



Technical Service Bulletin

SUBJECT:			No: TSB-12-54-014
DTC P0AA1, P0AA4, P0AE2, P1A15, P1A16, P1A17, P1A26, & P1AF2 – SERVICE MANUAL REVISION			DATE: October, 2012
			MODEL: 2012 i-MiEV
CIRCULATE TO:	☐ GENERAL MANAGER	☒ PARTS MANAGER	☒ TECHNICIAN
☒ SERVICE ADVISOR	☒ SERVICE MANAGER	☐ WARRANTY PROCESSOR	☐ SALES MANAGER

TSB Revision: TSB-12-54-014

PURPOSE

This TSB provides revised trouble shooting procedures for EV-ECU diagnostic codes P0AA1, P0AA4, P0AE2, P1A15, P1A16, P1A17, P1A26, and P1AF2.

AFFECTED VEHICLES

2012 i-MiEV

APPLICABLE SERVICE MANUALS

2012 i-MiEV Service Manual Group 54D: Electric Motor Unit and Traction Battery >> EV-ECU >> Diagnostic Trouble Control Procedures

DTC P0AA1 Main contactor (+) (seizure)
 DTC P0AA4 Main contactor (-) (seizure)
 DTC P0AE2 Charging contactor (seizure)
 DTC P1A15 High-voltage system error (1)
 DTC P1A16 High-voltage system error (2)
 DTC P1A17 High-voltage system error (3)
 DTC P1A26 Condenser discharge command OFF waiting timeout (EMCU)
 DTC P1AF2 EMCU Condenser discharge command F/B

Continued

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(3903)

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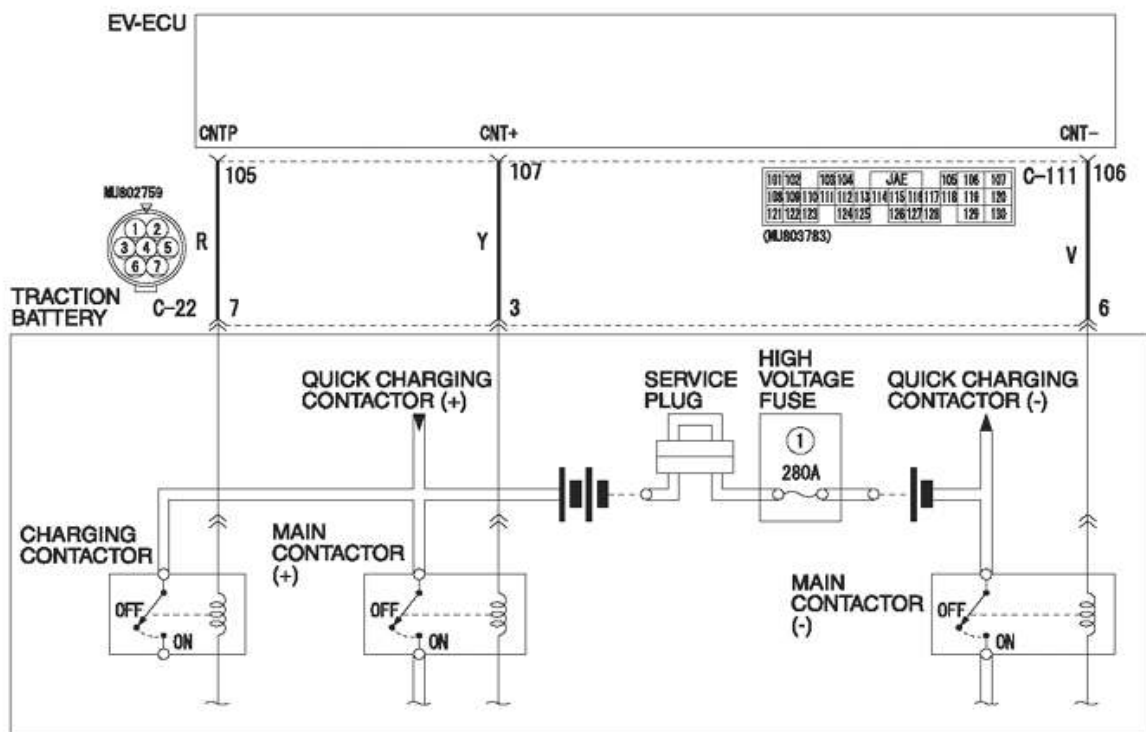
Only new information is shown in this TSB

Please replace the troubleshooting procedures for DTC P0AA1 with the following pages:

ELECTRIC MOTOR UNIT AND TRACTION BATTERY EV-ECU

DTC P0AA1 Main contactor (+) (seizure)

HIGH VOLTAGE POWER SUPPLY CONTROL SYSTEM CIRCUIT



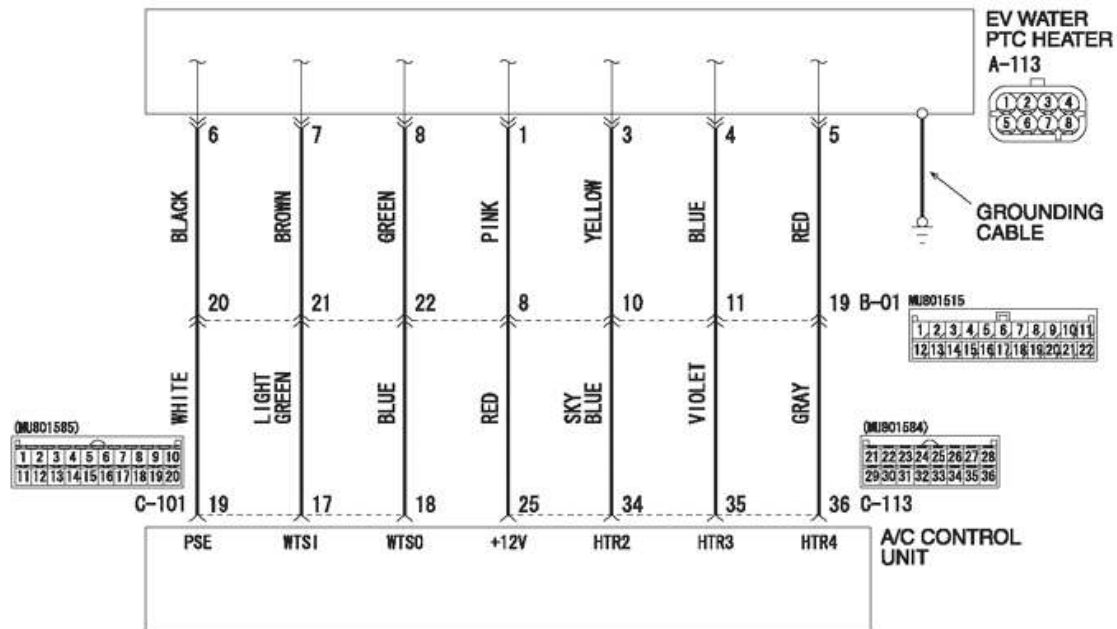
Wire colour code

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BR : Brown O : Orange GR : Grey R : Red P : Pink V : Violet PU : Purple SI : Silver

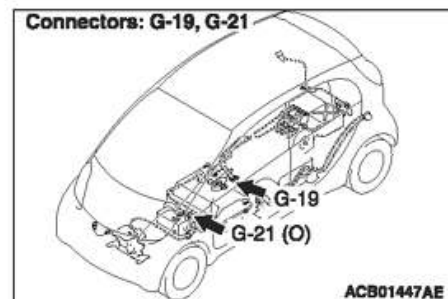
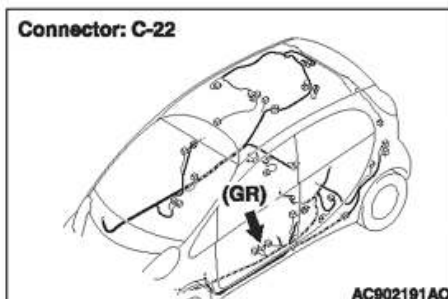
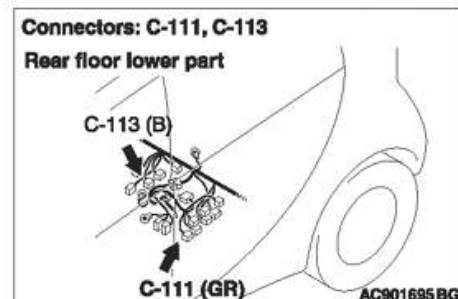
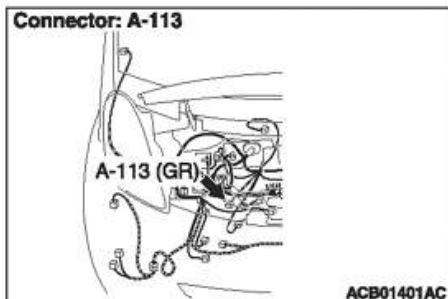
ACA03485 AC

ELECTRIC MOTOR UNIT AND TRACTION BATTERY EV-ECU

A/C Control Circuit



WDT55M008A



ELECTRIC MOTOR UNIT AND TRACTION BATTERY
EV-ECU

⚠ DANGER

- *When servicing the high voltage system parts, always shut off the high voltage by removing the service plug (Refer to).*
- *When servicing the high voltage system parts, always wear the protective equipment or armor to measure the high voltage (Refer to).*

⚠ CAUTION

If there is any problem in the CAN bus lines, an incorrect DTC may be set. Prior to this diagnosis, always diagnose the CAN bus lines (Refer to GROUP 54C – CAN Bus Diagnostics Table).

OPERATION

- The main contactors (+) and (-) the charging contactor inside the traction battery, which are controlled by the EV-ECU, activate and deactivate the high-voltage circuit. The EV-ECU monitors the voltage in the smoothing condenser in the EMCU.

DTC SET CONDITION

- if a seizure of the main contactor (+) or charging contactor is determined when the high-voltage circuit is shut down, the DTC P0AA1 will be set.

NOTE: This diagnosis code is stored as a current trouble only. Therefore, follow the troubleshooting steps for the current trouble.

