MITSUBISHI MOTORS

SERVICE BULLETIN

GLOBAL AFTER SALES OFFICE, MITSUBISHI MOTORS CORPORATION

PURPOSE : CORRECTION	ISSUE NO. : MSB-15EM00_54_90-501A	DATE : 2015-07-09
SUBJECT : Error in writings and omissions about the traction battery.		<DESTINATION/MODEL> (As per attached sheet 1) <M/Y> 15-16
GROUP : Gr:00(General)/Gr.54(Chassis electrical)/Gr.90(Circuit diagram)		i-MiEV(HA3W)

1. Description :

Please refer to the attached document for the correction of the error in writing existing in the applicable service manual.
1)Initialization of the estimated information and control information of traction battery(MMNA/USTP/EU)
2)Special tools (EU)
3)Diagnosis code “P1A46” for the battery management unit(BMU) (EU)
4)Replacement of the traction battery module (EU)
5)Circuit diagram for the traction battery management system (EU)

2. Affected service manuals :

Please refer to the attached document (Attached sheet 1)

3. About the details :

Please refer to the attached document (Attached sheet 4-6)

Revision history

		MSB No.	Issued Date	
Original		MSB-15EM00_54_90-501	2015/7/9	
Revision	A	MSB-15EM00_54_90-501A	2015/10/5	※This time

<For overseas market>
<EU>

Applicable manual	Pub. No.	Applicable title (INFO ID)	Content
2015 i-MiEV Workshop Manual CD-ROM	CHAE15E1-CD (Eng) CHAF15E1-CD (Fra) CHAG15E1-CD (Ger) CHAI15E1-CD (Ita) CHAS15E1-CD (Spa)	Added below “RESET ESTIMATED INFORMATION AND CONTROL INFPRMATION OF TRACTION BATTERY CAPACITY” (M001-02-110-11500-01)	Attached sheet 4 (1/9)-(2/9)
		SPECIL TOOLS (M549-40-020-18500-01)	Attached Sheet 4 (3/9)-(4/9)
		CODE NO.P1A46: LEAK SENSOR DETECTION CIRCUIT (M549-45-060-19900-01)	Attached sheet 4(5/9)
		BUS BAR REMOVAL AND INSTALLATION (M549-40-430-04300-01)	Attached sheet 4(6/9)
		TRACTION BATTERY MODULE REPLACEMENT (M549-40-640-08000-01)	Attached sheet 4 (7/9)-(9/9)
		TRACTION BATTERY MANAGEMENT SYSTEM (M901-03-820-08700-01)	Attached sheet 5

<MMNA>

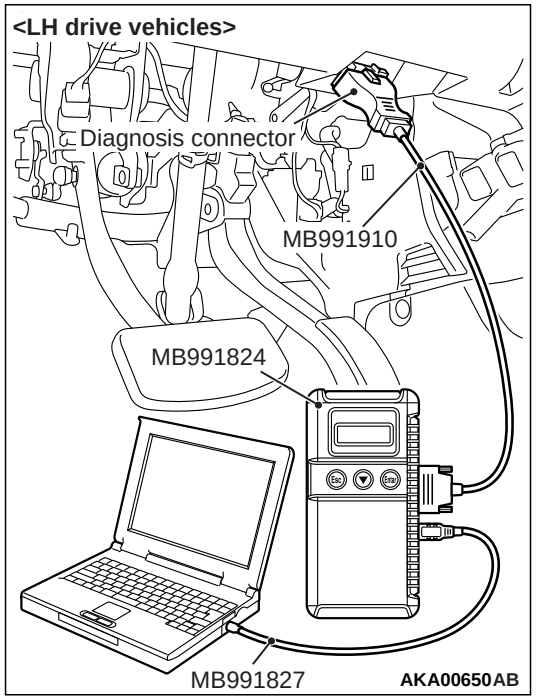
Applicable manual	Pub. No.	Applicable title (INFO ID)	Content
2016 i-MiEV Service Manual CD-ROM	DRAFT	INITIALIZE ESTIMATED INFORMATION AND CONTROL INFPRMATION OF MAIN DRIVE LITHIUM-ION BATTERY CAPACITY (M001-02-110-08500-01)	Attached sheet 6

