

GROUP 55 – HEATER, A/C, VENTILATION

BULLETIN No.	SUBJECT	MODEL
55/2003/001	A/C Performance testing	Magna/Verada
55/2002/001	Evaporator ice-up rework procedure	TJ/KJ Magna Verada
55/2002/002	Change of refrigerant quantity	NM Pajero
55/2002/003	Troubleshooting procedures	UG Nimbus



MITSUBISHI

SERVICE BULLETIN

GROUP: 55—Airconditioner, Heater

DATE: September 2003

NO. 55/2003/001

MODEL: Magna/Verada/Diamante

SUBJECT: Air conditioning performance testing

COUNTRIES:

Australia
New Zealand & Pacific

R.I.WYATT
MANAGER - AFTERSALES
TECHNICAL SUPPORT

Bulletin Consists of 2 Pages

Description:

The purpose of this bulletin is to advise of a revised performance temperature chart to be used when testing the airconditioning system fitted to Magna/Verada/Diamante vehicles.

Revised Performance Temperature Chart

Garage ambient temperature °C(°F)	21 (70)	26.7 (80)	32.2 (90)	37.8 (100)
Discharge air temperature °C (°F)	6.0–10.0 (43.0–50.0)	6.0–10.0 (43.0–50.0)	6.0–10.0 (43.0–50.0)	8.2–11.2 (46.5–52.0)
Compressor high pressure kPa (psi)	942–1208 (136.6–1752)	1135–1432 (164.6–207.6)	1327–1606 (192.4–232.9)	1683–1714 (244–248.59)
Compressor low pressure kPa (psi)	136–245 (19.7–35.5)	130–239 (18.8–34.6)	142–241 (20.6–35)	176–277 (25.5–40.2)

Could you please update all relevant reference material to reflect this change in specifications. A copy of the revised chart and recommended test procedure are attached for your convenience.

Affected Vehicles

1997, 1998, 1999, 2000, 2001, 2002, 2003 Magna/Verada/Diamante

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TEST PROCEDURE

Equipment and instrumentation

The calibration of thermometers should be checked on a regular basis to ensure temperature recordings and test results are accurate. The thermometer can be checked by immersion in an ice slurry (finely crushed ice mixed into a slurry). The thermometer should read 0°C (32°F). If the thermometer reads plus or minus , add or subtract this error to the reading shown on the gauge. The thermometer should be corrected or replaced if the error is above / below 1.5°C (2.7°F).

The pressure gauge readings should be checked each time the manifold gauge set is used. Open the Hi and Low dial to atmosphere with the hoses disconnected. If the readings are plus or minus the zero kPa / PSI / BAR reading, the dial should be adjusted to read zero or replaced. Once this procedure has been done, the pressure gauges will read zero for the day of use only as they have been adjusted to the atmospheric conditions for that specific day.

Vehicle settings

- Use passenger door to allow technician to access instrumentation, all other doors and windows closed.
- Engine hood cracked open , but NOT LIFTED (This will allow manifold gauge set hoses to be routed outside engine bay for viewing). If the engine hood is lifted this will allow hot air to recirculate increasing operating temperatures and pressures.
- Ambient conditions must contain NO SOLAR LOAD, vehicle should be in workshop environment under cover.

Air conditioner control settings

- A/C switch ON
- Recirculation mode selected
- Fan speed at maximum
- Temperature set to maximum cooling
- Engine at operating temperature
- Adjust engine speed to 1500 rpm with A/C clutch engaged
- Operate engine for 20 mins

Performance testing

The temperature output recorded with a dry bulb thermometer placed in the centre vent (Closest to blower) should conform to the Performance Testing Chart.

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

Performance Temperature Chart

Garage ambient temperature °C (°F)	21 (70)	26.7 (80)	32.2 (90)	37.8 (100)
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A.C.N. 067 570 995

SERVICE BULLETIN

GROUP: 55-Heater, A/C.

DATE: March 2002

NO. 55/2002/001

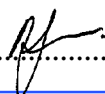
MODEL: TJ/KJ Magna, Verada

SUBJECT: Evaporator Ice-up rework procedure

COUNTRIES:

Australia

R.I.WYATT
MANAGER - WARRANTY &
TECHNICAL PUBLICATIONS

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Bulletin Consists of 6 Pages

This bulletin details the procedure required to rectify poor A/C performance caused by evaporator ice-up which may be experienced under certain operating conditions, eg: operating the air conditioning system on FAN SPEED 1 while in FRESH mode, travelling for prolonged periods at highway speed with FULL COLD selected.

The evaporator re-work involves relocating the thermistor probe in the evaporator case. The thermistor probe **must be relocated correctly** to ensure efficient operation of the A/C system.

Affected Vehicles

TJ/KJ Magna and Verada.

Manual air conditioning production fix effective from February 02 build.
Automatic air conditioning production fix effective from March 02 build.