PROBABLE CAUSES

- Damaged wiring harness or connector(s)
- Malfunction of the traction battery assembly
- Malfunction of the EV-ECU
- Malfunction of the EV water PTC heater
- Malfunction of the A/C control unit
- Malfunction of the onboard charger/DC-DC converter
- Malfunction of the EMCU
- Malfunction of the A/C compressor

DIAGNOSIS

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

Use the scan tool to diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Repair the CAN bus line (Refer to GROUP 54C – CAN Bus Diagnostics Table). Then go to Step 2.

STEP 2. DTC recheck after resetting CAN bus lines

Check again if the DTC P0AE2 is set to the EV-ECU.

- (1) Erase the DTC.
- (2) Set the electric motor switch from the "LOCK" (OFF) position to the "ON", and then to the "START" position temporarily.
- (3) After the electric motor switch from the "LOCK" (OFF) position, reset the electric motor switch from the "LOCK" (OFF) position to the "ON" position.
- (4) Check if the DTC is set.

Q: Is the DTC set?

YES : Go to Step 3.

NO : This diagnosis is complete.

STEP 3. Connector check: C-22 traction battery connector, C-111 EV-ECU connector

Q: Is the check result normal?

YES : Go to Step 4.

NO : Repair the damaged connector.

**ELECTRIC MOTOR UNIT AND TRACTION BATTERY
EV-ECU**

STEP 4. Check the wiring harness between C-111 EV-ECU connector terminal No. 107 and C-22 traction battery connector terminal No. 3.

Check the signal lines for short to power supply.

Q: Is the check result normal?

YES : Go to Step 5.

NO : Repair the wiring harness.

STEP 5. Voltage measurement at G-19 high-voltage, service plug connector

⚠ DANGER

Carry out the check on the high-voltage circuit while reading carefully the precautions on handling a high-voltage vehicle.

⚠ DANGER

Be sure to wear the specified protective equipment when removing the service plug.

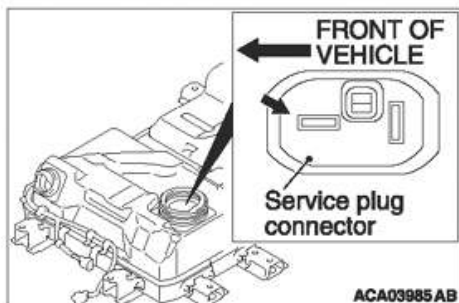
(1) Using a high voltage multimeter, measure the high voltage between the G-19 connection terminal and service plug connection forward terminal.

OK: 0 V

Q: Is the check result normal?

YES : Go to Step 6.

NO : Go to Step 14.



STEP 6. Using scan tool other DTC.

Check if the DTC except No. P1A16 or P1A26 is set to the EV-ECU.

Q: Is the DTC set?

YES : Carry out troubleshooting for the DTC.

NO : Go to Step 7.

STEP 7. Using scan tool other systems DTC.

Check if the DTC is set to the A/C control unit.

Q: Is the DTC set?

YES : Carry out troubleshooting for the DTC.

NO : Go to Step 8

ELECTRIC MOTOR UNIT AND TRACTION BATTERY
EV-ECU

STEP 8. Measure the resistance of the G-21 EV water PTC heater connector.

⚠ DANGER

Carry out the check on the high-voltage circuit while reading carefully the precautions on handling a high-voltage vehicle.

⚠ DANGER

Wear the specified protection equipment during the check.

- (1) Remove the service plug.
- (2) Disconnect the EV water PTC heater connector.
- (3) Measure it on the resistance at the EV water PTC heater side.
- (4) Measure the resistance between the G-21 EV water PTC heater connector terminal No.1 and No.2.

OK: 1 MΩ or more

Q: Is the check result normal?

YES : Go to Step 9.

NO : Check the high-voltage fuse No.3 (Refer to). Replace the EV water PTC heater (Refer to GROUP 55 - EV Water PTC Heater).

STEP 9. Measure the resistance at A-113 EV water PTC heater connector.

- (1) Disconnect the A-113 EV water PTC heater connector and measure it on the resistance at the EV water PTC heater side.
- (2) Measure the resistance between the A-113 EV water PTC heater connector terminal No.3, 4, 5 and the body ground.

OK: No continuity

Q: Is the check result normal?

YES : Go to Step 10.

NO : Replace the EV water PTC heater (Refer to GROUP 55 - EV Water PTC Heater).

STEP 10. Measure the resistance at A-113 EV water PTC heater connector.

- (1) Disconnect the A-113 EV water PTC heater connector and measure it on the resistance at the wiring harness side.
- (2) Measure the resistance between the A-113 EV water PTC heater connector terminal No.3, 4, 5 and the body ground.

OK: No continuity

Q: Is the check result normal?

YES : Go to Step 13.

NO : Go to Step 11.

ELECTRIC MOTOR UNIT AND TRACTION BATTERY
EV-ECU

STEP 11. Connector check: A-113 EV water PTC heater connector, B-01 joint connector, C-113 A/C control unit connector.

Q: Is the check result normal?

YES : Go to Step 12.

NO : Repair the damaged connector.

STEP 12. Check the wiring harness between A-113 EV water PTC heater connector terminal No. 3, 4, 5 and C-113 A/C control unit connector terminal No. 34, 35, 36.

Check the signal line for short circuit.

Q: Is the check result normal?

YES : Replace the A/C control unit (Refer to GROUP 55 - A/C Control Unit).

NO : Repair the wiring harness.

STEP 13. Check whether the DTC is reset.

Check again if the DTC is set to the EV-ECU.

(1) Erase the DTC.

(2) Set the electric motor switch from the "LOCK" (OFF) position to the "ON", and then to the "START" position temporarily.

(3) After the electric motor switch from the "LOCK" (OFF) position, reset the electric motor switch from the "LOCK" (OFF) position to the "ON" position.

(4) Check if the DTC is set.

Q: Is the DTC P0AA1 set?

YES : Replace the EV-ECU (Refer to). Then go to Step14

NO : Intermittent malfunction (Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points, How to Cope with Intermittent Malfunctions).

STEP 14. Check whether the DTC is reset.

Check again if the DTC is set to the EV-ECU.

(1) Erase the DTC.

(2) Set the electric motor switch from the "LOCK" (OFF) position to the "ON", and then to the "START" position temporarily.

(3) After the electric motor switch from the "LOCK" (OFF) position, reset the electric motor switch from the "LOCK" (OFF) position to the "ON" position.

(4) Check if the DTC is set.

Q: Is the DTC P0AA1 set?

YES : Replace the traction battery assembly (Refer to). Then go to Step15.

NO : The diagnosis is complete.

ELECTRIC MOTOR UNIT AND TRACTION BATTERY
EV-ECU

STEP 15. Check whether the DTC is reset.

Check again if the DTC is set to the EV-ECU.

- (1) Erase the DTC.
- (2) Set the electric motor switch from the "LOCK" (OFF) position to the "ON", and then to the "START" position temporarily.
- (3) After the electric motor switch from the "LOCK" (OFF) position, reset the electric motor switch from the "LOCK" (OFF) position to the "ON" position.
- (4) Check if the DTC is set.

Q: Is the DTC P0AA1 set?

YES : Return to Step 1.

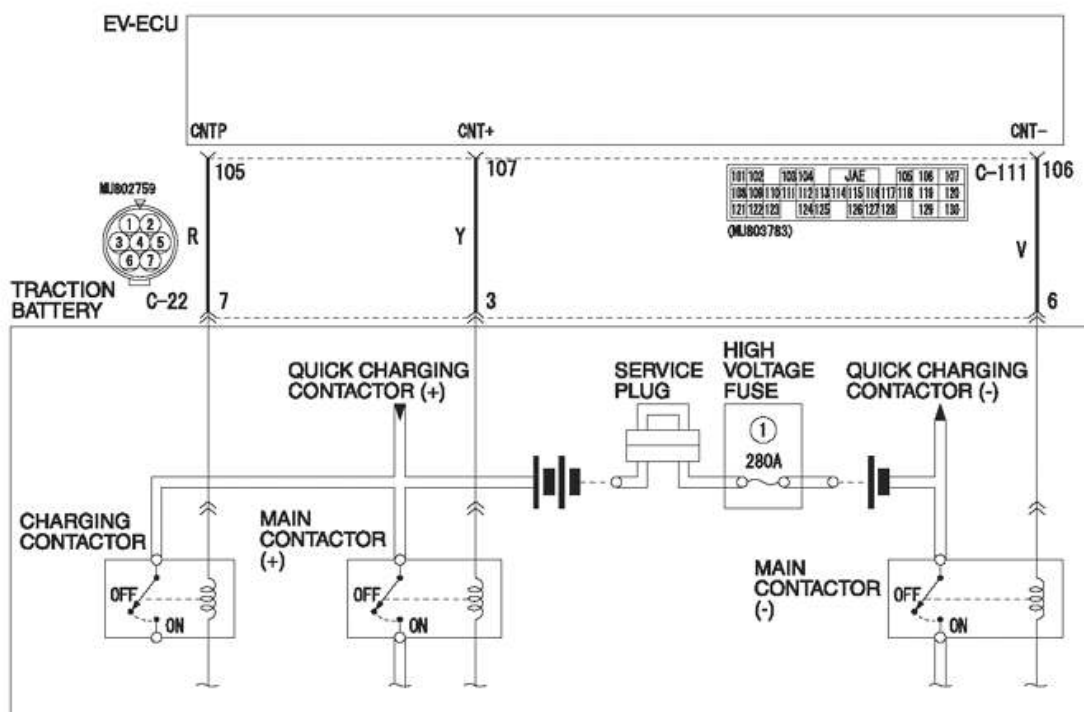
NO : The diagnosis is complete.

