SERVICE BULLETIN

GLOBAL AFTER SALES OFFICE. MITSUBISHI MOTORS CORPORATION

PURPOSE : INFORMATION	ISSUE NO. : MSB-12E00-002	DATE : 2012-02-21	
SUBJECT : INFORMATION ON 2012.5 i-MiEV		<MODEL> (EUR)	<M/Y> 12.5
GROUP : GENERAL		i-MiEV(HA3W)	

1. Description:

This Service Bulletin contains the information about the change of the following maintenance points by the running change of 12.5MY.

Gr.54D ELECTRIC MOTOR UNIT AND TRACTION BATTERY
- CHANGE OF TROUBLE SHPPTING

Gr.55 HEATER, AIR CONDITIONER AND VENTILATION
- CHANGE OF TROUBLE SHOOTING
- CHANGE OF PROCEDURE OF THE DESORPTION OF THE COMPRESSOR

2. Details:

See Attached sheet

GROUP 54D

ELECTRIC MOTOR UNIT AND TRACTION BATTERY

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GENERAL

M1549226500159

OUTLINE OF CHANGES

The following change is made to the conventional service procedure. The other service procedures are the same as the conventional ones.

- Due to the change in traction battery, the following BMU troubleshooting is changed.
  a. The troubleshooting of the code No. P1A4B is changed.
  b. The code No. P1AC6, P1AC7, P1AC8, P1AC9, P1ACA, P1ACB, P1ACC, P1ACD, P1ACE, P1ACF, P1AD0, P1AD1 and P1AD2 are added.

BATTERY MANAGEMENT UNIT (BMU) AND TRACTION BATTERY

INSPECTION CHART FOR DIAGNOSIS CODE

M1549400600116

Code No.	Diagnosis item	Reference page
P1A4B	Voltage of each battery cell abnormal	P.54D-3
P1AC6	Voltage of each battery cell abnormal (HI side)	P.54D-4
P1AC7	CMU01 battery cell resistance abnormal	P.54D-4
P1AC8	CMU02 battery cell resistance abnormal	P.54D-4
P1AC9	CMU03 battery cell resistance abnormal	P.54D-4
P1ACA	CMU04 battery cell resistance abnormal	P.54D-4
P1ACB	CMU05 battery cell resistance abnormal	P.54D-4
P1ACC	CMU06 battery cell resistance abnormal	P.54D-4
P1ACD	CMU07 battery cell resistance abnormal	P.54D-4
P1ACE	CMU08 battery cell resistance abnormal	P.54D-4
P1ACF	CMU09 battery cell resistance abnormal	P.54D-4
P1AD0	CMU10 battery cell resistance abnormal	P.54D-4
P1AD1	CMU11 battery cell resistance abnormal	P.54D-4
P1AD2	CMU12 battery cell resistance abnormal	P.54D-4

DIAGNOSIS CODE PROCEDURES

Code No. P1A4B: Voltage Of Each Battery Cell Abnormal

TROUBLE JUDGMENT

Check Conditions

- 3 seconds elapse after the electric motor switch is turned "ON", or 3 seconds elapse after the traction battery starts to be charged.
- The absolute value of the current is less than 1 A.
- The energy level gauge is more than 4 segments.
- None of the following diagnosis codes occur at the same time.
  a. P1AA8: Local CAN (for traction battery) signal time-out
  b. U1082: Local CAN (for traction battery) bus off

Judgement Criterion

- When the information that the difference is more than 0.145 V between the lowest battery cell voltage and the average battery cell voltage is received for more than 5 seconds.
- When the information that the difference (HI) is more than 0.08 V between the lowest battery cell voltage and the average battery cell voltage is received for more than 5 seconds.

FAIL-SAFE AND BACKUP FUNCTION

- Not available

PROBABLE CAUSE

- The module (battery cell and CMU) in the traction battery is failed.

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III data list

- Item 33: largest difference between cell voltage

  OK: 0.145 V less (electric motor switch: ON, also the energy level gauge of the combination meter has more than 4 segments.)

Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 – How to Use Troubleshooting/ Inspection Service Points – How to Cope with Intermittent Malfunctions).

NO : Replace the traction battery.

