditioning is working under low load (Outside air temperature sensor: ON)	750 ± 100
When the air conditioning is working under high load (Outside air temperature sensor: OFF)	900 ± 100

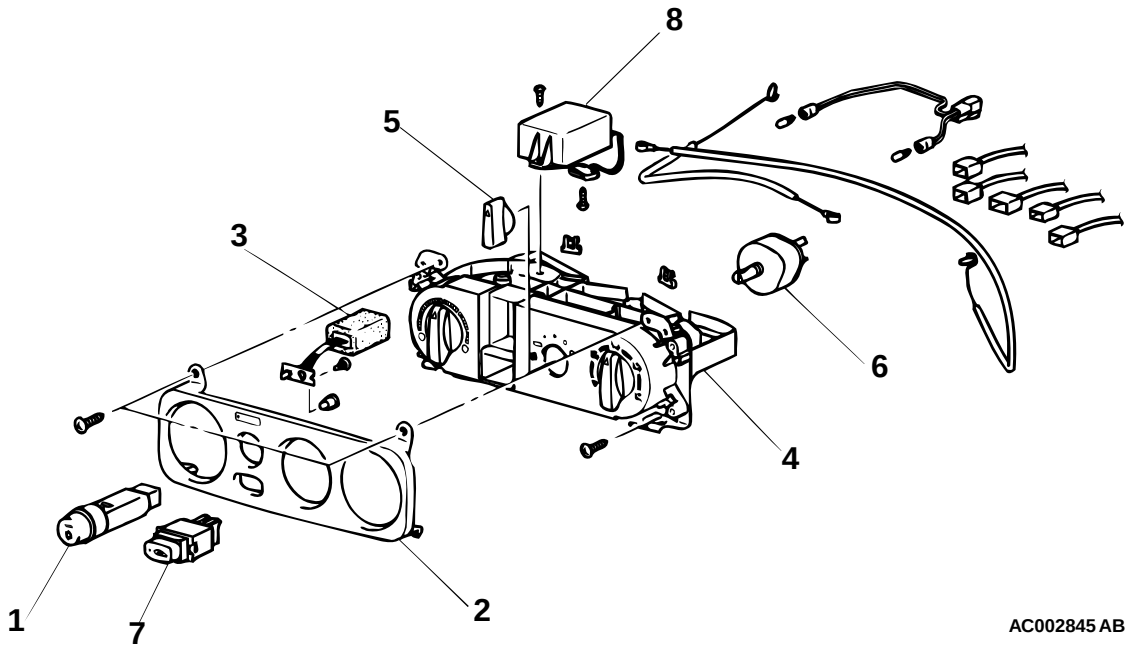
NOTE: It depends on the outside air temperature signal whether a low load, a middle load or a high load is applied to the air conditioning. The PCM receives the signal via the automatic compressor controller and determines whether the air conditioning is working under high, middle or low load.

HEATER CONTROL ASSEMBLY, A/C SWITCH AND INSIDE/OUTSIDE CHANGEOVER SWITCH

REMOVAL AND INSTALLATION

M1552012400058

Pre-removal and Post-installation Operation
- Floor Console Assembly, Knee Protector Cover, Master Bezel Assembly, Glove Box Assembly, Center Under Cover Removal and Installation (Refer to GROUP52A, Instrument Panel P.52A-32.)
- Foot Duct Removal and Installation (Refer to P.55-50.)



REMOVAL STEPS
1. A/C SWITCH
2. HEATER CONTROL PANEL
3. REAR HEATER INDICATOR <VEHICLES WITH REAR HEATER>

>>A<< 4. HEATER CONTROL ASSEMBLY

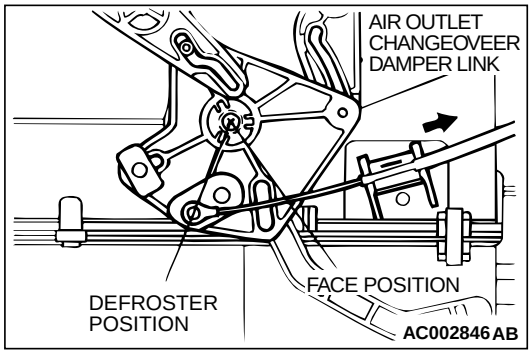
5. KNOB

REMOVAL STEPS (Continued)
6. BLOWER SWITCH
7. INSIDE/OUTSIDE AIR CHANGEOVER SWITCH
8. DEFROSTER SWITCH

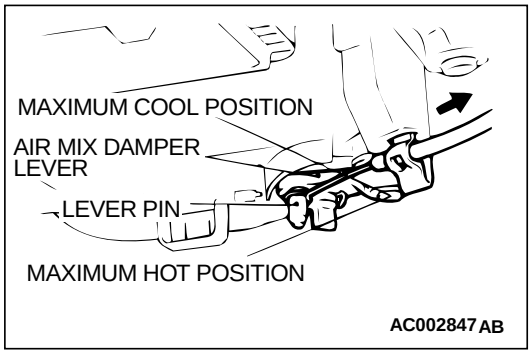
INSTALLATION SERVICE POINT

>>A<< HEATER CONTROL ASSEMBLY INSTALLATION

Follow the steps below to install the air outlet changeover damper link cable and air mix damper lever cable.



1. Set the air outlet changeover control knob on the heater control assembly to the defroster position.
2. Set the air outlet changeover damper link of the heater unit to the defroster position as shown in the illustration, and then connect the cable to the link pin.
3. Push the outer cable in the arrow so that there is no looseness, and then secure it with clip.

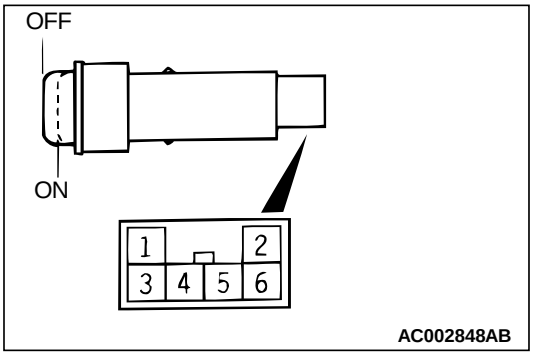


4. Set the temperature control knob on the heater control assembly to the maximum hot position.
5. Set the air mix damper lever of the heater unit to the maximum hot position as shown in the illustration, and then connect the cable to the lever pin.
6. Push the outer cable in the direction of the arrow so that there is no looseness, and then secure it with clip.
7. After installation, ensure that each damper operates smoothly by operating the heater control assembly knob.

INSPECTION

M1556001100141

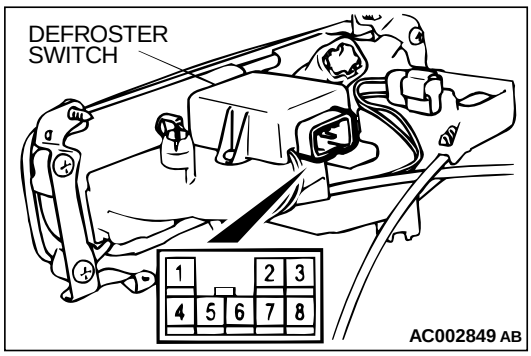
A/C SWITCH CONTINUITY CHECK



SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
At the ON position	1 – 4	Less than 2 ohms
At the OFF position	1 – 4	Open circuit

INSIDE/OUTSIDE AIR DAMPER CONTROLLER CONTINUITY CHECK

1. DEFROSTER SWITCH



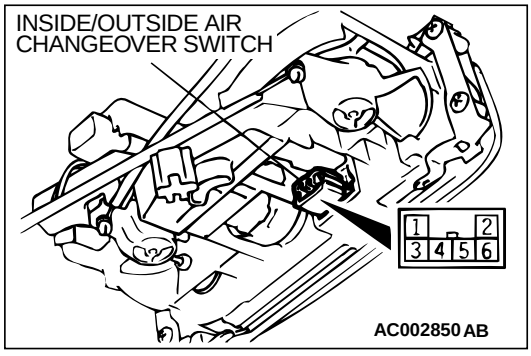
AIR OUTLET CHANGEOVER CONTROL KNOB POSITION	TESTER CONNECTION	SPECIFIED CONDITION
At the "DEFROSTER, DEFROSTER/ FOOT" position	5 – 7	Less than 2 ohms
Other position	5 – 7	Open circuit

2. INSIDE/OUTSIDE AIR DAMPER CHANGEOVER RELAY

NOTE: Battery voltage should measure supplied when the air outlet changeover knob is at the defroster or defroster/foot position.

