



# 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

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**GROUP 54D**

**ELECTRIC MOTOR  
UNIT AND  
TRACTION  
BATTERY**

**CONTENTS**

<b>GENERAL .....</b>	<b>54D-2</b>	<b>INSPECTION CHART FOR DIAGNOSIS CODE .....</b>	<b>54D-2</b>
<b>BATTERY MANAGEMENT UNIT (BMU) AND TRACTION BATTERY..</b>	<b>54D-2</b>	<b>DIAGNOSIS CODE PROCEDURES.....</b>	<b>54D-3</b>

**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.

- The troubleshooting of the code No. P1A4B is changed.
- 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	<a href="#">P.54D-3</a>
P1AC6	Voltage of each battery cell abnormal (HI side)	<a href="#">P.54D-4</a>
P1AC7	CMU01 battery cell resistance abnormal	<a href="#">P.54D-4</a>
P1AC8	CMU02 battery cell resistance abnormal	<a href="#">P.54D-4</a>
P1AC9	CMU03 battery cell resistance abnormal	<a href="#">P.54D-4</a>
P1ACA	CMU04 battery cell resistance abnormal	<a href="#">P.54D-4</a>
P1ACB	CMU05 battery cell resistance abnormal	<a href="#">P.54D-4</a>
P1ACC	CMU06 battery cell resistance abnormal	<a href="#">P.54D-4</a>
P1ACD	CMU07 battery cell resistance abnormal	<a href="#">P.54D-4</a>
P1ACE	CMU08 battery cell resistance abnormal	<a href="#">P.54D-4</a>
P1ACF	CMU09 battery cell resistance abnormal	<a href="#">P.54D-4</a>
P1AD0	CMU10 battery cell resistance abnormal	<a href="#">P.54D-4</a>
P1AD1	CMU11 battery cell resistance abnormal	<a href="#">P.54D-4</a>
P1AD2	CMU12 battery cell resistance abnormal	<a href="#">P.54D-4</a>

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## DIAGNOSIS CODE PROCEDURES

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### Code No. P1A4B: Voltage Of Each Battery Cell Abnormal

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#### 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

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##### 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.

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

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**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**

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**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.

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**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**

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**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**

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**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**

**CONTENTS**

<b>GENERAL INFORMATION</b> .....	<b>55-2</b>	.....	<b>55-2</b>
		CHECK AT ECU TERMINAL <A/C CONTROL UNIT>	
		.....	<b>55-3</b>
<b>TROUBLESHOOTING</b> .....	<b>55-2</b>		
DIAGNOSIS CODE CHART <A/C CONTROL UNIT>			
.....	<b>55-2</b>		
DIAGNOSIS CODE CHART .....	<b>55-2</b>		
B1105 ELC. COMPRESSOR (COMMUNICATION)			
		<b>COMPRESSOR ASSEMBLY</b> .....	<b>55-5</b>
		COMPRESSOR ASSEMBLY REMOVAL AND	
		INSTALLATION .....	<b>55-5</b>

## 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>

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

<C-113>

21	22	23	24	25	26	27	28
29	30	31	32	33	34	35	36

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	When moving to air recirculation position	System voltage
		When moving to fresh air 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