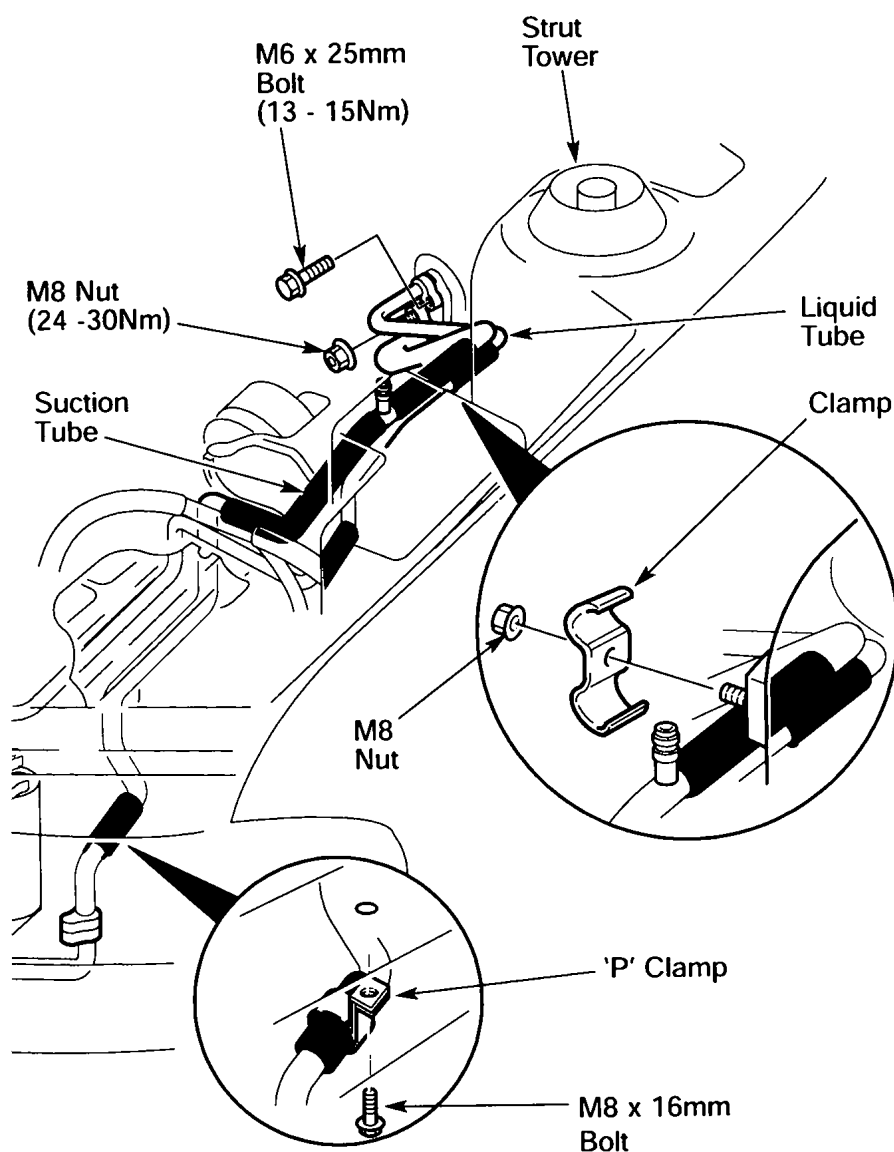
Warranty claim information

Operation code: 558331 10
Value: 1.8 hours

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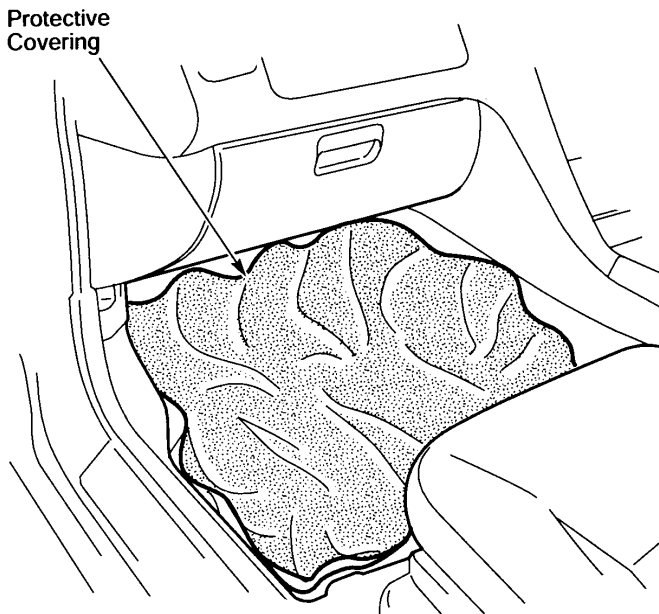
REWORK PROCEDURE



1. SUCTION AND LIQUID TUBE REMOVAL

- A. Evacuate the A/C system in accordance with the procedures in the workshop manual.
- B. Remove the M6X16mm bolt retaining the suction tube 'P' clamp to the bottom chassis rail.
- C. Remove the clamp and M8 nut securing the suction tube to the strut tower.
- D. Remove the M8 nut securing the suction tube to the evaporator outlet pad fitting at the firewall. Carefully withdraw the suction tube to avoid damaging the stud.
- E. Remove the M6x25mm bolt securing the liquid tube to the evaporator pad fitting at the firewall and carefully move the liquid tube away.
- F. Cap the suction and liquid tubes to avoid contamination and moisture absorbtion.

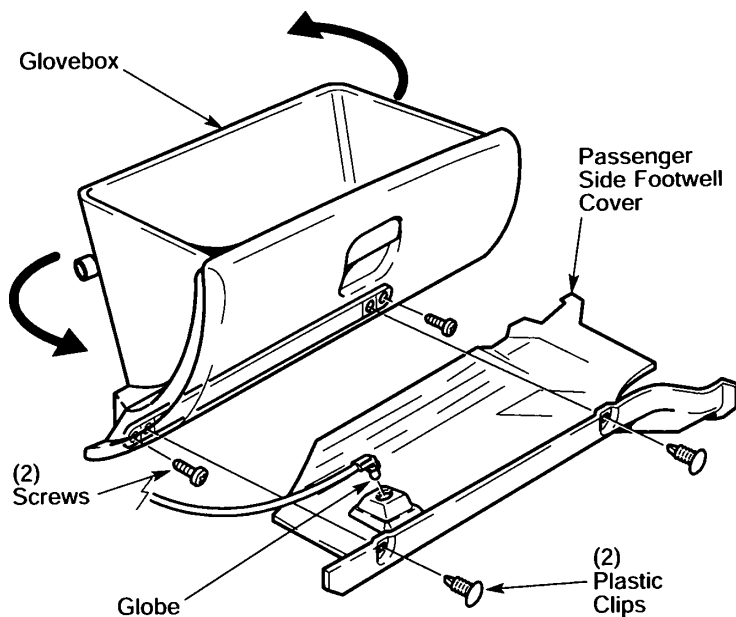
REWORK PROCEDURE



PREPARATION

A. Cover the passenger side footwell with a suitable protective covering as **OIL WILL LEAK FROM THE EVAPORATOR DURING REMOVAL.**

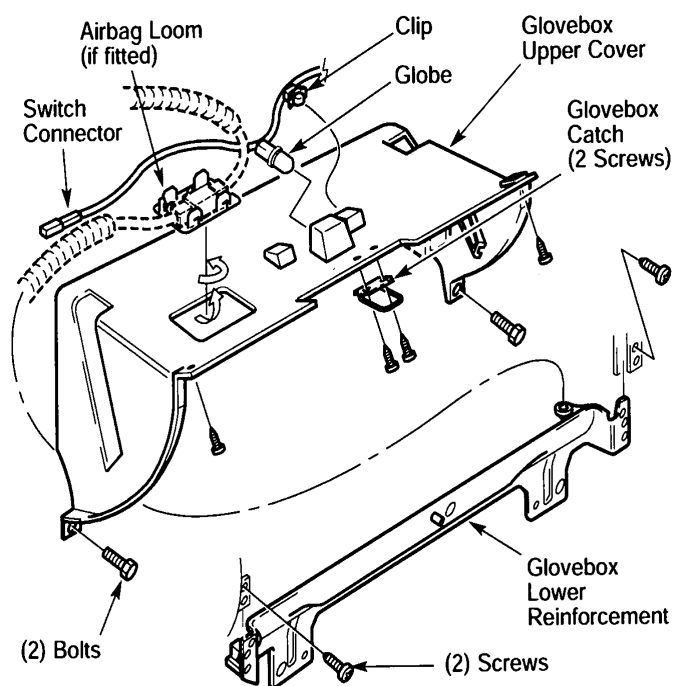
CAUTION: Refer to workshop manual for correct SRS airbag service procedures before commencing work on the interior of the vehicle.