Please replace the troubleshooting procedures for DTC P0AA4 with the following pages:

ELECTRIC MOTOR UNIT AND TRACTION BATTERY
EV-ECU

DTC P0AA4 Main contactor (-) (seizure)

HIGH VOLTAGE POWER SUPPLY CONTROL SYSTEM CIRCUIT

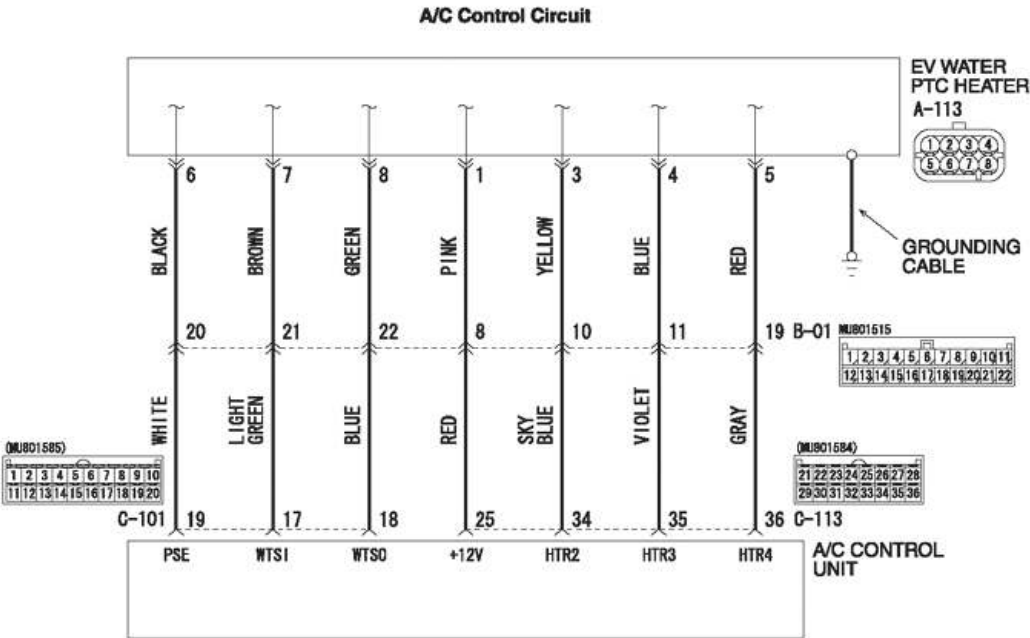


Wire colour code

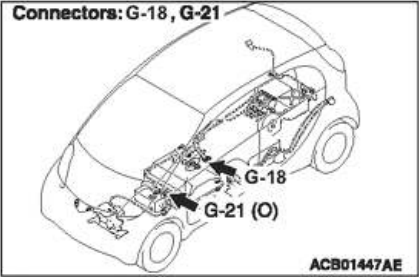
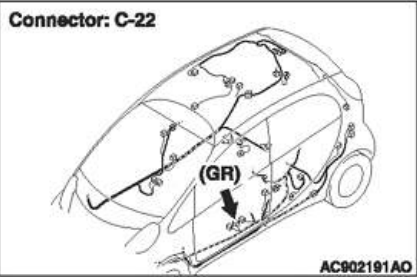
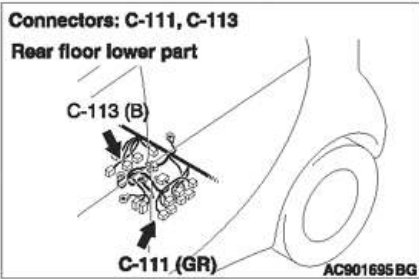
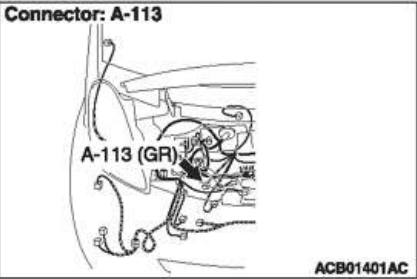
B: Black LG: Light green G: Green L: Blue W: White Y: Yellow SB: Sky blue
BR: Brown O: Orange GR: Grey R: Red P: Pink V: Violet PU: Purple SI: Silver

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ELECTRIC MOTOR UNIT AND TRACTION BATTERY
EV-ECU



WDT55M008A



ELECTRIC MOTOR UNIT AND TRACTION BATTERY
EV-ECU

⚠ DANGER

- *When servicing the high voltage system parts, always shut off the high voltage by removing the service plug (Refer to).*
- *When servicing the high voltage system parts, always wear the protective equipment or armor to measure the high voltage (Refer to).*

⚠ CAUTION

If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, always diagnose the CAN bus lines (Refer to GROUP 54C – CAN Bus Diagnostics Table).

OPERATION

- The main contactors (+) and (-) the charging contactor inside the traction battery, which are controlled by the EV-ECU, activate and deactivate the high-voltage circuit. The EV-ECU monitors the voltage in the smoothing condenser in the EMCU.

DTC SET CONDITION

- If a seizure of the main contactor (-) is determined when the high-voltage circuit is activated, the DTC P0AA4 will be set.

PROBABLE CAUSES

- Damaged wiring harness or connector(s)
- Malfunction of the traction battery assembly
- Malfunction of the EV-ECU
- Malfunction of the EV water PTC heater
- Malfunction of the A/C control unit
- Malfunction of the onboard charger/DC-DC converter
- Malfunction of the EMCU
- Malfunction of the A/C compressor

DIAGNOSIS

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

Use the scan tool to diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Repair the CAN bus line (Refer to GROUP 54C – CAN Bus Diagnostics Table). Then go to Step 2.

STEP 2. DTC recheck after resetting CAN bus lines

Check again if the DTC P0AA4 is set to the EV-ECU.

(1) Erase the DTC.

(2) Set the electric motor switch from the "LOCK" (OFF) position to the "ON", and then to the "START" position temporarily.

(3) Check if the DTC is set.

Q: Is the DTC P0AA4 set?

YES : Go to Step 3.

NO : This diagnosis is complete.

STEP 3. Connector check: C-22 traction battery connector, C-111 EV-ECU connector

Q: Is the check result normal?

YES : Go to Step 4.

NO : Repair the damaged connector.

ELECTRIC MOTOR UNIT AND TRACTION BATTERY
EV-ECU

STEP 4. Check the wiring harness between C-111 EV-ECU connector terminal No. 106 and C-22 traction battery connector terminal No. 6.

Check the signal lines for short to power supply.

Q: Is the check result normal?

YES : Go to Step 5.

NO : Repair the wiring harness.

STEP 5. Voltage measurement at G-18 high-voltage, service plug connector

⚠ DANGER

Carry out the check on the high-voltage circuit while reading carefully the precautions on handling a high-voltage vehicle.

⚠ DANGER

Be sure to wear the specified protective equipment when removing the service plug.

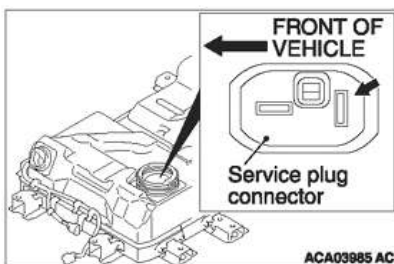
- (1) Using a high voltage multimeter, measure the high voltage between the G-18 connection terminal and service plug connection backward terminal.

OK: 0 V

Q: Is the check result normal?

YES : Go to Step 6.

NO : Go to Step 14.



STEP 6. Using scan tool other DTC.

Check if the DTC except No. P1A16 or P1A26 is set to the EV-ECU.

Q: Is the DTC set?

YES : Carry out troubleshooting for the DTC.

NO : Go to Step 7.

STEP 7. Using scan tool other systems DTC.

Check if the DTC is set to the A/C control unit.

Q: Is the DTC set?

YES : Carry out troubleshooting for the DTC.

NO : Go to Step 8.

ELECTRIC MOTOR UNIT AND TRACTION BATTERY
EV-ECU

STEP 8. Measure the resistance of the G-21 EV water PTC heater connector.

⚠ DANGER

Carry out the check on the high-voltage circuit while reading carefully the precautions on handling a high-voltage vehicle.

⚠ DANGER

Wear the specified protection equipment during the check.

- (1) Remove the service plug.
- (2) Disconnect the EV water PTC heater connector.
- (3) Measure it on the resistance at the EV water PTC heater side.
- (4) Measure the resistance between the G-21 EV water PTC heater connector terminal No.1 and No.2.

OK: 1 M Ω or more

Q: Is the check result normal?

YES : Go to Step 9.

NO : Check the high-voltage fuse No.3 (Refer to). Replace the EV water PTC heater (Refer to GROUP 55 - EV Water PTC Heater).

STEP 9. Measure the resistance at A-113 EV water PTC heater connector.

- (1) Disconnect the A-113 EV water PTC heater connector and measure it on the resistance at the EV water PTC heater side.
- (2) Measure the resistance between the A-113 EV water PTC heater connector terminal No. 3, 4, 5 and the body ground.

OK: No continuity

Q: Is the check result normal?

YES : Go to Step 10.

NO : Replace the EV water PTC heater (Refer to GROUP 55 - EV Water PTC Heater).

STEP 10. Measure the resistance at A-113 EV water PTC heater connector.

- (1) Disconnect the A-113 EV water PTC heater connector and measure it on the resistance at the wiring harness side.
- (2) Measure the resistance between the A-113 EV water PTC heater connector terminal No. 3, 4, 5 and the body ground.

OK: No continuity

Q: Is the check result normal?

YES : Go to Step 13.

NO : Go to Step 11.

ELECTRIC MOTOR UNIT AND TRACTION BATTERY
EV-ECU

STEP 11. Connector check: A-113 EV water PTC heater connector, B-01 joint connector, C-113 A/C control unit connector.

Q: Is the check result normal?

YES : Go to Step 12.

NO : Repair the damaged connector.

STEP 12. Check the wiring harness between A-113 EV water PTC heater connector terminal No. 3, 4, 5 and C-113 A/C control unit connector terminal No. 34, 35, 36.

Check the signal line for short circuit.

Q: Is the check result normal?

YES : Replace the A/C control unit.

NO : Repair the wiring harness.

STEP 13. Check whether the DTC is reset.

Check again if the DTC is set to the EV-ECU.

- (1) Erase the DTC.
- (2) Set the electric motor switch from the "LOCK" (OFF) position to the "ON", and then to the "START" position temporarily.
- (3) Check if the DTC is set.

Q: Is the DTC P0AA4 set?

YES : Replace the EV-ECU (Refer to). Then go to Step 14.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points, How to Cope with Intermittent Malfunctions).

STEP 14. Check whether the DTC is reset.

Check again if the DTC is set to the EV-ECU.

- (1) Erase the DTC.
- (2) Set the electric motor switch from the "LOCK" (OFF) position to the "ON", and then to the "START" position temporarily.
- (3) Check if the DTC is set.

Q: Is the DTC P0AA4 set?

YES : Replace the traction battery assembly (Refer to). Then go to Step 15.

NO : The diagnosis is complete.

STEP 15. Check whether the DTC is reset.

