MITSUBISHI MOTORS

# SERVICE BULLETIN

GLOBAL AFTER SALES OFFICE. MITSUBISHI MOTORS CORPORATION

| PURPOSE : INFORMATION | ISSUE NO. : MSB-12E00-002**A** | DATE : 2012-03-16 | |
|---|---|---|---|
| SUBJECT : INFORMATION ON 2012.5 i-MiEV | | <MODEL> (EUR) | <M/Y> 12.5 |
| GROUP : GENERAL | | i-MiEV(HA3W/HA3V) | |

## 1. Description:

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

Gr.37 POWER STEERING Change of the main point of the desorption(Change in the "A" version)
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

(Change in the "A" version)
Gr.00 : GENERAL is added
Gr.00E : GENERAL(ELECTRICAL) is added
Gr.37 : POWER STEERING is added
Gr.55 : HEATER,AIR CONDITIONER AND VENTILATION is replaced
Gr.80 : CONFIGURATION DIAGRAMS is added
Gr.90 : CIRCUIT DIAGRAMS is added

## 2. Details:

See Attached sheet

**Time to carry it out : The Vehicles produced after the end of March, 2012**

# GROUP 00

# GENERAL

## CONTENTS

GENERAL . . . . . 00

GENERAL <ELECTRICAL> . . . . . 00E

## NOTES

# GROUP 00

# GENERAL

## CONTENTS

**VEHICLE IDENTIFICATION . . . . . 00-2**
MODELS . . . . . 00-2
VEHICLE IDENTIFICATION NUMBER (CHASSIS NUMBER) . . . . . 00-2
**GENERAL DATA AND SPECIFICATIONS . . . . . 00-4**

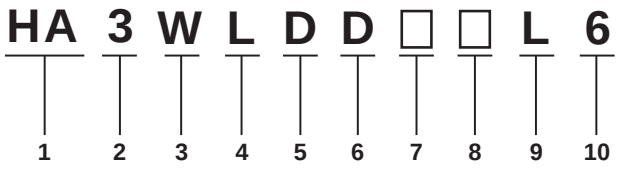
# VEHICLE IDENTIFICATION

## MODELS

M1001000306844

| Model code | | Motor model (electric motor unit) | Transmission model |
|---|---|---|---|
| HA3W | LDDL6 | Y4F1 (Permanent magnet synchronous motor) | F1E1A (Rear wheel drive 2WD, parallel axis 2-step decelerator) |
| | LDDR6 | | |

## MODEL CODE

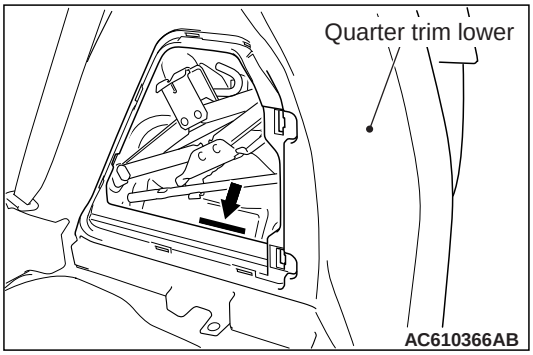



ACA02312

| No. | Item | Content | |
|---|---|---|---|
| 1 | Development | HA | MITSUBISHI i-MiEV |
| 2 | Electric motor unit type | 3 | Permanent magnet synchronous motor (Y4F1) |
| 3 | Vehicle type | W | Station wagon |
| 4 | Body style | L | 4-door with tailgate |
| 5 | Transmission type | D | Transmission without shifting function (F1E1A) |
| 6 | Trim level (Price class) | D | – |
| 7 | Engine specification | None | – |
| 8 | Special feature | None | 2WD |
| 9 | Steering wheel location | L | Left hand drive |
| | | R | Right hand drive |
| 10 | Destination | 6 | Vehicles for Europe |

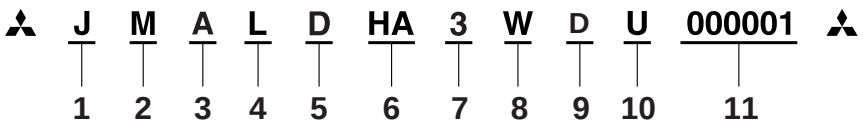
## VEHICLE IDENTIFICATION NUMBER (CHASSIS NUMBER)

M1001005602826




The chassis number is stamped on the quarter trim lower panel.

## CODE CHART

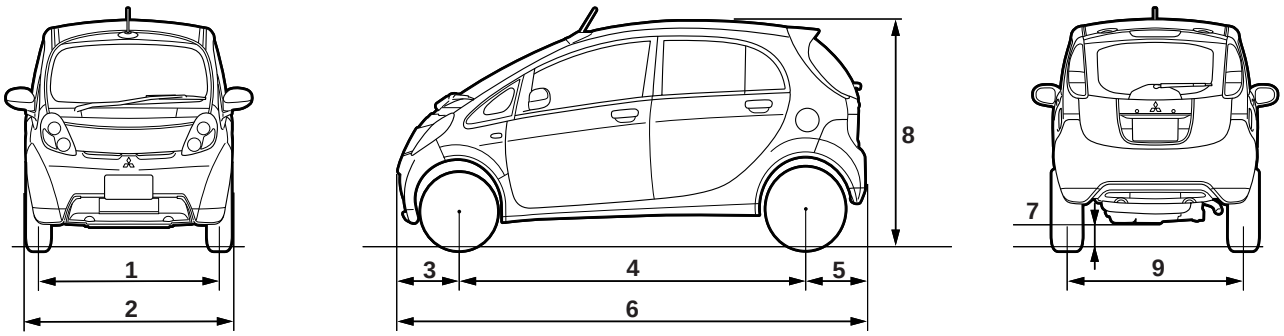



ACC00383AB

| No. | Item | Content | |
|---|---|---|---|
| 1 | Country | J | Japan |
| 2 | Make | M | MITSUBISHI |
| 3 | Destination | A | Vehicles for Europe, right hand drive (MMC-manufactured vehicles) |
| | | B | Vehicles for Europe, left hand drive (MMC-manufactured vehicles) |
| 4 | Body style | L | 4-door with tailgate |
| 5 | Transmission type | D | Transmission without shifting function |
| 6 | Development order | HA | MITSUBISHI i-MiEV |
| 7 | Electric motor unit type | 3 | Permanent magnet synchronous motor |
| 8 | Soft | W | Station wagon |
| 9 | Model year | D | 2013 |
| 10 | Plant | U | Mizushima Motor Vehicle Works |
| 11 | Serial number | 000001 to 999999 | |

# GENERAL DATA AND SPECIFICATIONS

M1001000907087




ACA04034AB

| Item | | | HA3W | |
|---|---|---|---|---|
| | | | LDDL6 | LDDR6 |
| Vehicle dimension mm | Front track | 1 | 1,310 | 1,310 |
| | Overall width | 2 | 1,475 | 1,475 |
| | Front overhang | 3 | 500 | 500 |
| | Wheel base | 4 | 2,550 | 2,550 |
| | Rear overhang | 5 | 425 | 425 |
| | Overall length | 6 | 3,475 | 3,475 |
| | Ground clearance (unladen) | 7 | 150 | 150 |
| | Overall height (unladen) | 8 | 1,610 | 1,610 |
| | Rear track | 9 | 1,270 | 1,270 |
| Vehicle weight kg | Kerb weight | Without full optional parts | 1,110 | 1,110 |
| | | With full optional parts | 1,113 | 1,113 |
| | Max. gross vehicle weight | | 1,450 | 1,450 |
| | Max. axle weight rating-front | | 640 | 640 |
| | Max. axle weight rating-rear | | 810 | 810 |
| Seating capacity | | | 4 | 4 |
| Main battery | Type | | Lithium ion battery | Lithium ion battery |
| | Total voltage V | | 330 | 330 |
| | Total electric energy kWh | | 16 | 16 |
| Electric motor | Model No. | | Y4F1 | Y4F1 |
| | Type | | Permanent magnet synchronous motor | Permanent magnet synchronous motor |
| | Rated output kW | | 35 | 35 |
| | Max. output kW/rpm | | 49/2,500 – 8,000 | 49/2,500 – 8,000 |
| | Max. torque N·m/rpm | | 180/0 – 2,000 | 180/0 – 2,000 |
| Transmission | Model code | | F1E1A | F1E1A |
| | Type | | Without shifting function | Without shifting function |
| Turning radius m | | | 4.5 | 4.5 |

# GROUP 00E

# GENERAL <ELECTRICAL>

## CONTENTS

**OUTLINE OF CHANGE . . . . . 00E-2**

CONFIGURATION DIAGRAMS . . . . . 00E-2
CIRCUIT DIAGRAMS . . . . . 00E-2

# OUTLINE OF CHANGE

## CONFIGURATION DIAGRAMS

M1001016100249

| Connector symbol | Name | | Reference page | Description of change |
|---|---|---|---|---|
| A | HOOD ROOM | <LHD> | P.80-2 | • The splice point, the number of terminals and the colour of the A/C compressor connector have been changed. |
| | | <RHD> | P.80-4 | |

## CIRCUIT DIAGRAMS

M1001008400449

| Main title | Sub title | Reference page | Description of changes |
|---|---|---|---|
| TRACTION BATTERY COOLING SYSTEM | <LHD> | P.90-2 | • Due to the change of the A/C compressor, the following items have been changed.<br>• The shape of A/C compressor connector (A-111)<br>• The communication circuit between the A/C compressor and the A/C control unit<br>• The low-voltage-side power source circuit of the A/C compressor |
| | <RHD> | P.90-5 | |
| HEADLAMP | <RHD> | P.90-8 | • J/C (2) (B-03) has been deleted from the LIN circuit between the ETACS-ECU and the column switch. |
| TAIL LAMP POSITION LAMP, LICENCE PLATE LAMP AND LAMP REMINDER BUZZER | <RHD> | P.90-10 | |
| TURN-SIGNAL LAMP AND HAZARD WARNING LAMP | <RHD> | P.90-19 | |
| DAYTIME RUNNING LAMP (DRL) | <RHD> | P.90-13 | |
| FRONT FOG LAMP | <RHD> | P.90-15 | |
| REAR FOG LAMP | <RHD> | P.90-17 | |
| AIR CONDITIONER | <LHD> | P.90-21 | • Due to the change of the A/C compressor, the following items have been changed.<br>• The shape of A/C compressor connector (A-111)<br>• The communication circuit between the A/C compressor and the A/C control unit<br>• The low-voltage-side power source circuit of the A/C compressor |
| | <RHD> | P.90-25 | |
| WINDSHIELD WIPER AND WASHER | <RHD> | P.90-29 | • J/C (2) (B-03) has been deleted from the LIN circuit between the ETACS-ECU and the column switch. |
| REAR WIPER AND WASHER | <RHD> | P.90-31 | |

# GROUP 37

# POWER STEERING

## CONTENTS

GENERAL . . . . . 37-2

POWER STEERING GEAR BOX AND LINKAGE . . . . . 37-2

REMOVAL AND INSTALLATION . . . . . 37-2

# GENERAL

M1372000102139

## OUTLINE OF CHANGE

Due to the change in A/C compressor assembly, the following removal service point of steering gear box removal and installation is changed.

# POWER STEERING GEAR BOX AND LINKAGE

## REMOVAL AND INSTALLATION

M1372010902192

### REMOVAL SERVICE POINT

### <<D>> STEERING GEAR & LINKAGE ASSEMBLY REMOVAL

1. Loosen the heater water pump assembly to make sure that it moves freely. However, do not remove the heater piping hose.
2. To ensure that there is adequate operating clearance for pulling out the steering gear & linkage assembly, disconnect the left stabilizer link at the stabilizer side.
3. Check that hoses and wiring harnesses are not caught, and then remove the steering gear & linkage assembly from between the stabilizer bar LH-side and the body.