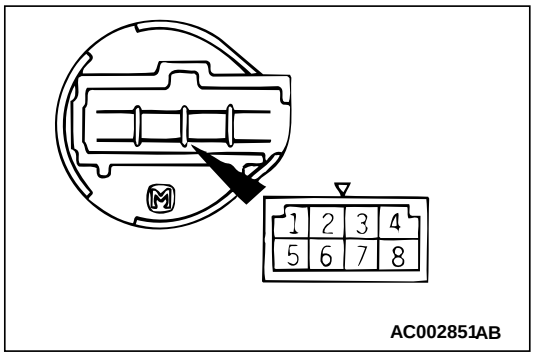
AIR OUTLET CHANGEOVER CONTROL KNOB POSITION	BATTERY CONNECTION	TESTER CONNECTION	SPECIFIED CONDITION
At the "DEFROSTER, DEFROSTER/ FOOT" position	• Connect terminal 7 to the positive battery terminal • Connect terminal 3 to the negative battery terminal	6 – 4	Less than 2 ohms
Other position	• Connect terminal 3 to the positive battery terminal • Connect terminal 7 to the negative battery terminal	6 – 4	Open circuit

INSIDE/OUTSIDE AIR CHANGEOVER SWITCH



SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
Inside air recirculation (RECIRC)	4 – 6	Less than 2 ohms
Outside air induction (FRESH)	4 – 5	Less than 2 ohms

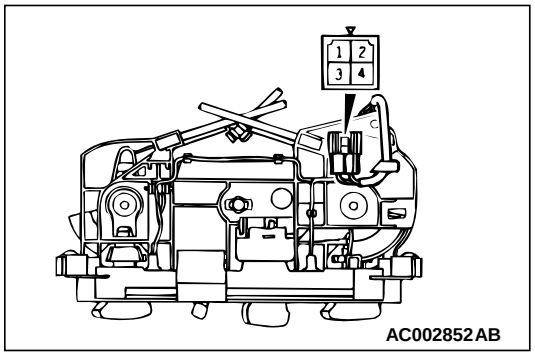
BLOWER SWITCH CONTINUITY CHECK



AC002851AB

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
At the "OFF" position	1 – 8 2 – 5 3 – 5 5 – 6 5 – 7	Open circuit
At the "LO" position	1 – 8 3 – 5	Less than 2 ohms
At the "ML" position	1 – 8 5 – 6	Less than 2 ohms
At the "MH" position	1 – 8 2 – 5	Less than 2 ohms
At the "HI" position	1 – 8 5 – 7	Less than 2 ohms

MICRO SWITCH CONTINUITY CHECK



AC002852AB

AIR OUTLET CHANGEOVER CONTROL KNOB POSITION	TESTER CONNECTION	SPECIFIED CONDITION
At the "DEFROSTER, DEFROSTER/ FOOT" position	1 – 3	Less than 2 ohms
Other position	1 – 3	Open circuit

HEATER UNIT AND HEATER CORE

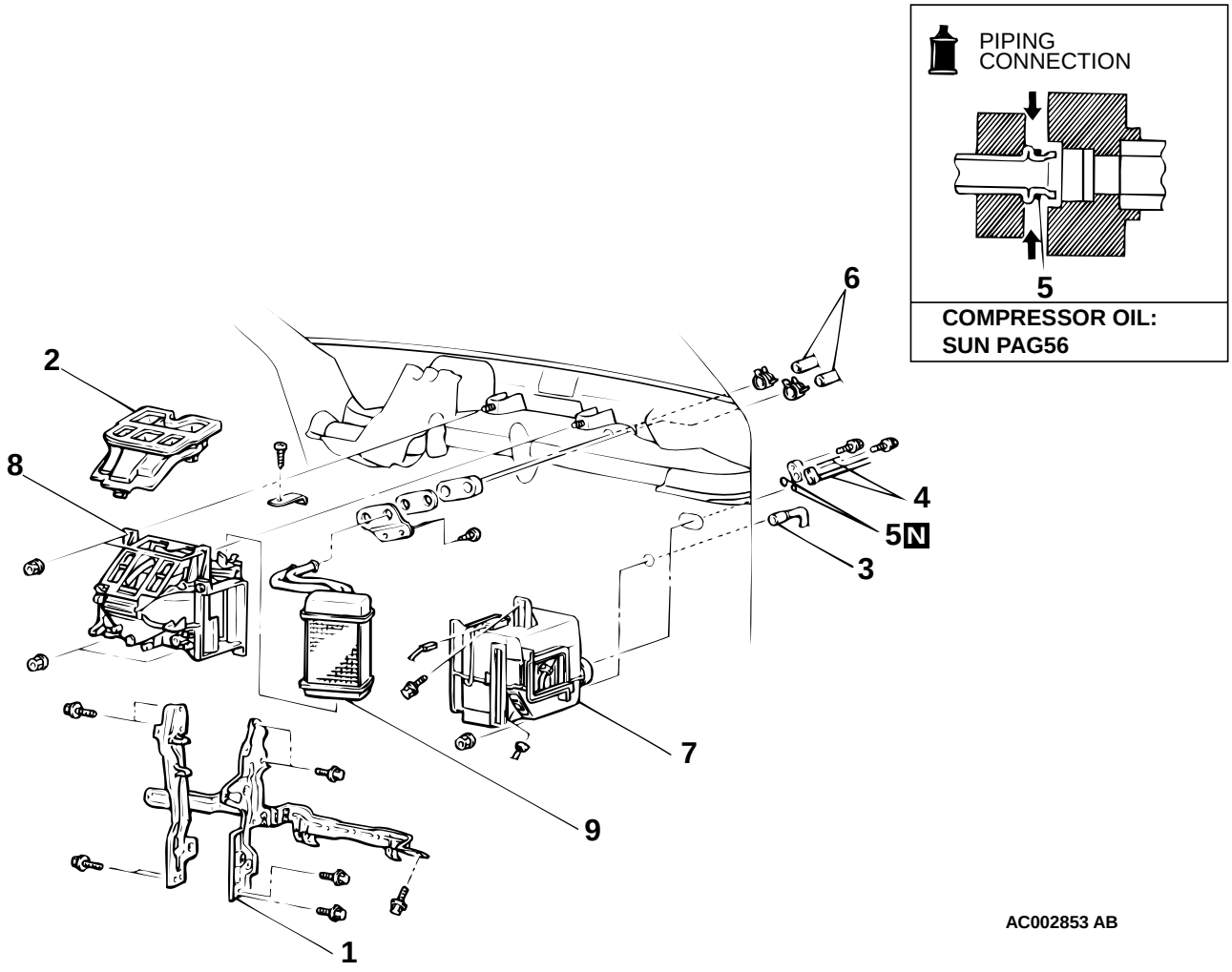
REMOVAL AND INSTALLATION

M1551001900067

⚠ 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 Discharging and Charging <Vehicles with A/C> (Refer to P.55-22.)
- Engine Coolant Draining and Refilling (Refer to GROUP 14, On-vehicle Service P.14-2.)
- Instrument panel Removal and Installation (Refer to GROUP 52A, Instrument Panel P.52A-32.)
- Joint Duct Removal and Installation <Vehicles without A/C> (Refer to P.55-3.)



REMOVAL STEPS
1. CENTER REINFORCEMENT
2. CENTER VENTILATION DUCT
3. DRAIN HOSE <VEHICLES WITH A/C>

<<A>> 4. SUCTION PIPE OR HOSE AND DISCHARGE PIPE CONNECTION <VEHICLES WITH A/C>

5. O-RING

REMOVAL STEPS (Continued)

6. HEATER HOSE CONNECTION

>>A<< 7. EVAPORATOR <VEHICLES WITH A/C>

8. HEATER UNIT
9. HEATER CORE

TSB Revision

REMOVAL SERVICE POINT

<<A>> SUCTION PIPE OR HOSE, DISCHARGE PIPE DISCONNECTION

⚠ CAUTION

Seal the hose completely, otherwise the compressor oil and receiver will absorb water vapor easily, possibly damaging the compressor and deteriorating performance.

Plug the disconnected hose and the evaporator nipple to prevent foreign material from getting into them.

INSTALLATION SERVICE POINT

>>A<< EVAPORATOR INSTALLATION

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

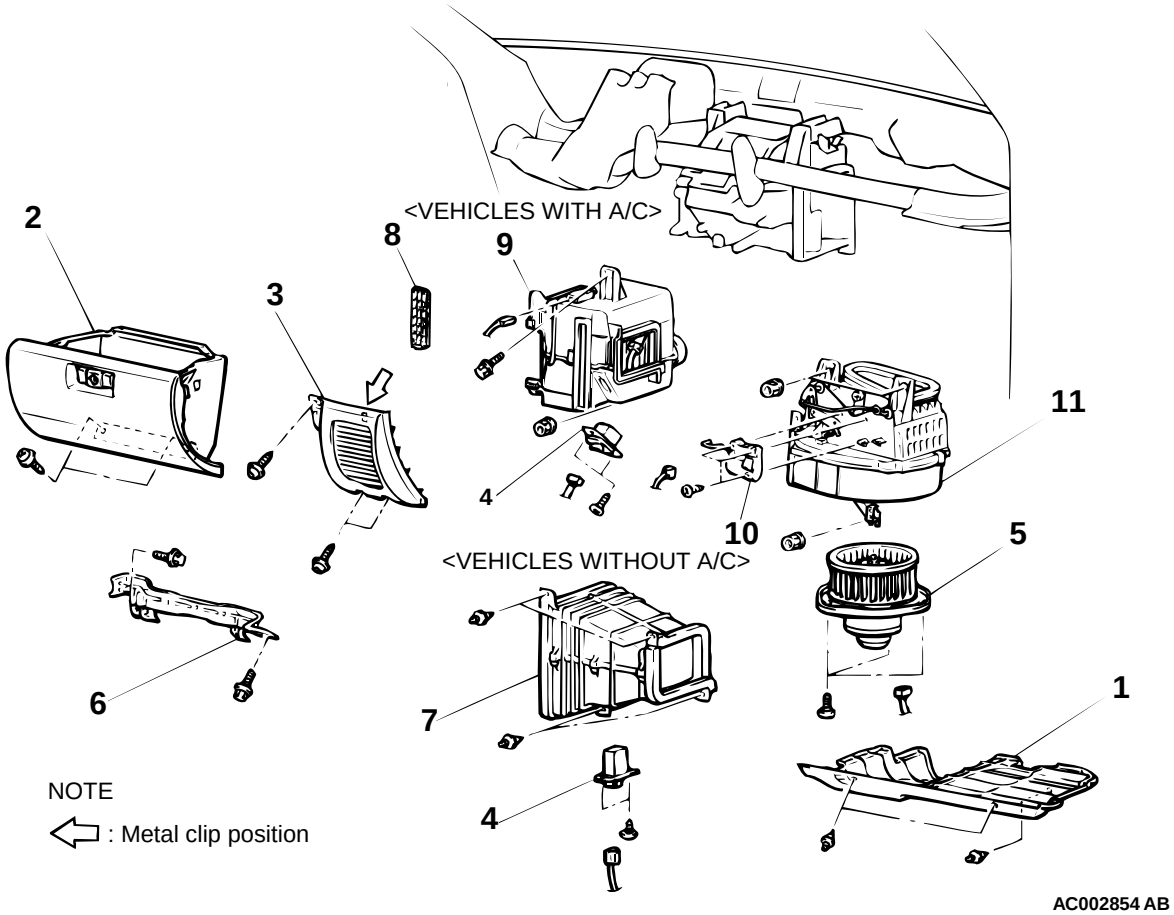
Compressor oil: SUN PAG56

Quantity: 70cm^3(2.4 floz)