Code No. P1AC6: Voltage Of Each Battery Cell Abnormal (HI side)

TROUBLE JUDGMENT

Check Conditions

- 3 seconds elapse after the electric motor switch is turned "ON", or 3 seconds elapse after the traction battery starts to be charged.
- The absolute value of the current is less than 1 A.
- The energy level gauge is more than 4 segments.
- None of the following diagnosis codes occur at the same time.
  a. P1AA8: Local CAN (for traction battery) signal time-out
  b. U1082: Local CAN (for traction battery) bus off

Judgement Criterion

- When the information that the difference is more than 0.05 V between the lowest battery cell voltage and the average battery cell voltage is received for more than 5 seconds.

FAIL-SAFE AND BACKUP FUNCTION

- Not available

PROBABLE CAUSE

- The module (battery cell and CMU) in the traction battery is failed.

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III data list

- Item 33: largest difference between cell voltage

  OK: 0.05 V less (electric motor switch: ON, also the energy level gauge of the combination meter has more than 4 segments.)

Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 – How to Use Troubleshooting/ Inspection Service Points – How to Cope with Intermittent Malfunctions).

NO : Replace the traction battery.

Code No. P1AC7: CMU01 battery cell resistance abnormal, P1AC8: CMU02 battery cell resistance abnormal, P1AC9: CMU03 battery cell resistance abnormal, P1ACA: CMU04 battery cell resistance abnormal, P1ACB: CMU05 battery cell resistance abnormal, P1ACC: CMU06 battery cell resistance abnormal, P1ACD: CMU07 battery cell resistance abnormal, P1ACE: CMU08 battery cell resistance abnormal, P1ACF: CMU09 battery cell resistance abnormal, P1AD1: CMU10 battery cell resistance abnormal, P1AD2: CMU11 battery cell resistance abnormal, P1AD3: CMU12 battery cell resistance abnormal

TROUBLE JUDGMENT

Check Conditions

- 3 seconds elapse after the electric motor switch is turned "ON", or 3 seconds elapse after the traction battery starts to be charged.
- None of the following diagnosis codes occur at the same time.
  a. P1AA8: Local CAN (for traction battery) signal time-out
  b. U1082: Local CAN (for traction battery) bus off

Judgement Criterion

- Difference in resistance values inside battery cells is more than 6.6 mΩ.

FAIL-SAFE AND BACKUP FUNCTION

- Not available

PROBABLE CAUSE

- The module (battery cell, CMU) in the traction battery is failed.

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III data list

- Check the data list reference table corresponding to the diagnosis code.

  OK: 6.6 mΩ or less

Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 – How to Use Troubleshooting/ Inspection Service Points – How to Cope with Intermittent Malfunctions).

NO : Replace the traction battery.

GROUP 55

HEATER, AIR CONDITIONER AND VENTILATION

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DIAGNOSIS CODE CHART 55-2

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GENERAL INFORMATION

M1551000100701

Due to the following change, the service procedure has been established.
- The diagnosis code procedure "Code No. B1105" has been changed.
- The compressor removal and installation procedure has been changed.

TROUBLESHOOTING

DIAGNOSIS CODE CHART <A/C CONTROL UNIT>

M1554004902328

Code No.	Diagnostic item	Reference page	Service data display contents when diagnosis code is set
B1105	ELC. compressor (Communication)	P.55-2	–

DIAGNOSIS CODE CHART

Code No. B1105 ELC. compressor (communication)

Diagnosis code set conditions
This code is set when the A/C control unit cannot communicate with the compressor & heater controller for 5 seconds or more.

PROBABLE CAUSES
- Malfunction of A/C relay
- Malfunction of A/C control unit
- Malfunction of A/C compressor
- Damaged harness wires and connectors
- Power supply and earth to the A/C compressor defective

DIAGNOSIS PROCEDURE

STEP 1. Connector check: B-309 A/C relay connector

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the damaged connector.

STEP 2. Check the A/C relay relay.

Q: Is the A/C relay in good condition?
YES : Go to Step 3.
NO : Replace the heater water pump relay.

STEP 3. Measure the voltage at B-309 heater water pump relay connector.
(1) Disconnect the connector, and measure at the wiring harness side.
(2) Voltage between terminal 4 and body earth

OK: Battery voltage

Q: Is the check result normal?
YES : Go to Step 5.
NO : Go to Step 4.