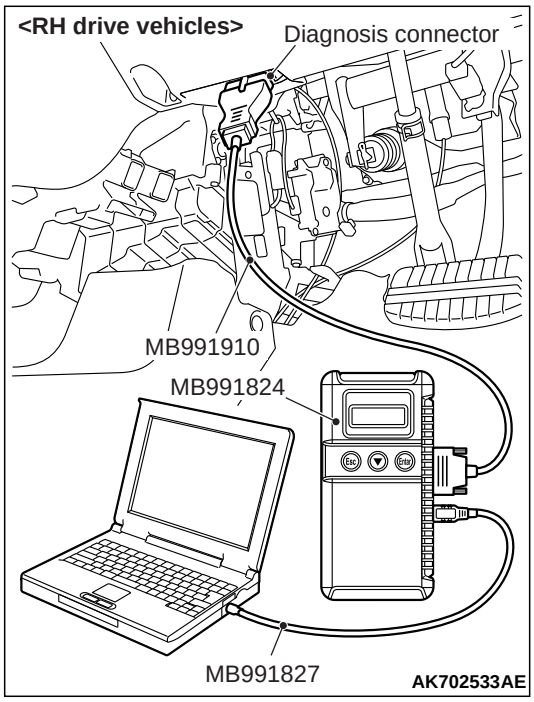
Procedure

⚠ CAUTION

<Correct> INITIALISE

While the M.U.T.-III is communicating with the vehicle, the electric motor switch may not be turned off and no normally. Therefore, when you turn off the electric motor switch for that communication, wait for several seconds and then turn on it again (do not turn on it immediately).





1. Turn off the power supply mode of the electric motor switch. Then connect the M.U.T.-III to the diagnosis connector.
2. Turn the electric motor switch to the ON position.
3. From the System select Screen of the M.U.T.-III, select the "BMU".
4. Select the "Special Function" from the BMU screen.
5. Select the "CMU ID numbering" from the Special Function screen
6. Press the OK button, and execute the CMU ID automatic numbering.
7. Turn off the power supply mode of the electric motor switch, and then disconnect the M.U.T.-III.

<Incorrect> ~~RESET~~ **ESTIMATED INFORMATION AND CONTROL INFORMATION OF TACTION BATTERY CAPACITY (BATTERY MAINTENANCE FUNCTION)**

<Correct> initialise

M1001021100115

<Incorrect> ~~reset~~ If replacing the traction battery, reset the traction battery capacity information and the control information.

⚠ CAUTION

- **Do not execute "Batt. capa. estimated info. reset" unless you replace the traction battery and you determine the capacity of the battery, which is installed on an authorised used car.**

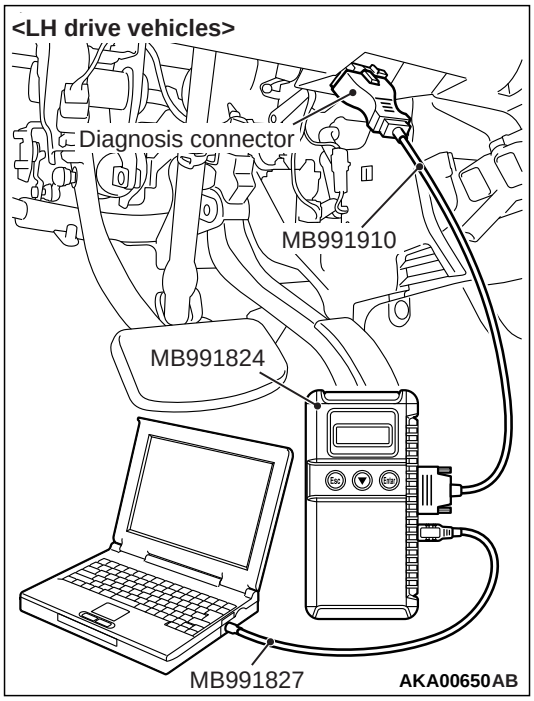
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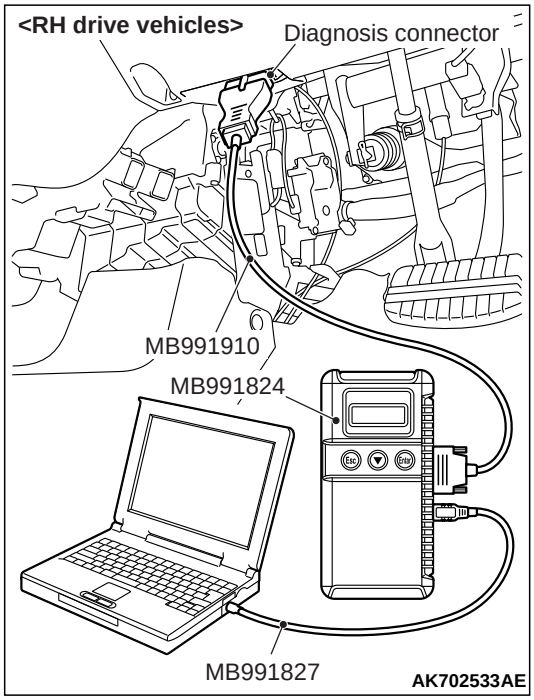
- **If you did inadvertently, carry out the procedures for writing BMU learning value (Refer to P.00-32), and then execute the drive battery capacity automatic measurement (Refer to GROUP 54Dc – Traction Battery Capacity Automatic Measurement).**
- **While the M.U.T.-III is communicating with the vehicle, the electric motor switch may not be turned LOCK (OFF) and no normally. Therefore, when you turn LOCK (OFF) the electric motor switch for that communication, wait for several seconds and then turn ON it again (do not turn ON it immediately).**

NOTE: If replacing the BMU and the traction battery at the same time, you do not have to do this procedure.