BLOWER ASSEMBLY AND RESISTOR

REMOVAL AND INSTALLATION

M1551002800245



AC002854 AB

TSB Revision

RESISTER, BLOWER FAN AND MOTOR REMOVAL STEPS

1. UNDER COVER
2. GLOVE BOX ASSEMBLY
3. CORNER COVER
4. RESISTOR
5. BLOWER FAN AND MOTOR

BLOWER CASE REMOVAL STEPS

- INSTRUMENT PANEL (REFER TO GROUP 52A, INSTRUMENT PANEL P.52A-32.)

6. GLOVE BOX FRAME

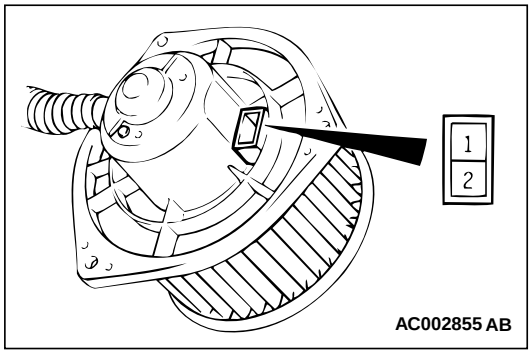
BLOWER CASE REMOVAL STEPS (Continued)

7. JOINT DUCT <VEHICLES WITHOUT A/C>
8. COVER <VEHICLES WITH A/C>
9. EVAPORATOR <VEHICLES WITH A/C> (REFER TO P.55-36.)
10. INSIDE /OUTSIDE AIR CHANGEOVER DAMPER MOTOR
11. BLOWER CASE ASSEMBLY

INSPECTION

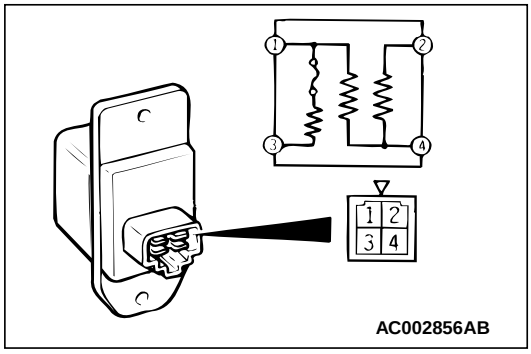
M1556001100099

BLOWER FAN AND MOTOR CHECK



When battery voltage is applied between the terminals, check that the motor operates. Also, check that there is no abnormal noise.

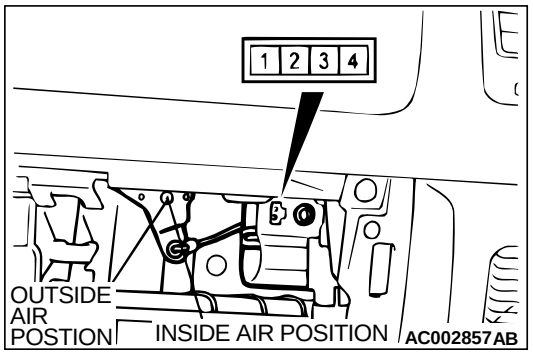
RESISTOR CHECK



Use an ohmmeter to measure the resistance between the terminals. Check that the measured value is at the standard value.

MEASUREMENT TERMINAL	STANDARD VALUE Ω
Between terminals 3 and 2 (LO)	2.0
Between terminals 3 and 4 (ML)	1.1
Between terminals 3 and 1 (MH)	0.37

INSIDE/OUTSIDE AIR CHANGEOVER DAMPER MOTOR CHECK



⚠ CAUTION

Cut off the battery voltage when the damper is in the inside/outside air position.

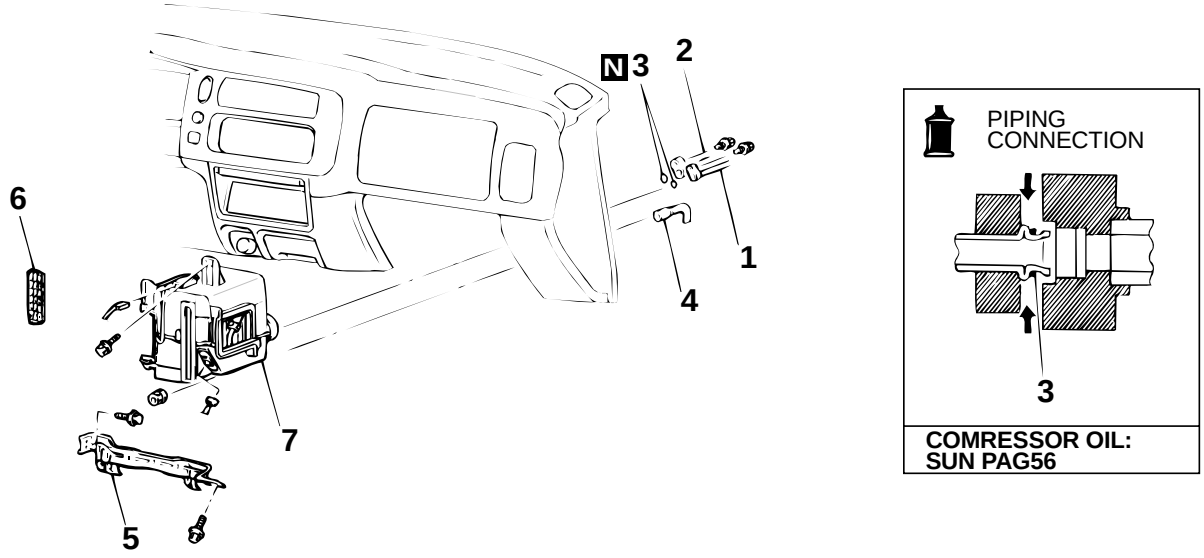
BATTERY CONNECTION	LEVER POSITION
• Connect terminal 1 to the positive battery terminal • Connect terminal 2 to the negative battery terminal	Moves to the outside air position
• Connect terminal 1 to the positive battery terminal • Connect terminal 4 to the negative battery terminal	Moves to the inside air position

EVAPORATOR ASSEMBLY

REMOVAL AND INSTALLATION

M1552003600139

Pre-removal and Post-installation Operation
- Refrigerant Disconnecting and Charging (Refer to P.55-29.)
- Under Cover, Glove Box Assembly Removal and Installation (Refer to GROUP 52A, Instrument Panel P.52A-32.)



REMOVAL STEPS

<<A>> 1. SUCTION PIPE OR HOSE CONNECTION
<<A>> 2. DISCHARGE PIPE CONNECTION
3. O-RING

REMOVAL STEPS (Continued)

>>A<< 4. DRAIN HOSE
5. GLOVE BOX FRAME
6. COVER
7. EVAPORATOR

TSB Revision

REMOVAL SERVICE POINT

<<A>> SUCTION PIPE OR HOSE, DISCHARGE PIPE DISCONNECTION

⚠ CAUTION

Seal the hose completely, otherwise the compressor oil and receiver will absorb water vapor easily, possibly damaging the compressor and deteriorating performance.

Plug the disconnected hose and the evaporator nipple to prevent foreign material from getting into them.

INSTALLATION SERVICE POINT

>>A<< EVAPORATOR INSTALLATION

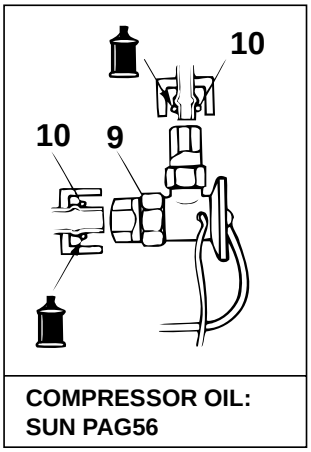
When replacing the evaporator, refill with a specified amount of compressor oil and install it (to the vehicle).