STEP 4. Check the wiring harness between the fusible link (25) and B-309 A/C relay connector terminal No. 4.
- Check the power supply line for open circuit.

NOTE: Before checking the wiring harness, check the junction block connectors B-310, B-307 and repair it if necessary.

Q: Is the check result normal?
YES : Intermittent malfunction. Refer to GROUP 00 – How to Use Troubleshooting/ Inspection Service Points, – How to Cope with Intermittent Malfunctions.)
NO : Repair the wiring harness.

STEP 5. Connector check: A-111 A/C compressor connector

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

STEP 6. Measure voltage at the A/C compressor connector A-111.
(1) Disconnect the connector, and measure at the wiring harness side.
(2) Voltage between terminal 1 and body earth

OK: Battery voltage

Q: Is the check result normal?
YES : Go to Step 8.
NO : Go to Step 7.

STEP 7. Check the wiring harness between the B-309 A/C relay connector terminal No. 3 and A-111 A/C compressor connector terminal No. 1.
- Check the power supply line for open circuit.

NOTE: Before checking the wiring harness, check the junction block connectors B-302, B-301, joint connector B-03 <LHD> and intermediate connector B-27 repair it if necessary.

Q: Is the check result normal?
YES : Intermittent malfunction. (Refer to GROUP 00 – How to Use Troubleshooting/ Inspection Service Points, How to Cope with Intermittent Malfunctions.)
NO : Repair the wiring harness.

STEP 8. Measure resistance value at the A/C compressor connector A-111.
(1) Disconnect the connector, and measure at the wiring harness side.
(2) Resistance between terminal No. 2 and body earth

OK: Continuity exists (2 Ω or less).

Q: Is the check result normal?
YES : Go to Step 9.
NO : Go to Step 12.

STEP 9. Connector check: C-101 A/C control unit connector.

Q: Is the check result normal?
YES : Go to Step 10.
NO : Repair the damaged connector.

STEP 10. Check the wiring harness between the A-111 A/C compressor connector terminals No. 3, 4 and C-101 A/C control unit connector terminal No.1, 2.
- Check the input and output lines for open or short circuit.

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

STEP 11. After replacing the A/C control unit , check again if the diagnosis code is set.

Q: Is the diagnosis code set?
YES : Replace the A/C compressor.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Use Troubleshooting/ Inspection Service Points, How to Cope with Intermittent Malfunctions.)

STEP 12. Connector check: B-122 earth connector

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

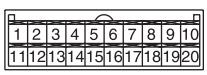
STEP 13. Check the wiring harness between A-111 A/C compressor connector terminal No.2 and B-122 earth connector terminal No. 6.
- Check the earth wires for open circuit.

Q: Is the check result normal?
YES : Intermittent malfunction. (Refer to GROUP 00 – How to Use Troubleshooting/ Inspection Service Points, How to Cope with Intermittent Malfunctions.)
NO : Repair the wiring harness.

CHECK AT ECU TERMINAL <A/C CONTROL UNIT>

M1554005400450

<C-101>



<C-113>



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Terminal No.	Check items	Inspection conditions	Normal conditions
1	Communication with the A/C compressor (high)	–	–
2	Communication with the A/C compressor (low)		
3 to 4	–		
5	Foot area air outlet/main battery cooling selection damper motor (drive battery cooling side)	When the main battery moves to the cooling side	System voltage
		When foot area air outlet is selected	0 V
6	Foot area air outlet/main battery cooling selection damper motor (foot area air outlet side)	When the main battery moves to the cooling side	
		When foot area air outlet is selected	System voltage
7	Heater water pump relay	Heater water pump relay: ON	1 V or less
8	–	–	–
9	Communication with the A/C-ECU		
10	Earth of the A/C-ECU		
11 to 12	–		
13	Back-up power supply		System voltage
14	Earth	Always	0 V
15	Power supply	A/C relay: ON	System voltage
16	A/C pressure sensor	Refer to "Simple inspection of the A/C pressure sensor".	Refer to "Simple inspection of the A/C pressure sensor".
17	Heater inlet water temperature sensor	Temperature at the sensor 25°C (10 kΩ)	1.0 to 1.5 V
18	Heater outlet water temperature sensor		
19	Sensor earth	Always	0 V
20	Sensor power supply	Electric motor switch: ON	5 V
21 to 23	–	–	–
24	Air recirculation/fresh air selection damper motor and potentiometer	Air recirculation/fresh air selection damper motor fresh air position	0 to 1.5 V
25	heater 12 V power supply	Electric motor switch: ON	System voltage
26 to 28	–	–	–
29	Heater water pump assembly input	Heater water pump assembly: ON	12 V