Check again if the DTC is set to the EV-ECU.

- (1) Erase the DTC.
- (2) Set the electric motor switch from the "LOCK" (OFF) position to the "ON", and then to the "START" position temporarily.
- (3) Check if the DTC is set.

Q: Is the DTC P0AA4 set?

YES : Return to Step 1.

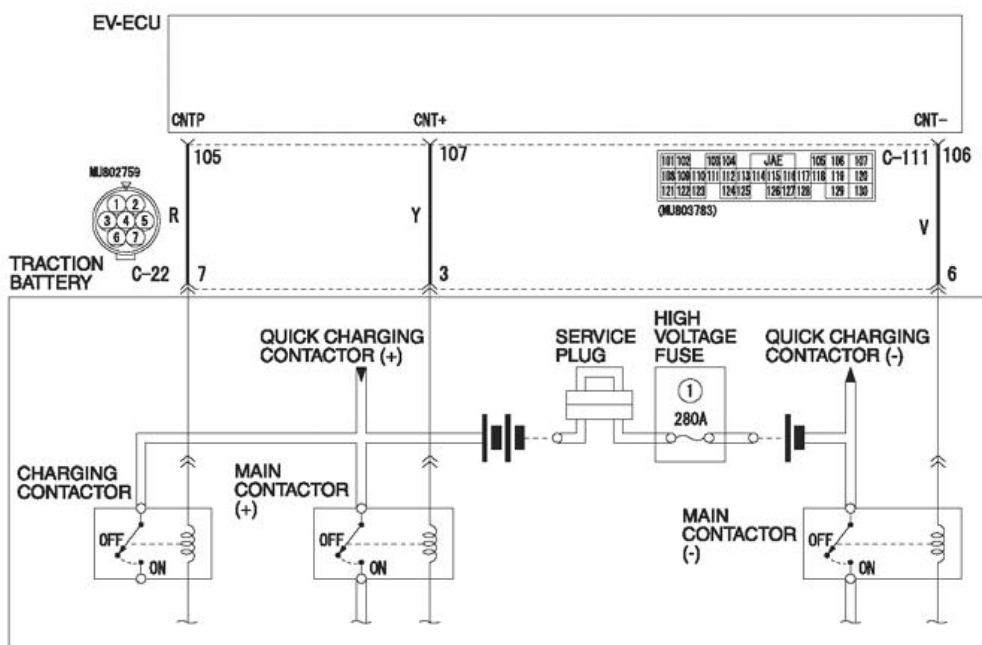
NO : The diagnosis is complete.

Please replace the troubleshooting procedures for DTC P0AE2 with the following pages:

ELECTRIC MOTOR UNIT AND TRACTION BATTERY EV-ECU

DTC P0AE2 Charging contactor (seizure)

HIGH VOLTAGE POWER SUPPLY CONTROL SYSTEM CIRCUIT

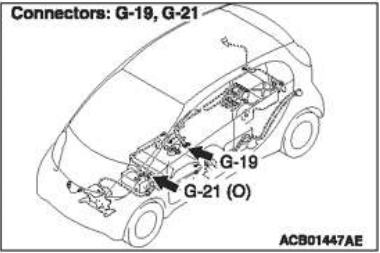
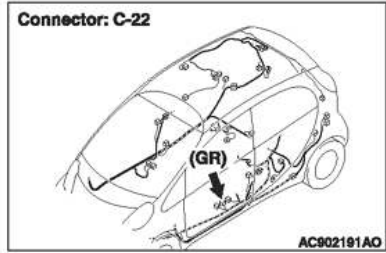
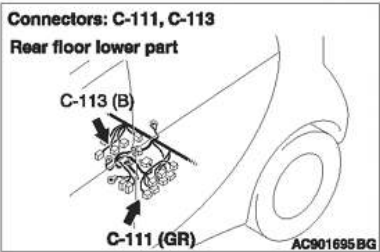
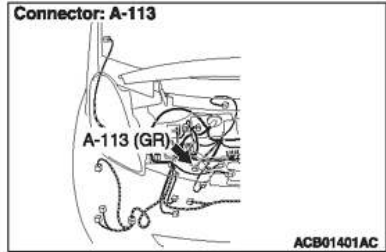
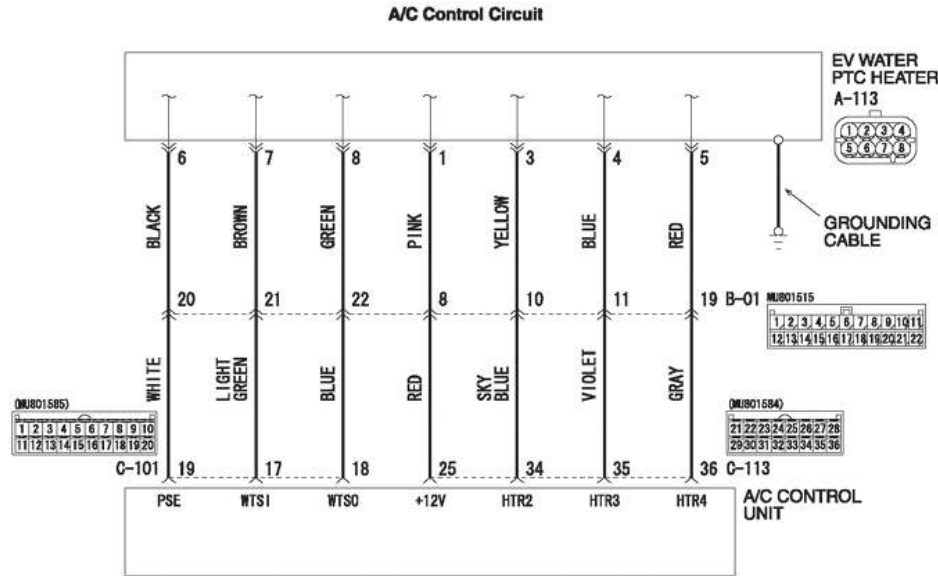


Wire colour code

B : Black LG : Light green G : Green L : Blue W : White Y : Yellow SB : Sky blue
BR : Brown O : Orange GR : Grey R : Red P : Pink V : Violet PU : Purple SI : Silver

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ELECTRIC MOTOR UNIT AND TRACTION BATTERY
EV-ECU



ELECTRIC MOTOR UNIT AND TRACTION BATTERY
EV-ECU

⚠ DANGER

- *When servicing the high voltage system parts, always shut off the high voltage by removing the service plug (Refer to).*
- *When servicing the high voltage system parts, always wear the protective equipment or armor to measure the high voltage (Refer to).*

⚠ CAUTION

If there is any problem in the CAN bus lines, an incorrect DTC may be set. Prior to this diagnosis, always diagnose the CAN bus lines (Refer to GROUP 54C – CAN Bus Diagnostics Table).

OPERATION

- The main contactors (+) and (-) the charging contactor inside the traction battery, which are controlled by the EV-ECU, activate and deactivate the high-voltage circuit. The EV-ECU monitors the voltage in the smoothing condenser in the EMCU.

DTC SET CONDITION

- If a seizure of the charging contactor or main contactor (+) is determined when the high-voltage circuit is activated, the DTC P0AE2 will be set.

PROBABLE CAUSES

- Damaged wiring harness or connector(s)
- Malfunction of the traction battery assembly
- Malfunction of the EV-ECU
- Malfunction of the EV water PTC heater
- Malfunction of the A/C compressor
- Malfunction of the onboard charger/DC-DC converter
- Malfunction of the EMCU

DIAGNOSIS

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

Use the scan tool to diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Repair the CAN bus line (Refer to GROUP 54C – CAN Bus Diagnostics Table). Then go to Step 2.

STEP 2. DTC recheck after resetting CAN bus lines

Check again if the DTC P0AE2 is set to the EV-ECU.

(1) Erase the DTC.

(2) Set the electric motor switch from the "LOCK" (OFF) position to the "ON", and then to the "START" position temporarily.

(3) Check if the DTC is set.

Q: Is the DTC set?

YES : Go to Step 3.

NO : This diagnosis is complete.

STEP 3. Connector check: C-22 traction battery connector, C-111 EV-ECU connector

Q: Is the check result normal?

YES : Go to Step 4.

NO : Repair the damaged connector.

ELECTRIC MOTOR UNIT AND TRACTION BATTERY
EV-ECU

STEP 4. Check the wiring harness between C-111 EV-ECU connector terminal No. 105 and C-22 traction battery connector terminal No. 7.

Check the output lines for open circuit and short to ground.

Q: Is the check result normal?

YES : Go to Step 5.

NO : Repair the wiring harness.

STEP 5. Voltage measurement at G-19 high-voltage connector, service plug

⚠ DANGER

Carry out the check on the high-voltage circuit while reading carefully the precautions on handling a high-voltage vehicle.

⚠ DANGER

Be sure to wear the specified protective equipment when removing the service plug.

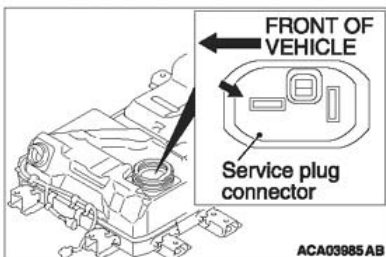
(1) Using a high voltage multimeter, measure the high voltage between the G-19 connection terminal and service plug forward terminal.

OK: 0 V

Q: Is the check result normal?

YES : Go to Step 6.

NO : Go to Step 14.



STEP 6. Using scan tool other DTC.

Check if the DTC except No. P1A16 or P1A26 is set to the EV-ECU.

Q: Is the DTC set?

YES : Carry out troubleshooting for the DTC.

NO : Go to Step 7.

STEP 7. Using scan tool other systems DTC.

Check if the DTC is set to the A/C control unit.

Q: Is the DTC set?

YES : Carry out troubleshooting for the DTC.

NO : Go to Step 8.

ELECTRIC MOTOR UNIT AND TRACTION BATTERY
EV-ECU

STEP 8. Measure the resistance of the G-21 EV water PTC heater connector.

⚠ DANGER

Carry out the check on the high-voltage circuit while reading carefully the precautions on handling a high-voltage vehicle.

⚠ DANGER

Wear the specified protection equipment during the check.