Compressor oil: SUN PAG56

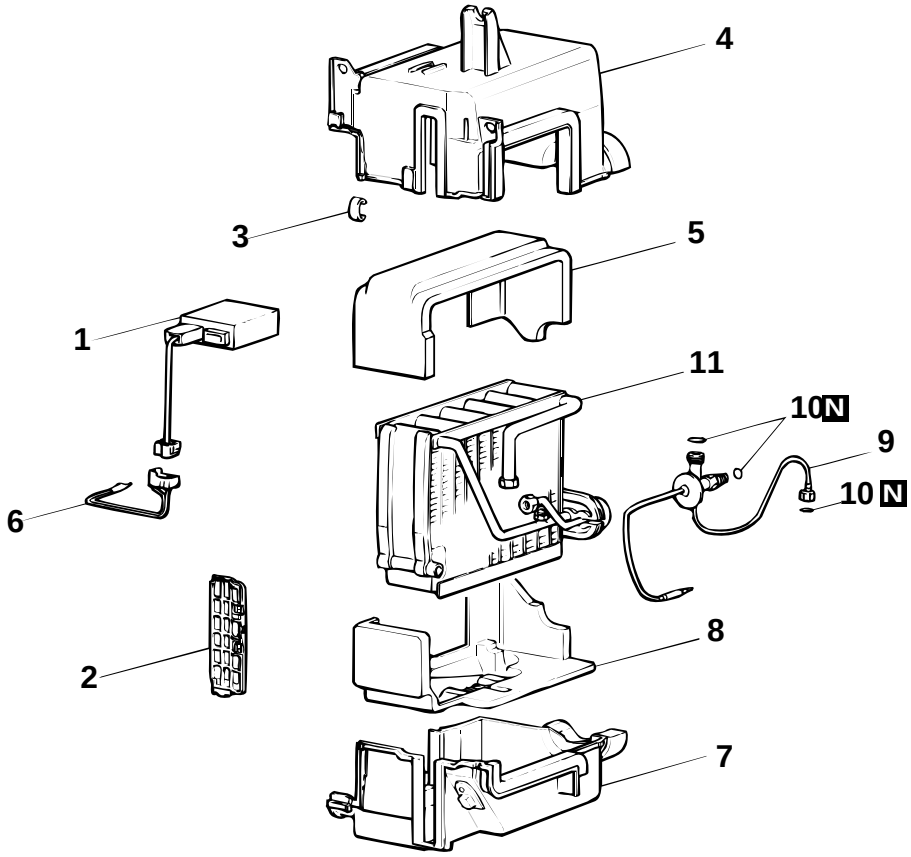
Quantity: 50cm^3(17 floz)

DISASSEMBLY AND ASSEMBLY

M1552003800058



COMPRESSOR OIL: SUN PAG56



AC002859 AB

DISASSEMBLY STEPS

1. AUTOMATIC COMPRESSOR CONTROLLER
2. CLIP

DISASSEMBLY STEPS (Continued)

3. COVER
4. EVAPORATOR COVER (UPPER)
5. LINING, UPPER

TSB Revision

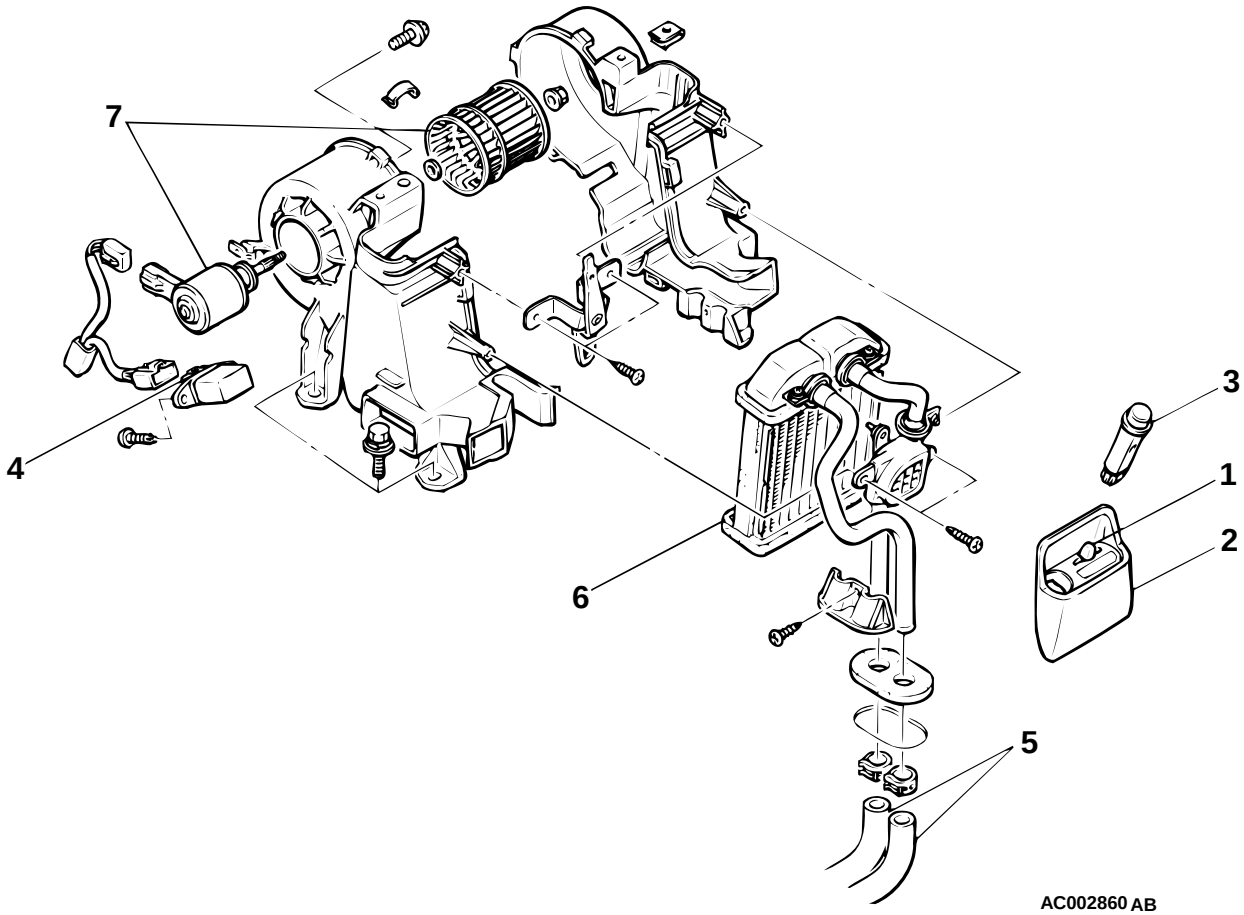
DISASSEMBLY STEPS (Continued)

6. THERMOSTAT
7. EVAPORATOR COVER (LOWER)
8. LINING, LOWER
9. EXPANSION VALVE
10. O-RING
11. EVAPORATOR

REAR HEATER UNIT

REMOVAL AND INSTALLATION

M1551004700062



REAR HEATER SWITCH REMOVAL STEPS

1. KNOB
2. REAR HEATER CONTROL PANEL ASSEMBLY
3. REAR HEATER SWITCH

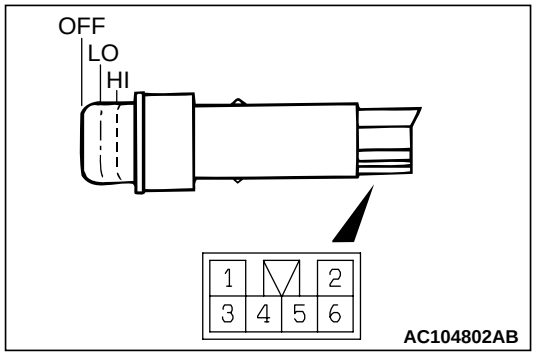
FAN MOTOR ASSEMBLY REMOVAL STEPS

- REAR FLOOR CONSOLE (REFER TO GROUP 52A, FLOOR CONSOLE P.52A-35.)
4. RESISTOR
- DRAINING AND SUPPLYING OF COOLANT (REFER TO GROUP 14. ON-VEHICLE SERVICE P.14-2.)
5. REAR HEATER HOSE CONNECTION
6. REAR HEATER CORE ASSEMBLY
7. REAR BLOWER MOTOR ASSEMBLY

INSPECTION

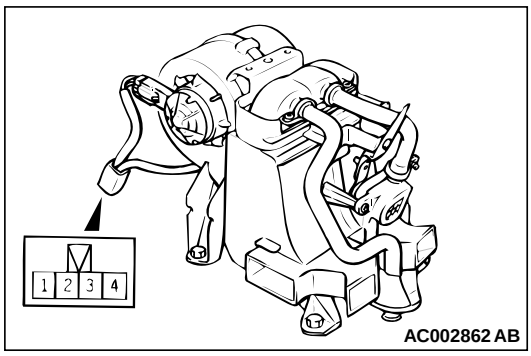
M1556001100107

REAR HEATER SWITCH CONTINUITY CHECK



SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
At the OFF position	1 – 4 2 – 4	Open circuit
At the LO position	2 – 4	Less than 2 ohms
At the HI position	1 – 4	Less than 2 ohms

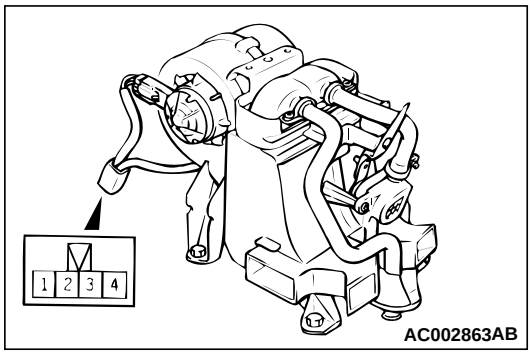
REAR BLOWER MOTOR OPERATION CHECK



Check that the motor rotates when the battery voltage is applied between the terminals. Make sure that there is no abnormal noise from the motor at this time.