## GROUP 54D

# ELECTRIC MOTOR UNIT AND TRACTION BATTERY

### CONTENTS


**GENERAL . . . . . 54D-2**

**BATTERY MANAGEMENT UNIT (BMU) AND TRACTION BATTERY . . 54D-2**

INSPECTION CHART FOR DIAGNOSIS CODE . . . . . 54D-2

DIAGNOSIS CODE PROCEDURES . . . . . 54D-3

# GENERAL

M1549226500159

## OUTLINE OF CHANGES

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

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

# BATTERY MANAGEMENT UNIT (BMU) AND TRACTION BATTERY

## INSPECTION CHART FOR DIAGNOSIS CODE

M1549400600116

| Code No. | Diagnosis item | Reference page |
|---|---|---|
| P1A4B | Voltage of each battery cell abnormal | P.54D-3 |
| P1AC6 | Voltage of each battery cell abnormal (HI side) | P.54D-4 |
| P1AC7 | CMU01 battery cell resistance abnormal | P.54D-5 |
| P1AC8 | CMU02 battery cell resistance abnormal | P.54D-5 |
| P1AC9 | CMU03 battery cell resistance abnormal | P.54D-5 |
| P1ACA | CMU04 battery cell resistance abnormal | P.54D-5 |
| P1ACB | CMU05 battery cell resistance abnormal | P.54D-5 |
| P1ACC | CMU06 battery cell resistance abnormal | P.54D-5 |
| P1ACD | CMU07 battery cell resistance abnormal | P.54D-5 |
| P1ACE | CMU08 battery cell resistance abnormal | P.54D-5 |
| P1ACF | CMU09 battery cell resistance abnormal | P.54D-5 |
| P1AD0 | CMU10 battery cell resistance abnormal | P.54D-5 |
| P1AD1 | CMU11 battery cell resistance abnormal | P.54D-5 |
| P1AD2 | CMU12 battery cell resistance abnormal | P.54D-5 |

# DIAGNOSIS CODE PROCEDURES

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

### TROUBLE JUDGMENT

**Check Conditions**

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

**Judgement Criterion**

- Difference in voltage values each battery cell is more than 0.08 V.

### FAIL-SAFE AND BACKUP FUNCTION

- Not available

### PROBABLE CAUSE

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

### DIAGNOSIS PROCEDURE

**STEP 1. M.U.T.-III diagnosis code**

Reconfirm whether the diagnosis codes are set from BMU.

1. Erase the diagnosis codes being set.
2. Electric motor switch: "LOCK" (OFF) → ON
3. After 10 seconds, also the energy level gauge of the combination meter confirm more than 4 segments.

**Q: Is the diagnosis code set?**

**YES :** Replace the traction battery.

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

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

## TROUBLE JUDGMENT

**Check Conditions**

- 3 seconds elapse after the electric motor switch is turned "ON", or 3 seconds elapse after the traction battery starts to be charged.
- The absolute value of the current is less than 1 A.
- The energy level gauge is more than 12 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**

- Difference in voltage values each battery cell is more than 0.05 V.

## FAIL-SAFE AND BACKUP FUNCTION

- Not available

## PROBABLE CAUSE

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

## DIAGNOSIS PROCEDURE

### STEP 1. Traction battery condition check

**Q: Does replace the module in the traction battery recently?**
**YES :** Erase the diagnosis code, check end.
**NO :** Go to Step 2.

### STEP 2. M.U.T.-III diagnosis code

Reconfirm whether the diagnosis codes are set from BMU.

1. Erase the diagnosis codes being set.
2. Electric motor switch: "LOCK" (OFF) → ON
3. After 10 seconds, also the energy level gauge of the combination meter confirm more than 12 segments.

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

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

## TROUBLE JUDGMENT

**Check Conditions**

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

**Judgement Criterion**

- Difference in resistance values inside battery cells is great.

## FAIL-SAFE AND BACKUP FUNCTION

- Not available

## PROBABLE CAUSE

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

## DIAGNOSIS PROCEDURE

**STEP 1. M.U.T.-III diagnosis code**

Reconfirm whether the diagnosis codes are set from BMU.

1. Erase the diagnosis codes being set.
2. Electric motor switch: "LOCK" (OFF) → ON
3. Check if the diagnosis code is set.

**Q: Is the diagnosis code set?**

**YES :** Replace the traction battery.

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

**NOTES**

## GROUP 55

# HEATER, AIR CONDITIONER AND VENTILATION

### CONTENTS


**GENERAL . . . . . 55-2**

**TROUBLESHOOTING . . . . . 55-2**

DIAGNOSIS CODE CHART <A/C CONTROL UNIT> . . . . . 55-2

DIAGNOSIS CODE CHART . . . . . 55-2

CHECK AT ECU TERMINAL <A/C CONTROL UNIT> . . . . . 55-4

**COMPRESSOR ASSEMBLY . . . . . 55-5**

REMOVAL AND INSTALLATION . . . . . 55-5

# GENERAL

M1551000100701

## OUTLINE OF CHANGES

Due to the following change, the service procedure has been established.

- The diagnosis code procedure "Code No. B1105" has been changed.
- The compressor removal and installation procedure has been changed.

# TROUBLESHOOTING

## DIAGNOSIS CODE CHART <A/C CONTROL UNIT>

M1554004902328

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

## DIAGNOSIS CODE CHART

**Code No. B1105 ELC. compressor (communication)**

### Diagnosis code set conditions

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

## PROBABLE CAUSES

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

## DIAGNOSIS PROCEDURE

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

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

**STEP 2. Check the A/C relay relay.**

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

**STEP 3. Measure the voltage at B-309 heater water pump relay connector.**

(1) Disconnect the connector, and measure at the wiring harness side.
(2) Voltage between terminal 4 and body earth

**OK: Battery voltage**

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

**STEP 4. Check the wiring harness between the fusible link (25) and B-309 A/C relay connector terminal No. 4.**

- Check the power supply line for open circuit.

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

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

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

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

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

**OK: Battery voltage**

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

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

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

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

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

**OK: Continuity exists (2 Ω or less).**

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

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

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

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

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

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

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

**STEP 12. Connector check: B-122 earth connector**

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

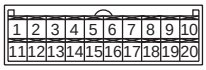
**STEP 13. Check the wiring harness between A-111 A/C compressor connector terminal No.2 and B-122 earth connector terminal No. 6.**
- Check the earth wires for open circuit.

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

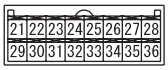
## CHECK AT ECU TERMINAL <A/C CONTROL UNIT>

M1554005400450

<C-101>




<C-113>




ACA03437AB

| 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 | – | – | – |

| Terminal No. | Check items | Inspection conditions | Normal conditions |
|---|---|---|---|
| 29 | Heater water pump assembly input | Heater water pump assembly: ON | 12 V |
| 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 fresh air position | System voltage |
| | | When moving to air recirculation position | 1 V or less |
| 32 to 33 | – | – | – |
| 34 to 36 | Heater output | At max. heater output | 3.0 to 7.0V |

# COMPRESSOR ASSEMBLY

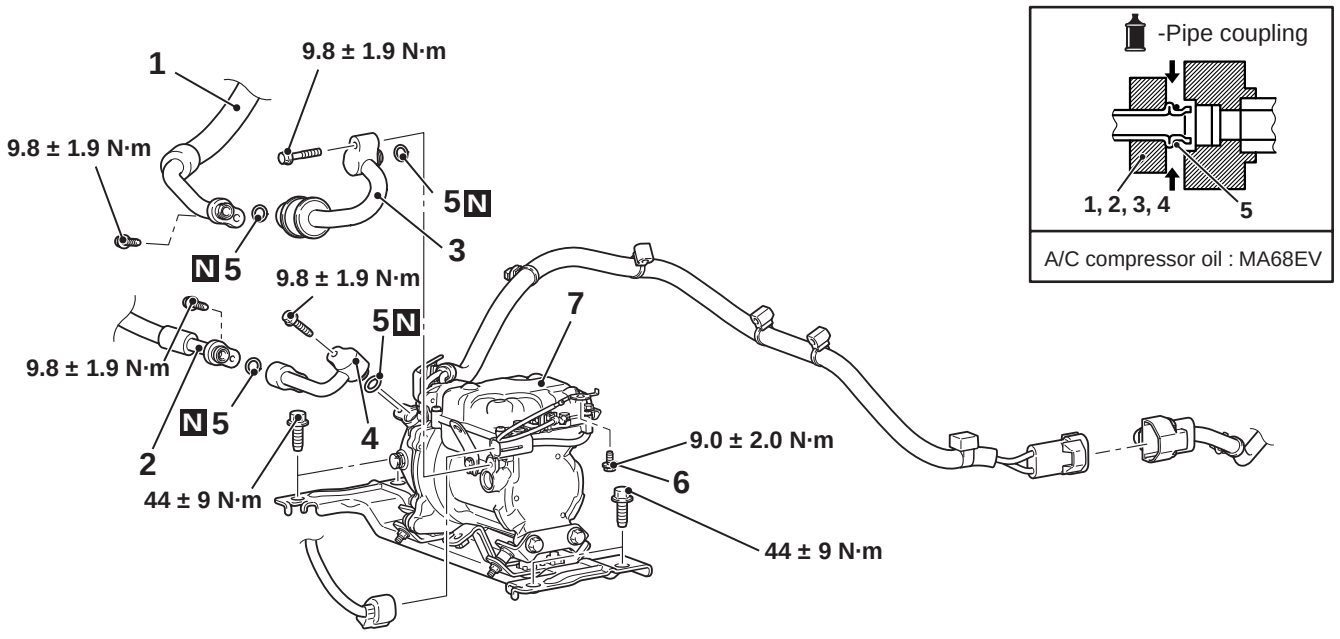
## REMOVAL AND INSTALLATION

M1552004403632

***⚠ DANGER***

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

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




ACC00379AB

**Removal steps**

<<**A**>> 1. A/C compressor discharge pipe connection
<<**A**>> 2. A/C compressor suction pipe connection
<<**A**>> 3. A/C compressor discharge pipe hose
<<**A**>> 4. A/C compressor suction pipe hose
5. O-ring
- Cooling fan resistor (Refer to GROUP 14, Cooling Fan Resistor.)

6. Earth bolt
<<**B**>> >>**A**<< 7. A/C compressor assembly

## REMOVAL SERVICE POINTS

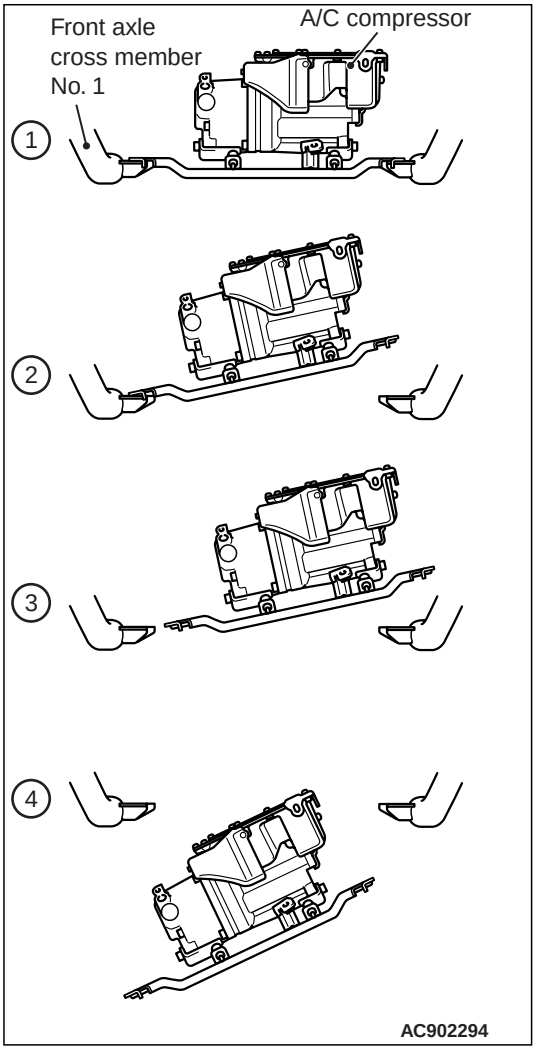
## <<A>>A/C COMPRESSOR DISCHARGE PIPE/A/C COMPRESSOR SUCTION PIPE/A/C COMPRESSOR DISCHARGE PIPE HOSE/A/C COMPRESSOR SUCTION PIPE HOSE DISCONNECTION