- (1) Remove the service plug.
- (2) Disconnect the G-21 EV water PTC heater connector.
- (3) Measure it on the resistance at the EV water PTC heater side.
- (4) Measure the resistance between the G-21 EV water PTC heater connector terminal No.1 and No.2.

OK: 1 MΩ or more

Q: Is the check result normal?

YES : Go to Step 9.

NO : Check the high-voltage fuse No.3 (Refer to). Replace the EV water PTC heater (Refer to GROUP 55 - EV Water PTC Heater).

STEP 9. Measure the resistance at A-113 EV water PTC heater connector.

- (1) Disconnect the A-113 EV water PTC heater connector and measure it on the resistance at the EV water PTC heater side.
- (2) Measure the resistance between the A-113 EV water PTC heater connector terminal No.3, 4, 5 and the body ground.

OK: No continuity

Q: Is the check result normal?

YES : Go to Step 10.

NO : Replace the EV water PTC heater (Refer to GROUP 55 - EV Water PTC Heater).

STEP 10. Measure the resistance at A-113 EV water PTC heater connector.

- (1) Disconnect the A-113 EV water PTC heater connector and measure it on the resistance at the wiring harness side.
- (2) Measure the resistance between the A-113 EV water PTC heater connector terminal No.3, 4, 5 and the body earth.

OK: No continuity

Q: Is the check result normal?

YES : Go to Step 13.

NO : Go to Step 11.

ELECTRIC MOTOR UNIT AND TRACTION BATTERY
EV-ECU

STEP 11. Connector check: A-113 EV water PTC heater connector, B-01 joint connector, C-113 A/C control unit connector.

Q: Is the check result normal?

YES : Go to Step 12.

NO : Repair the damaged connector.

STEP 12. Check the wiring harness between A-113 EV water PTC heater connector terminal No. 3, 4, 5 and C-113 A/C control unit connector terminal No. 34, 35, 36.

Check the signal line for short circuit.

Q: Is the check result normal?

YES : Replace the A/C control unit (Refer to GROUP 55 - A/C Control Unit).

NO : Repair the wiring harness.

STEP 13. Check whether the DTC is reset.

Check again if the DTC is set to the EV-ECU.

(1) Erase the DTC.

(2) Set the electric motor switch from the "LOCK" (OFF) position to the "ON", and then to the "START" position temporarily.

(3) Check if the DTC is set.

Q: Is the DTC P0AE2 set?

YES : Replace the EV-ECU (Refer to). Then go to Step 14.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points, How to Cope with Intermittent Malfunctions).

STEP 14. Check whether the DTC is reset.

Check again if the DTC is set to the EV-ECU.

(1) Erase the DTC.

(2) Set the electric motor switch from the "LOCK" (OFF) position to the "ON", and then to the "START" position temporarily.

(3) Check if the DTC is set.

Q: Is the DTC P0AE2 set?

YES : Replace the traction battery assembly (Refer to). Then go to Step 15.

NO : The diagnosis is complete.

STEP 15. Check whether the DTC is reset.

Check again if the DTC is set to the EV-ECU.

(1) Erase the DTC.

(2) Set the electric motor switch from the "LOCK" (OFF) position to the "ON", and then to the "START" position temporarily.

(3) Check if the DTC is set.

Q: Is the DTC P0AE2 set?

YES : Return to Step 1.

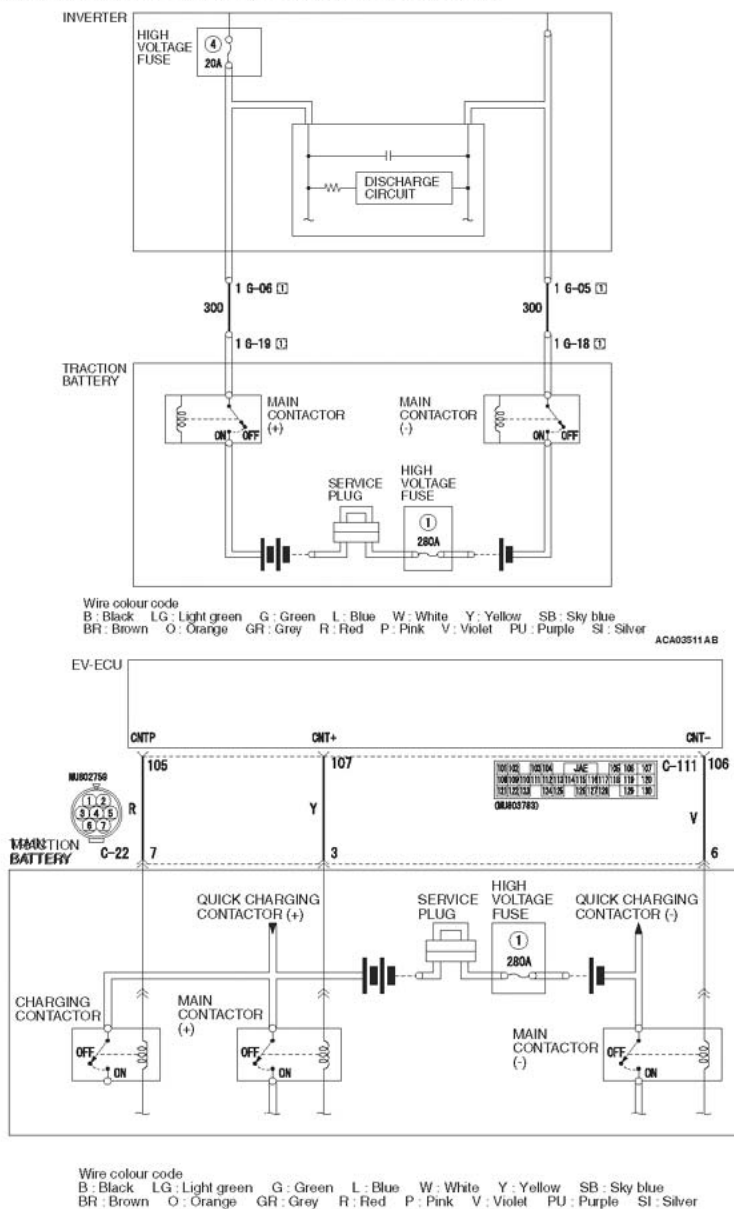
NO : The diagnosis is complete.

Please replace the troubleshooting procedures for DTC P1A15 with the following pages:

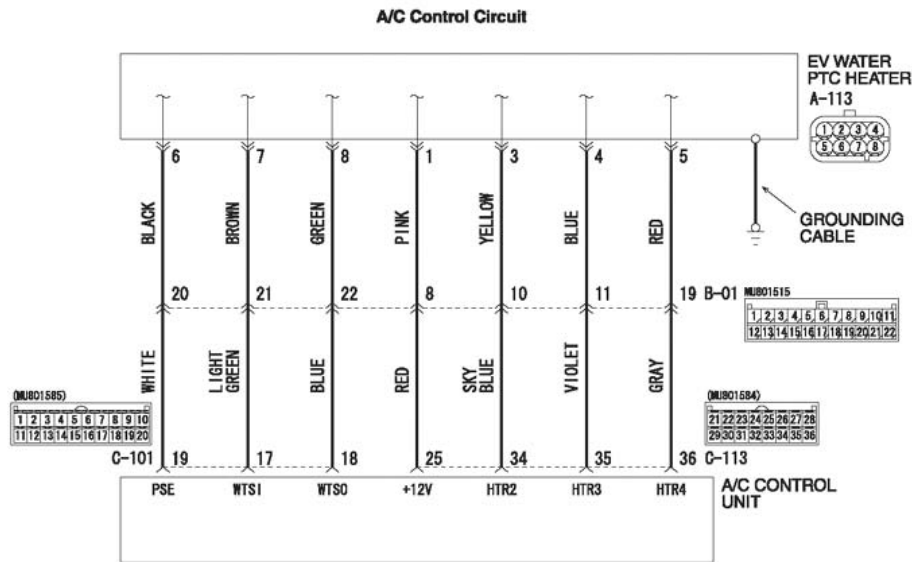
ELECTRIC MOTOR UNIT AND TRACTION BATTERY EV-ECU

DTC P1A15 High-voltage system error (1)

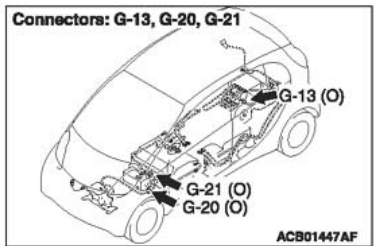
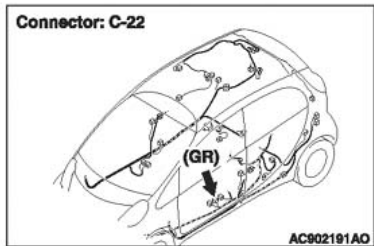
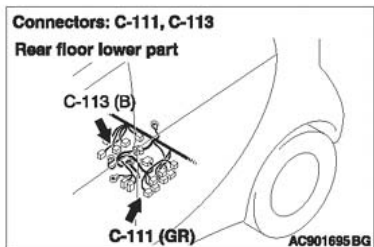
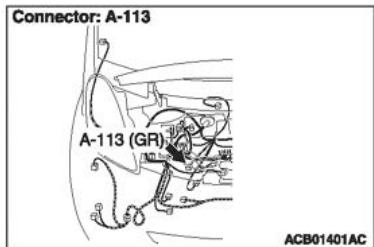
REGULAR CHARGING CONTROL SYSTEM CIRCUIT



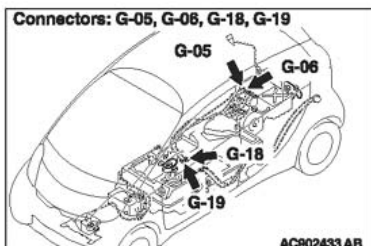
ELECTRIC MOTOR UNIT AND TRACTION BATTERY
EV-ECU



WDT55M008A



ELECTRIC MOTOR UNIT AND TRACTION BATTERY EV-ECU



⚠ DANGER

- When servicing the high voltage system parts, always shut off the high voltage by removing the service plug (Refer to).
- When servicing the high voltage system parts, always wear the protective equipment or armor to measure the high voltage (Refer to).

⚠ CAUTION

If there is any problem in the CAN bus lines, an incorrect DTC may be set. Prior to this diagnosis, always diagnose the CAN bus lines (Refer to GROUP 54C – CAN Bus Diagnostics Table).