M1552004403632

**⚠ DANGER**

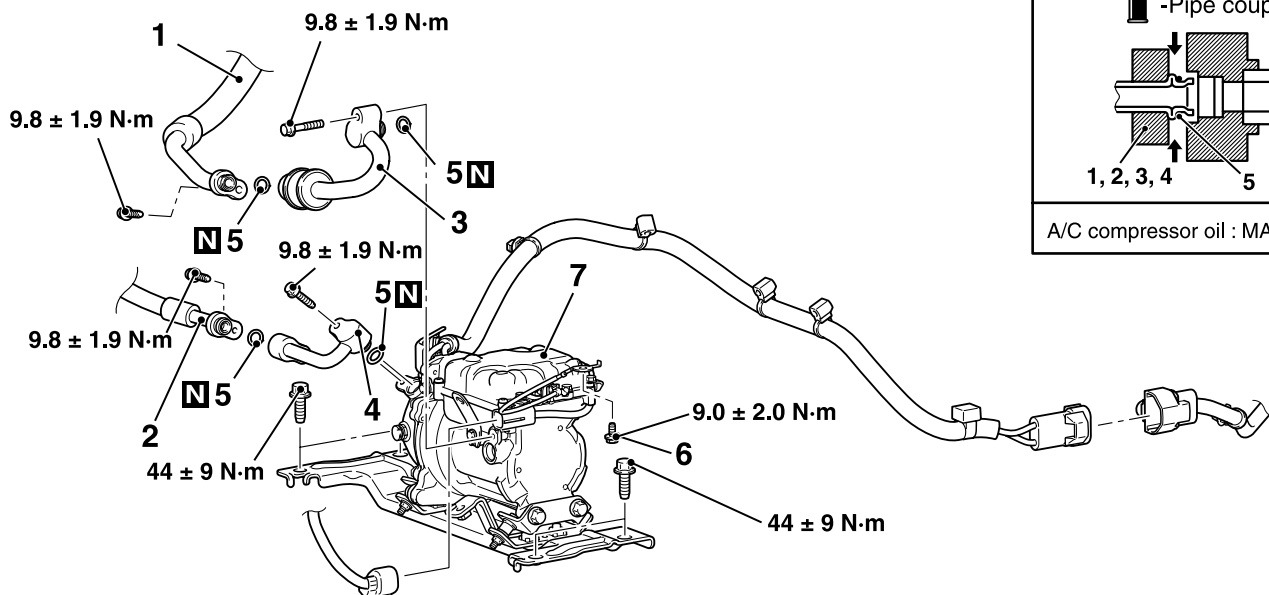
**When servicing the high voltage system parts, always shut off the high voltage by removing the service plug .**

**Pre-removal operation**

- Discharging refrigeran
- Front side member cover A, front wheel house cover, front floor cover A removal (Refer to GROUP 51 – Under Cover.)

**Post-installation operation**

- 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**
- <<A>> 1. A/C compressor discharge pipe connection <<A>>
- <<A>> 2. A/C compressor suction pipe connection <<A>>

- Removal steps**
3. A/C compressor discharge pipe hose
4. A/C compressor suction pipe hose

**Removal steps**

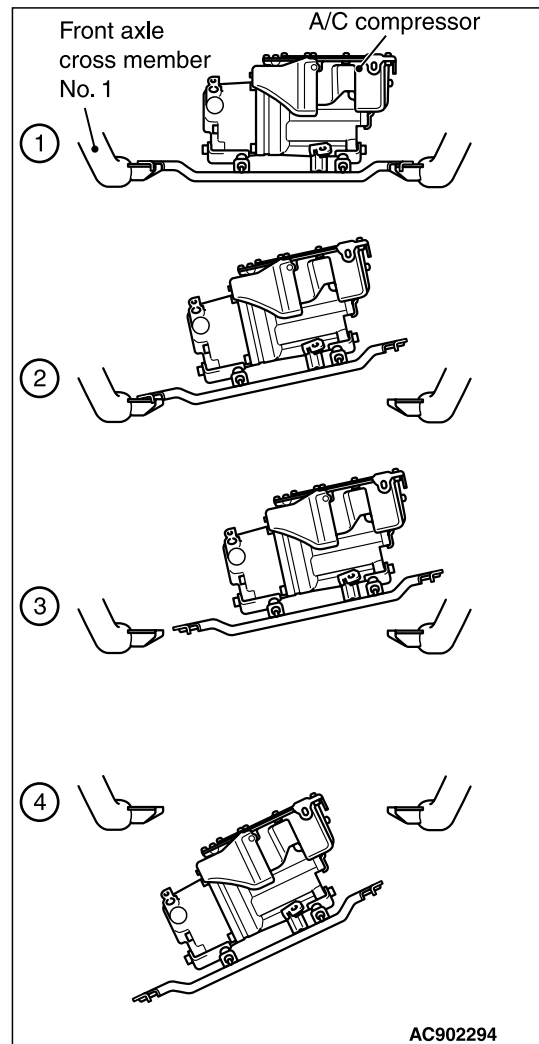
5. O-ring
  - Cooling fan resistor (Refer to GROUP 14, Cooling Fan Resistor.)
6. A/C compressor assembly

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

**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 than 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<sup>3</sup>)
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 ( $Y \text{ cm}^3$ ) calculated from the following equation, fill the remaining amount ( $X + 20 \text{ cm}^3$ ) to the new A/C compressor, and install the compressor.

$$100 \text{ cm}^3 - X \text{ cm}^3 - 20 \text{ cm}^3 = Y \text{ cm}^3$$

*NOTE:*

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