Terminal No.	Check items	Inspection conditions	Normal conditions
30	Air recirculation/fresh air selection damper motor	When moving to air recirculation position	System voltage
		When moving to fresh air position	1 V or less
31	Air recirculation/fresh air selection damper motor		System voltage
		When moving to air recirculation position	1 V or less
32 to 33	–	–	–
34 to 36	Heater output	At max. heater output	3.0 to 7.0V

COMPRESSOR ASSEMBLY

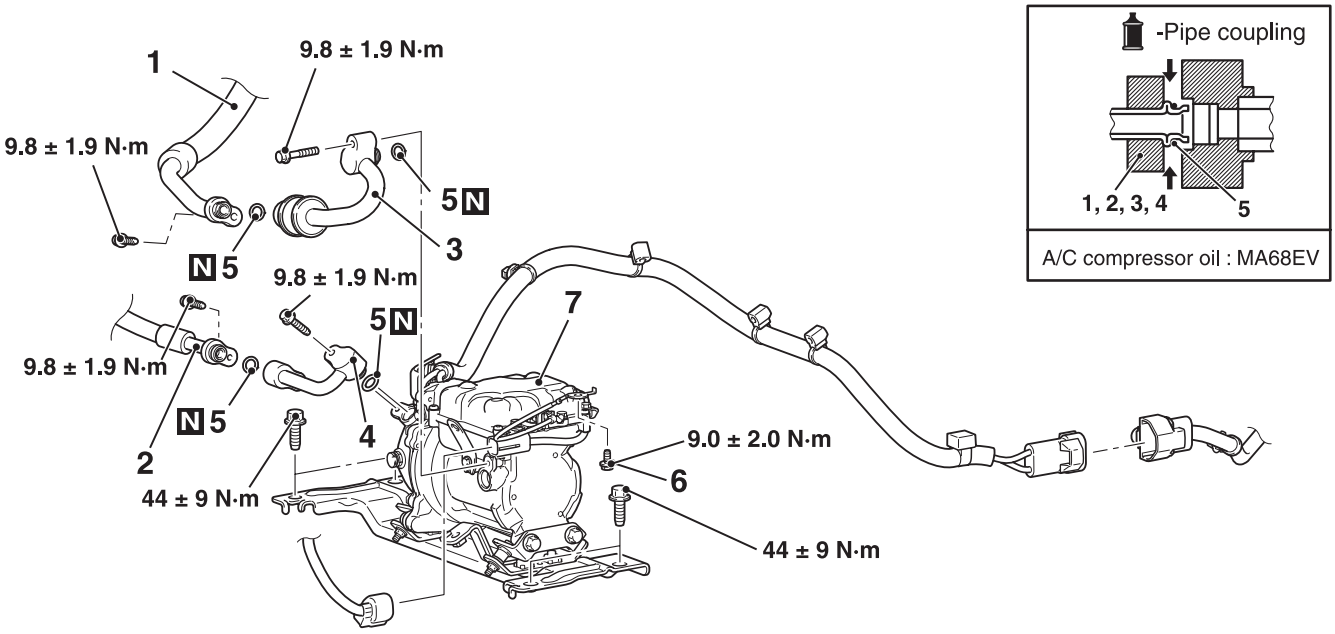
REMOVAL AND INSTALLATION

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⚠ DANGER

When servicing the high voltage system parts, always shut off the high voltage by removing the service plug .