OPERATION

The high-voltage circuit activation and shutdown are controlled by the EV-ECU. The EV-ECU also monitors the voltage of the smooth condenser in the EMCU via the CAN communication.

DTC SET CONDITION

- If the charging time of the smooth condenser in the EMCU reaches the specified time or more when the high-voltage circuit activation, the DTC P1A15 will be set.

PROBABLE CAUSES

- Damaged wiring harness or connector(s)
- Malfunction of the high-voltage fuse No.1 (Main, 280A) (traction battery assembly)
- Malfunction of the traction battery assembly
- Malfunction of the EMCU
- Malfunction of the EV water PTC heater
- Malfunction of the A/C control unit
- Malfunction of the onboard charger/DC-DC converter
- Malfunction of the A/C compressor

DIAGNOSIS

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

Use the scan tool to diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Repair the CAN bus line. (Refer to GROUP 54C – CAN Bus Diagnostics Table). Then go to Step 2.

STEP 2. DTC recheck after resetting CAN bus lines

Check again if the DTC P1A15 is set to the EV-ECU.

- (1) Erase the DTC.
- (2) Set the electric motor switch from the "LOCK" (OFF) position to the "ON", and then to the "START" position temporarily.
- (3) Check if the DTC is set.

Q: Is the DTC set?

YES : Go to Step 3.

NO : This diagnosis is complete.

ELECTRIC MOTOR UNIT AND TRACTION BATTERY
EV-ECU

STEP 3. Using scan tool other DTC.

Check if the DTC except No. No. P0AA1, P1A17 or P1AF2 is set to the EV-ECU.

Q: Is the DTC set?

YES : Carry out troubleshooting for the DTC.

NO : Go to Step 4.

STEP 4. Using scan tool other systems DTC.

Check if the DTC is set to the A/C control unit.

Q: Is the DTC set?

YES : Carry out troubleshooting for the DTC.

NO : Go to Step 5.

STEP 5. Using scan tool MB991958, check freeze frame (FFD) data

Check the freeze frame data.

Freeze frame data

- Item No. 15 : EMCU: Condenser voltage

OK: 220 V or more

Q: Is the check result normal?

YES : Go to Step 6.

NO : Go to Step 9.

STEP 6. Check whether the DTC is reset.

** DANGER**

Carry out the check on the high-voltage circuit while reading carefully the precautions on handling a high-voltage vehicle.

** DANGER**

Wear the specified protection equipment during the check.

Check again if the DTC is set to the EV-ECU.

(1) Remove the service plug.

** DANGER**

Isolate bare wires of the disconnected high-voltage circuit with a plastic tape.

(2) Disconnect the G-21 EV water PTC heater connector.

(3) Installation the service plug.

(4) Set the electric motor switch from the "LOCK" (OFF) position to the "ON", and then to the "START" position temporarily.

(5) Check if the DTC is set.

Q: Is the DTC set?

YES : Go to Step 7.

NO : Go to Step 16.

ELECTRIC MOTOR UNIT AND TRACTION BATTERY
EV-ECU

STEP 7. Check whether the DTC is reset.

⚠ DANGER

Carry out the check on the high-voltage circuit while reading carefully the precautions on handling a high-voltage vehicle.

⚠ DANGER

Wear the specified protection equipment during the check.

Check again if the DTC is set to the EV-ECU.

(1) Remove the service plug.

⚠ DANGER

Isolate bare wires of the disconnected high-voltage circuit with a plastic tape.

(2) Disconnect the G-20 A/C compressor connector.

(3) Installation the service plug.

(4) Set the electric motor switch from the "LOCK" (OFF) position to the "ON", and then to the "START" position temporarily.

(5) Check if the DTC is set.

Q: Is the diagnosis code set?

YES : Go to Step 8.

NO : Replace the A/C compressor (Refer to GROUP 55 - A/C Compressor).

STEP 8. Check whether the DTC is reset.

⚠ DANGER

Carry out the check on the high-voltage circuit while reading carefully the precautions on handling a high-voltage vehicle.

⚠ DANGER

Wear the specified protection equipment during the check.

Check again if the DTC is set to the EV-ECU.

(1) Remove the service plug.

⚠ DANGER

Isolate bare wires of the disconnected high-voltage circuit with a plastic tape.

(2) Disconnect the G-13 onboard charger/DC-DC converter connector.

(3) Installation the service plug.

(4) Set the electric motor switch from the "LOCK" (OFF) position to the "ON", and then to the "START" position temporarily.

(5) Check if the DTC is set.

Q: Is the diagnosis code set?

YES : Replace the inverter (Refer to). Then go to Step 22

NO : Replace the onboard charger/DC-DC converter (Refer to).

ELECTRIC MOTOR UNIT AND TRACTION BATTERY
EV-ECU

STEP 9. High-voltage fuse No.1 (Main,280A) (traction battery assembly) check

Check the high-voltage fuse No.1 (Main, 280A) (Refer to).

Q: Is the check result normal?

YES : Go to Step 11.

NO : Replace the high-voltage fuse No.1 (Main, 280A).
Then go to Step 10

STEP 10. Using scan tool other systems DTC.

Check if the DTC is set to the EMCU.

Q: Is the DTC set?

YES : Carry out troubleshooting for the DTC.

NO : Go to Step 22.

STEP 11. Connector check: G-18, G-19 traction battery connector, G-05, G-06 inverter connector

⚠ DANGER

Carry out the check on the high-voltage circuit while reading carefully the precautions on handling a high-voltage vehicle.

⚠ DANGER

Be sure to wear the specified protective equipment when removing the service plug.

- Check whether terminals are engaged correctly (deformation or discolouration).
 - Check whether the terminals are tightened to the specified torque (Refer to and).
 - Check whether foreign materials are pinched.
- Q: Is the check result normal?**
Yes: Go to Step 12.
No: Reconnect the terminals or replace the traction battery cable.

STEP 12. Check the wiring harness between G-05, G-06 inverter connector terminal and G-18, G-19 traction battery connector terminal.

⚠ DANGER

Carry out the check on the high-voltage circuit while reading carefully the precautions on handling a high-voltage vehicle.

⚠ DANGER

Be sure to wear the specified protective equipment when removing the service plug.

Check the high-voltage line for damage.

Q: Is the check result normal?

YES : Go to Step 13.

NO : Replace the traction battery cable.

ELECTRIC MOTOR UNIT AND TRACTION BATTERY
EV-ECU

STEP 13. Connector check: C-22 traction battery connector, C-111 EV-ECU connector

Q: Is the check result normal?

YES : Go to Step 14.

NO : Repair the damaged connector

STEP 14. Check the wiring harness between C-111 EV-ECU connector terminal No. 105, 106, 107 and C-22 traction battery connector terminal No. 3, 6, 7.

Check the signal lines, ground line for open.

Q: Is the check result normal?

YES : Go to Step 15.

NO : Repair the wiring harness.

STEP 15. Check on main contactor (+), (-), charging contactor coil resistance of contactor.

Refer to

Q: Is the check result normal?

YES : Go to Step 16.

NO : Repair the traction battery assembly (Refer to).

STEP 16. Measure the resistance of the G-21 EV water PTC heater connector.

⚠ DANGER

Carry out the check on the high-voltage circuit while reading carefully the precautions on handling a high-voltage vehicle.

⚠ DANGER

Wear the specified protection equipment during the check.

- (1) Remove the service plug.
- (2) Disconnect the G-21 EV water PTC heater connector.
- (3) Measure it on the resistance at the EV water PTC heater side.
- (4) Measure the resistance between the G-21 EV water PTC heater connector terminal No.1 and No.2.

OK: 1 MΩ or more

Q: Is the check result normal?

YES : Go to Step 17.

NO : Check the high-voltage fuse No.3 (Refer to). Replace the EV water PTC heater (Refer to GROUP 55 - EV Water PTC Heater).

ELECTRIC MOTOR UNIT AND TRACTION BATTERY
EV-ECU

STEP 17. Measure the resistance at A-113 EV water PTC heater connector.

- (1) Disconnect the A-113 EV water PTC heater connector and measure it on the resistance at the EV water PTC heater side.
- (2) Measure the resistance between the A-113 EV water PTC heater connector terminal No.3, 4, 5 and the body ground.

OK: No continuity

Q: Is the check result normal?

YES : Go to Step 18. Check whether the DTC is reset.

NO : Replace the EV water PTC heater (Refer to GROUP 55 - EV Water PTC Heater).

STEP 18. Measure the resistance at A-113 EV water PTC heater connector.

- (1) Disconnect the A-113 EV water PTC heater connector and measure it on the resistance at the wiring harness side.
- (2) Measure the resistance between the A-113 EV water PTC heater connector terminal No.3, 4, 5 and the body earth.

OK: No continuity

Q: Is the check result normal?

YES : Go to Step 21.

NO : Go to Step 19.

STEP 19. Connector check: A-113 EV water PTC heater connector, B-01 joint connector, C-113 A/C control unit connector.

Q: Is the check result normal?

YES : Go to Step 20.

NO : Repair the damaged connector.

STEP 20. Check the wiring harness between A-113 EV water PTC heater connector terminal No. 3, 4, 5 and C-113 A/C control unit connector terminal No. 34, 35, 36.

Check the signal line for short circuit.

Q: Is the check result normal?

YES : Replace the A/C control unit.

NO : Repair the wiring harness.

ELECTRIC MOTOR UNIT AND TRACTION BATTERY
EV-ECU

STEP 21. Check whether the DTC is reset.

Check again if the DTC is set to the EV-ECU.

- (1) Erase the stored DTC.
- (2) Set the electric motor switch from the "LOCK" (OFF) position to the "ON", and then to the "START" position temporarily.
- (3) Check if the DTC is set.

Q: Is the DTC set?

YES : Replace the traction battery assembly (Refer to).
Then go to Step 22.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points, How to Cope with Intermittent Malfunctions).

STEP 22. Check whether the DTC is reset.

Check again if the DTC is set to the EV-ECU.

- (1) Erase the stored DTC.
- (2) Set the electric motor switch from the "LOCK" (OFF) position to the "ON", and then to the "START" position temporarily.
- (3) Check if the DTC is set.

Q: Is the DTC set?

YES : Return to Step 1.

NO : The diagnosis is complete.