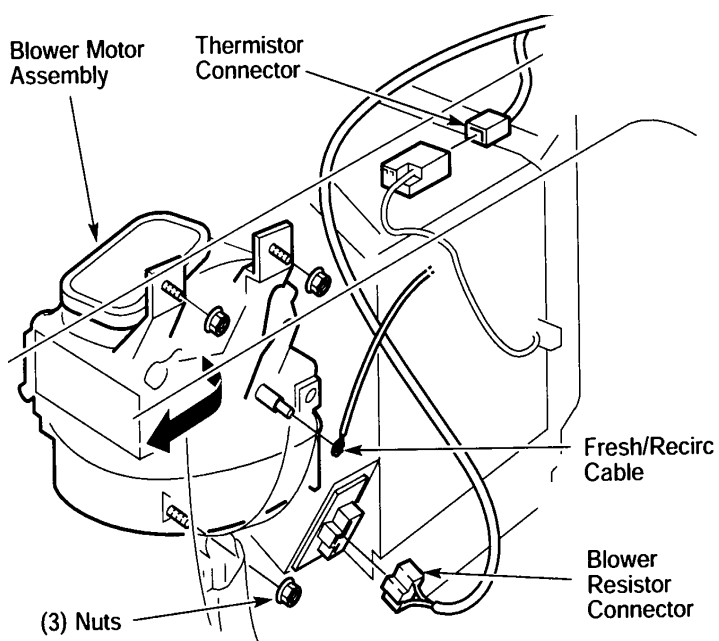
INTERIOR PARTS REMOVAL

- A. Remove the passenger side footwell cover(2 plastic clips). Disconnect the globe from the cover (where fitted).
- B. Remove the (2) screws securing the glovebox then twist in direction of the arrows as shown to remove.

REWORK PROCEDURE

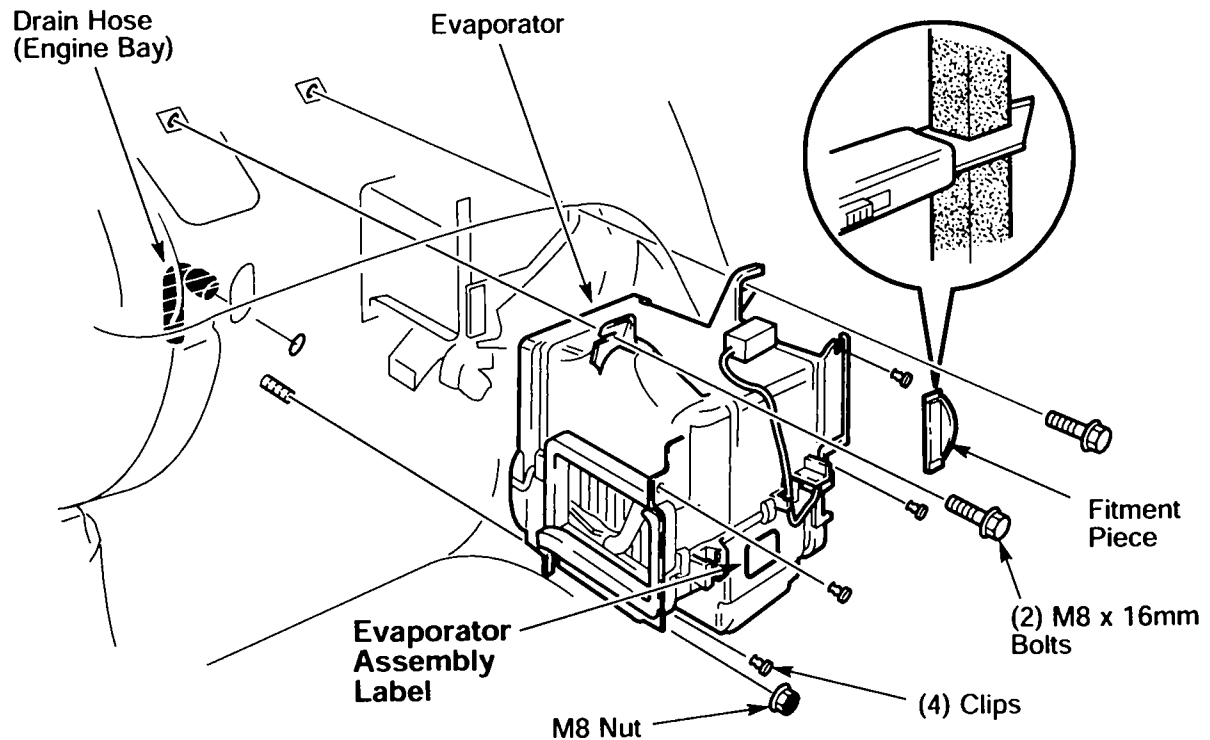


- C. Remove the glove box catch (2 screws).
- D. Remove the glove box upper cover (2 bolts and 2 screws), unclip the air bag loom harness panel and disconnect the clip, globe and boot release switch (if fitted).
- E. Remove the glove box lower reinforcement (2 screws) and disconnect the glovebox switch connector.



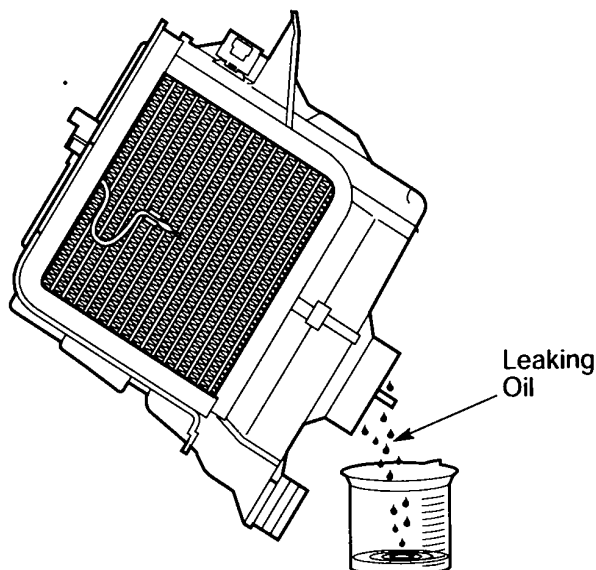
- F. Disconnect the blower resistor connector from the evaporator case.
- G. Disconnect the thermistor 3 pin connector (manual A/C) located on the top of the evaporator case or the 2-pin connector (auto A/C) located on the front of the evaporator case.
- H. Disconnect the fresh/recirc. cable from the blower motor assembly.
- I. Remove the 3 nuts securing the blower motor assembly and move the blower motor assembly to the left.