**⚠ CAUTION**

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

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

## <<B>> A/C COMPRESSOR ASSEMBLY REMOVAL




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

## INSTALLATION SERVICE POINT

## >>A<< A/C COMPRESSOR ASSEMBLY INSTALLATION

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

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

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

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

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

*NOTE:*

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

**NOTES**

## GROUP 80

# CONFIGURATION DIAGRAMS

### CONTENTS

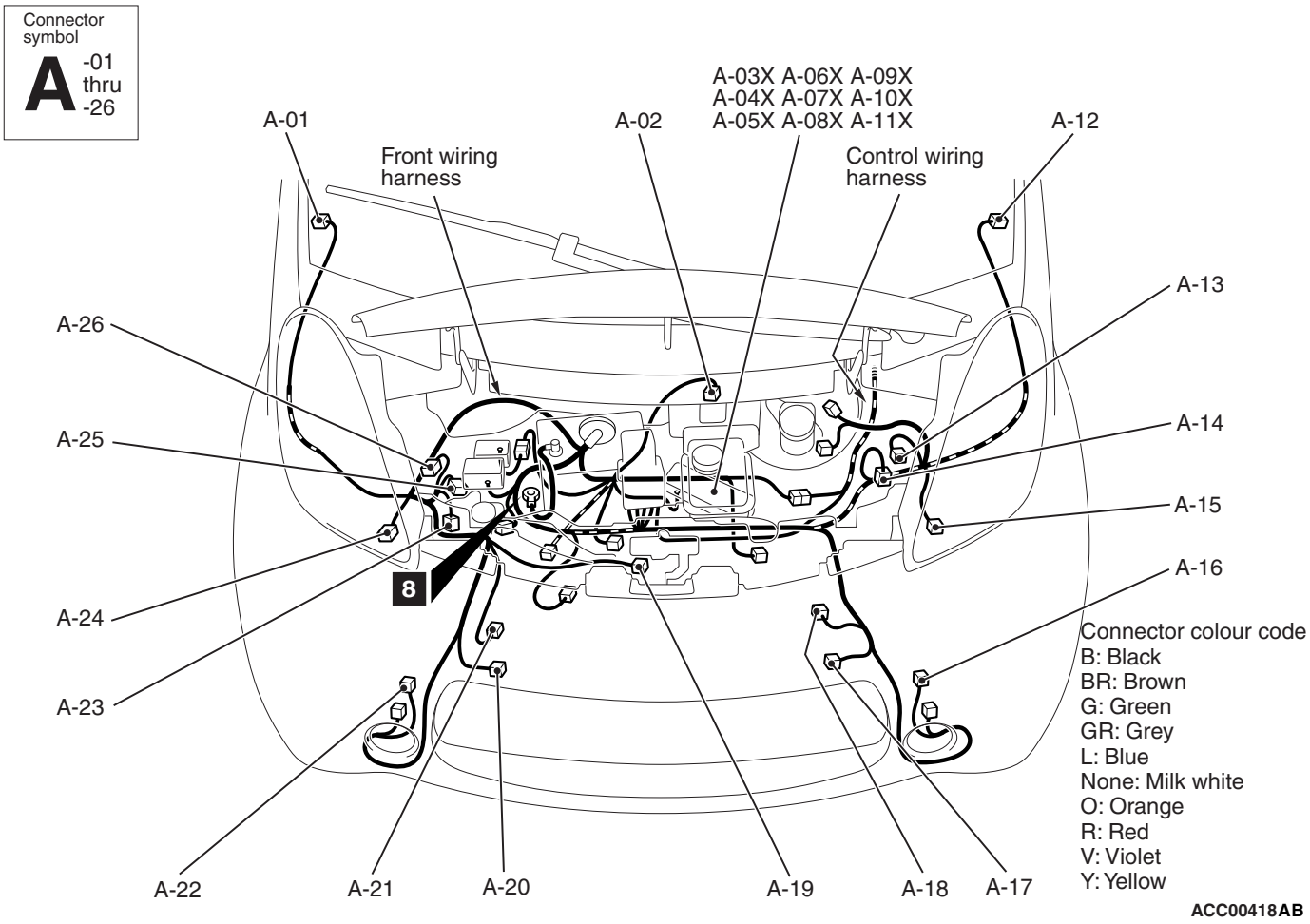
**HOOD ROOM** . . . . . **80-2**

HOOD ROOM <LHD> . . . . . 80-2
HOOD ROOM <RHD> . . . . . 80-4

# HOOD ROOM

## HOOD ROOM <LHD>

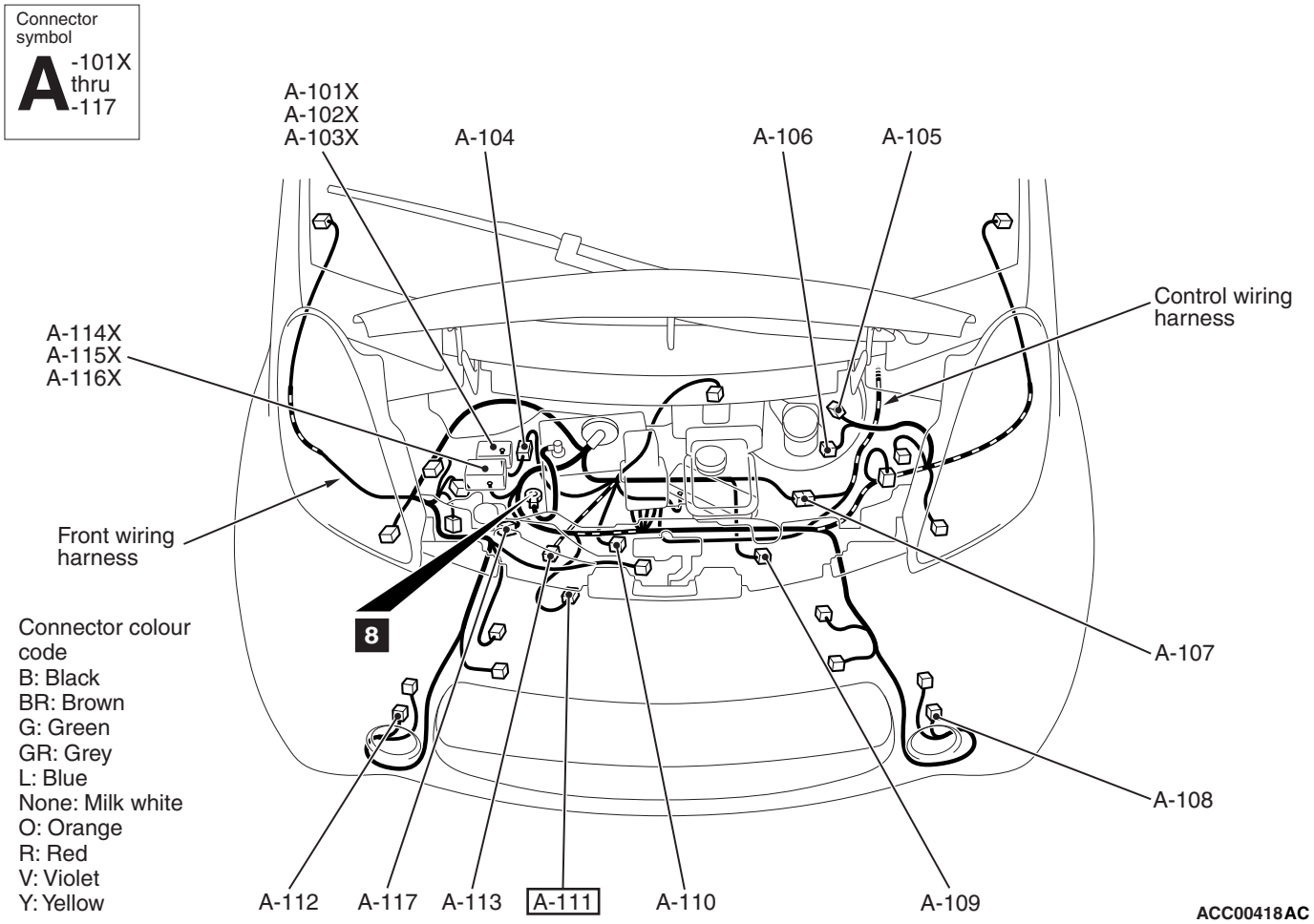
M1801004000122




ACC00418AB

| | | |
|---|---|---|
| A-01 | (2-GR) | Side turn-signal lamp (RH) |
| A-02 | (6-GR) | Windshield wiper motor |
| A-03X | (4) | Horn relay |
| A-04X | (4) | Headlamp relay (HI) |
| A-05X | (4) | Headlamp relay (LO) |
| A-06X | (4) | On board charger relay |
| A-07X | (4) | Front fog lamp relay |
| A-08X | (4) | EV control relay |
| A-09X | (4) | Water pump relay |
| A-10X | (4) | Cooling fan relay (LO) |
| A-11X | (4) | Cooling fan relay (HI) |
| A-12 | (2-GR) | Side turn-signal lamp (LH) |
| A-13 | (10-GR) | Headlamp assembly (LH) |
| A-14 | (26-B) | ASC-ECU |
| A-15 | (2-Y) | Front impact sensor (LH) |
| A-16 | (2-B) | Front fog lamp (LH) |
| A-17 | (2-B) | Ambient temperature sensor |
| A-18 | (2-B) | Front wheel speed sensor (LH) |
| A-19 | (2-B) | Cooling fan motor |
| A-20 | (1-B) | Horn |
| A-21 | (2-B) | Front wheel speed sensor (RH) |
| A-22 | (2-B) | Front fog lamp (RH) |
| A-23 | (2-GR) | Windshield washer motor |
| A-24 | (2-Y) | Front impact sensor (RH) |
| A-25 | (3-B) | A/C pressure sensor |
| A-26 | (10-GR) | Headlamp assembly (RH) |

## HOOD ROOM <LHD> (CONTINUED)

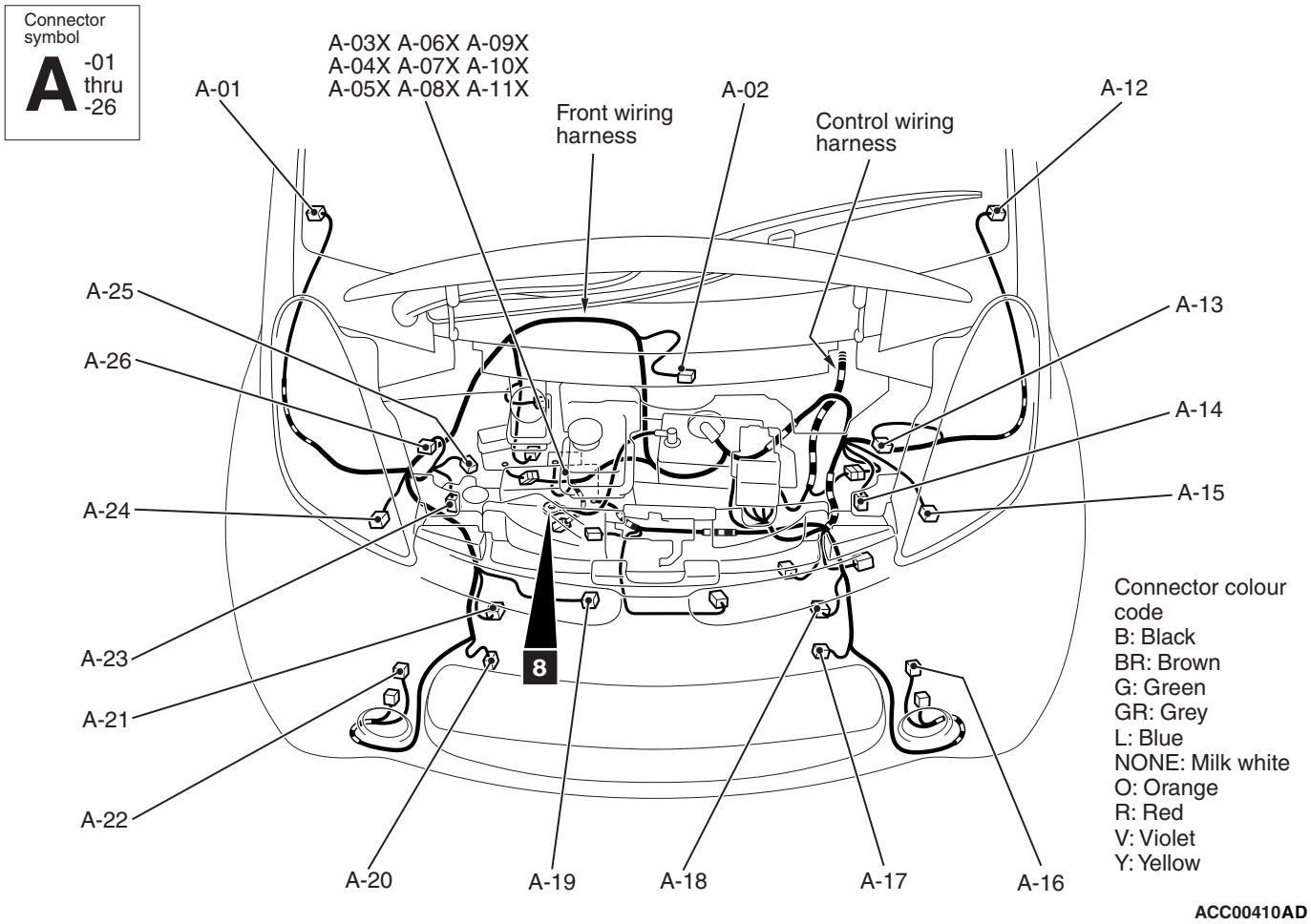



| | | |
|---|---|---|
| A-101X | (5) | Brake electric vacuum pump control relay 1 |
| A-102X | (5) | Brake electric vacuum pump control relay 2 |
| A-103X | (5) | Brake electric vacuum pump main relay |
| A-104 | (8-B) | Front wiring harness and brake electric vacuum pump relay box combination |
| A-105 | (3-B) | Brake booster vacuum sensor |
| A-106 | (2-GR) | Brake fluid level switch |
| A-107 | (8-B) | Front wiring harness and control wiring harness combination |
| A-108 | (2-GR) | Daytime running lamp (LH) |
| A-109 | (2-GR) | Heater water pump assembly |
| A-110 | (2-GR) | Cooling fan resister (for cooling fan relay (LO)) |
| A-111 | (4-GR) | A/C compressor |
| A-112 | (2-GR) | Daytime running lamp (RH) |
| A-113 | (8-GR) | EV water PTC heater |
| A-114X | (4) | Heater water pump relay |
| A-115X | (4) | Traction battery cooling fan relay |
| A-116X | (4) | Daytime running lamp relay |
| A-117 | (2-B) | Acoustic vehicle alerting speaker |

