GROUP 55B

AUTOMATIC AIR CONDITIONING

CONTENTS

GENERAL DESCRIPTION

M1552000100696

The blower, heater, and evaporator have been integrated with the heater and A/C system to achieve greater fan power and noise reduction.

ITEM	SPECIFICATION
Heater control assembly	Dial type
Compressor mode	MSC90CAS
Compressor type	Scroll type
Refrigerant and quantity g (oz)	R-134a (HFC-134a), 480 –520 (16.9 –18.3)

SAFETY PRECAUTIONS

⚠ ***WARNING***

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

Because R-134a refrigerant is a hydro fluorocarbon (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 (–21.64° 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 (104.0°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 your eyes, use a few drops of mineral oil to wash them out. R-134a is rapidly absorbed by the oil.
2. Next, splash your eyes with plenty of cold water.
3. Call your doctor immediately even if irritation has ceased.

⚠ **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 (104.0° 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***

A 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

CONDENSER FAN AND RADIATOR FAN CONTROL

The ECM judges the required revolution speed of radiator fan motor and condenser fan motor using the input signals transmitted from A/C switch, output shaft speed sensor and engine coolant temperature sensor.

COMPRESSOR CONTROL

When operating the A/C switch

- The air thermo sensor, which senses the temperature of the air flowing out of the evaporator, deactivates the compressor at 1° C (33.8° F) or below.
- A/C-ECU detect refrigerant pressure by A/C pressure sensor and turns OFF when the refrigerant pressure becomes excessively high or low, thus protecting the compressor circuit (See Table below).
- When the air thermo sensor is activated, and the ignition switch, blower switch, and A/C switch are ON, the A/C compressor clutch relay is energized.

When operating the mode selection dial

- The A/C will work when the mode selection dial is set to the "Defroster" or "Defroster/foot" position, or the temperature control dial is set to the "MAX A/C" position. In other dial positions, when the A/C switch is turned on, the A/C will work.

A/C Compressor Clutch Relay ON Conditions

Ignition switch (IG2)		ON	*NOTE: A/C compressor clutch relay is de-energized when any one switch, sensor or control unit shown on the left turns off.* *NOTE: The components marked by * communicate with the ECU. If the air thermo sensor detects a temperature of 1°C (33.8°F), the A/C-ECU will turn off the A/C compressor clutch relay.*
Blower switch		ON	
A/C switch, mode selection dial defroster, defroster/foot position or temperature control MAX A/C		ON	
Air thermo sensor		*	
Pressure detected by A/C pressure sensor	2.94 MPa (427psi) or less (If the refrigerant pressure exceeds 2.94 MPa (427psi), A/C compressor clutch relay is not ON condition until the refrigerant pressure has been measured up to 2.35 MPa (341psi) a or less.)	ON	
	0.19 MPa (27psi) or more (If the refrigerant pressure falls short of 0.19 MPa (27psi), A/C compressor clutch relay is not ON condition until the refrigerant pressure has been measured up to 0.22 MPa (32psi) or more.)		
A/C compressor clutch relay driving transistor (within powertrain control module)		ON	

AUTOMATIC A/C DIAGNOSIS

INTRODUCTION

M1554006200103

After air is taken in through the air selection damper, it is fed to the evaporator by the blower fan and motor and cooled. The air cooled by the evaporator is mixed appropriately with the warmed air which pass through the heater core to achieve a comfortable temperature. If the A/C does not operate or the cooled air is not discharged, the system components or relay may be faulty.

AUTOMATIC AIR CONDITIONING TROUBLESHOOTING STRATEGY

M1554004700652

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.

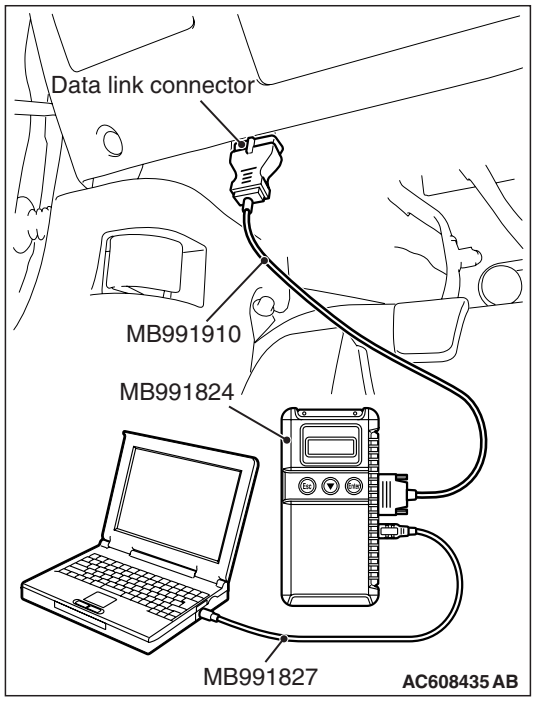
DIAGNOSTIC FUNCTION

M1552019800165

HOW TO CONNECT THE SCAN TOOL (M.U.T.-III)

Required Special Tools:

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)



⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

1. Ensure that the ignition switch is at the "LOCK" (OFF) position.
2. Start up the personal computer.
3. Connect special tool MB991827 to special tool MB991824 and the personal computer.
4. Connect special tool MB991910 to special tool MB991824
5. Connect special tool MB991910 to the data link connector.
6. Turn the power switch of special tool MB991824 to the "ON" position.

   NOTE: When the special tool MB991824 is energized, the special tool MB991824 indicator light will be illuminated in a green color.
7. Start the M.U.T.-III system on the personal computer.