REWORK PROCEDURE



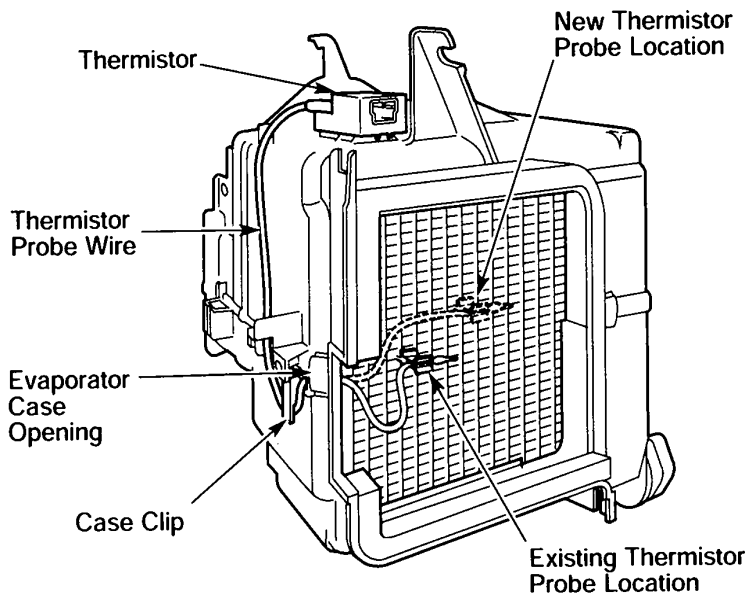
EVAPORATOR REMOVAL.

- A. Remove the drain hose from the evaporator assembly (engine bay)
- B. Carefully remove the fitment piece from the right hand side of the evaporator assembly. If necessary , cut the foam seal at the top and bottom of the fitment piece to avoid damage to the seal.
- C. Remove the (1) M8 nut, (2) M8 x 16 bolts and (4) clips securing the evaporator assembly and remove carefully to avoid damaging the inlet and outlet seals.



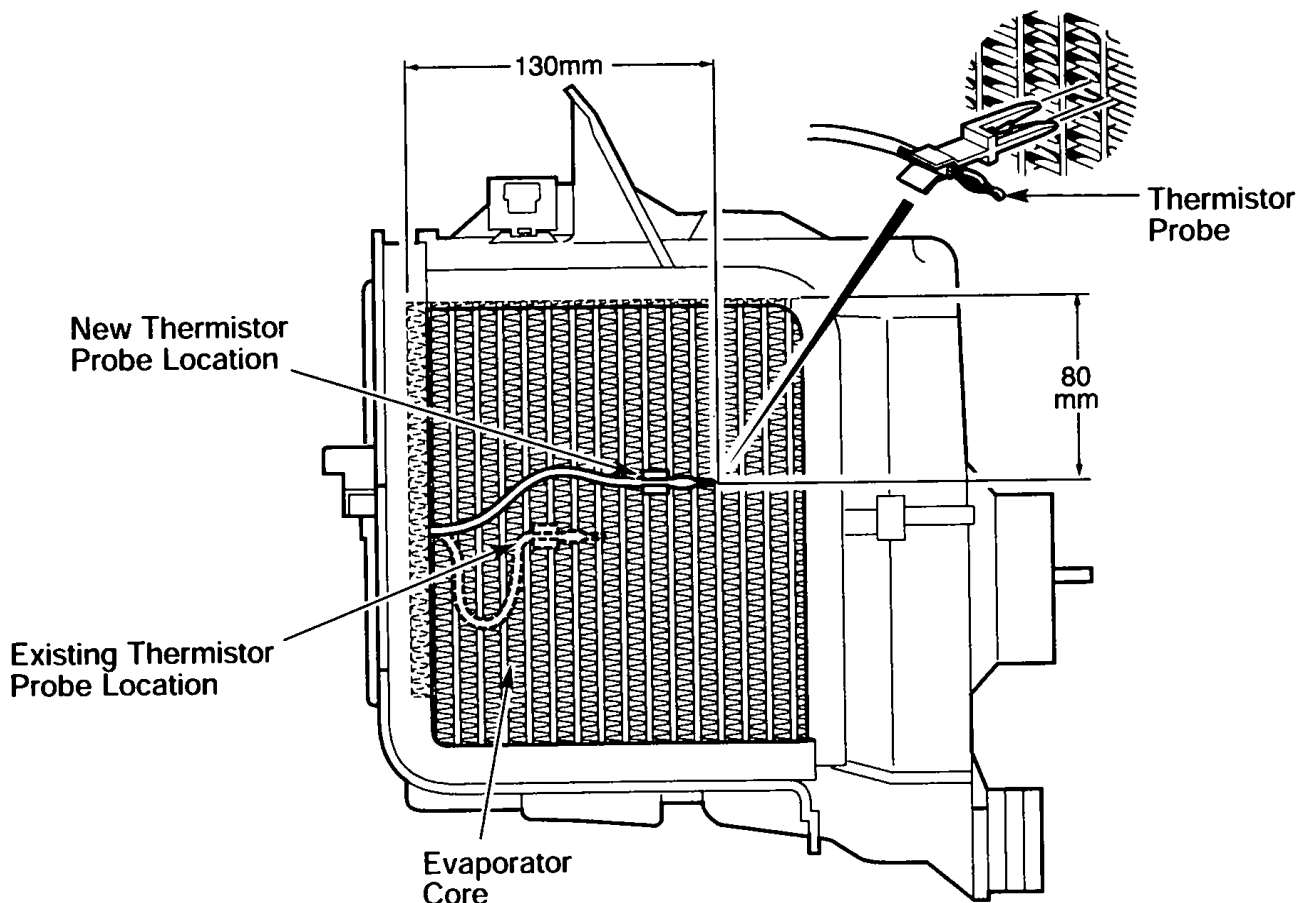
NOTE: When the evaporator is removed some oil will leak from the evaporator. Using a suitable container, catch any leaking oil. When re-installing the evaporator, replenish with a similar amount of oil. (If unknown 50ml should be added)

REWORK PROCEDURE



THERMISTOR PROBE RELOCATION

- A. Carefully remove the thermistor probe from the evaporator core.
- B. Feed additional thermistor probe wire around the case clip and through the opening in the evaporator case to allow the thermistor to be located in the new position. (Avoid placing excessive strain on the wire where it exits the thermistor)
- C. Measure and place a mark **130mm** from the left edge of the evaporator core and **80mm** from the top of the evaporator core fins as shown in the diagram below. Position the **tip of the thermistor probe** over the mark and secure with the original probe clip.



RE-ASSEMBLY

- A. Re-install all previously removed components in reverse order of disassembly noting the following.
 - 1) Ensure the evaporator assembly seals are not damaged during re-assembly.
 - 2) Replenish any oil that may have leaked from the evaporator to protect the compressor from operating with a low oil level.
 - 3) Ensure suction and liquid tube O-rings are in place. Tighten bolts to specified torque.
 - 4) Re-charge A/C system with specified charge quantity (**Max 700g/ Min 650g**)
 - 5) Check for correct operation of A/C system.



**MITSUBISHI MOTORS
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A.C.N. 067 570 395

SERVICE BULLETIN

GROUP: 55-Heater, A/C.