BATTERY CONNECTION	SPECIFIED CONDITION
• Connect terminal 1 to the positive battery terminal • Connect terminal 3 to the negative battery terminal	Blower motor rotates (HI).
• Connect terminal 1 to the positive battery terminal • Connect terminal 4 to the negative battery terminal	Blower motor rotates (LO).

RESISTER CHECK



Use an ohmmeter to check the resistance between terminals number 3 and number 4.

Standard value: 3.9 Ω

COMPRESSOR ASSEMBLY

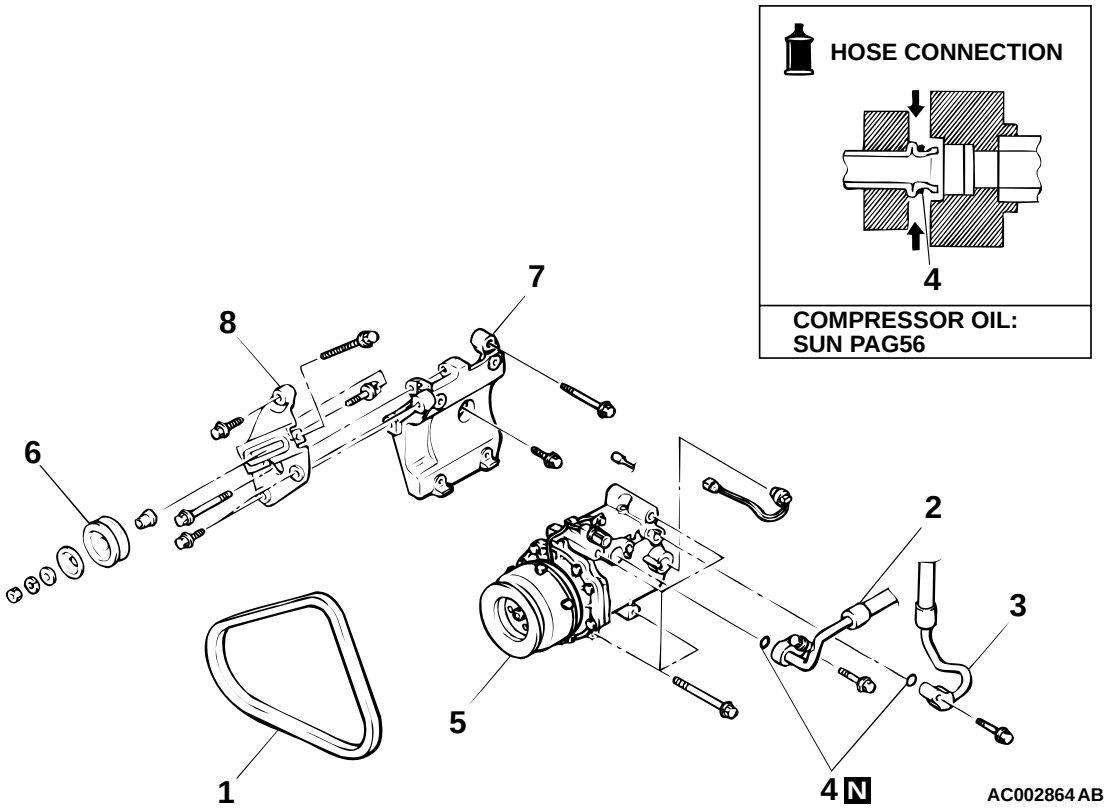
REMOVAL AND INSTALLATION

M1552004400097

⚠ ***WARNING***

When removing and installing the compressor from vehicles equipped with SRS, do not let it bump against the front impact sensor (LH).

Pre-removal Operation	Post-installation Operation
• Refrigerant discharging (Refer to P.55-22.) • Battery Removal	• Refrigerant Charging (Refer to P.55-22.) • Drive Belt Tension Adjustment (Refer to GROUP 00, Maintenance Service – Drive Belts P.00-43.) • Battery Installation



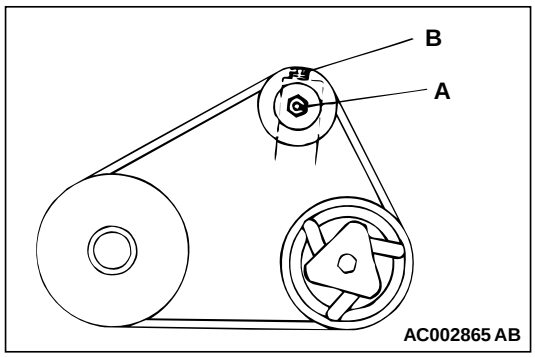
REMOVAL STEPS

<<A>> 1. DRIVE BELT
<<B>> 2. SUCTION HOSE CONNECTION
<<B>> 3. DISCHARGE HOSE CONNECTION
4. O-RING
<<C>> >>A<< 5. COMPRESSOR

REMOVAL STEPS (Continued)

6. TENSION PULLEY
7. COMPRESSOR BRACKET ASSEMBLY
8. TENSION PULLEY BRACKET ASSEMBLY <3.0L ENGINE>

TSB Revision



REMOVAL SERVICE POINTS

<<A>> DRIVE BELT REMOVAL

1. Loosen the nut "A" for holding.
2. Loosen the bolt "B" for adjustment.
3. Remove the drive belt.

<<B>> SUCTION HOSE, DISCHARGE HOSE REMOVAL

⚠ CAUTION

Seal the hoses completely, otherwise the compressor oil and receiver will absorb water vapor easily, possibly damaging the compressor and deteriorating performance.

Plug the disconnected hose and compressor nipple to prevent foreign matter from getting into them.

<<C>> COMPRESSOR REMOVAL

When removing the compressor, be careful not to spill the compressor oil.

INSTALLATION SERVICE POINT

>>A<< 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 cm^3 (X floz)] 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

170 cm^3 – X cm^3 = Y cm^3 (5.7 floz – X floz = Y floz)

NOTE: Y cm^3 (Y floz) 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 cm^3 (Y floz) and discharge from the new compressor.

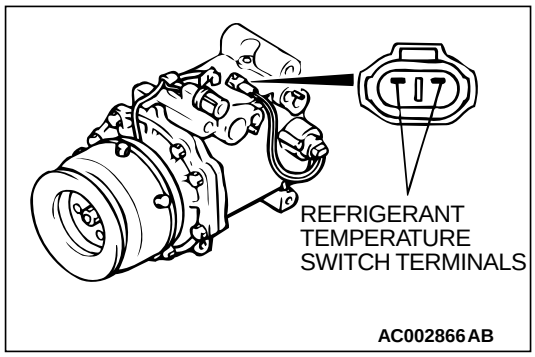
Quantity:

- **Evaporator: 70 cm^3 (2.4 floz)**
- **Condenser: 20 cm^3 (0.7 floz)**
- **Suction hose: 10 cm^3 (0.3 floz)**
- **Receiver: 10 cm^3 (0.3 floz)**

INSPECTION

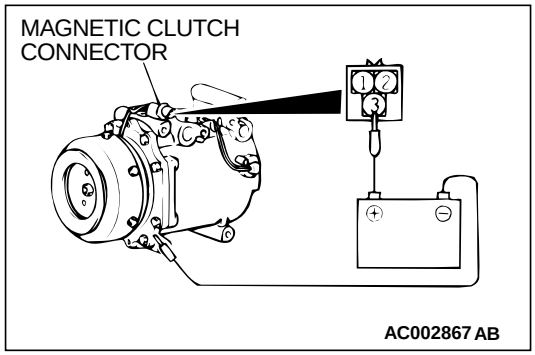
M1556001100118

REFRIGERANT-TEMPERATURE SWITCH SIMPLE CHECK



When the A/C is off, check that there is continuity between the refrigerant-temperature switch terminals. If not, replace the compressor assembly.

COMPRESSOR MAGNETIC CLUTCH OPERATION INSPECTION

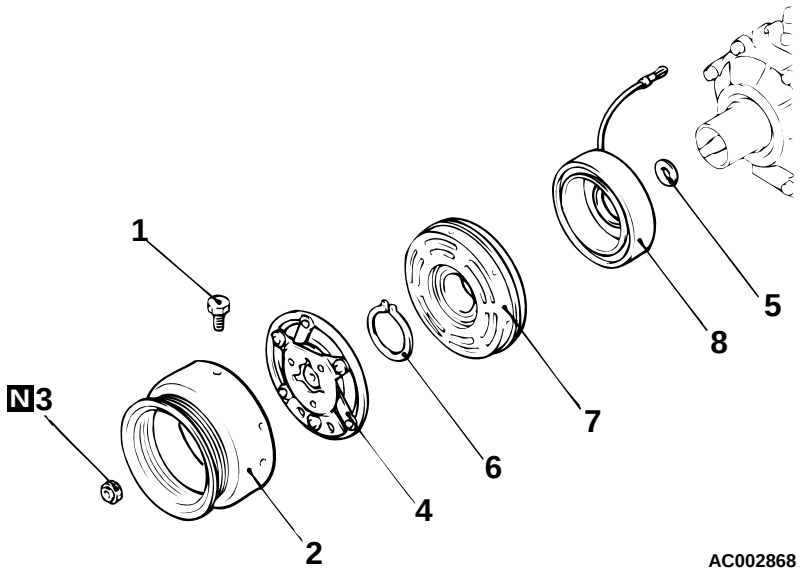


Connect the positive battery terminal to the compressor magnetic clutch connector terminal 3, and ground the negative battery terminal to the body of the compressor. The condition is normal if the sound of the magnetic clutch (click) can be heard.