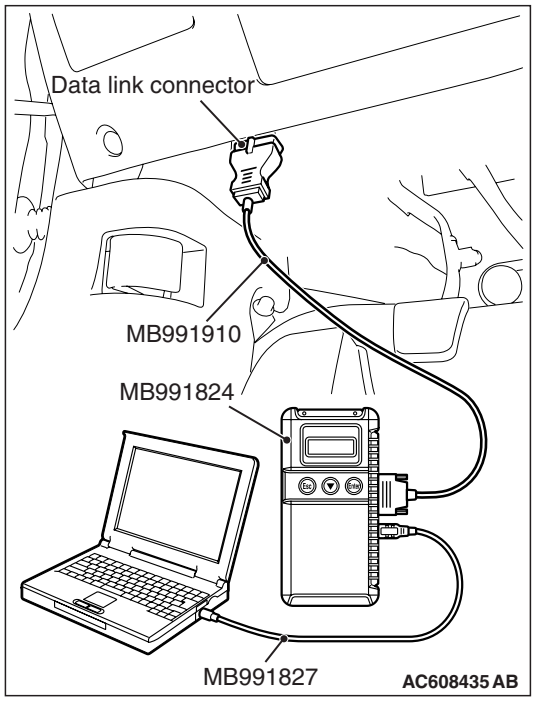
NOTE: Disconnecting the scan tool special tool MB991824 is the reverse of the connecting sequence, making sure that the ignition switch is at the "LOCK" (OFF) position.

TSB Revision

HOW TO READ AND ERASE DIAGNOSTIC TROUBLE CODES

Required Special Tools:

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)



⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

NOTE: If the battery voltage is low, diagnostic trouble codes will not be output. Check the battery if scan tool MB991958 does not display.

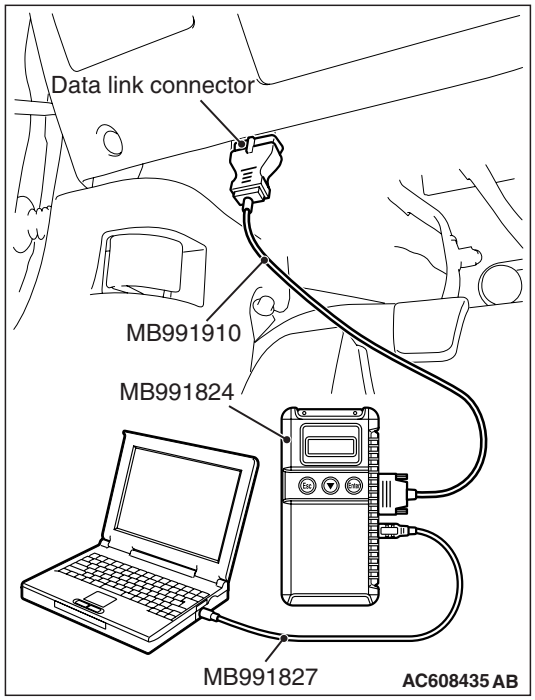
1. Connect the scan tool MB991958 to the data link connector.
2. Turn the ignition switch to the "ON" position.
3. Select "System select" from the start-up screen.
4. Select "From 2006 MY" of "Model Year." When the "Vehicle Information" is displayed, check the contents.
5. Select "AUTO A/C" from "System List," and press the "OK" button.

   NOTE: When the "Loading Option Setup" list is displayed, check the applicable item.
6. Select "Diagnostic Trouble Code."
7. If a DTC is set, it is shown.
8. Choose "Erase DTCs" to erase the DTC.

HOW TO READ DATA LIST

Required Special Tools:

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)



⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

1. Connect the scan tool MB991958 to the data link connector.
2. Turn the ignition switch to the "ON" position.
3. Select "Interactive Diagnosis" from the start-up screen.
4. Select "System Select."

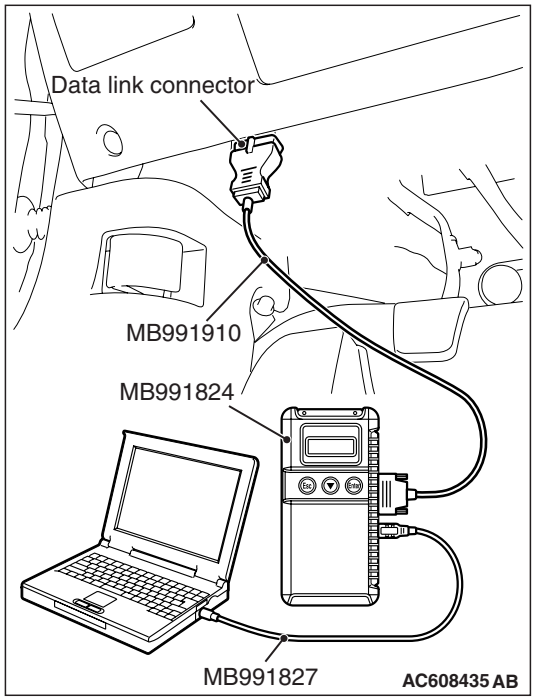
Select "AUTO A/C" from "System List," and press the "OK" button.