DATE: July 2002

NO. 55/2002/002

MODEL: Pajero NM

SUBJECT: Change of refrigerant quantity

COUNTRIES:

Australia

R.I.WYATT
MANAGER - WARRANTY &
TECHNICAL PUBLICATIONS

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Bulletin Consists of 1 Page

This bulletin is to inform you of a change in specification relating to the refrigerant charge required for the air conditioner system fitted to the NM model Pajero.

LUBRICANTS

55A-3

Item		Specified lubricants	Quantity
Compressor oil mL	Except for vehicles with rear cooler	DENSO OIL 8	120 ± 20
	Vehicles with rear cooler	DENSO OIL 8	140 ± 20
Pipe connections		DENSO OIL 8	As required
Refrigerant g	Except for vehicles with rear cooler	R134a (HFC-134a)	500 ± 20 <Old>
	Vehicles with rear cooler	R134a (HFC-134a)	750 ± 20 <Old>

550 **750**
<New> <New>

LUBRICANTS

55B-2

Item		Brand	Quantity
Compressor oil mL	Single A/C <except vehicles with rear cooler>	DENSO OIL 8	120 ± 20
	Vehicles with rear cooler	DENSO OIL 8	140 ± 20
Pipe connections		DENSO OIL 8	As required
Refrigerant g	Single A/C <except vehicles with rear cooler>	R134a (HFC-134a)	500 ± 20 <Old>
	Single A/C <vehicles with rear cooler>, dual A/C	R134a (HFC-134a)	750 ± 20 <Old>

550 **750**
<New> <New>

Applicable Manual:

Manual	Publication	Affected Pages
2001 PAJERO WORKSHOP MANUAL chassis VOL 2	PWJEO005 (2/2)	55A-3, 55B-2

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SERVICE BULLETIN

GROUP: 55-Heater, A/C.

DATE: October 2002

NO. 55/2002/003

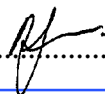
MODEL: UG Nimbus

SUBJECT: Trouble shooting procedures

COUNTRIES:

Australia

R.I.WYATT
MANAGER - WARRANTY &
TECHNICAL PUBLICATIONS

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Bulletin Consists of 8 Pages

Purpose

This bulletin is to inform you of an addition to the trouble shooting procedures applicable for the rear air conditioner as fitted to the Nimbus vehicle

Applicable Manual:

Manual	Publication
2001 SPACE WAGON Workshop Manual Chassis SUPPLEMENT	PWDE9809-2

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GROUP 55

HEATER, AIR CONDITIONER AND VENTILATION

GENERAL

OUTLINE OF CHANGE

The following items have been changed. Other items not mentioned here are the same as before.

- On vehicles for GCC, a connector for rear cooler unit has been changed from 18-pin type to 12-pin type. According to this change, the following service procedures have been established.
- On vehicles for Australia and New Zealand, the rear cooler of the same specification as that for GCC has been adopted.

TROUBLESHOOTING

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points.

DIAGNOSIS FUNCTION

DIAGNOSIS CODES CHECK

Connect the MUT-II to the diagnosis connector (16-pin), then check diagnosis codes.
(Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points.)

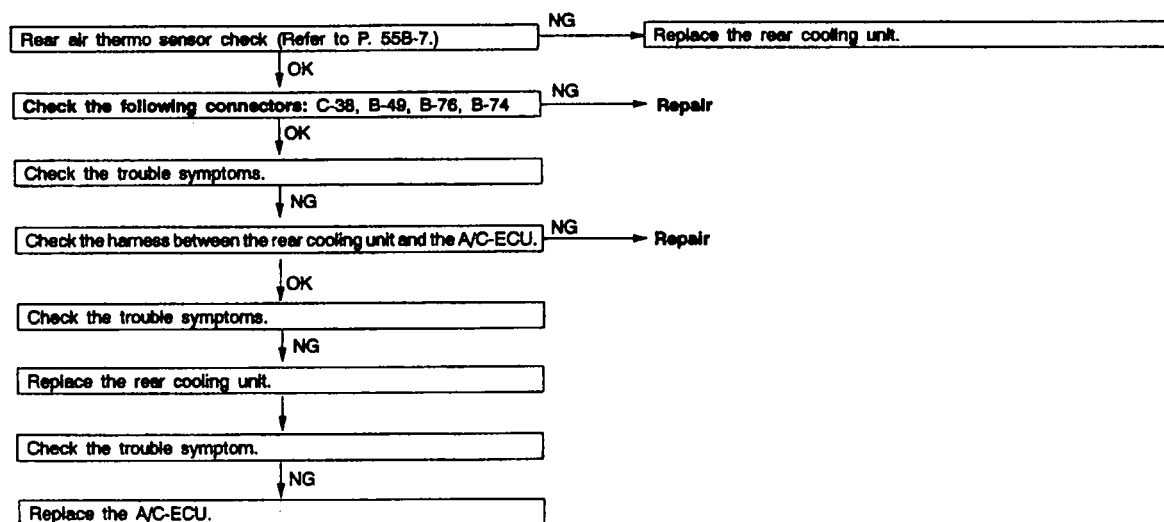
ERASING DIAGNOSIS CODES

Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points.

INSPECTION CHART FOR DIAGNOSIS CODES

Code No.	Diagnosis item	Reference page
23	Rear air thermo sensor system (open circuit)	55B-1

Code No.23 Rear air thermo sensor system (open circuit)	Probable cause
This diagnosis code is output if the rear air thermo sensor (incorporated in the rear cooling unit) sends no signal to the A/C-ECU due to an open circuit in that sensor power supply or input line.	<ul style="list-style-type: none"> Malfunction of connector Malfunction of harness Malfunction of the rear cooling unit Malfunction of the A/C-ECU