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Attached sheet 4 (2/9)





1. Connect the M.U.T.-III to the diagnosis connector with the electric motor switch in the LOCK (OFF) position.
2. Turn the electric motor switch to the ON position.
3. From the System select Screen of the M.U.T.-III, select the "BMU".
4. Select the "Special Function" from the BMU screen.
5. Select the "Battery Maintenance Function" from the Special Function screen <Incorrect>
6. ~~Select the "BATT. transportation deterioration reflection" from the Battery Maintenance Function screen.~~
7. ~~After the estimated information of the traction battery transportation deterioration reflection, select "Control information reset" from the Battery Maintenance Function screen.~~
8. ~~Turn off the power supply mode of the electric motor switch, and then disconnect the M.U.T.-III.~~
9. After the reset of the BMU control information, check the battery current capacity according to the following procedures:
   (1) After 10 seconds elapsed from the previous process, turn on the power switch.
   (2) Select the "STV (Scan Tool Viewer)" from the M.U.T.-III start screen.
   (3) Select the "System Select" from the fault STV top menu screen.
   (4) Select the "BMU" from the system select screen.
   (5) Select the "Service Data" from the BMU screen.
   (6) Check the BMU service data, item No. 23: Battery current capacity. <Incorrect>
   (7) If the value, item No. 23: Battery current capacity, satisfies 45.0 – ~~48.0~~ Ah, go to the step 10. If not, start from step 4 to do the reset of the control information.
10. Turn the electric motor switch to the LOCK (OFF) position to disconnect the M.U.T.-III.

A

48.5 Ah

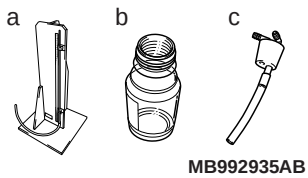
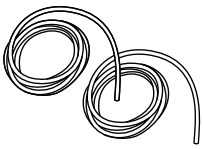
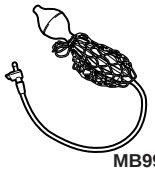
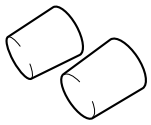
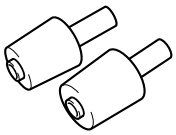
<Correct>

<Correct>

6. Select the "Batt. capa. estimated info. reset" from the Battery Maintenance Function screen.

7. Wait until "Batt. capa. estimated info. reset" has been completed. Then select "Control information reset" from the Battery Maintenance Function screen.

8. Put the electric motor switch in the LOCK (OFF) position.

Tool	Number	Name	Use
 MB992935AB	MB992935	Pressure gauge unit a. Measuring bench b. Bottle c. Rubber plug with nipple	Air leak check of the traction battery
 MB992936	MB992936	Nipple (29 – 35)	Air leak check of the traction battery *NOTE: Rubber plug with nipple included in special tool pressure gauge unit (MB992935)*
 MB992937	MB992937	Hose (6)	Air leak check of the traction battery
 MB992938	MB992938	Air pump	Air leak check of the traction battery
 MB992939	MB992939	Plug (23 – 27.5)	Air leak check of the traction battery
 MB992940	MB992940	Nipple (19 – 22) <New> From attached sheet 4 (4/9) <Old>	Air leak check of the traction battery
–	MB992913	Battery charger & discharger	Drive battery module replacement
–	MB992920	Dummy battery module (8 cell)	Drive battery module replacement
–	MB992921	Dummy battery module (4 cell)	Drive battery module replacement
–	MB992924	Service BMU (B)	Drive battery module replacement

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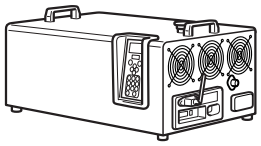
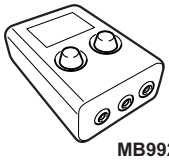
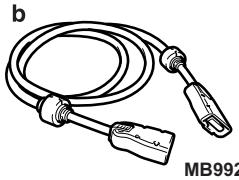
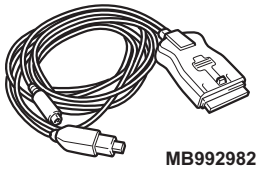
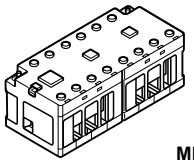
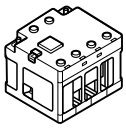
DIAGNOSIS TROUBLESHOOTING FLOW

M1549400400026

Before troubleshooting the BMU, check whether the diagnosis code is stored in the EV-ECU. If the EV-ECU has stored the diagnosis code, troubleshoot the stored diagnosis code.