5. Select "Data List."
6. Choose an appropriate item and select the "OK" button.

HOW TO PERFORM ACTUATOR TEST

Required Special Tools:

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A (Vehicles with CAN communication system)



⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

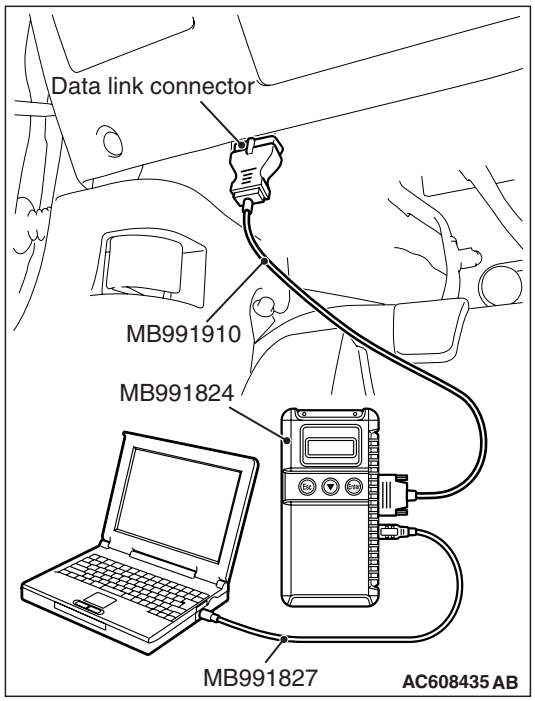
1. Connect the scan tool MB991958 to the data link connector.
2. Turn the ignition switch to the "ON" position.
3. Select "System Select."
4. Select "AUTO A/C" from "System List," and press the "OK" button.
5. Choose "Actuator Test" from "AUTO A/C" screen.
6. Choose an appropriate item and select the "OK" button.

TSB Revision

HOW TO DIAGNOSE THE CAN BUS LINE

Required Special Tools:

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A



⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

1. Connect scan tool MB991958 to the data link connector.
2. Turn the ignition switch to the "ON" position.
3. Select "CAN bus diagnosis" from the start-up screen.
4. When the vehicle information is displayed, confirm that it matches the vehicle whose CAN bus lines will be diagnosed.
   - If they match, go to step 8.
   - If not, go to step 5.
5. Select "view vehicle information" button.
6. When the vehicle information is displayed, confirm again that it matches the vehicle which is diagnosed CAN bus line.
   - If they match, go to step 8.
   - If not, go to step 5.
7. Press the "OK" button.
8. When the options are displayed, choose the options (mark the check) and then select "OK".

DIAGNOSTIC TROUBLE CODE CHART

M1554004900902

⚠ CAUTION

During diagnosis, a DTC code associated with another system may be set when the ignition switch is turned on with connector(s) disconnected. After completing the repair, confirm all systems for DTC code(s). If DTC code(s) are set, erase them all.

Diagnostic trouble code No.	Diagnostic item	Reference page
B10C0	Interior temperature sensor system (short circuit)	P.55B-9
B10C1	Interior temperature sensor system (open circuit)	P.55B-9

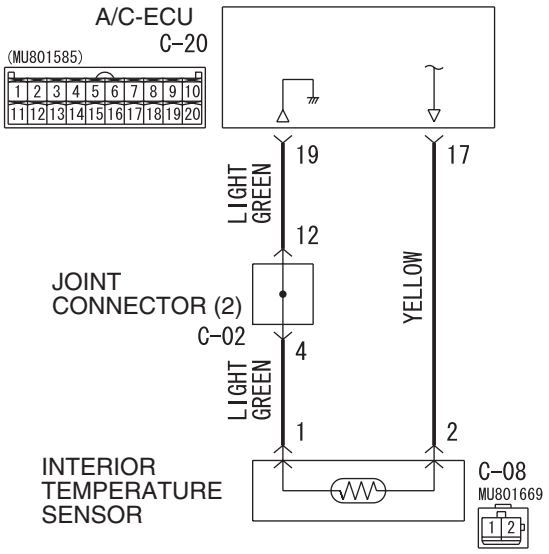
Diagnostic trouble code No.	Diagnostic item	Reference page
B1000	Control panel communication error	Refer to GROUP 55A diagnostic trouble code chart P.55A-8
B1003	Mode dial SW error	
B1018	Temperature control dial SW error	
B1021	Fan dial SW error	
B1031	Air thermo sensor system (short circuit)	
B1032	Air thermo sensor system (open circuit)	
B1034*	Ambient air temperature sensor system (short circuit)	
B1035*	Ambient air temperature sensor system (open circuit)	
B1079	Refrigerant leaks	
B2214	Control panel failure	
B223B	Control panel improperly assembled	
U1415	Coding not completed	
U0019	Bus off (CAN1)	
U0141	ETACS-ECU time-out	
U0151	SRS-ECU time-out	
U0154	Occupant classification-ECU time-out	
U0155	Combination meter time-out	
U0168	WCM time-out	
U0184	Audio time-out	
U0195	Satellite radio tuner time-out	
U0197	Hands free module time-out	

*NOTE: The diagnostic trouble codes marked by * are set from the ETACS-ECU.*

DIAGNOSTIC TROUBLE CODE PROCEDURES

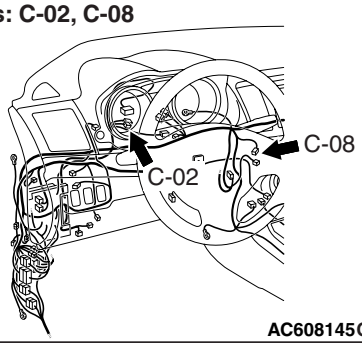
DTC B10C0, B10C1: Interior Temperature Sensor System

Interior Temperature Sensor Circuit



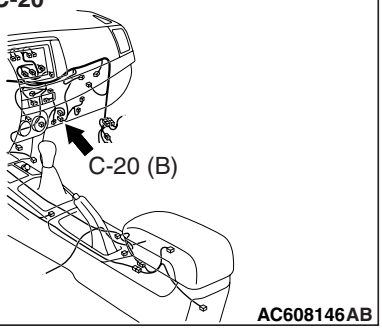
W8G55M012A

Connectors: C-02, C-08



AC608145CL

Connector: C-20



AC608146AB

DTC SET CONDITION

- DTC B10C0 is set if there is a short circuit in the interior temperature sensor input circuit.
- DTC B10C1 is set if there is a defective connector connection, or if there is an open circuit in the harness.