INSPECTION CHART FOR TROUBLE SYMPTOMS

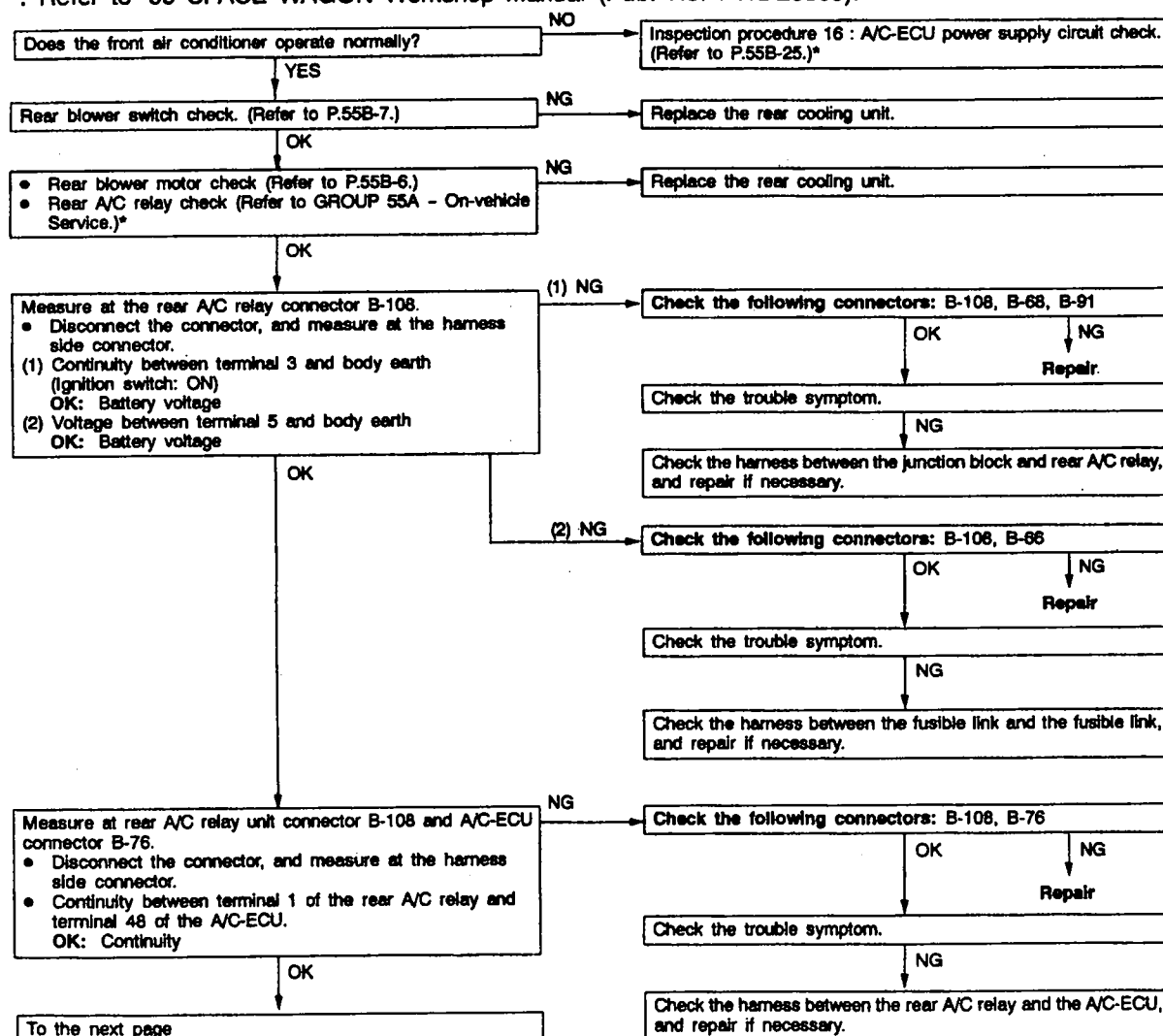
55400500068

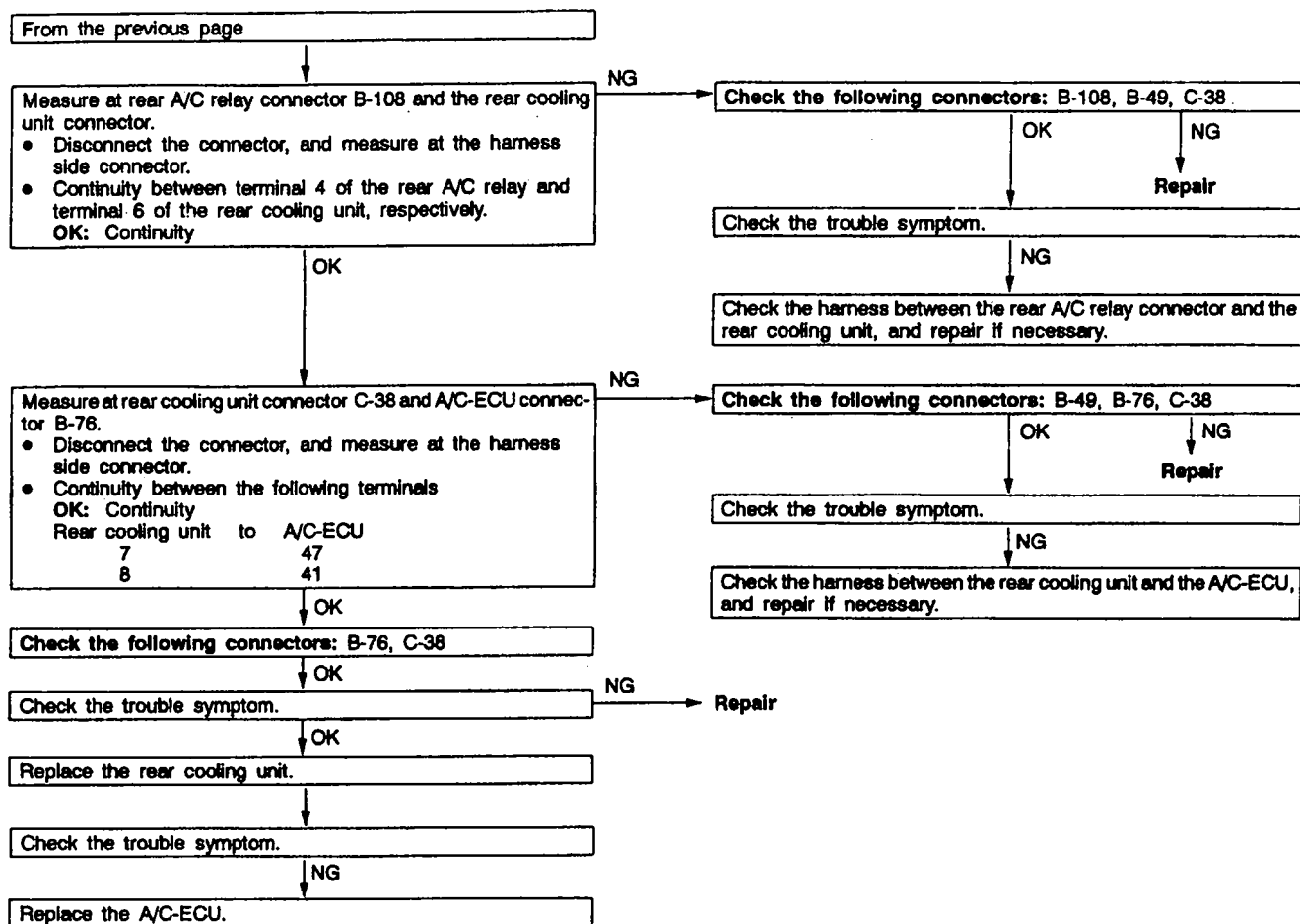
Trouble symptom	Inspection procedure No.	Reference page
Rear cooling unit blower does not operate.	1	55B-2
Rear A/C outlet air temperature does not change.	2	55B-4
Rear A/C air amount cannot be changed.	3	55B-5

Inspection procedure 1

Rear cooling unit blower does not operate.	Probable cause
If no air comes out of the blower even though the blower switch is on, the cause is probably a malfunction of the rear A/C relay circuit.	<ul style="list-style-type: none"> • Malfunction of rear cooling unit • Malfunction of rear A/C relay • Malfunction of connector or harness • Malfunction of A/C-ECU

*: Refer to '99 SPACE WAGON Workshop Manual (Pub. No. PWDE9809).