COMPRESSOR

DISASSEMBLY AND ASSEMBLY

M1552004600262



	DISASSEMBLY STEPS			DISASSEMBLY STEPS
1.	BOLT	>>E<<	•	AIR GAP ADJUSTMENT
2.	PULLEY	<<A>> >>D<<	3.	NUT

TSB Revision

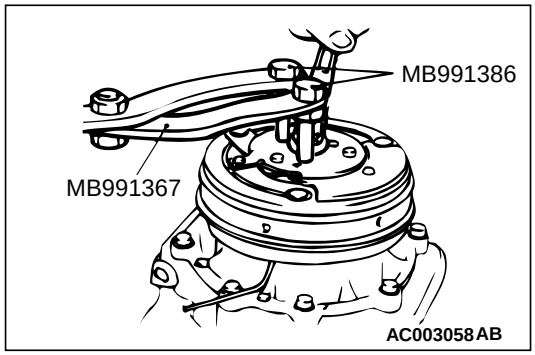
DISASSEMBLY STEPS

>>C<< 4. ARMATURE PLATE
5. SHIMS
>>B<< 6. SNAP RING
7. ROTOR
>>A<< 8. CLUTCH COIL

DISASSEMBLY SERVICE POINT

<<A>> NUT REMOVAL

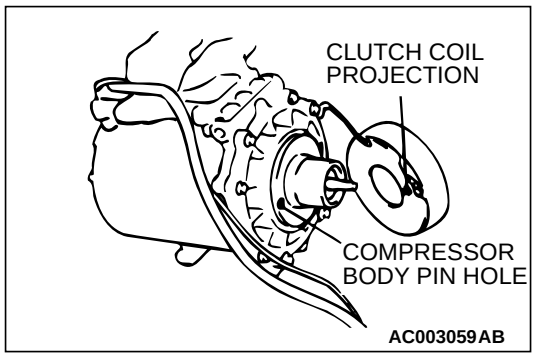
Use special tools MB991367 and MB991386 to hold the magnetic clutch, and remove the nut.



ASSEMBLY SERVICE POINTS

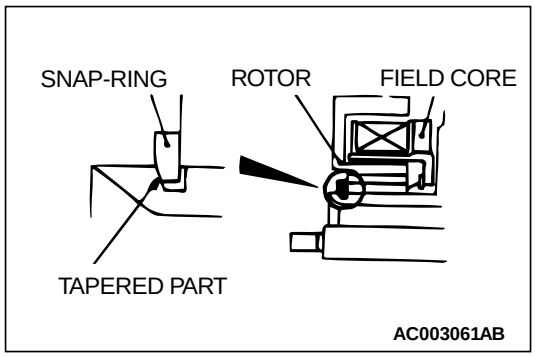
>>A<< CLUTCH COIL INSTALLATION

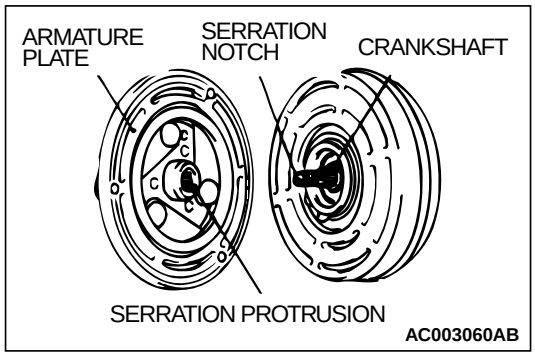
When installing the clutch coil to the A/C compressor boy, install so that the pin hole of the A/C compressor body and the clutch coil projection are aligned.



>>B<< SNAP RING INSTALLATION

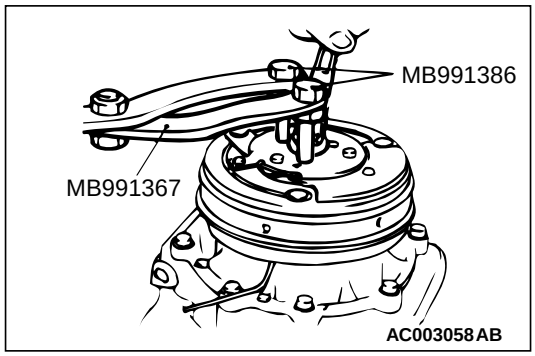
Install the snap ring so that the tapered surface is to the outside.





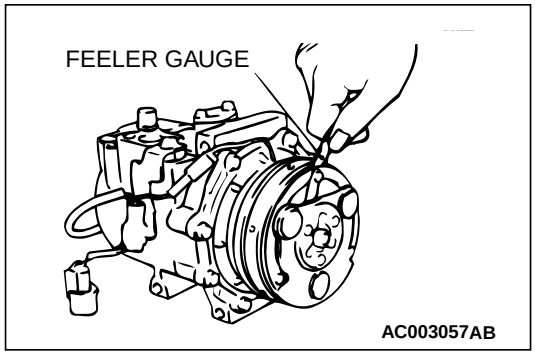
>>C<< ARMATURE PLATE INSTALLATION

Align the serration protrusion on the crankshaft with the notch on the armature and install.



>>D<< NUT INSTALLATION

Use special tools MB991367 and MB991386 to hold the magnetic clutch, and tighten the nut in the same manner as for removal.



>>E<< AIR GAP ADJUSTMENT

Check whether or not the air gap of the clutch is within the standard value.

Standard value: 0.3 – 0.5 mm (0.01 – 0.02 inch)

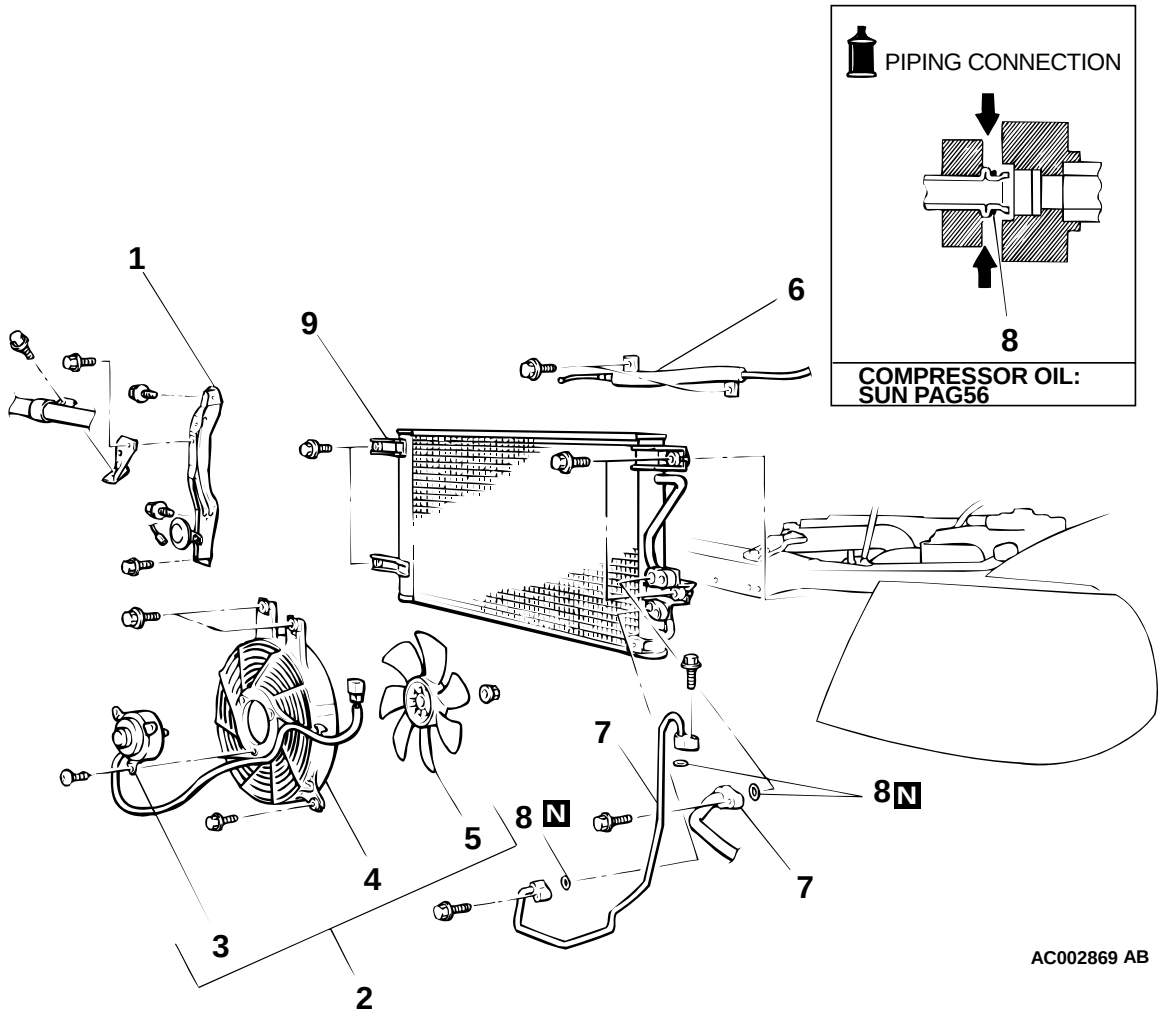
NOTE: If there is a deviation of the air gap from the standard value, make the necessary adjustment by adjusting the number of shims.