Attached sheet 4 (4/9)

BATTERY MANAGEMENT UNIT (BMU) AND TRACTION BATTERY
RECOMMENDED TOOLS

Tool	Number	Name	Use
 a  MB992979 b  MB992980 c  MB992981 d  MB992982 MB992913	MB992913 a: MB992979 b: MB992980 c: MB992981 d: MB992982	Battery charger & discharger a: Universal fuse box b: High voltage cable A c: High voltage cable B d: Low voltage cable	Drive battery module replacement
 MB992920	MB992920	Dummy battery module (8 cell)	Drive battery module replacement
 MB992921	MB992921	Dummy battery module (4 cell)	Drive battery module replacement

<New>

From attached sheet 4 (3/9)

<Old>

STEP 6. Check the wiring harness between H-19 BMU connector (terminal No.3, 26) and C-21 traction battery connector (terminal No.2, 13)
Check signal line for open or short circuit.

Q: Is the check result normal?
YES : Go to Step 7.
NO : Repair the wiring harness.

ground fault detector

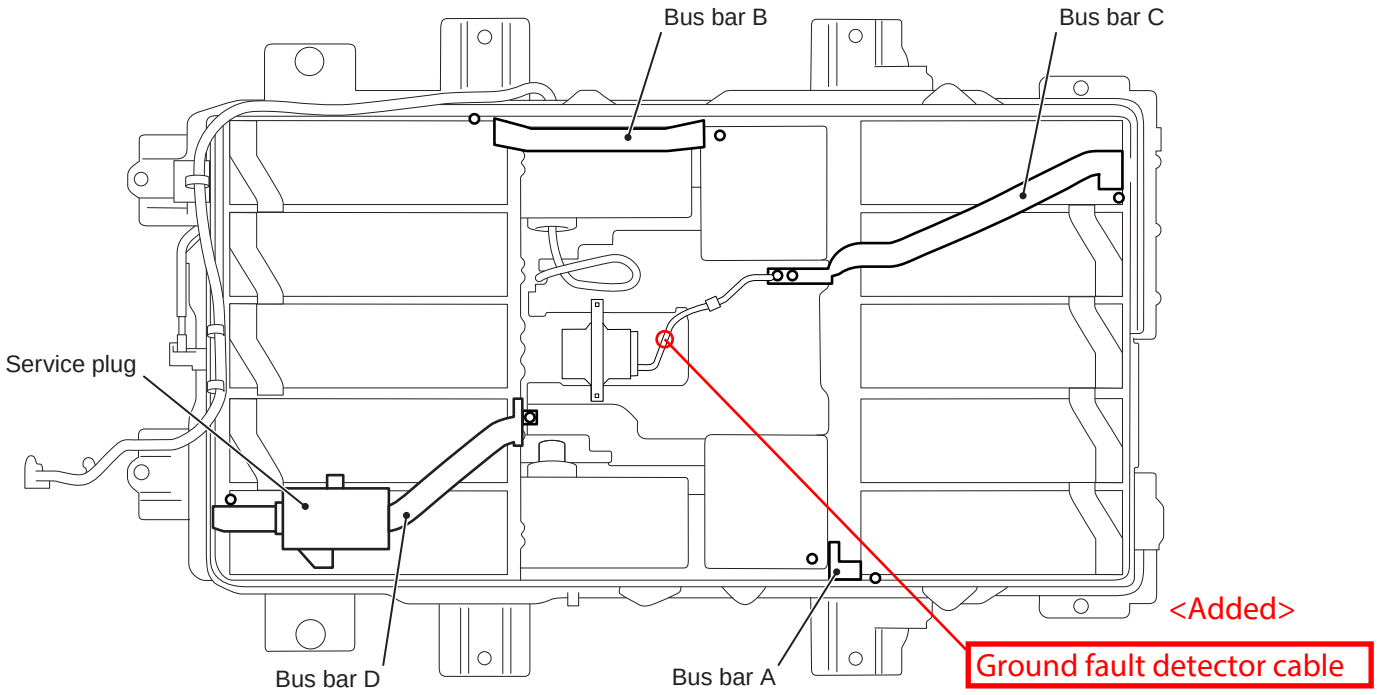
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STEP 7. Check the cable between BMU connector and bus bar
Check line for open or short circuit.

Q: Is the check result normal?
YES : Go to Step 8.
NO : Repair the cable (Refer to P.54Dc-164).

STEP 8. M.U.T.-III diagnosis code.

Q: Is the diagnosis code set?
YES : Replace the BMU (Refer to P.54Dc-149).
NO : Check end.