TECHNICAL DESCRIPTION (COMMENT)

Current trouble

- The A/C-ECU, the interior temperature sensor, or connector(s) or wiring between the two may be defective.

TSB Revision

Past trouble

- If DTC B10C0 or B10C1 is stored as a past trouble, carry out diagnosis with particular emphasis on wiring and connector(s) between the A/C-ECU and the interior temperature sensor. If the connectors and wiring are normal, and obviously the ECU is the cause of the trouble, replace the ECU. If in doubt, do not replace the ECU.

TROUBLESHOOTING HINT

- Malfunction of connector.
- Malfunction of the harness.
- Malfunction of the interior temperature sensor.
- Malfunction of the A/C-ECU.

DIAGNOSIS

Required Special Tool:

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A

STEP 1. Using scan tool MB991958, diagnose the CAN bus line.

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

Use scan tool MB991958 to diagnose the CAN bus lines.

(1) Connect scan tool MB991958. Refer to "How to connect the Scan Tool (M.U.T.-III) P.55B-4."
(2) Turn the ignition switch to "ON" position.
(3) Diagnose the CAN bus line.

Q: Is the check result satisfactory?

YES : Go to Step 2.
NO : Repair the CAN bus lines. Repair the CAN bus lines (Refer to GROUP 54C, Diagnosis-Can Bus Diagnostic Chart P.54C-16).

STEP 2. Recheck for diagnostic trouble code.

Recheck if the DTC is set.

(1) Erase the DTC.
(2) Turn the ignition switch to "ON" position.
(3) Check if the DTC is set.

Q: Is the check result satisfactory?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunctions P.00-13.
NO : Go to Step 3.

STEP 3. Check interior temperature sensor connector C-08 and A/C-ECU connector C-20 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are interior temperature sensor connector C-08 and A/C-ECU connector C-20 in good condition?

YES : Go to Step 4.
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

STEP 4. Check the wiring harness between A/C-ECU connector C-20 (terminal 17 and 19) and interior temperature sensor connector C-08 (terminals 1 and 2).

NOTE: Also check joint connector C-02 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-02 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

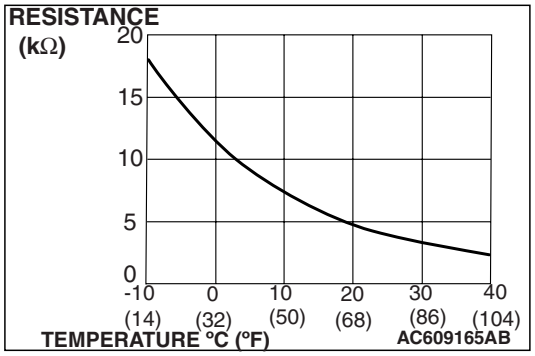
Q: Is the wiring harness between A/C-ECU connector C-20 (terminal 17 and 19) and interior temperature sensor connector C-08 (terminals 1 and 2) in good condition?

YES : Go to Step 5.
NO : Repair the wiring harness.

STEP 5. Check the interior temperature sensor.

Measure the resistance between connector terminals 1 and 2 under at least two different temperatures. The resistance values should generally match those in the graph.

NOTE: The temperature at the check should not exceed the range in the graph.



Q: Is the interior temperature sensor in good condition?

YES : Replace the A/C-ECU. Then go to Step 6.
NO : Replace the interior temperature sensor. Then go to Step 6.

STEP 6. Recheck for diagnostic trouble code.

Check again if the DTC is set.
(1) Connect scan tool MB991958 to the data link connector
(2) Turn the ignition switch to the "ON" position.
(3) Check if the DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the check result satisfactory?

YES : The procedure is complete.
NO : Return to Step 1.

TSB Revision

SYMPTOM CHART

M1554005000946

⚠ CAUTION

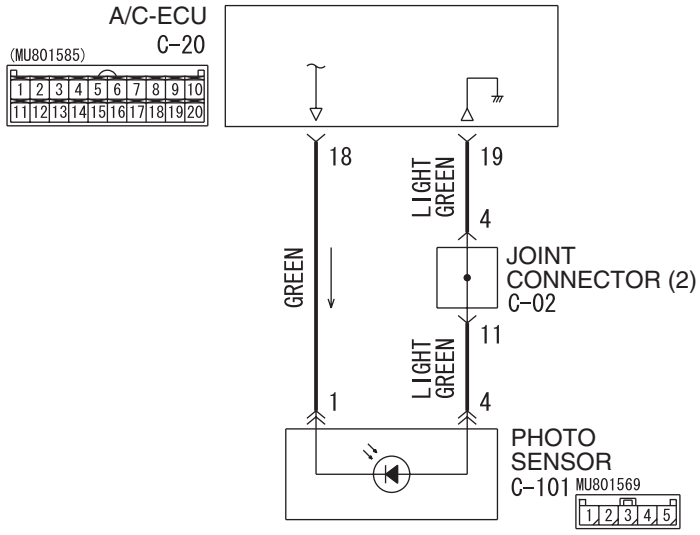
During diagnosis, a DTC code associated with another system may be set when the ignition switch is turned on with connector(s) disconnected. On completion, confirm all systems for DTC code(s). If DTC code(s) are set, erase them all.