CONDENSER AND CONDENSER FAN MOTOR

REMOVAL AND INSTALLATION

M1552006700243

Pre-removal and Post-installation Operation
- Radiator Grill Removal and Installation (Refer to GROUP 51, Grill, Molding and Garnish P.51-6.)
- Front Bumper Removal and Installation (Refer to GROUP 51, Front Bumper P.51-2.)



CONDENSER FAN MOTOR REMOVAL STEPS
1. HOOD LOCK STAY
2. CONDENSER FAN MOTOR AND SHROUD ASSEMBLY
3. CONDENSER FAN MOTOR
4. SHROUD
5. CONDENSER FAN

<<A>>

CONDENSER REMOVAL STEPS
- REFRIGERANT DISCHARGING AND CHARGING (REFER TO P.55-22.)

1. HOOD LOCK STAY
2. CONDENSER FAN MOTOR AND SHROUD ASSEMBLY
6. CABLE PROTECTOR
7. DISCHARGE HOSE, LIQUID PIPE A AND CONDENSER CONNECTION
8. O-RING

>>A<<

9. CONDENSER

TSB Revision

REMOVAL SERVICE POINT

<<A>> DISCHARGE HOSE/LIQUID PIPE A DISCONNECTION

⚠ CAUTION

Seal the hoses completely, otherwise the compressor oil and receiver will absorb water vapor easily, possibly damaging the compressor and deteriorating performance.

Plug the disconnected hose, pipe and condenser nipple to prevent foreign matter from getting into them.

INSTALLATION SERVICE POINT

>>A<< CONDENSER INSTALLATION

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

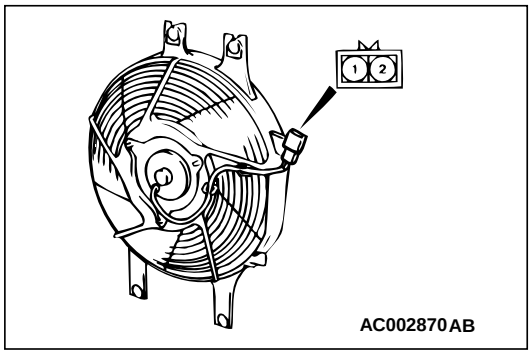
Compressor oil: SUN PAG56

Quantity: 20 cm^3(0.7 floz)

INSPECTION

M1556001100129

CONDENSER FAN MOTOR CHECK



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

REFRIGERANT LINE

REFRIGERANT LINE

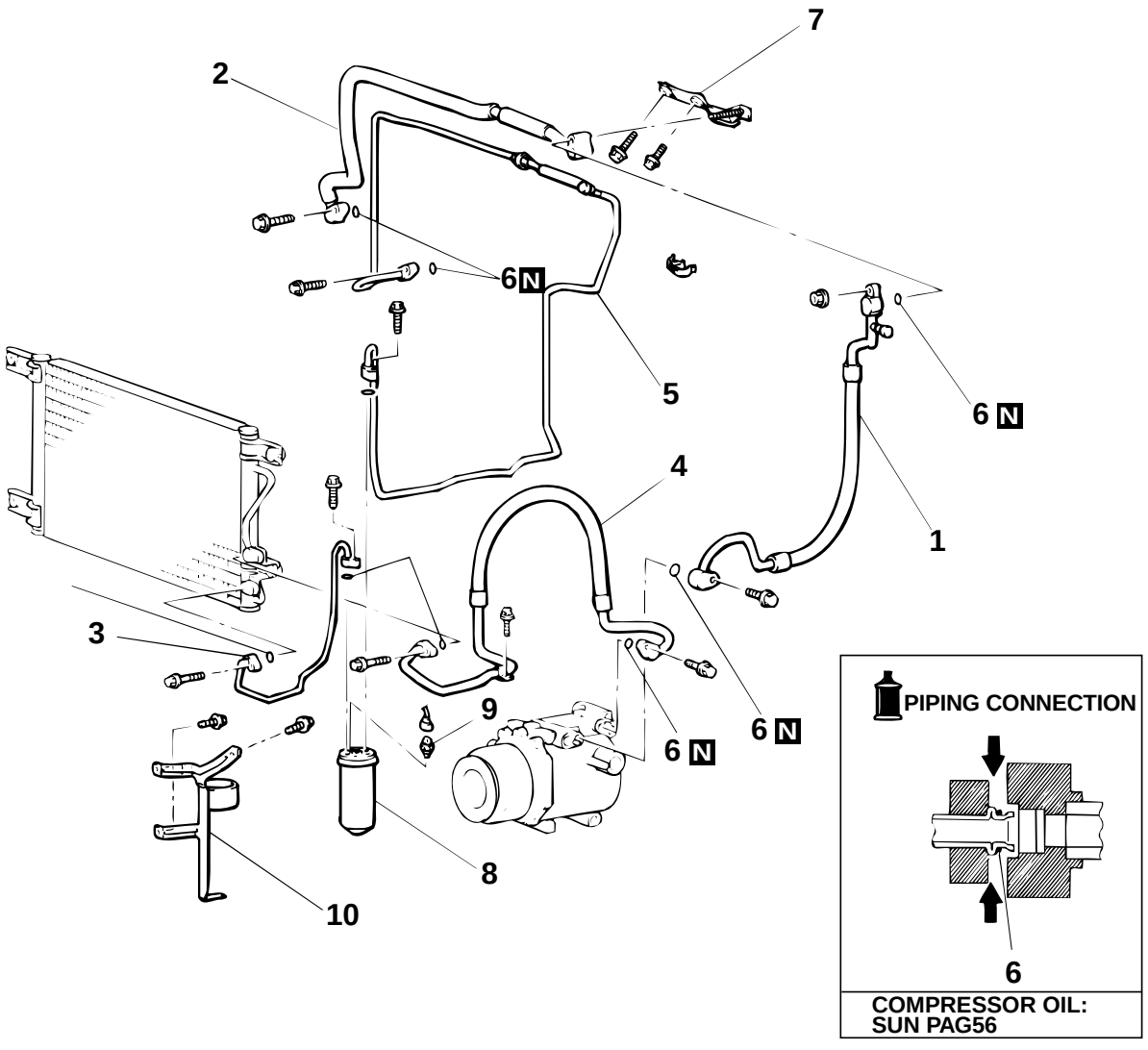
M1552006400253

⚠ *WARNING*

When removing and installing the suction pipe or discharge pipe C from vehicles equipped with SRS, do not let it bump against the front impact sensor (RH).

REMOVAL AND INSTALLATION

Pre-removal and Post-installation Operation
- Refrigerant Discharging and Charging (Refer to P.55-22.)
- Radiator Grill Removal and Installation (Refer to GROUP 51,Grill, Moulding and Garnish P.51-6.)
- Front Bumper Removal and Installation (Refer to GROUP 51, Front Bumper P.51-2.)
- Battery Removal and installation
- Windshield Washer Tan Removal and Installation (Refer to GROUP 51, Windshield Wiper and Washer P.51-16.)



AC002871 AB

REMOVAL STEPS

	>>A<<	1.	SUCTION HOSE
<<A>>		2.	SUCTION PIPE A
<<A>>		3.	LIQUID PIPE A
<<A>>		4.	DISCHARGE HOSE
<<A>>		5.	LIQUID PIPE

REMOVAL STEPS (Continued)

		6.	O-RING
		7.	SUCTION PIPE BRACKET
<<A>>	>>A<<	8.	RECEIVER ASSEMBLY
		9.	DUAL PRESSURE SWITCH
		10.	RECEIVER BRACKET

TSB Revision

REMOVAL SERVICE POINT

<<A>> HOSE, PIPE AND RECEIVER ASSEMBLY DISCONNECTION

⚠ CAUTION

Seal the hoses completely, otherwise the compressor oil and receiver will absorb water vapor easily, possibly damaging the compressor and deteriorating performance.

Plug the disconnected hose, pipe, condenser, compressor and heater unit nipple to prevent foreign matter from getting into them.

INSTALLATION SERVICE POINT

>>A<< SUCTION HOSE/RECEIVER ASSEMBLY INSTALLATION

⚠ CAUTION

Seal the hoses completely, otherwise the compressor oil and receiver will absorb water vapor easily, possibly damaging the compressor and deteriorating performance.

Plug the disconnected hose, pipe, condenser, compressor and heater unit nipple to prevent foreign matter from getting into them.

Compressor oil: SUN PAG56

Quantity: Suction hose: 10cm^3 (0.3 floz)

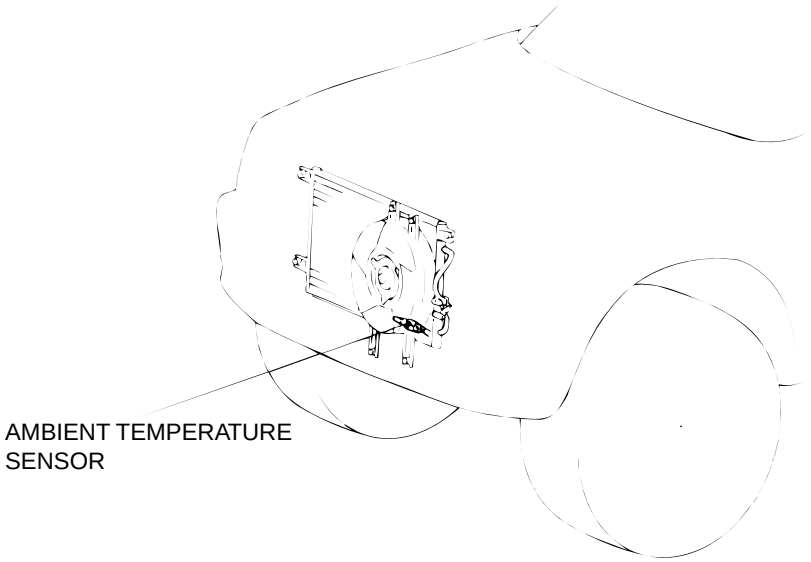
Receiver assembly: 10 cm^3 (0.3 floz)

AMBIENT TEMPERATURE SENSOR

REMOVAL AND INSTALLATION

M1554003400056

Pre-removal and Post-installation Operation
Front Bumper Removal and Installation (Refer to GROUP 51, Front Bumper P.51-2.)