ACE01063 AB

⚠ CAUTION

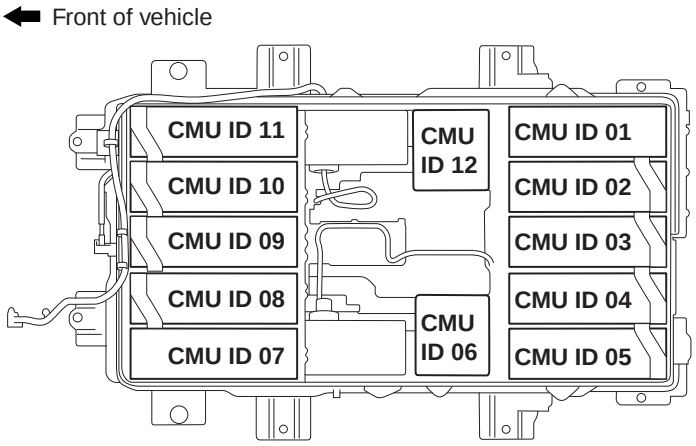
Before installing the bus bar shown by "A" in the figure, use an multimeter to check that there is no potential difference between the two module terminals at the bus bar ends.

2. Remove the four bus bars in the alphabetical order shown.

EIGHT-CELL MODULE REMOVAL AND INSTALLATION

M1549404400040

NOTE:



ACC07060 AC

The CMU IDs on the module are assigned as shown.

Traction battery module replacement

M1549406400080

⚠ CAUTION

- **Do not move the vehicle while the traction battery module is replaced.**
- **While the special tool (MB992924 or MB992925) is set, the vehicle can not be driven to avoid an accident. If you attempt to drive the vehicle, the vehicle will vibrate due to a torque "hunting".**
- **When the recommended tools MB992750, MB992959, MB992752, MB992753 and MB992907 are used, the diagnosis code, which indicates a defective traction battery cooling fan, will be set in the BMU. (this has no effect on the capacity measurement of the traction battery). If you carry out the normal charging after the replacement work, the diagnosis code will be set as a historic trouble. After completing the battery charging, use the M.U.T.-III to erase the code.**
- **Do not subject the battery module to strong impact. Do not reuse the battery module that has been subjected to impact (e.g. it was dropped on the floor). Replace it with a new one.**

Replacement procedure

1. Write the learnt value, which has been stored in the BMU, into special tool (MB992924 or MB992925) manually (Refer to GROUP 00 – Precautions Before Service – Procedures for writing BMU learned value).
2. Substitute the BMU with special tool MB992924 or MB992925.

⚠ *DANGER*

Before servicing the high-voltage system components, observe the specified procedure to remove the safety plug.

3. Remove the traction battery from the vehicle, and remove a defective module (Refer to P.54Dc-156).
4. Install the special tool (MB992920 or MB992921) in place of the removed module.
5. Use the recommended tools MB992750, MB992959, MB992752, MB992753 and MB992907 to connect the traction battery with the vehicle. (When not using the recommended tools, mount the traction battery assembly to the vehicle.)
6. Use the M.U.T.-III to select and execute "CMU support forced release" on the BMU special function menu. Write the CMU ID of the removed module into special tool MB992924 or MB992925.
7. Use the M.U.T.-III to select and execute the BMU special function menu "Battery auto capacity measured". Then obtain the replacement module in accordance with a measurement result (which is displayed on item No. 401 "Auto capa.measured result his.1". If the voltage difference among the battery cells reach 25 mV or more with the traction battery fully charged, use special tool MB992913 to execute "Automatic Balance" (automatic charging) for the relevant battery module, which the voltage difference exists in.

   NOTE:
   - *For how to execute "Automatic Balance" (automatic charging), see the operating manual for the special tool.*
   - *Charging the battery module with special tool MB992913 will compensate for the voltage difference.*
8. Use special tool MB992913 to execute "Automatic Balance" (automatic charging) for the replacement module.

   NOTE: For how to execute "Automatic Balance" (automatic charging), see the operating manual for the special tool.

⚠ *DANGER*

Before servicing the high-voltage system components, observe the specified procedure to remove the safety plug.

9. Substitute special tool MB992920 or MB992921 with the replacement module.
10. Substitute special tool MB992924 or MB992925 with the BMU.
11. Use the M.U.T.-III to select and execute "CMU ID numbering" on the BMU special function menu to number the CMUs for identification.
12. Use the M.U.T.-III to erase the diagnosis code. Then turn the electric motor switch to OFF position and wait for ten seconds.
13. Use the M.U.T.-III to select and execute "Battery auto capacity measured" on the BMU special function menu. Check that no diagnosis codes are set. (When not using the recommended tools, mount the traction battery assembly to the vehicle.)

14. Assemble the traction battery assembly, and perform the air leak check (Refer to P.54Dc-179). Then mount the battery to the vehicle.
15. Check the software version of the BMU and the CMU, and update if necessary.