*NOTE: Connector numbers enclosed by a box mean connectors of which have been changed.*

## HOOD ROOM <RHD>

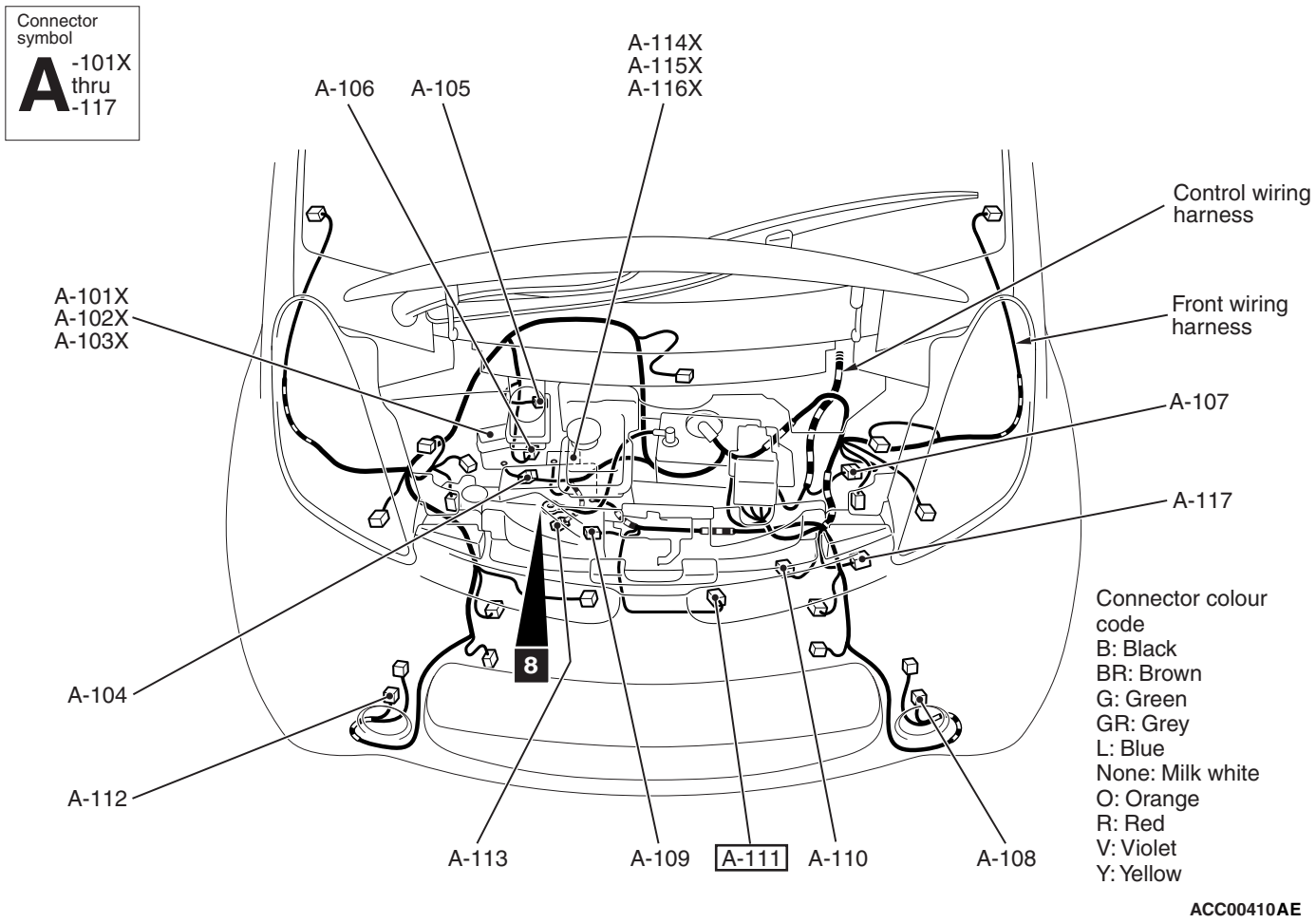
M1801004000133




ACC00410AD

| | | |
|---|---|---|
| A-01 | (2-GR) | Side turn-signal lamp (RH) |
| A-02 | (6-GR) | Windshield wiper motor |
| A-03X | (4) | Horn relay |
| A-04X | (4) | Headlamp relay (HI) |
| A-05X | (4) | Headlamp relay (LO) |
| A-06X | (4) | On board charger relay |
| A-07X | (4) | Front fog lamp relay |
| A-08X | (4) | EV control relay |
| A-09X | (4) | Water pump relay |
| A-10X | (4) | Cooling fan relay (LO) |
| A-11X | (4) | Cooling fan relay (HI) |
| A-12 | (2-GR) | Side turn-signal lamp (LH) |
| A-13 | (10-GR) | Headlamp assembly (LH) |
| A-14 | (26-B) | ASC-ECU |
| A-15 | (2-Y) | Front impact sensor (LH) |
| A-16 | (2-B) | Front fog lamp (LH) |
| A-17 | (2-B) | Ambient temperature sensor |
| A-18 | (2-B) | Front wheel speed sensor (LH) |
| A-19 | (2-B) | Cooling fan motor |
| A-20 | (1-B) | Horn |
| A-21 | (2-B) | Front wheel speed sensor (RH) |
| A-22 | (2-B) | Front fog lamp (RH) |
| A-23 | (2-GR) | Windshield washer motor |
| A-24 | (2-Y) | Front impact sensor (RH) |
| A-25 | (3-B) | A/C pressure sensor |
| A-26 | (10-GR) | Headlamp assembly (RH) |

## HOOD ROOM <RHD> (CONTINUED)




| | | |
|---|---|---|
| A-101X | (5) | Brake electric vacuum pump control relay 1 |
| A-102X | (5) | Brake electric vacuum pump control relay 2 |
| A-103X | (5) | Brake electric vacuum pump main relay |
| A-104 | (8-B) | Front wiring harness and brake electric vacuum pump relay box combination |
| A-105 | (3-B) | Brake booster vacuum sensor |
| A-106 | (2-GR) | Brake fluid level switch |
| A-107 | (8-B) | Front wiring harness and control wiring harness combination |
| A-108 | (2-GR) | Daytime running lamp (LH) |
| A-109 | (2-GR) | Heater water pump assembly |
| A-110 | (2-GR) | Cooling fan resister (for cooling fan relay (LO)) |
| A-111 | (4-GR) | A/C compressor |
| A-112 | (2-GR) | Daytime running lamp (RH) |
| A-113 | (8-GR) | EV water PTC heater |
| A-114X | (4) | Heater water pump relay |
| A-115X | (4) | Traction battery cooling fan relay |
| A-116X | (4) | Daytime running lamp relay |
| A-117 | (2-B) | Acoustic vehicle alerting speaker |

*NOTE: Connector numbers enclosed by a box mean connectors of which have been changed.*

**NOTES**

# GROUP 90

# CIRCUIT DIAGRAMS

## CONTENTS


**TRACTION BATTERY COOLING SYSTEM . . . . . 90-2**
- TRACTION BATTERY COOLING SYSTEM <LHD> . . . . . 90-2
- TRACTION BATTERY COOLING SYSTEM <RHD> . . . . . 90-5

**HEADLAMP . . . . . 90-8**
- HEADLAMP <RHD> . . . . . 90-8

**TAIL LAMP, POSITION LAMP, LICENCE PLATE LAMP AND LIGHTING MONITOR BUZZER . . . . . 90-10**
- TAIL LAMP, POSITION LAMP, LICENCE PLATE LAMP AND LAMP REMINDER BUZZER <RHD> . . . . . 90-10

**DAYTIME RUNNING LAMP (DRL) . . 90-13**
- DAYTIME RUNNING LAMP (DRL) <RHD> . . . . . 90-13

**FRONT FOG LAMP . . . . . 90-15**
- FRONT FOG LAMP <RHD> . . . . . 90-15

**REAR FOG LAMP . . . . . 90-17**
- REAR FOG LAMP <RHD> . . . . . 90-17

**TURN-SIGNAL LAMP AND HAZARD WARNING LAMP . . . . . 90-19**
- TURN-SIGNAL LAMP AND HAZARD WARNING LAMP <RHD> . . . . . 90-19

**AIR CONDITIONER . . . . . 90-21**
- AIR CONDITIONER <LHD> . . . . . 90-21
- AIR CONDITIONER <RHD> . . . . . 90-25

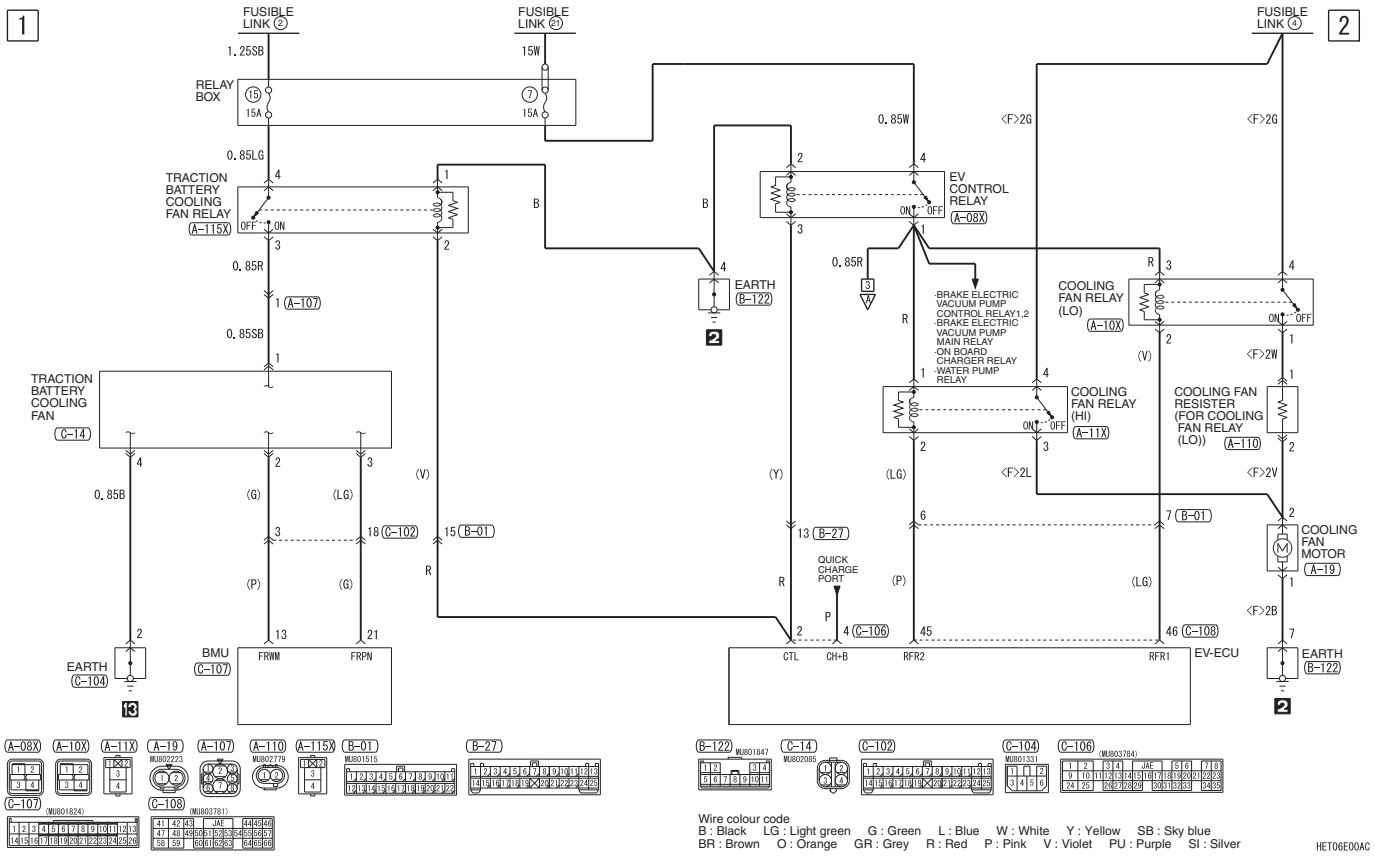
**WINDSHIELD WIPER AND WASHER. . . . . 90-29**
- WINDSHIELD WIPER AND WASHER <RHD>. . . . . 90-29