Please replace the troubleshooting procedures for DTC P1A16 with the following pages:

ELECTRIC MOTOR UNIT AND TRACTION BATTERY EV-ECU	
DTC P1A16 High-voltage system error (2)	
 CAUTION If there is any problem in the CAN bus lines, an incorrect DTC may be set. Prior to this diagnosis, always diagnose the CAN bus lines (Refer to GROUP 54C – CAN Bus Diagnostics Table).	DTC SET CONDITION • If the discharging time of the smooth condenser in the EMCU reaches the specified time or more when the high-voltage circuit is shut down, the DTC P1A16 will be set.
OPERATION The high-voltage circuit activation and shutdown are controlled by the EV-ECU. The EV-ECU also monitors the voltage of the smooth condenser in the EMCU via the CAN communication.	PROBABLE CAUSES • Malfunction of the EMCU • Malfunction of the EV-ECU • Damaged wiring harness or connector(s) • Malfunction of the EV water PTC heater • Malfunction of the A/C control unit • Malfunction of the A/C compressor • Malfunction of the onboard charger/DC-DC converter • Malfunction of the traction battery assembly
DIAGNOSIS	
STEP 1. Using scan tool MB991958, diagnose the CAN bus lines. Use the scan tool to diagnose the CAN bus lines. Q: Is the check result normal? YES : Go to Step 3. NO : Repair the CAN bus line (Refer to GROUP 54C – CAN Bus Diagnostics Table). Then go to Step 2.	
STEP 2. DTC recheck after resetting CAN bus lines Check again if the DTC P1A16 is set to the EV-ECU. (1) Erase the DTC. (2) Set the electric motor switch from the "LOCK" (OFF) position to the "ON", and then to the "START" position temporarily. (3) After the electric motor switch from the "LOCK" (OFF) position, reset the electric motor switch from the "LOCK" (OFF) position to the "ON" position. (4) Check if the DTC is set. Q: Is the DTC set? YES : Go to Step 3. NO : This diagnosis is complete.	
STEP 3. Using scan tool other DTC. Check if the DTC except No. No. P0AA1, P0AA2, P0AE2 or P1A15 is set to the EV-ECU. Q: Is the DTC set? YES : Carry out troubleshooting for the DTC. NO : Go to Step 4.	

ELECTRIC MOTOR UNIT AND TRACTION BATTERY
EV-ECU

STEP 4. Check whether the DTC is reset.

Check again if the DTC is set to the EV-ECU.

- (1) Erase the DTC.
- (2) Set the electric motor switch from the "LOCK" (OFF) position to the "ON", and then to the "START" position temporarily.
- (3) After the electric motor switch from the "LOCK" (OFF) position, reset the electric motor switch from the "LOCK" (OFF) position to the "ON" position.
- (4) Check if the DTC is set.

Q: Is the DTC P1A16 set?

YES : Replace the inverter (Refer to). Then go to Step 5.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points, How to Cope with Intermittent Malfunctions).

STEP 5. Check whether the DTC is reset.

Check again if the DTC is set to the EV-ECU.

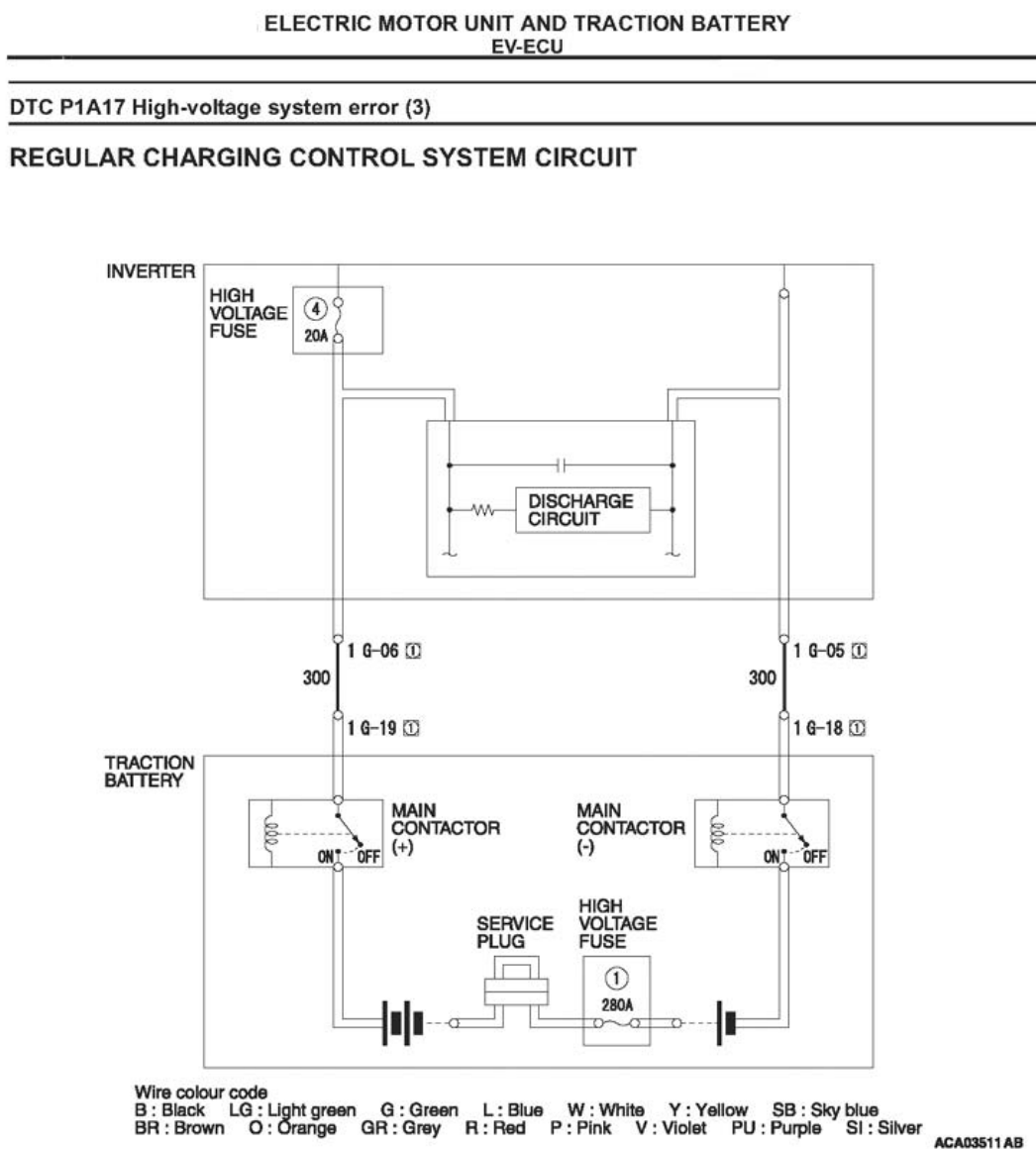
- (1) Erase the DTC.
- (2) Set the electric motor switch from the "LOCK" (OFF) position to the "ON", and then to the "START" position temporarily.
- (3) After the electric motor switch from the "LOCK" (OFF) position, reset the electric motor switch from the "LOCK" (OFF) position to the "ON" position.
- (4) Check if the DTC is set.

Q: Is the DTC P1A16 set?

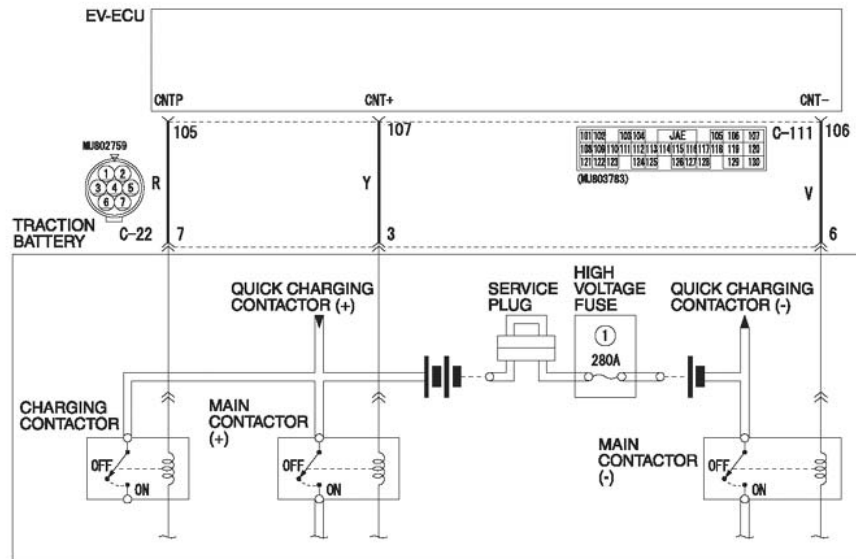
YES : Return to Step 1.

NO : The diagnosis is complete.

Please replace the troubleshooting procedures for DTC P1A17 with the following pages:

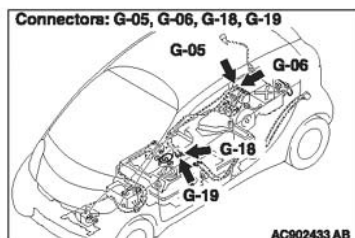
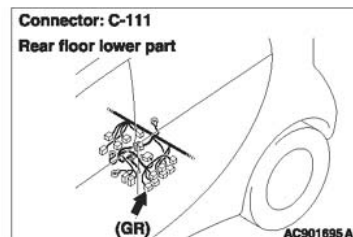
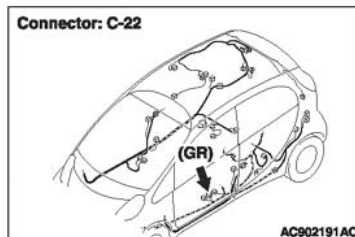


ELECTRIC MOTOR UNIT AND TRACTION BATTERY EV-ECU



Wire colour code
B : Black LG : Light green G : Green L : Blue W : White Y : Yellow SB : Sky blue
BR : Brown O : Orange GR : Grey R : Red P : Pink V : Violet PU : Purple SI : Silver

ACA03485 AC



ELECTRIC MOTOR UNIT AND TRACTION BATTERY
EV-ECU

⚠ DANGER

- *When servicing the high voltage system parts, always shut off the high voltage by removing the service plug (Refer to).*
- *When servicing the high voltage system parts, always wear the protective equipment or armor to measure the high voltage (Refer to).*

⚠ CAUTION

If there is any problem in the CAN bus lines, an incorrect DTC may be set. Prior to this diagnosis, always diagnose the CAN bus lines (Refer to GROUP 54C – CAN Bus Diagnostics Table).