Symptom	Inspection procedure	Reference page
When the A/C is operation, temperature inside the passenger compartment does not decrease (Cool air is not emitted).	1	Refer to GROUP 55A, symptom chart P.55A-64
Malfunction of the A/C power supply system.	2	
The compressor does not work.	3	
Blower fan and motor do not turn.	4	
Blower air amount cannot be changed.	5	
Outside/inside air changeover is not possible.	6	
A/C outlet air temperature does not increase.	7	
Air outlet vent cannot be changed.	8	
Rear window defogger does not operate.	9	
Blower motor power supply system.	10	
When sunlight intensity changes, air outlet temperature does not change.	11	P.55B-13

SYMPTOM PROCEDURES

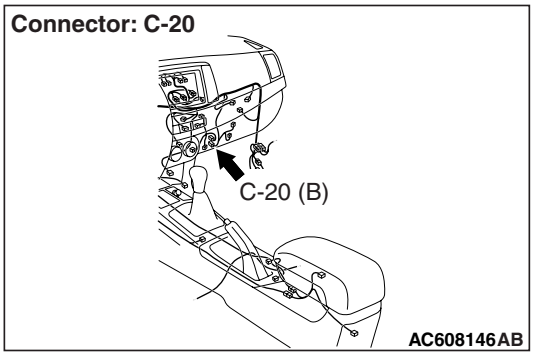
INSPECTION PROCEDURE 11: When Sunlight Intensity Changes, Air Outlet Temperature Does Not Change.

Photo Sensor Circuit

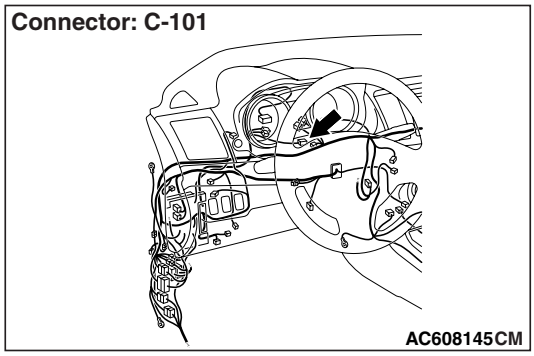


W8G55M013A

Connector: C-20



Connector: C-101



CIRCUIT OPERATION

When the blower air temperature cannot be changed even if the preset temperature is changed, the sensors may be defective.

TROUBLESHOOTING HINTS

- Malfunction of the photo sensor
- Malfunction of the A/C-ECU
- Malfunction of connector.
- Malfunction of the harness.

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set

TSB Revision

- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A

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

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

YES : Go to Step 2.
NO : Refer to GROUP 55A, Symptom chart, P.55A-64.

STEP 2. Using scan tool MB991958, read the diagnostic trouble code.

⚠ CAUTION
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

Check if an A/C-ECU DTC is set.
(1) Connect scan tool MB991958 to the data link connector.
(2) Turn the ignition switch to the "ON" position.
(3) Check if the DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the check result satisfactory?

YES : Go to Step 3.
NO : Refer to P.55B-7.

STEP 3. Using scan tool MB991958, check data list.

(1) Connect scan tool MB991958 to the data link connector.
(2) Start the engine.
(3) Set scan tool MB991958 to the data reading mode.
  - Item 67: Photo sensor
(4) Cover the photo sensor and security indicator with your hand or a shop towel.

NOTE: Check that the voltage displayed on the scan tool changes.

(5) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Does the voltage displayed on the scan tool change when the photo sensor and security indicator is covered?

YES : Replace the A/C-ECU. Check that the A/C works normally.
NO : Go to Step 4.

STEP 4. Check A/C-ECU connector C-20 and photo sensor connector C-101 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are A/C-ECU connector C-20 and photo sensor connector C-101 in good condition?

YES : Go to Step 5.
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

STEP 5. Check the wiring harness between photo sensor connector C-101 (terminals 4 and 1) and A/C-ECU connector C-20 (terminals 19 and 18).

Q: Is the wiring harness between photo sensor connector C-101 (terminals 4 and 1) and A/C-ECU connector C-20 (terminals 19 and 18) in good condition?

YES : Go to Step 6.
NO : Repair the wiring harness. Check that the A/C works normally.

STEP 6. Replace the photo sensor.

Q: Does the A/C operate normally?

YES : No action is necessary and testing is complete.
NO : Replace the A/C-ECU. Check that the A/C works normally.

DATA LIST REFERENCE TABLE

M1554005100631

Scan tool display	Item No.	Inspection status	The display contents under normal conditions
Engine speed	17	–	Displays correct engine speed.
Ambient temperature sensor	19	–	Ambient temperature is the same as scan tool displayed temperature
Air thermo sensor	20	–	Evaporator outlet temperature is the same as scan tool displayed temperature.
Interior temperature sensor	21	–	Interior temperature is the same as scan tool displayed temperature
Temperature setting	23		Displays air conditioning set temperature.
ETC sensor	24	–	Engine coolant temperature is the same as scan tool displayed temperature.
Vehicle speed	26	–	Displays vehicle speed.
A/C Compressor drive request	27	Compressor ON	ON
		Compressor OFF	OFF
Air conditioning switch	28	Air conditioning switch ON	ON
		Air conditioning switch OFF	OFF
Refrigerant leak	29	–	Normal
Idel up request	34	–	Displays idle-up request signal.
Rear heater SW light*	35	–	–
PTC heater 1*	36	–	–
PTC heater 2*	37	–	–
PTC heater 3*	38	–	–
In/out select damp poten (target)	45	–	Displays outside/inside air selection damper target position.
In/out select damp potentiometer	46	–	Displays outside/inside air selection damper position.
Air outlet c/o potentiometer	55	–	Displays air outlet changeover damper position.
Air outlet c/o potentio. (Target)	56	–	Displays air outlet changeover damper target position.