**REAR WIPER AND WASHER . . . . . 90-31**
- REAR WIPER AND WASHER <RHD> . . . . 90-31

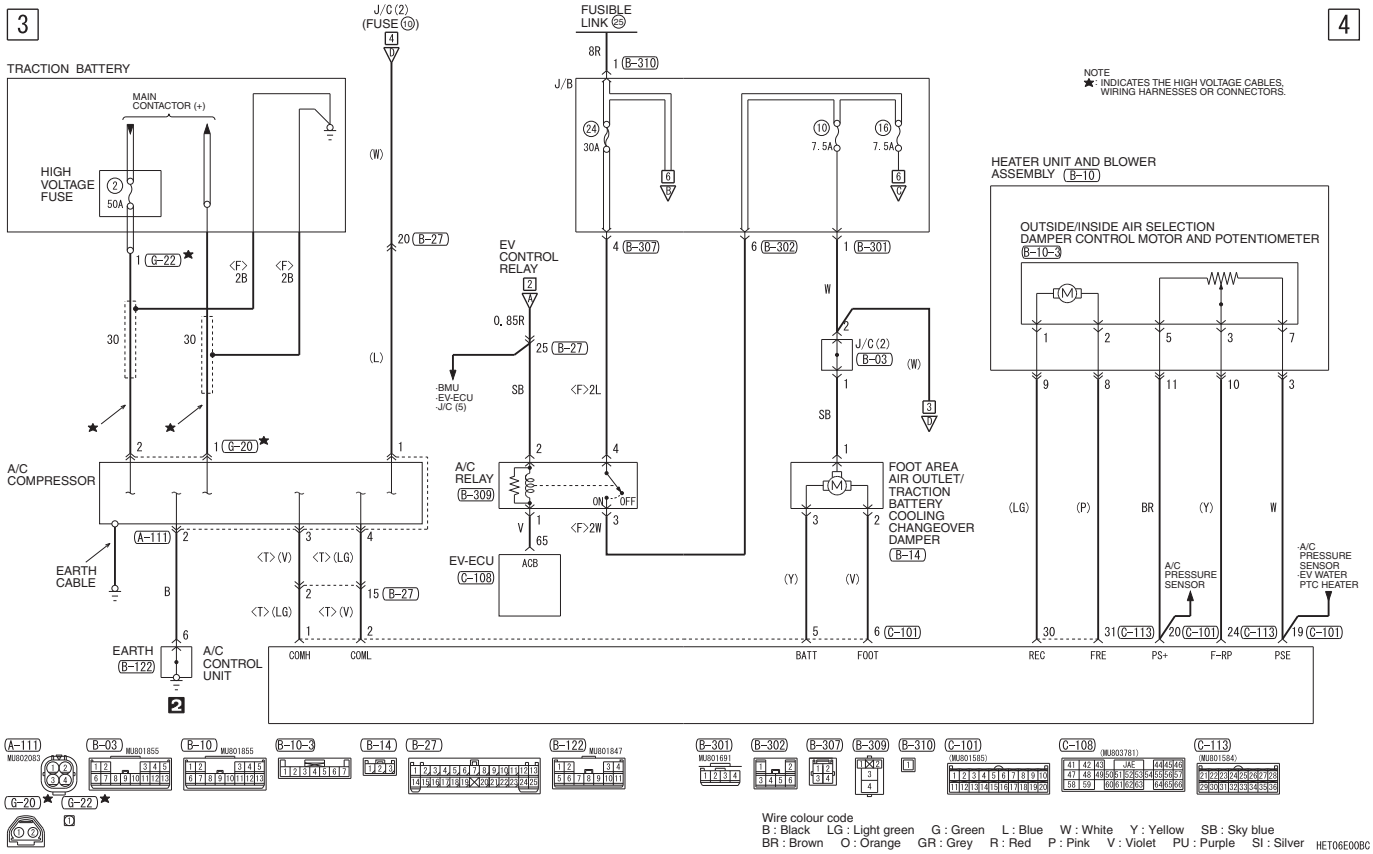
# TRACTION BATTERY COOLING SYSTEM

## TRACTION BATTERY COOLING SYSTEM <LHD>

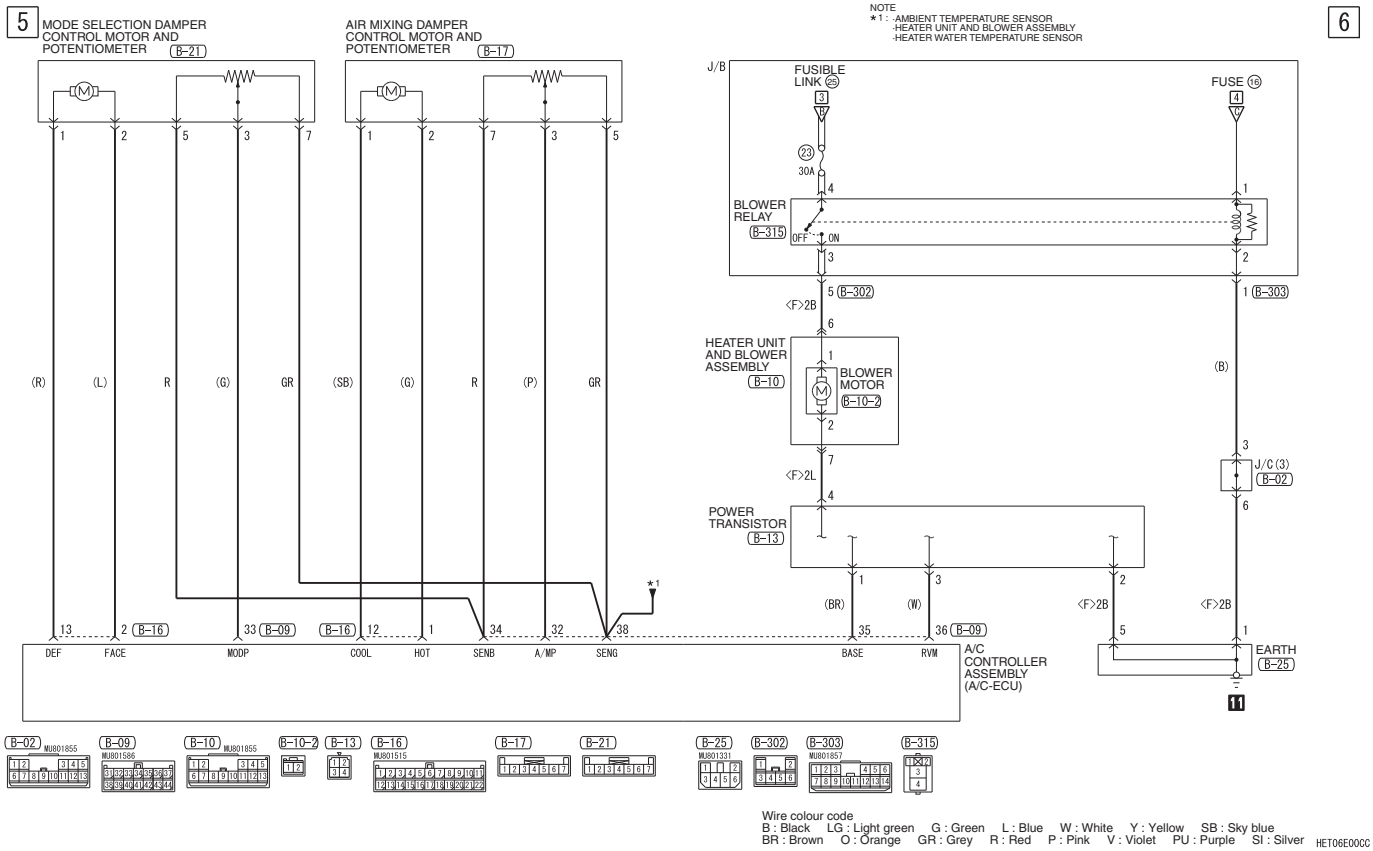
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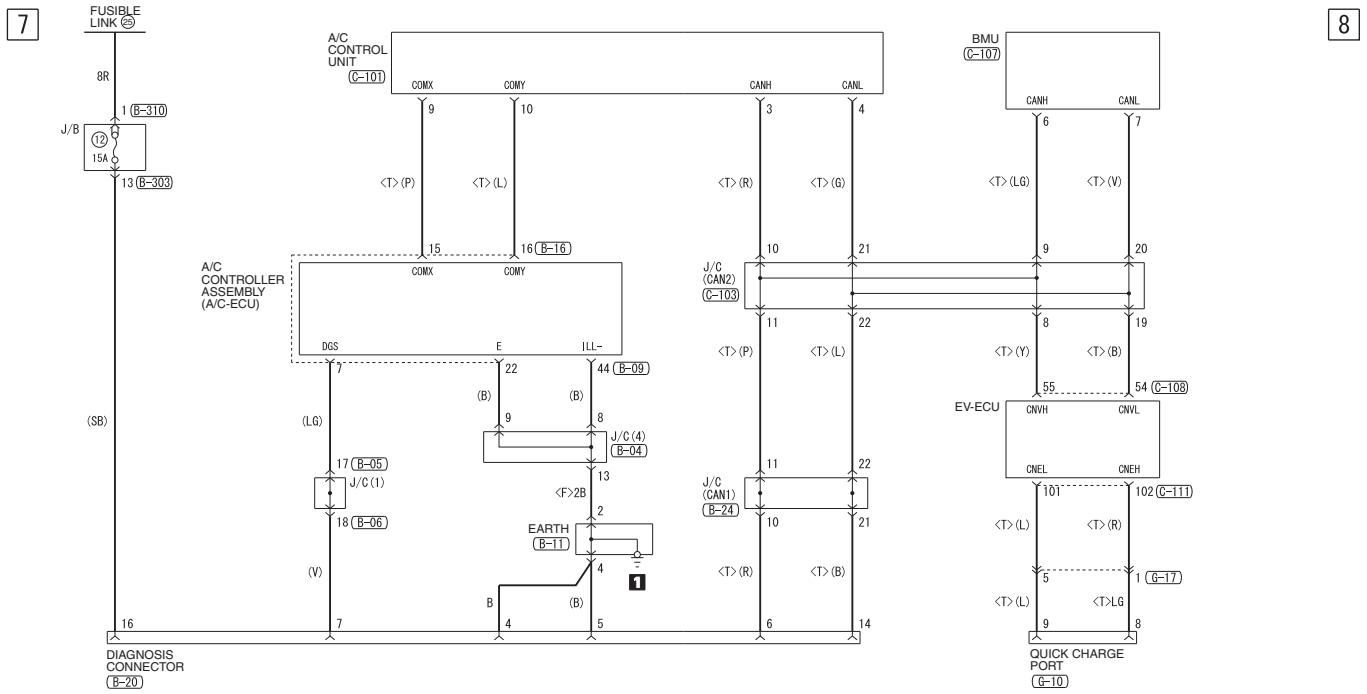
## TRACTION BATTERY COOLING SYSTEM <LHD> (CONTINUED)