INSPECTION

AIR LEAK CHECK

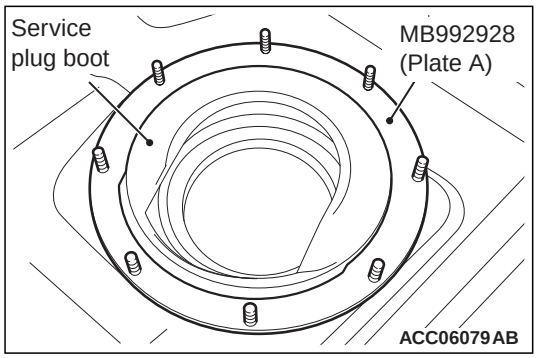
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Preparation for inspection

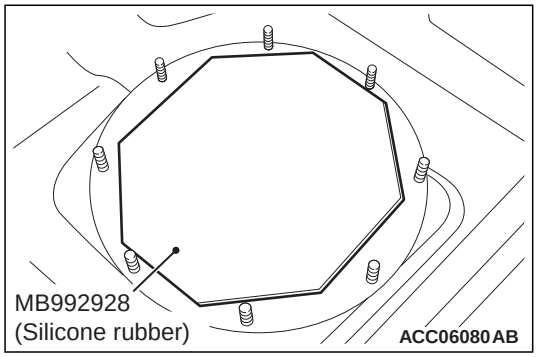
⚠ CAUTION

Set the special tool securely, or air leak may be caused.

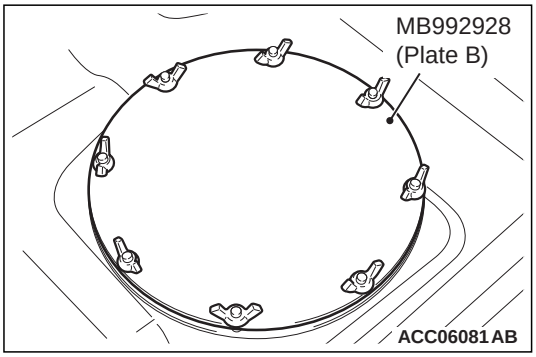
1. Set the service plug cover (MB992928) to the service plug boot.

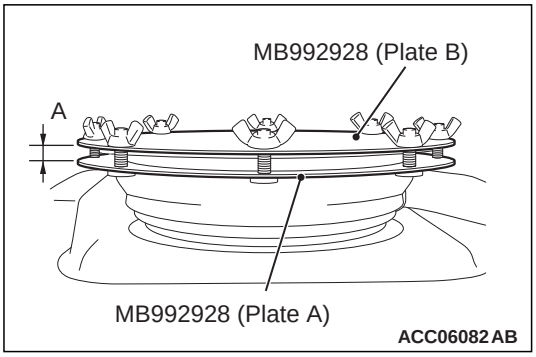


(1) Set the plate A of the service plug cover (MB992928) to the service plug boot.



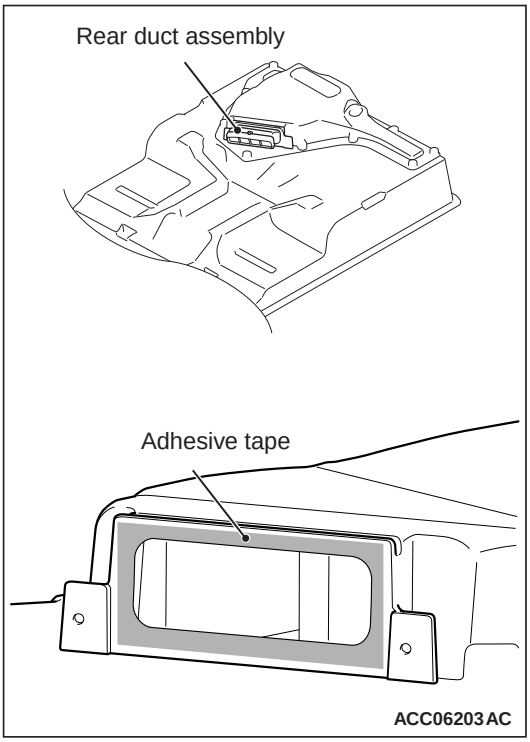
(2) Put the silicone rubber of the service plug cover (MB992928) on the service plug boot.





(3) Set the plate B of the service plug cover (MB992928). Tighten the screws so that the clearance (A) between the plates A and B is even.

2. Set the duct cover B (MB992933) to the cooling fan outlet.



(1) Remove the rear duct assembly, and remove the adhesive tape from the traction battery side.

Traction battery module replacement

M1549406400080

⚠ CAUTION

- **Do not move the vehicle while the traction battery module is replaced.**
- **Do not subject the battery module to strong impact. Do not reuse the battery module that has been subjected to impact (e.g. it was dropped on the floor). Replace it with a new one.**

Replacement procedure

⚠ *DANGER*

Before servicing the high-voltage system components, observe the specified procedure to remove the safety plug.