TSB Revision

Scan tool display	Item No.	Inspection status	The display contents under normal conditions
Low pressure judgment	57	–	Normal
Rear defogger switch	60	Rear window defogger switch ON	ON
		Rear window defogger switch OFF	OFF
Pressure sensor	61	–	Displays refrigerant pressure.
Air mix potentiometer	63	–	Displays the air mix damper position.
Photo sensor	67	–	Displays sunload.
Front blower fan	68	–	Displays blower motor condition.
Front blower fan (Target)	69	–	Displays blower motor target value.
Refrigerant pressure	73	–	Displays refrigerant pressure status.
Condenser fan	74	–	Displays condenser fan running condition.
Temp. set dial position	76	–	Displays the set temperature output value on the control panel.
A/C Panel type	77	–	Dial/Auto/RHD
Fan set dial position	78	–	Displays the air volume output value on the control panel.
Air outlet c/o set dial position	79	–	Displays output value to the air outlet changeover dial on the control panel.
Fan set dial operation flag	80	–	ON when the air volume adjusting dial is operated
A/C SW operation flag	81	–	ON when the air conditioning switch is operated
Temp. set dial operation flag	82	–	ON when the air conditioning switch is operated
Defogger flag	83	–	ON when the air outlet changeover dial is set to the DEF position.
In/out air c/o SW operation flag	84	–	ON when the inside air/outside air changeover switch is operated

TSB Revision

Scan tool display	Item No.	Inspection status	The display contents under normal conditions
Rear defogger SW operation flag	87	–	ON when the rear window switch is operated
Rear defogger SW light	88	–	Displays rear window switch indicator status.
A/C SW light	89	–	Displays air conditioning switch indicator status.
In/out air c/o SW light	90	–	Displays the status of the inside air/outside air changeover switch indicator.
A/C Compressor drive flag	91	–	ON when the compressor is activated.
Wiper operation flag	92	–	ON when the wiper is operated.
Ignition position information	93	–	Ignition switch position status
Power source voltage	94	–	Displays power supply voltage.
IOD fuse equipment flag	95	–	IOD fuse status
A/T lock up open request	96	–	Displays A/T lock open request signal.
System operation time	100	–	–
Compressor use times	101	–	–
Rear defogger use times	102	–	–
In/out air c/o poten drive time	103	–	–
Air outlet c/o poten drive time	104	–	–
Air mix potentiometer drive time	105	–	–
Hot state time (Interior TEMP.)	106	–	–
Cold state time (Interior TEMP.)	107	–	–
Hot state time (Ambient TEMP.)	108	–	–
Cold state time (Ambient TEMP.)	109	–	–
Maximum ambient temperature	110	–	–
Minimum ambient temperature	111	–	–
Maximum Engine coolant TEMP.	112	–	–
Engine high speed time	113	–	–

TSB Revision

Scan tool display	Item No.	Inspection status	The display contents under normal conditions
Maximum Engine speed	114	–	–
High pressure drive time	115	–	–
High pressure cut times	116	–	–
Maximum pressure (kPa)	117	–	–
A/C use rate	118	–	–
Compressor operation rate	119	–	–
Eco operation rate	120	–	–
Recirc use rate	121	–	–
A/C operation times	122	–	–
In/out air c/o operation times	123	–	–
Mode dial operation times	124	–	–
Blower fan dial operation times	125	–	–
TEMP. set dial operation times	126	–	–
FACE mode use rate	127	–	–
B/L mode use rate	128	–	–
FOOT mode use rate	129	–	–
D/F mode use rate	130	–	–
DEF mode use rate	131	–	–
Fan OFF use rate	132	–	–
Fan 1-2step use rate	133	–	–
Fan 3-4step use rate	134	–	–
Fan 5-6step use rate	135	–	–
Fan 7-8step use rate	136	–	–
Temp 1-7 step use rate	137	–	–
Temp 8-10step use rate	138	–	–
Temp 11-13 step use rate	139	–	–
Temp 17-19step use rate	140	–	–
Temp 20-22step use rate	141	–	–
Temp 23-29step use rate	142	–	–
PTC heater1 use times	143	–	–
PTC heater2 use times	144	–	–
PTC heater3 use times	145	–	–
Fan LO driving time	146	–	–
Fan M1 driving time	147	–	–

TSB Revision

Scan tool display	Item No.	Inspection status	The display contents under normal conditions
Fan M2 driving time	148	–	–
Fan HI driving time	149	–	–
Rear PTC heater counter	150	–	–