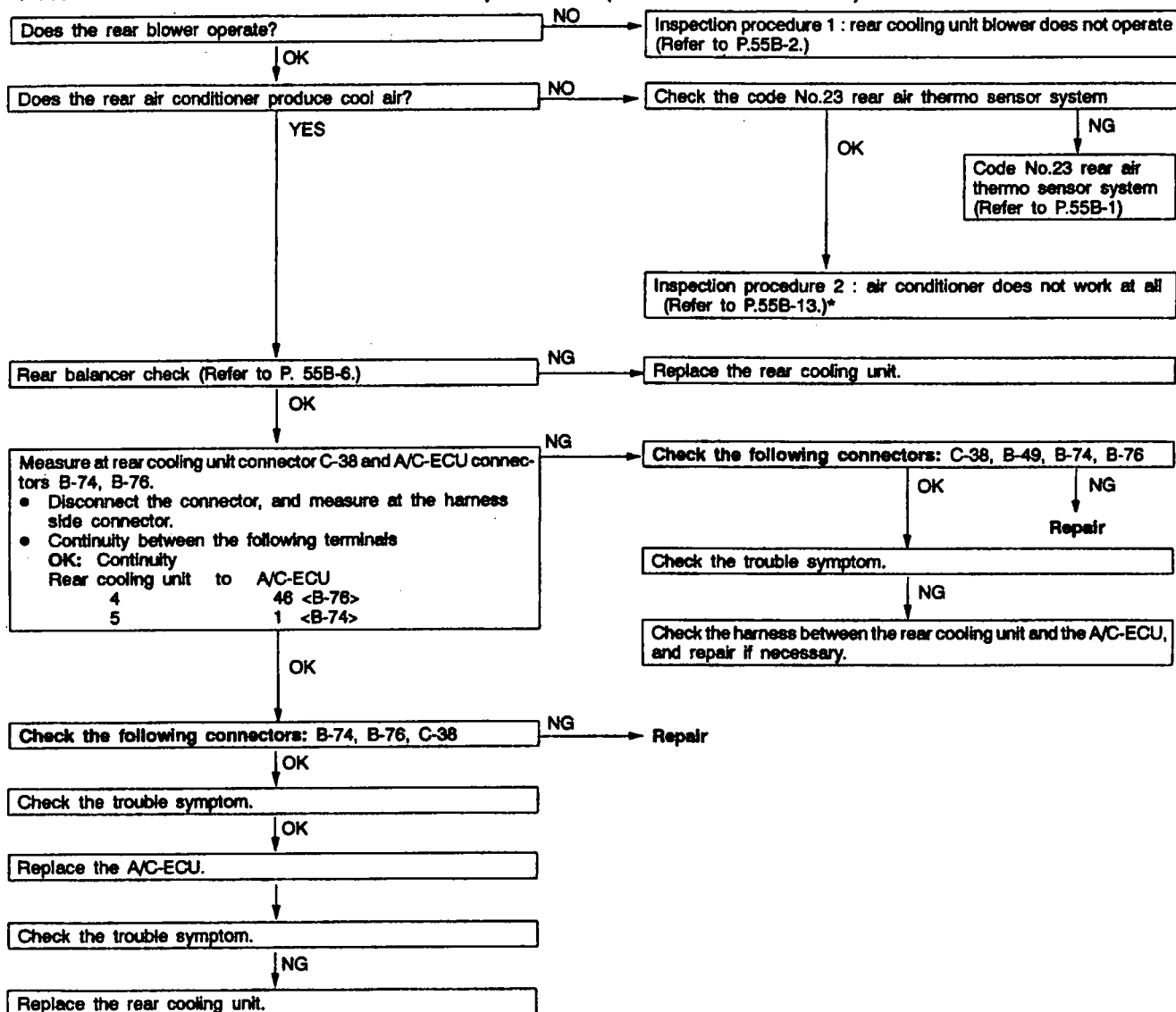




Inspection procedure 2

Rear A/C outlet air temperature does not change.	Probable cause
If the outlet air temperature does not change by operating the rear cooling unit air temperature adjusting dial, the rear air thermo sensor inside the rear cooling unit, rear balancer, blower motor, rear balancer solenoid valve system.	<ul style="list-style-type: none"> • Malfunction of the rear cooling unit • Malfunction of the rear balancer solenoid valve • Malfunction of connector or harness • Malfunction of A/C-ECU

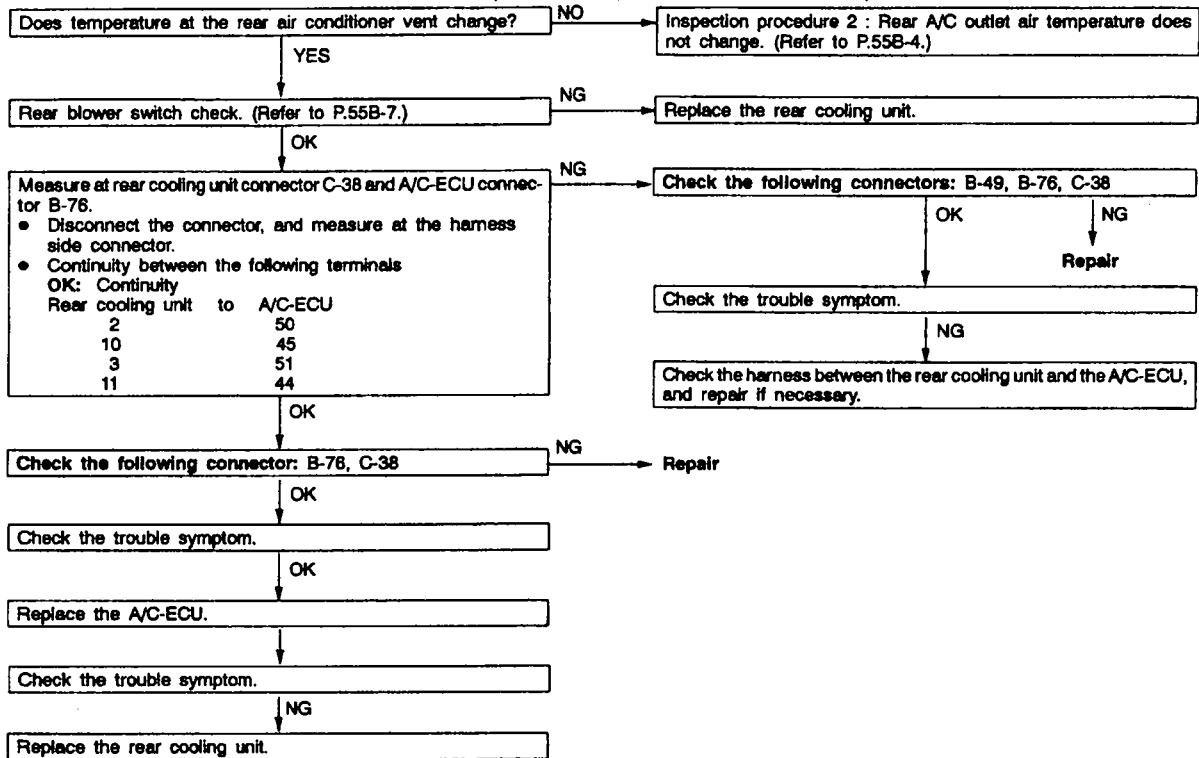
*: Refer to '99 SPACE WAGON Workshop Manual (Pub. No. PWDE9809).