1. Remove the traction battery from the vehicle, and remove a defective module (Refer to).
2. Install the special tool (MB992920 or MB992921) in place of the removed module.
3. Use the M.U.T.-III to select and execute "CMU support forced release" on the BMU special function menu. Write the CMU ID of the removed module into the BMU.
4. Use the M.U.T.-III to select and execute the BMU special function menu "Battery auto capacity measured". Then obtain the replacement module in accordance with a measurement result (which is displayed on item No. 401 "Auto capa.measured result his.1"). If the voltage difference among the battery cells reach 25 mV or more with the traction battery fully charged, use special tool MB992913 to execute "Automatic Balance" (automatic charging) for the relevant battery module, which the voltage difference exists in.

   NOTE:
   - *For how to execute "Automatic Balance" (automatic charging), see the operating manual for the special tool.*
   - *Charging the battery module with special tool MB992913 will compensate for the voltage difference.*
5. Use special tool MB992913 to execute "Automatic Balance" (automatic charging) for the replacement module.

   NOTE: For how to execute "Automatic Balance" (automatic charging), see the operating manual for the special tool.

⚠ *DANGER*

Before servicing the high-voltage system components, observe the specified procedure to remove the safety plug.

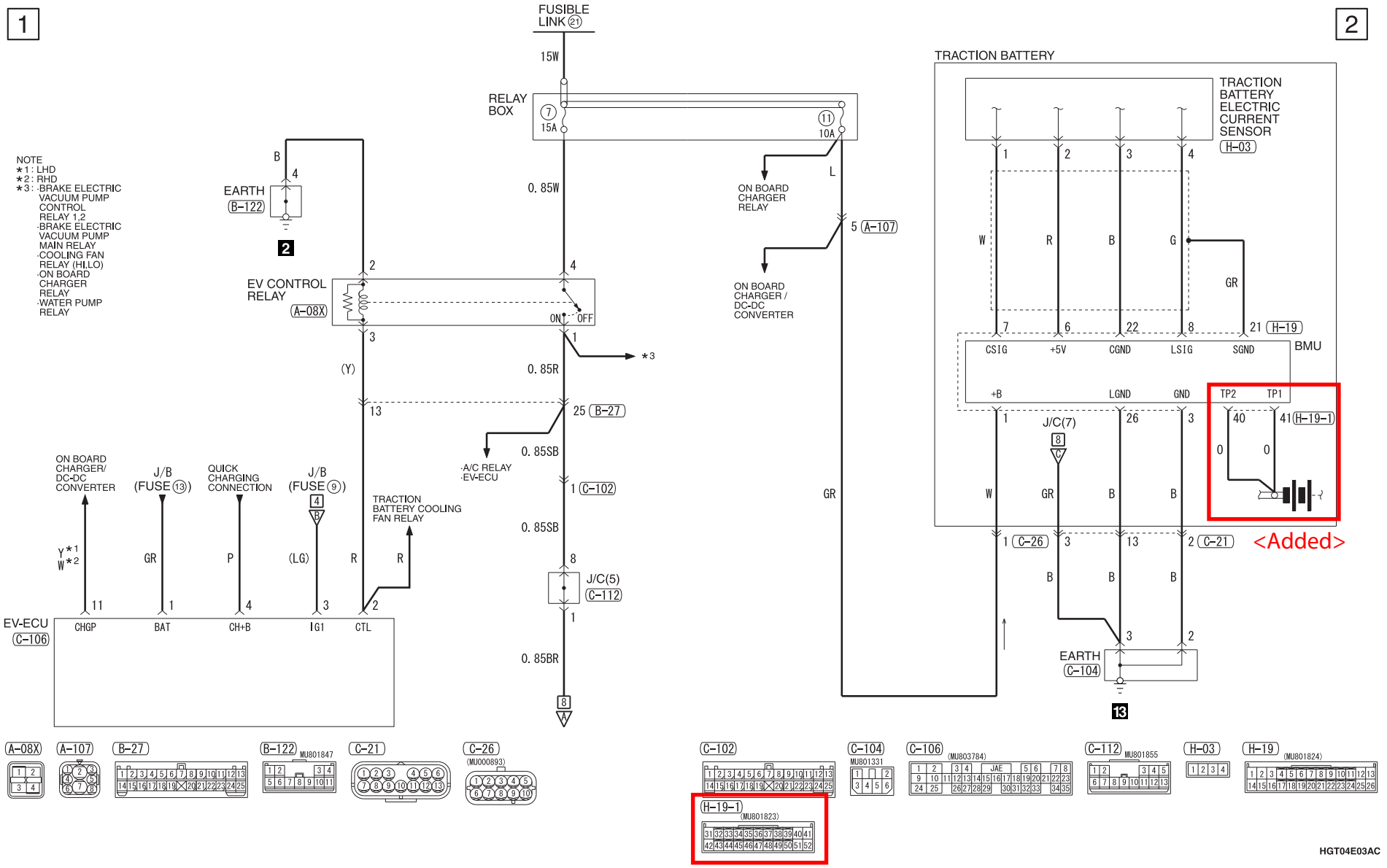
6. Substitute special tool MB992920 or MB992921 with the replacement module.
7. Use the M.U.T.-III to select and execute "CMU ID numbering" on the BMU special function menu to number the CMUs for identification.
8. Use the M.U.T.-III to erase the diagnosis code. Then turn the electric motor switch to OFF position and wait for ten seconds.
9. Use the M.U.T.-III to select and execute "Battery auto capacity measured" on the BMU special function menu. Check that no diagnosis codes are set. (When not using the recommended tools, mount the traction battery assembly to the vehicle.)
10. Assemble the traction battery assembly, and perform the air leak check (Refer to). Then mount the battery to the vehicle.
11. Check the software version of the BMU and the CMU, and update if necessary.