*NOTE: * shows that it is displayed but not used.*

ACTUATOR TEST

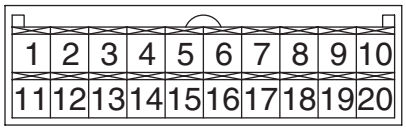
M1554005200575

Item No.	Check items	Driven content
2	idle up request	Idle-up request signal
5	In/out selection damper	The moving position of outside/inside air selection damper motor
6	Air mix damper motor	The moving position of air mix damper motor
7	Front blower fan	The amount of blower motor rotation
8	Air outlet c/o damper	Air outlet changeover damper motor moving position
10	Condenser fan	The amount of condenser fan rotation
11	Air conditioning	A/C switch selection position
12	Rear defogger switch	Rear window defogger switch selection position
13	A/T lock open request	A/T lock open request signal

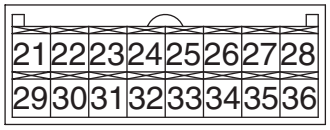
CHECK AT A/C-ECU TERMINAL

M1552010301274

C-20



C-19



AC210339AF

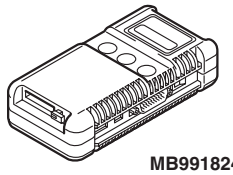
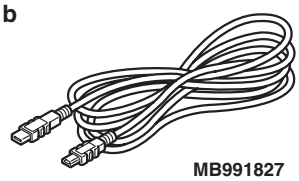
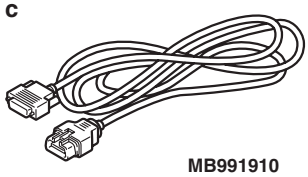
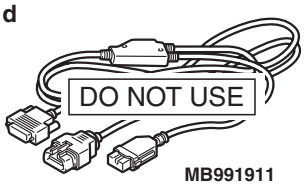
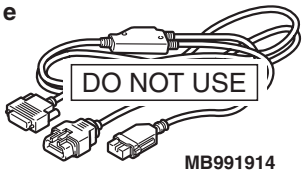
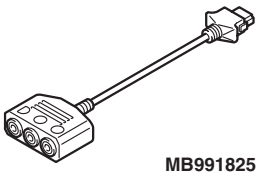
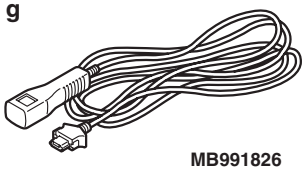
Terminal No.	Check items	Check conditions	Normal conditions
1	Power transistor (DRAIN)	Air volume control dial: Maximum air volume	0 to 2 V
2	Power transistor (GATE)	Air volume control dial: Maximum air volume	Battery voltage
3 –8	–	–	–
9	A/C control panel (input)	–	–
10	A/C control panel (input)	–	–
11, 12	–	–	–
13	Battery power supply	Always	Battery voltage
14	Ground	Always	0 V
15	IG1 power supply	Ignition switch: IG1	Battery voltage
16	A/C pressure sensor input	Refer to P.55A-112.	Refer to P.55A-112.
17	Interior temperature sensor	Sensor probe temperature: 25° C (77° F) (4.0 kΩ)	2.1 to 2.7 V
18	Photo sensor input	Brightness 0 lux	5 V
		Brightness 100000 lux or more (under summer sunshine)	0 V
19	Sensor ground	Always	0 V
20	A/C pressure sensor power supply	Ignition switch: IG2	5 V
21	Air thermo sensor ground	Always	0 V
22	Air thermo sensor	Sensor probe temperature: 25° C (77° F) (4.0 kΩ)	2.1 to 2.7 V
23	–	–	–
24	Motor for air outside/inside air circulation switching damper	–	–
25	Motor for air outside/inside air circulation switching damper	–	–
26	Motor for air outside/inside air circulation switching damper	–	–

TSB Revision

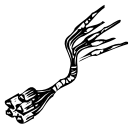
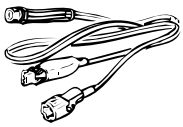
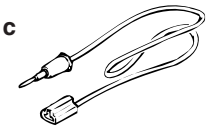
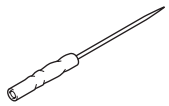
Terminal No.	Check items	Check conditions	Normal conditions
27	Motor for air outside/inside air circulation switching damper	–	–
28	Air mix damper motor	–	–
29	Motor power supply	–	–
30	Air outlet changeover damper motor	–	–
31	Air outlet changeover damper motor	–	–
32	Air outlet changeover damper motor	–	–
33	Air outlet changeover damper motor	–	–
34	Air mix damper motor	–	–
35	Air mix damper motor	–	–
36	Air mix damper motor	–	–

SPECIAL TOOLS

M1552000600624

Tool	Tool number and name	Supersession	Application
a  MB991824 b  MB991827 c  MB991910 d  MB991911 e  MB991914 f  MB991825 g  MB991826 MB991958	MB991958 a. MB991824 b. MB991827 c. MB991910 d. MB991911 e. MB991914 f. MB991825 g. MB991826 M.U.T.-III sub-assembly a. Vehicle communication interface (V.C.I.) b. M.U.T.-III USB cable c. M.U.T.-III main harness A (Vehicles with CAN communication system) d. M.U.T.-III main harness B (Vehicles without CAN communication system) e. M.U.T.-III main harness C (for Daimler Chrysler models only) f. M.U.T.-III measurement adapter g. M.U.T.-III trigger harness	MB991824-KIT *NOTE: G: MB991826 M.U.T.-III Trigger Harness is not necessary when pushing V.C.I. ENTER key.*	**⚠ CAUTION** **M.U.T.-III main harness A (MB991910) should be used. M.U.T.-III main harness B and C should not be used for this vehicle.** DTC, data list and actuator test check.