AC002872AC

INSPECTION

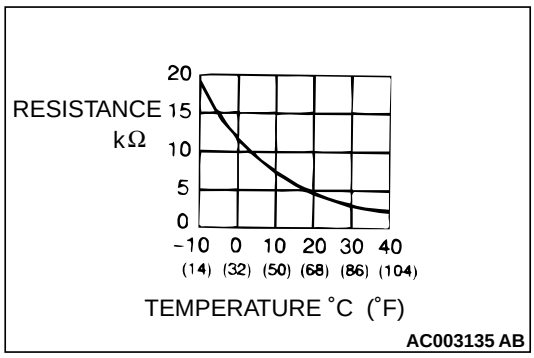
M1556001100130

AMBIENT TEMPERATURE CHECK

⚠ ***WARNING***

The temperature conditions when checking should not exceed the range shown in the diagram.

When the resistance between the sensor terminals is measured under two or more temperature conditions the resistance should approximately satisfy the illustrated values.



AC003135 AB

TSB Revision

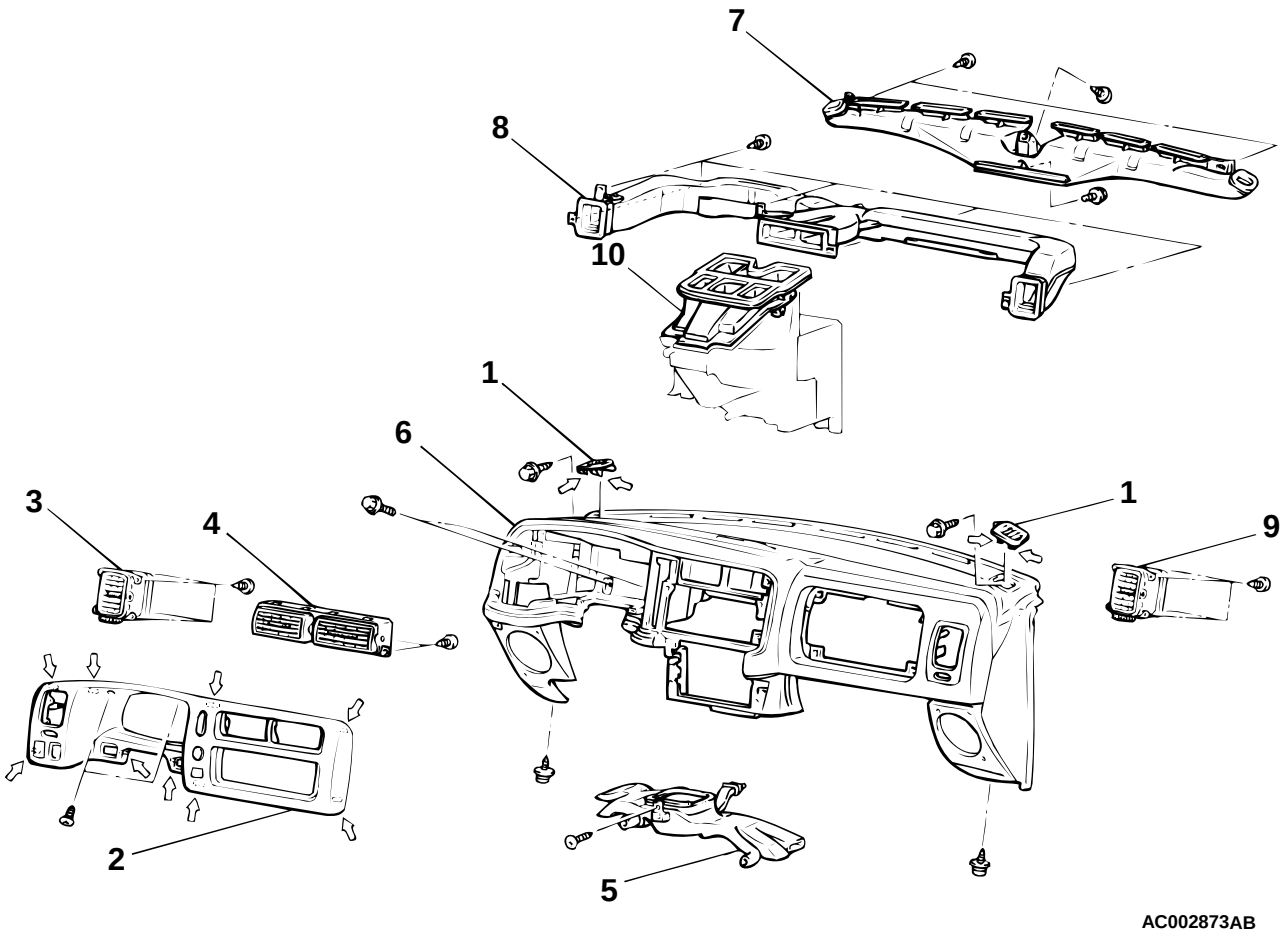
VENTILATORS

REMOVAL AND INSTALLATION

M1553001600233

⚠ WARNING

When removing and installing the Instrument panel assembly from vehicles equipped with SRS do not let it bump against the SRS-ECU or the components.

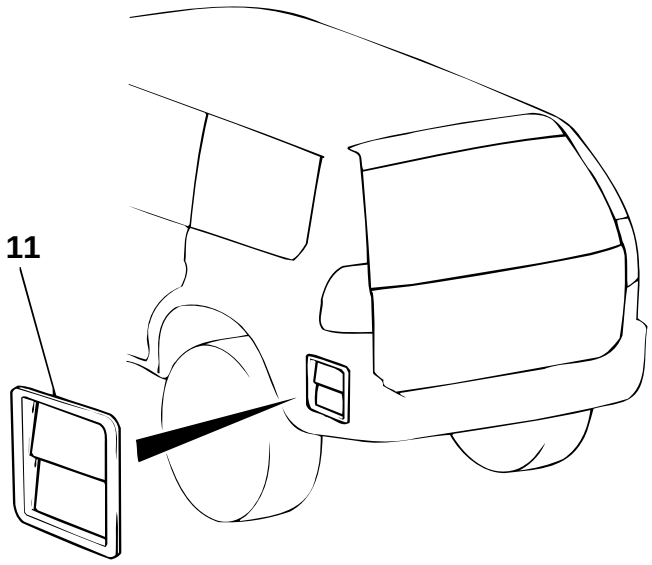


AC002873AB

NOTE
⇦ : Metal clip position

1. SIDE DEFROSTER GRILL
   AIR OUTLET ASSEMBLY (DRIVER'S SIDE) AND CENTER OUTLET ASSEMBLY REMOVAL STEPS
2. METER BEZEL ASSEMBLY
3. AIR OUTLET ASSEMBLY (DRIVER'S SIDE)
4. CENTER OUTLET ASSEMBLY
   FOOT DUCT REMOVAL STEPS
   - FRONT FLOOR CONSOLE ASSEMBLY (REFER TO GROUP 52A, FLOOR CONSOLE P.52A-35.)
5. FOOT DUCT
   DEFROSTER NOZZLE, DISTRIBUTION DUCT AIR OUTLET ASSEMBLY (PASSENGER'S SIDE) AND CENTER VENTILATION DUCT REMOVAL STEPS
6. INSTRUMENT PANEL (REFER TO GROUP 52A, INSTRUMENT PANEL P.52A-32.)
7. DEFROSTER NOZZLE
8. DISTRIBUTION DUCT
9. AIR OUTLET ASSEMBLY (PASSENGER'S SIDE)
10. CENTER VENTILATION DUCT

TSB Revision



AC002874 AB

REAR VENTILATION DUCT
REMOVAL STEPS
- REAR BUMPER ASSEMBLY (REFER TO GROUP 51, REAR BUMPER P.51-4.)

11. REAR VENTILATION DUCT

SPECIFICATIONS

SERVICE SPECIFICATIONS

M1552000300214

ITEM		STANDARD VALUE
Idle speed r/min.		700 ± 100
Idle-up speed r/min.	When the air conditioning is working under low load (Outside air temperature sensor: ON)	750 ± 100
	When the air conditioning is working under high load (Outside air temperature sensor: OFF)	900 ± 100
Resistor (for blower motor) Ω	Front	LO: 2.0 ML: 1.1 MH: 0.37
	Rear	3.9
Air gap (magnetic clutch) mm (in)		0.3 – 0.5 (0.01 – 0.02)

LUBRICANTS

M1552000400211

ITEM	SPECIFIED LUBRICANTS	QUANTITY
Compressor refrigerant unit lubricant cm^3 (floz)	SUN PAG 56	170 (5.7)
Each connection of refrigerant line	SUN PAG 56	As required

TSB Revision

NOTES