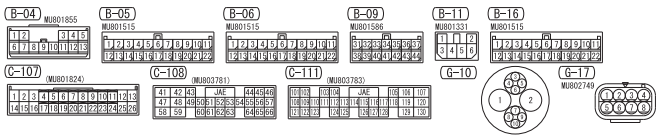


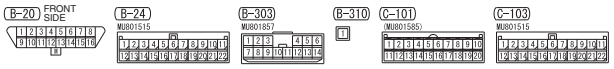

## TRACTION BATTERY COOLING SYSTEM <LHD> (CONTINUED)



## TRACTION BATTERY COOLING SYSTEM <LHD> (CONTINUED)



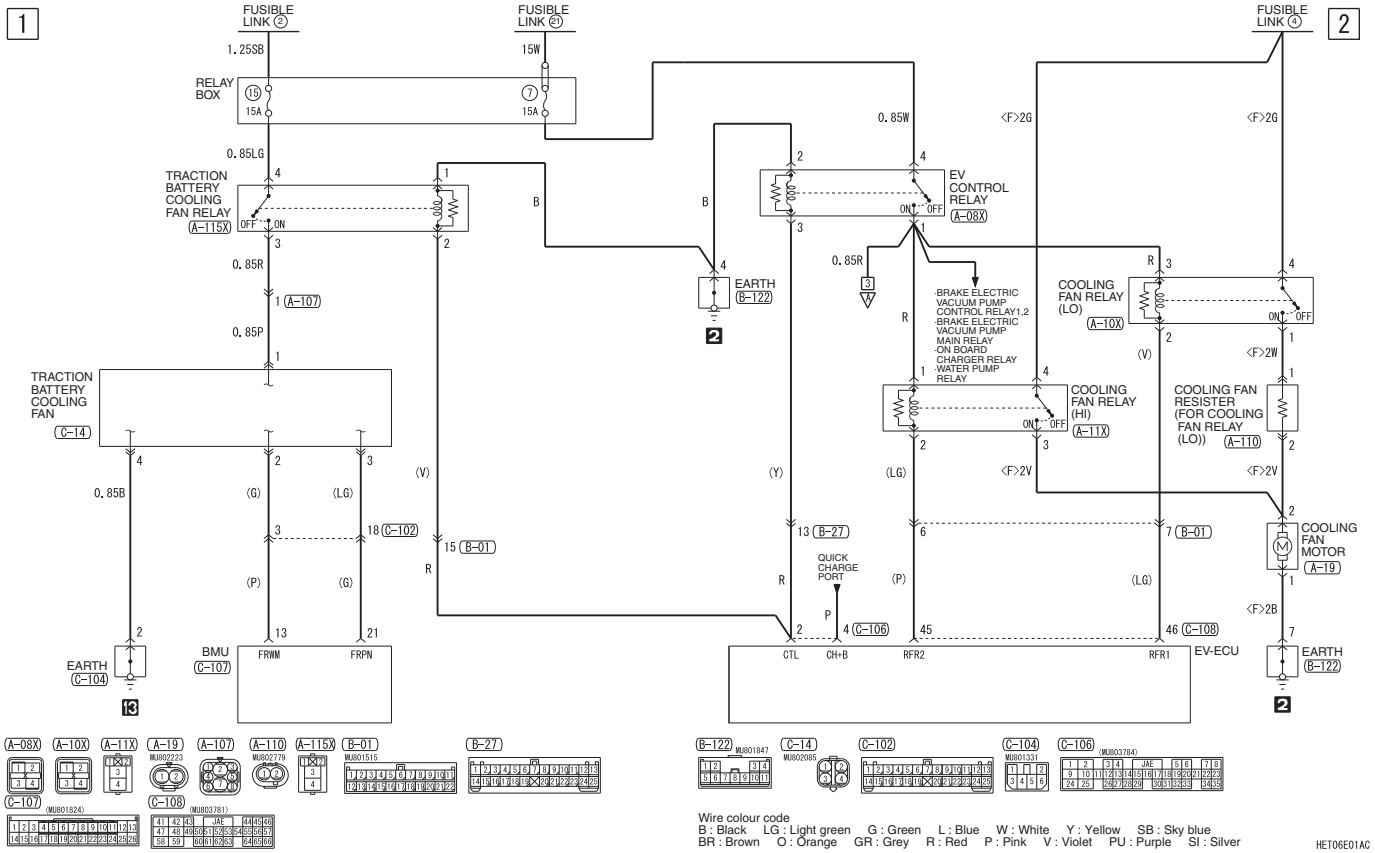



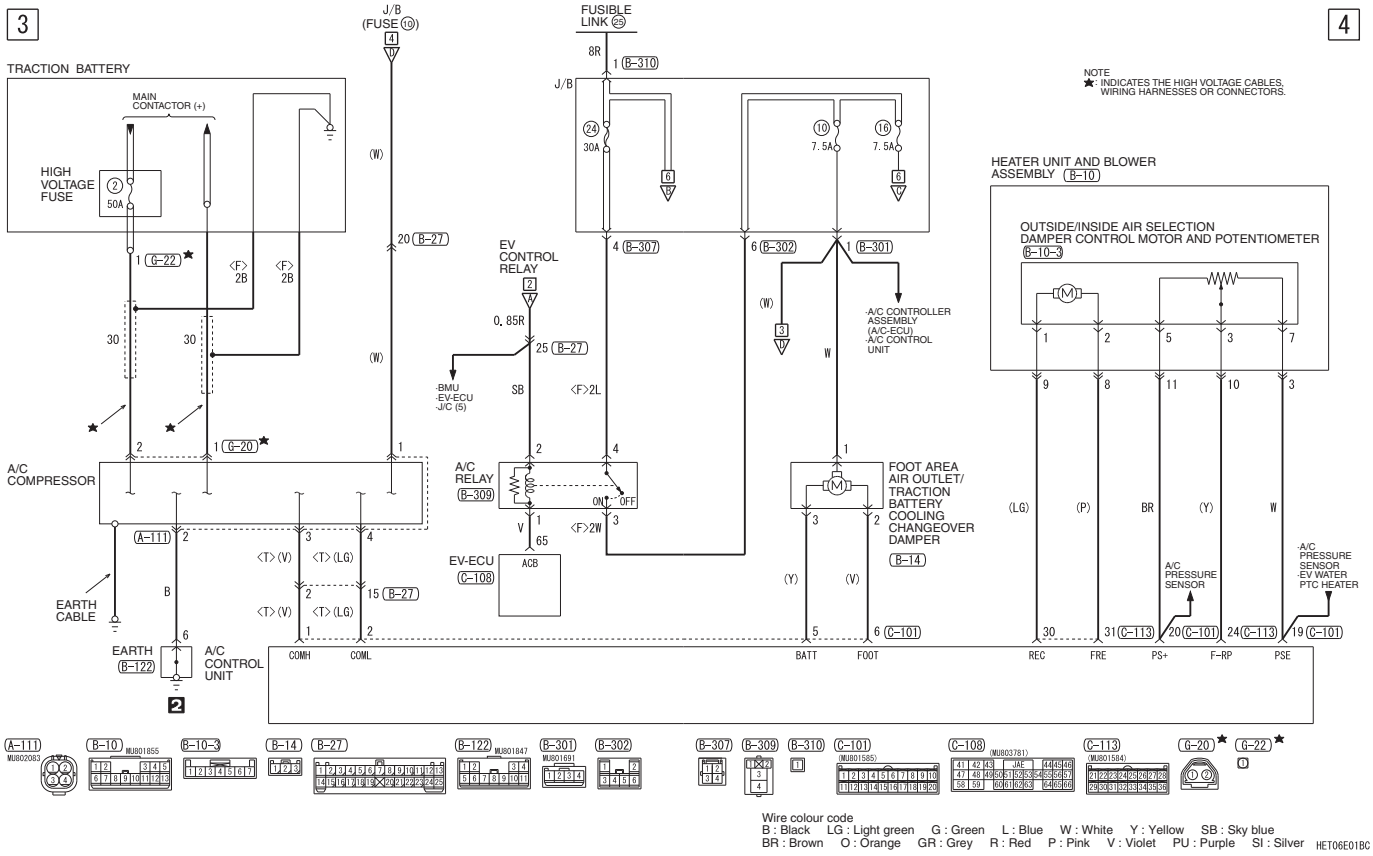

Wire colour code
B : Black LG : Light green G : Green L : Blue W : White Y : Yellow SB : Sky blue
BR : Brown O : Orange GR : Grey R : Red P : Pink V : Violet PU : Purple SI : Silver HET06E00DC

# TRACTION BATTERY COOLING SYSTEM <RHD>

M1901038100091



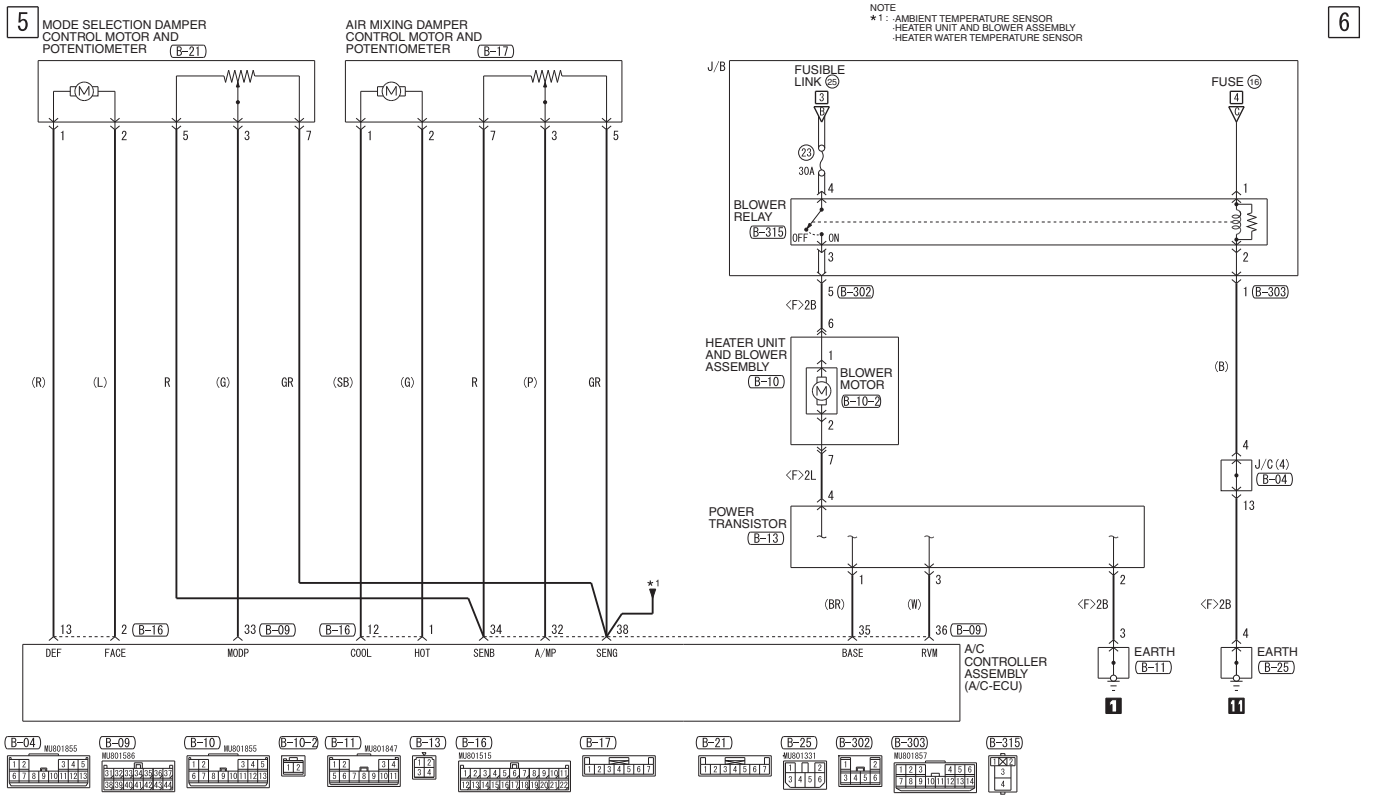
## TRACTION BATTERY COOLING SYSTEM <RHD> (CONTINUED)