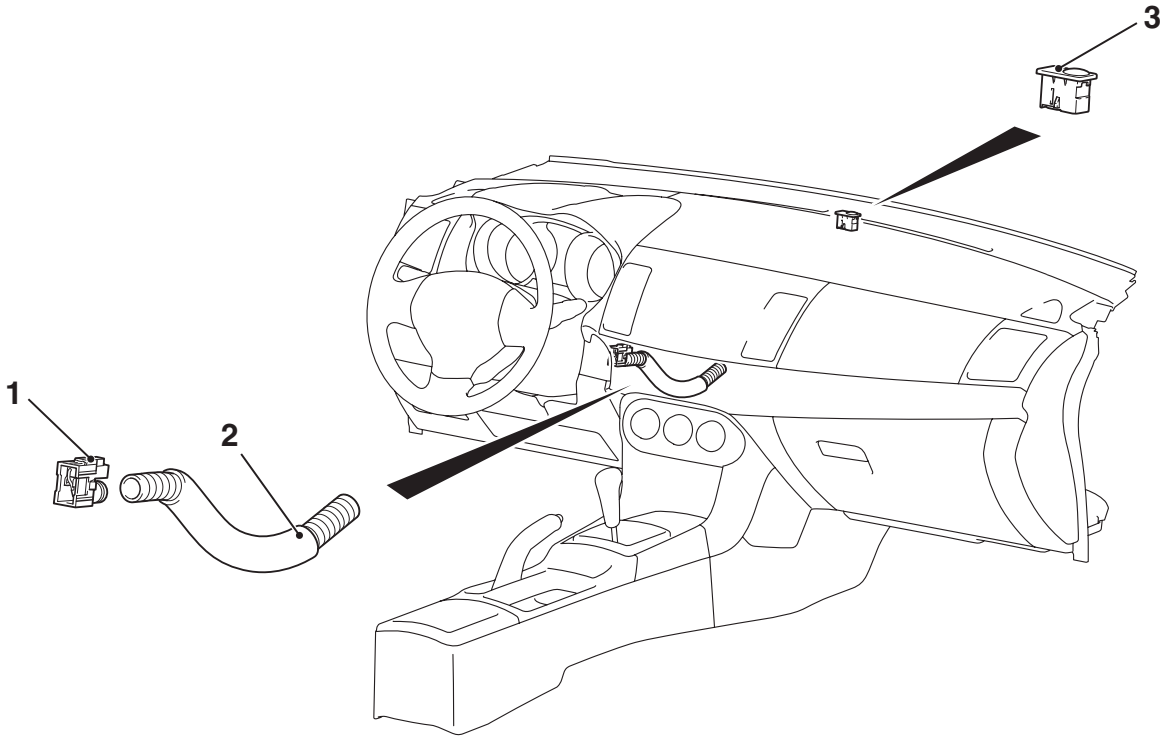
TSB Revision

Tool	Tool number and name	Supersession	Application
a  b  c  d  MB991223	MB991223 a. MB991219 b. MB991220 c. MB991221 d. MB991222 Harness set a. Check harness b. LED harness c. LED harness adapter d. Probe	General service tool (jumper)	Continuity check and voltage measurement at harness wire or connector a. For checking connector pin contact pressure b. For checking power supply circuit c. For checking power supply circuit d. For connecting a locally sourced tester
 MB992006	MB992006 Extra fine probe	–	Continuity check and voltage measurement at harness wire or connector

SENSORS

REMOVAL AND INSTALLATION

M1554001900356



AC608224AB

Interior temperature sensor removal steps

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

1. Interior temperature sensor
2. Aspirator hose

Photo sensor removal steps

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

3. Photo sensor

Required Special Tools:

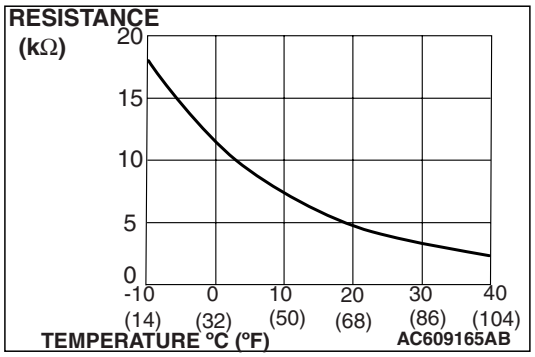
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A

INSPECTION

M1554002000237

INTERIOR TEMPERATURE SENSOR CHECK

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



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

PHOTO SENSOR CHECK

1. Connect scan tool MB991958, and check the data list of the photo sensor (Refer to P.55B-16).
2. Check that the displayed value changes when you cover the photo sensor with your hands.

OTHER PARTS

OTHER PARTS MAINTENANCE SERVICE POINTS

M1554004000426

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

Item		Reference page
On-vehicle service	Refrigerant level test	P.55A-112
	Air conditioning compressor clutch test	P.55A-112
	Simple inspection of the a/c pressure sensor	P.55A-112
	Compressor drive belt adjustment	P.55A-113
	Charging, discharging	P.55A-113
	Performance test	P.55A-114
	Refrigerant leak repair	P.55A-115
	Compressor noise check	P.55A-116
	Power relay continuity check	P.55A-116
	Idle-up operation check	P.55A-117

Item	Reference page
Heater control unit	P.55A-118
Heater unit and blower assembly	P.55A-119
Motors and transistor	P.55A-124
Ambient air temperature sensor	P.55A-126
A/C-ECU	P.55A-127
Compressor and tension pulley	P.55A-128
Condenser	P.55A-133
Refrigerant line	P.55A-134
Ducts	P.55A-137
Rear ventilation duct	P.55A-137

TSB Revision