Pre-removal operation	Post-installation operation
• Discharging refrigeran • Front side member cover A, front wheel house cover, front floor cover A removal (Refer to GROUP 51 – Under Cover.)	• Front side member cover A, front wheel house cover, front floor cover A installation (Refer to GROUP 51 – Under Cover.) • Charging refrigerant



ACC00379AB

		Removal steps			Removal steps
<<A>>	1.	A/C compressor discharge pipe connection	<<A>>	3.	A/C compressor discharge pipe hose
<<A>>	2.	A/C compressor suction pipe connection	<<A>>	4.	A/C compressor suction pipe hose

Removal steps

5. O-ring
- Cooling fan resistor (Refer to GROUP 14, Cooling Fan Resistor.)

<<B>> >>A<< 6. A/C compressor assembly

REMOVAL SERVICE POINTS

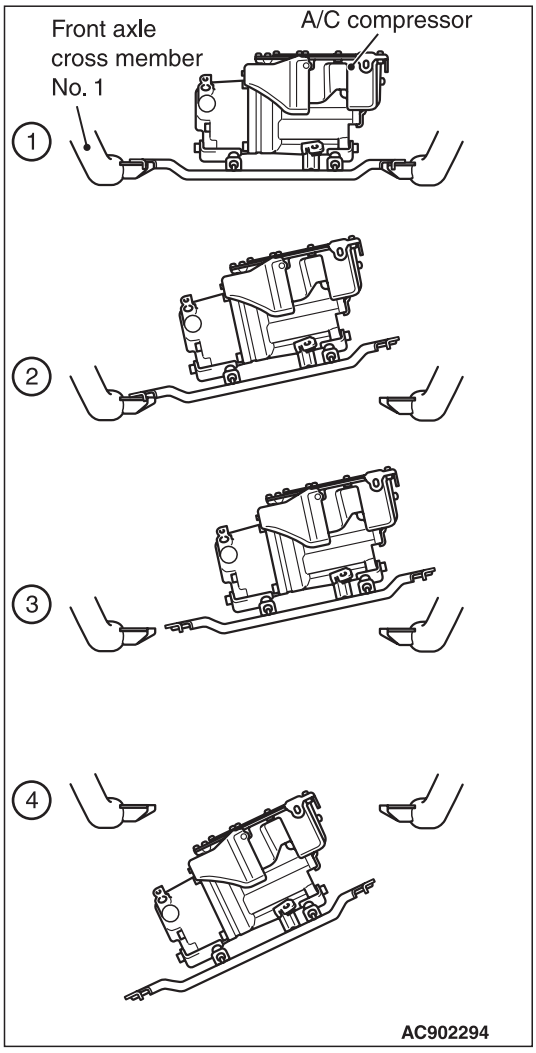
<<A>>A/C COMPRESSOR DISCHARGE PIPE/A/C COMPRESSOR SUCTION PIPE/A/C COMPRESSOR DISCHARGE PIPE HOSE/A/C COMPRESSOR SUCTION PIPE HOSE DISCONNECTION

⚠ CAUTION

- **Use the plug which is not breathable because A/C compressor oil or receiver have high hygroscopicity.**
- **For the compressor oil and installation oil for the piping O-ring, use the oil MA68EV dedicated for the A/C compressor EV24AN4. If an oil other then the MA68EV is used, even if it is only a small amount, the electric insulation is considerably deteriorated and a leakage may occur.**

Plug the hose nipple removed to prevent the entry of dust and dirt.

<<B>> A/C COMPRESSOR ASSEMBLY REMOVAL



Remove it as shown in the figure at the left using the space upper left of the A/C compressor. At this time, be careful not to make the upper part of the A/C compressor contact another part.

INSTALLATION SERVICE POINT

>>A<< A/C COMPRESSOR ASSEMBLY INSTALLATION

When installing the new A/C compressor, install the A/C compressor after adjusting the oil volume as follows.

1. Measure the oil of A/C compressor removed.(X cm^3)
2. Drain the oil completely from the new A/C compressor.

NOTE: Do not reuse the oil drained from the new A/C compressor.

3. After draining the provided new oil by the amount (Y cm^3) calculated from the following equation, fill the remaining amount (X + 20 cm^3) to the new A/C compressor, and install the compressor.

100 cm^3 - X cm^3 - 20 cm^3 = Y cm^3

NOTE:

1. *100 cm^3 shows the oil volume contained in the new A/C compressor.*
2. *Y cm^3 shows the oil volume accumulated in the refrigerant line, condenser, and cooling unit, etc.*
3. *20 cm^3 shows the oil amount remaining in the A/C compressor after X cm^3 of oil is drained from the used A/C compressor. (Almost all oil in the new A/C compressor can be drained.)*