OPERATION

- The high-voltage circuit activation and shutdown are controlled by the EV-ECU. The EV-ECU also monitors the voltage of the smooth condenser in the EMCU via the CAN communication.

DTC SET CONDITION

- When the main contactors (+) and (–) are set to ON, if the voltage of the smooth condenser in the EMCU is kept at 200 V or less, the DTC P1A17 will be set.

PROBABLE CAUSES

- Damaged wiring harness or connector(s)
- Malfunction of the traction battery assembly
- Malfunction of the EMCU

DIAGNOSIS

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

Use the scan tool to diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Repair the CAN bus line (Refer to GROUP 54C – CAN Bus Diagnostics Table). Then go to Step 2.

STEP 2. DTC recheck after resetting CAN bus lines

Check again if the DTC P1A17 is set to the EV-ECU.

(1) Erase the DTC.

(2) Set the electric motor switch from the "LOCK" (OFF) position to the "ON", and then to the "START" position temporarily.

(3) Check if the DTC is set.

Q: Is the DTC set?

YES : Go to Step 3.

NO : This diagnosis is complete.

STEP 3. Using scan tool other DTC.

Check if the DTC No. P1A15 is set to the EV-ECU.

Q: Is the diagnosis code set?

YES : Carry out troubleshooting for the DTC.

NO : Go to Step 4.

ELECTRIC MOTOR UNIT AND TRACTION BATTERY
EV-ECU

STEP 4. Connector check: G-18, G-19 traction battery connector, G-05, G-06 inverter connector

⚠ DANGER

Carry out the check on the high-voltage circuit while reading carefully the precautions on handling a high-voltage vehicle.

⚠ DANGER

Be sure to wear the specified protective equipment when removing the service plug.

- Check whether terminals are engaged correctly (deformation or discolouration).
- Check whether the terminals are tightened to the specified torque (Refer to and).
- Check whether foreign materials are pinched.

Q: Is the check result normal?

Yes: Go to Step 5.

No: Reconnect the terminals or replace the traction battery cable.

STEP 5. Check the wiring harness between G-05, G-06 inverter connector terminal and G-18, G-19 traction battery connector terminal.

⚠ DANGER

Carry out the check on the high-voltage circuit while reading carefully the precautions on handling a high-voltage vehicle.

⚠ DANGER

Be sure to wear the specified protective equipment when removing the service plug.

Check the high-voltage line for damage.

Q: Is the check result normal?

YES : Go to Step 6.

NO : Replace the traction battery cable.

STEP 6. Connector check: C-22 traction battery connector, C-111 EV-ECU connector

Q: Is the check result normal?

YES : Go to Step 7.

NO : Repair the damaged connector

STEP 7. Check the wiring harness between C-111 EV-ECU connector terminal No. 105, 106, 107 and C-22 traction battery connector terminal No. 3, 6, 7.

Check the signal lines, ground line for open.

Q: Is the check result normal?

YES : Go to Step 8.

NO : Repair the wiring harness.

ELECTRIC MOTOR UNIT AND TRACTION BATTERY
EV-ECU

STEP 8. Check on main contactor (+), (-), charging contactor coil resistance of contactor.

Refer to

Q: Is the check result normal?

YES : Go to Step 9.

NO : Replace the traction battery assembly (Refer to).

STEP 9. Check whether the DTC is reset.

Check again if the DTC is set to the EV-ECU.

- (1) Erase the DTC.
- (2) Set the electric motor switch from the "LOCK" (OFF) position to the "ON", and then to the "START" position temporarily.
- (3) Check if the DTC is set.

Q: Is the DTC P1A17 set?

YES : Replace the traction battery assembly (Refer to).
Then go to Step 10.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points, How to Cope with Intermittent Malfunctions).

STEP 10. Check whether the DTC is reset.

Check again if the DTC is set to the EV-ECU.

- (1) Erase the DTC.
- (2) Set the electric motor switch from the "LOCK" (OFF) position to the "ON", and then to the "START" position temporarily.
- (3) Check if the DTC is set.

Q: Is the DTC P1A17 set?

YES : Return to Step 1.

NO : The diagnosis is complete.

Please replace the troubleshooting procedures for DTC P1A26 with the following pages:

ELECTRIC MOTOR UNIT AND TRACTION BATTERY EV-ECU	
DTC P1A26 Condenser discharge command OFF waiting timeout (EMCU)	
⚠ CAUTION If there is any problem in the CAN bus lines, an incorrect DTC may be set. Prior to this diagnosis, always diagnose the CAN bus lines (Refer to GROUP 54C – CAN Bus Diagnostics Table). OPERATION - EMCU communicates with the EV-ECU via CAN. DTC SET CONDITION - If the DTC P1A26 is set to the EMCU when the high-voltage circuit is shut down, the DTC P1A26 will be set.	<i>NOTE: The diagnosis code is stored as a historic trouble. Therefore, follow the troubleshooting steps for the historic trouble.</i> PROBABLE CAUSE - Damaged wiring harness or connector(s) - Malfunction of the EV water PTC heater - Malfunction of the A/C compressor - Malfunction of the onboard charger/DC-DC converter - Malfunction of the traction battery assembly - Malfunction of the EMCU
DIAGNOSIS	
STEP 1. Using scan tool MB991958, diagnose the CAN bus lines. Use the scan tool to diagnose the CAN bus lines. Q: Is the check result normal? YES : Go to Step 3. NO : Repair the CAN bus line (Refer to GROUP 54C – CAN Bus Diagnostics Table). Then go to Step 2.	
STEP 2. DTC recheck after resetting CAN bus lines Check again if the DTC P1A26 is set to the EV-ECU. (1) Erase the DTC. (2) Set the electric motor switch from the "LOCK" (OFF) position to the "ON", and then to the "START" position temporarily. (3) After the electric motor switch from the "LOCK" (OFF) position, reset the electric motor switch from the "LOCK" (OFF) position to the "ON" position. (4) Check if the DTC is set. Q: Is the DTC set? YES : Go to Step 3. NO : This diagnosis is complete.	
STEP 3. Using scan tool other DTC. Check if the DTC No. P0AA1, P0AA2 or P0AE2 is set to the EV-ECU. Q: Is the DTC set? YES : Carry out troubleshooting for the DTC. NO : Go to Step 4.	

**ELECTRIC MOTOR UNIT AND TRACTION BATTERY
EV-ECU**

STEP 4. Using scan tool other system DTC.

Check if the DTC P1A26 is set to the EMCU.

Q: Is the DTC set?

YES : Carry out troubleshooting for the DTC P1A26 (Refer to). Then go to Step 5.

NO : Go to Step 5.

STEP 5. Check whether the DTC is reset.

Check again if the DTC is set to the EV-ECU.

- (1) Erase the DTC.
- (2) Set the electric motor switch from the "LOCK" (OFF) position to the "ON", and then to the "START" position temporarily.
- (3) After the electric motor switch from the "LOCK" (OFF) position, reset the electric motor switch from the "LOCK" (OFF) position to the "ON" position.
- (4) Check if the DTC is set.

Q: Is the DTC P1A26 set?

YES : Return to Step 1.

NO : The diagnosis is complete.

Please replace the troubleshooting procedures for DTC P1AF2 with the following pages:

ELECTRIC MOTOR UNIT AND TRACTION BATTERY EV-ECU	
DTC P1AF2 EMCU condenser discharge command F/B	
⚠ CAUTION If there is any problem in the CAN bus lines, an incorrect DTC may be set. Prior to this diagnosis, always diagnose the CAN bus lines (Refer to GROUP 54C – CAN Bus Diagnostics Table). OPERATION - EMCU communicates with the EV-ECU via CAN. DTC SET CONDITION - If the conditions that the EV-ECU discharge command is ON and EMCU discharge command feedback is OFF are met for 2 seconds or longer when the high-voltage circuit is shut down, the DTC P1AF2 will be set.	PROBABLE CAUSE - Damaged wiring harness or connector(s) - Malfunction of the EV water PTC heater - Malfunction of the A/C compressor - Malfunction of the onboard charger/DC-DC converter - Malfunction of the traction battery assembly - Malfunction of the EMCU
DIAGNOSIS	
STEP 1. Using scan tool MB991958, diagnose the CAN bus lines. Use the scan tool to diagnose the CAN bus lines. Q: Is the check result normal? YES : Go to Step 3. NO : Repair the CAN bus line (Refer to GROUP 54C – CAN Bus Diagnostics Table). Then go to Step 2.	
STEP 2. DTC recheck after resetting CAN bus lines Check again if the DTC P1AF2 is set to the EV-ECU. (1) Erase the DTC. (2) Set the electric motor switch from the "LOCK" (OFF) position to the "ON", and then to the "START" position temporarily. (3) After the electric motor switch from the "LOCK" (OFF) position, reset the electric motor switch from the "LOCK" (OFF) position to the "ON" position. (4) Check if the DTC is set. Q: Is the DTC set? YES : Go to Step 3. NO : This diagnosis is complete.	
STEP 3. Using scan tool other DTC. Check if the DTC No. P1A15 is set to the EV-ECU. Q: Is the DTC set? YES : Carry out troubleshooting for the DTC. NO : Go to Step 4.	

ELECTRIC MOTOR UNIT AND TRACTION BATTERY
EV-ECU

STEP 4. Using scan tool other system DTC.

Check if the DTC is set to the EMCU.

Q: Is the DTC set?

YES : Carry out troubleshooting for the EMCU (Refer to).
Then go to Step 5.

NO : Go to Step 5.

STEP 5. Check whether the DTC is reset.

Check again if the DTC is set to the EV-ECU.

- (1) Erase the DTC.
- (2) Set the electric motor switch from the "LOCK" (OFF) position to the "ON", and then to the "START" position temporarily.
- (3) After the electric motor switch from the "LOCK" (OFF) position, reset the electric motor switch from the "LOCK" (OFF) position to the "ON" position.
- (4) Check if the DTC is set.

Q: Is the DTC P1AF2 set?

YES : Return to Step 1.

NO : The diagnosis is complete.