<Correct>

To attached sheet 4 (7,8/9)

<Incorrect>

Attached sheet 5



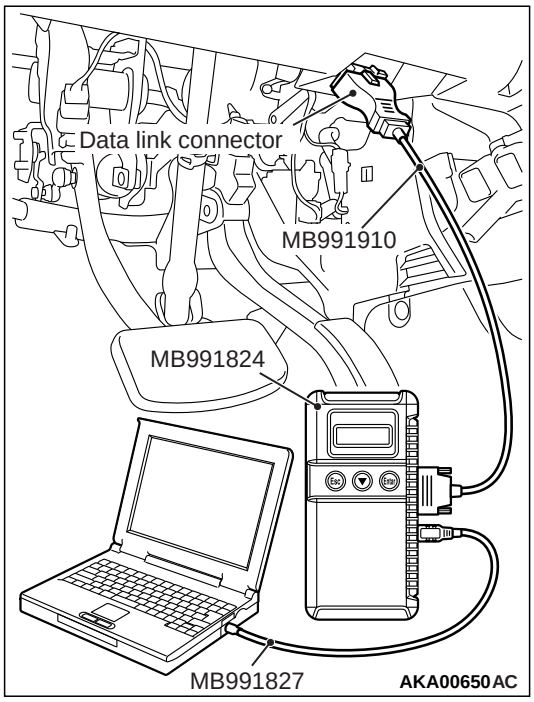
Attached sheet 6

⚠ CAUTION

- **Do not execute "Batt. capa. estimated info. reset" unless you replace the drive battery and you determine the capacity of the battery.**
- **If you did inadvertently, carry out the procedures for writing BMU learning value (Refer to P.00-45), and then execute the drive battery capacity automatic measurement (Refer to GROUP 54Dc–Main Drive Lithium-ion Battery Capacity Automatic Measurement P.54Dc-156).**
- **While the scan tool MB991958 is communicating with the vehicle, the electric motor switch may not be turned off and no normally. Therefore, when you turn off the electric motor switch for that communication, wait for several seconds and then turn on it again (do not turn on it immediately).**

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~~*NOTE: If replacing the BMU and the Main Drive Lithium-ion Battery at the same time, you do not have to do this procedure.*~~



1. Connect the scan tool MB991958 to the data link connector with the electric motor switch in the LOCK (OFF) position.
2. Turn the electric motor switch to the ON position.
3. From the System select Screen of the scan tool MB991958, select the "BMU".
4. Select the "Special Function" from the BMU screen.
5. Select the "Battery Maintenance Function" from the Special Function screen
6. Select the "Batt. capa. estimated info. reset" from the Battery Maintenance Function screen.
7. Wait until "Batt. capa. estimated info. reset" has been completed. Then select "Control information reset" from the Battery Maintenance Function screen.
8. Put the electric motor switch in the LOCK (OFF) position.
9. After the initialize of the BMU control information, check the battery current capacity according to the following procedures:
   (1) After 10 seconds elapsed from the previous process, turn on the electric motor switch.
   (2) Select the "STV (Scan Tool Viewer)" from the scan tool MB991958 start screen.
   (3) Select the "System Select" from the fault STV top menu screen.
   (4) Select the "BMU" from the system select screen.
   (5) Select the "Service Data" from the BMU screen.
   (6) Check the BMU service data, item No. 23: Battery current capacity.
   (7) If the value, item No. 23: Battery current capacity, satisfies 45.0 – ~~48.0~~ Ah, go to Step 10. If not, start from Step 4 to do the initialize of the control information.
10. Turn the electric motor switch to the LOCK (OFF) position to disconnect the scan tool MB991958.

<Correct> A 48.5 Ah

<Incorrect>

TSB Revision