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

HET06E01BC

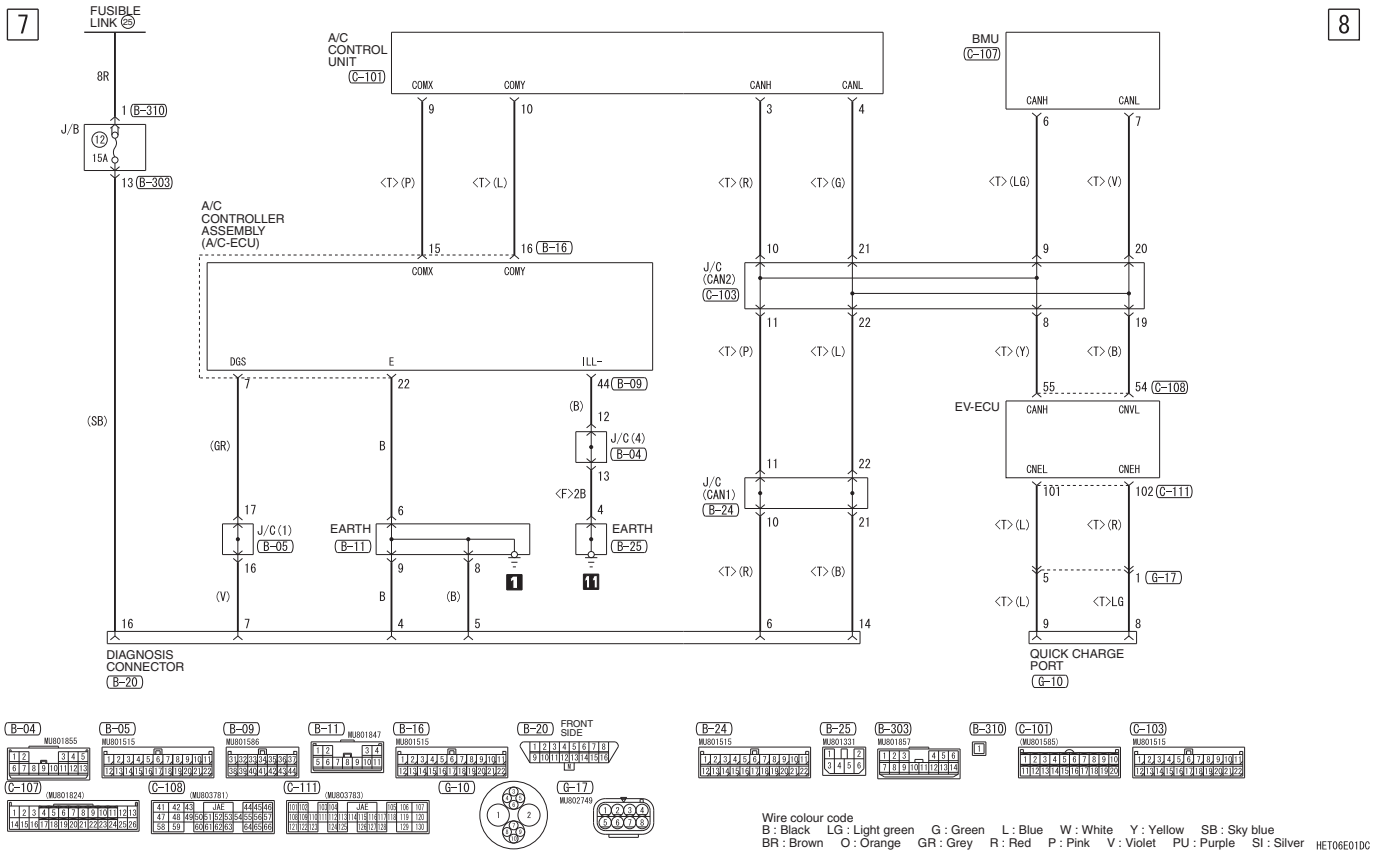
## TRACTION BATTERY COOLING SYSTEM <RHD> (CONTINUED)




Wire colour code
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HET06E01CC

## TRACTION BATTERY COOLING SYSTEM <RHD> (CONTINUED)







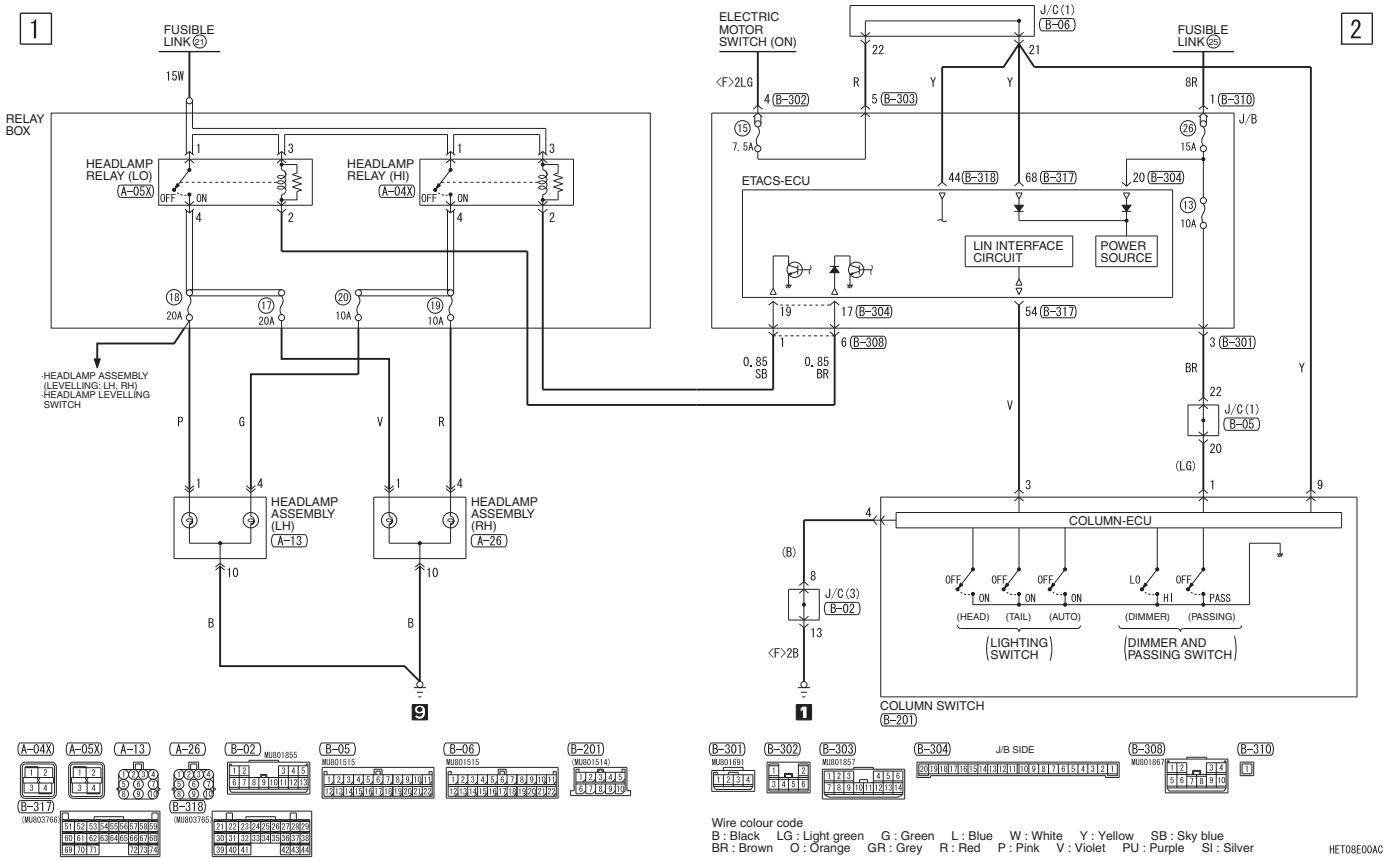



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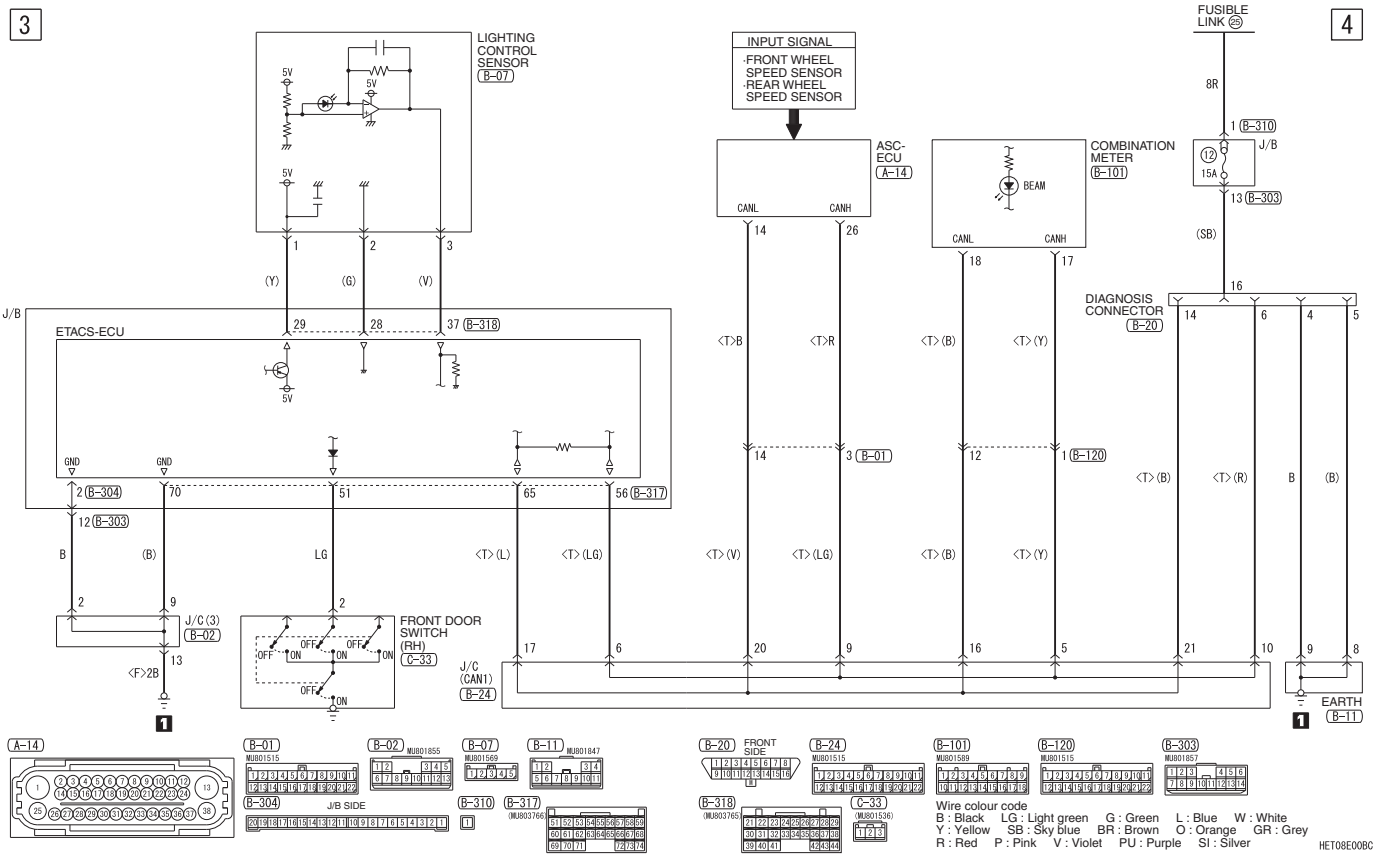
# HEADLAMP