Inspection procedure 3

Rear A/C air amount cannot be changed.	Probable cause
If the rear A/C air amount cannot be controlled, the power transistor (incorporated in the rear cooling unit) or the rear balancer switch circuit may be defective.	<ul style="list-style-type: none"> • Malfunction of the rear cooling unit • Malfunction of connector or harness • Malfunction of A/C-ECU

*: Refer to '99 SPACE WAGON Workshop Manual (Pub. No. PWDE9809).



CHECK AT THE A/C-ECU TERMINAL

Rear cooling unit

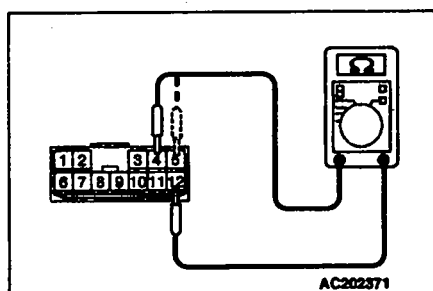


AC201988

Terminal no.	Check item	Check when	Normal state
1	Air thermo sensor output	When sensor section temperature is 25°C (1.5kΩ)	2 ± 0.5 V
2	Rear A/C air volume adjusting dial switch output (AUTO)	Set air volume adjusting dial to "AUTO" position.	0 V
3	Rear A/C air volume adjusting dial switch input (ME)	Set air volume adjusting dial to "ME" position.	0 V
4	Rear balancer output	Set the temperature dial to "+4" position.	1 ± 0.5 V
		Set the temperature dial to "-4" position.	4 ± 0.5 V
5	Rear balancer	When rear cooler is ON	5 ± 0.5 V

55B-6 HEATER, AIR CONDITIONER AND VENTILATION – Troubleshooting, Rear Cooling Unit

Terminal no.	Check item	Check when	Normal state
6	Rear blower motor	When rear cooler is OFF	0 V
		When rear cooler is ON	Battery voltage
7	Rear power transistor base input	When rear cooler is ON	0.5 – 7.5 V
8	Rear power transistor collector input	When rear cooler is ON	7 – 10 V
9	Illumination power supply	When lighting switch ON	Battery voltage
10	Rear A/C air volume adjusting dial switch input (LO)	When air volume adjusting dial is at LO.	Battery voltage
11	Rear A/C air volume adjusting dial switch input (HI)	When air volume adjusting dial is at HI.	0 V
12	Earth	At all times	Continuity



REAR COOLING UNIT

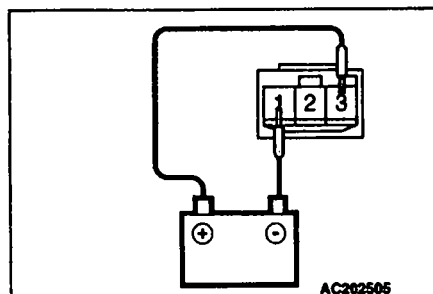
REAR BALANCER

Check that the resistance value between the terminals 4, 5 and 12 of the rear cooling unit connector is within the standard value.

Standard value:

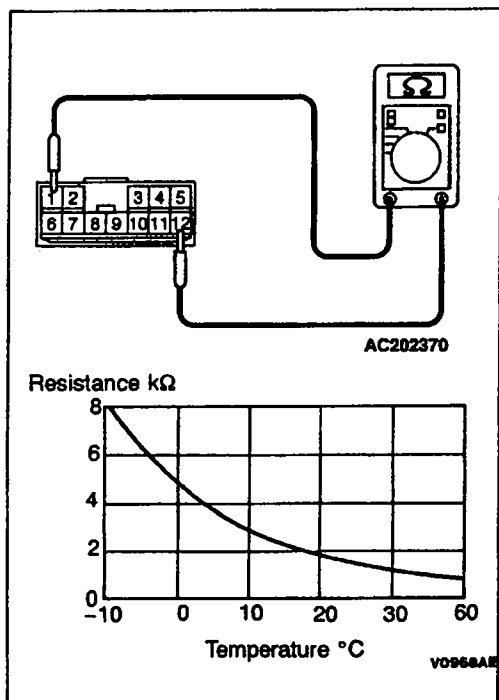
Test terminals	Temperature adjustment dial position	Standard value (Ω)
Between terminals 4 and 12	-4	4 ± 0.9
	0	2.5 ± 0.9
	+4	1 ± 0.9

Test terminals	Standard value (Ω)
Between terminals 5 and 12	5.0

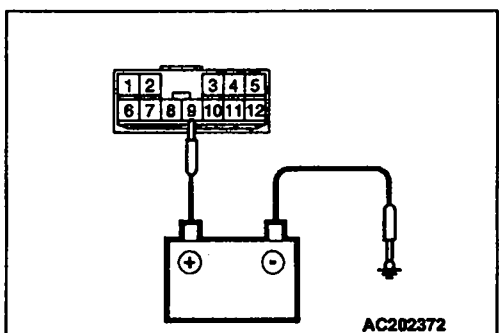


BLOWER MOTOR

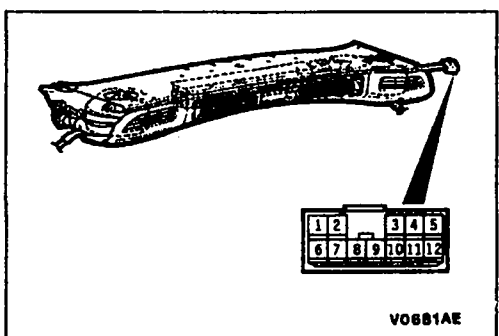
Disconnect the blower motor connector inside the rear cooling unit. Check that the blower motor operates when applying battery voltage to the terminals shown in the illustration. Also, check that the blower motor does not produce noise.

**REAR AIR THERMO SENSOR**

When the resistance value between the sensor terminals of the rear cooling unit connector is measured under two or more temperature conditions, the resistance value should be close to the values shown in the graph.

**ILLUMINATION LAMP**

Check that the illumination lamp goes on when applying battery voltage to the terminal of the rear cooling unit connector as shown in the illustration.

**REAR BLOWER SWITCH**

Dial position	Terminal No.				
	2	10	3	11	12
OFF					
AUTO	○				○
LO		○			○
ME			○		○
HI				○	○