## HEADLAMP <RHD>

M1901001507892



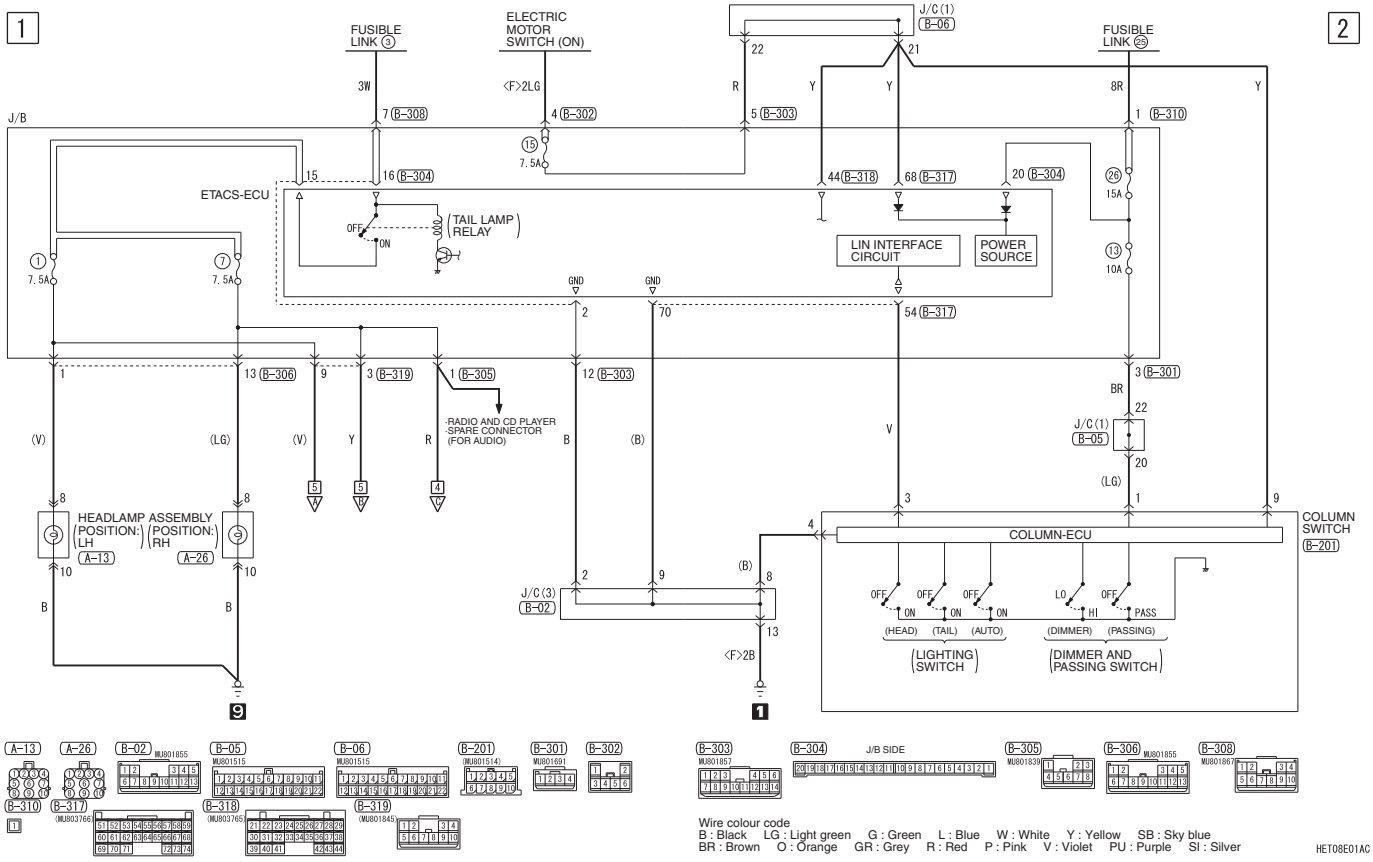
## HEADLAMP <RHD> (CONTINUED)



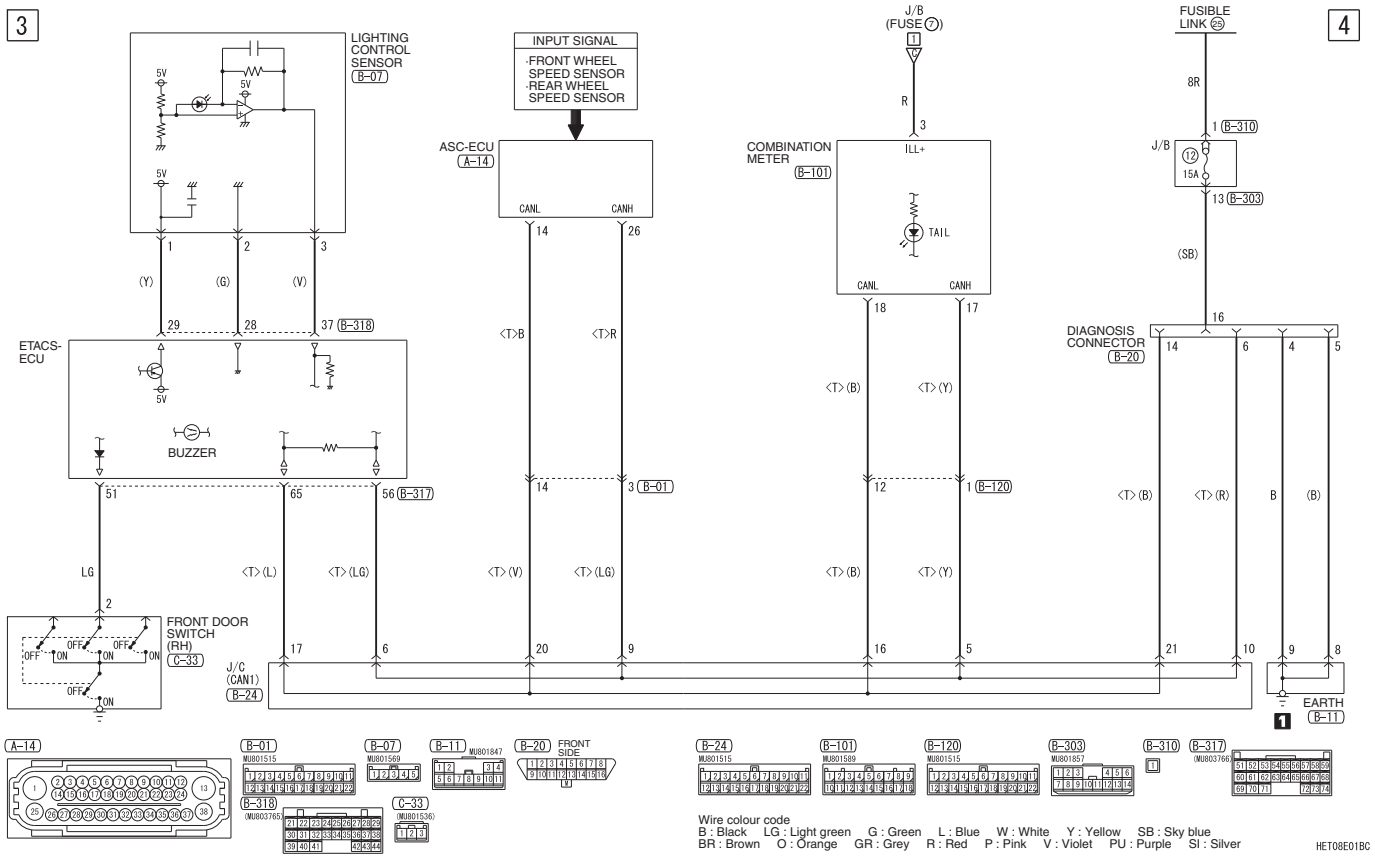
# TAIL LAMP, POSITION LAMP, LICENCE PLATE LAMP AND LIGHTING MONITOR BUZZER

## TAIL LAMP, POSITION LAMP, LICENCE PLATE LAMP AND LAMP REMINDER BUZZER <RHD>

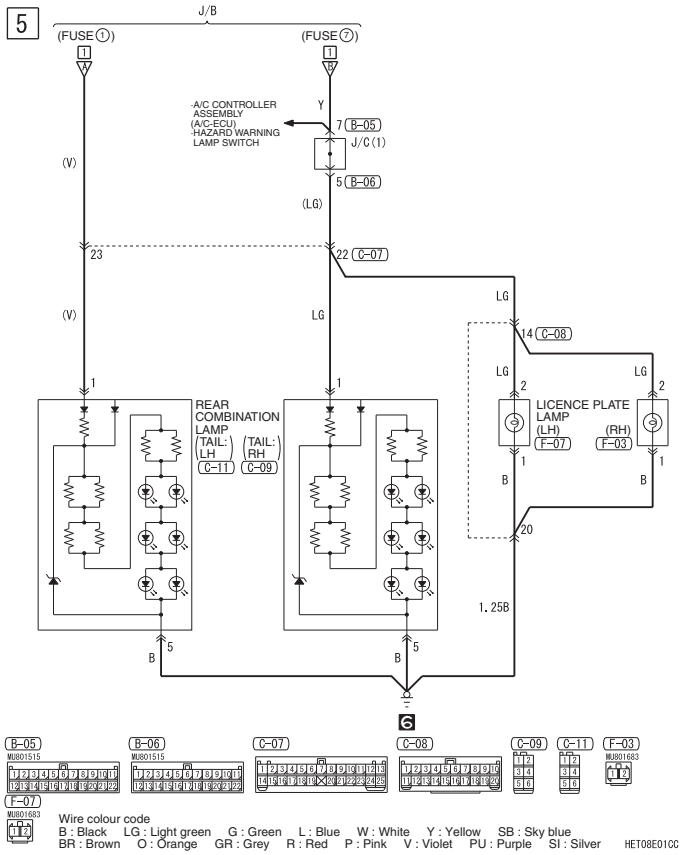
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## TAIL LAMP, POSITION LAMP, LICENCE PLATE LAMP AND LAMP REMINDER BUZZER <RHD> (CONTINUED)



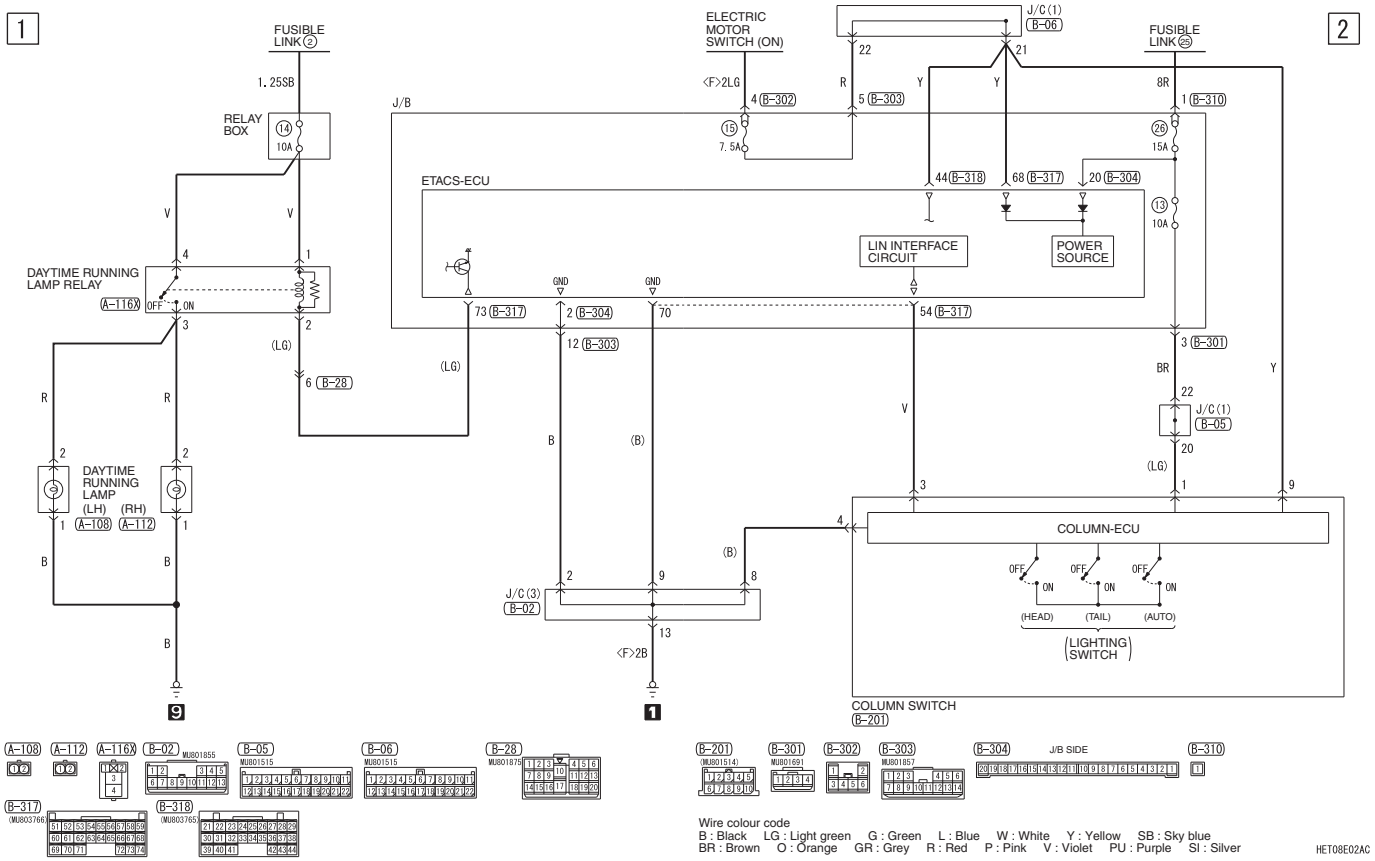
## TAIL LAMP, POSITION LAMP, LICENCE PLATE LAMP AND LAMP REMINDER BUZZER <RHD> (CONTINUED)



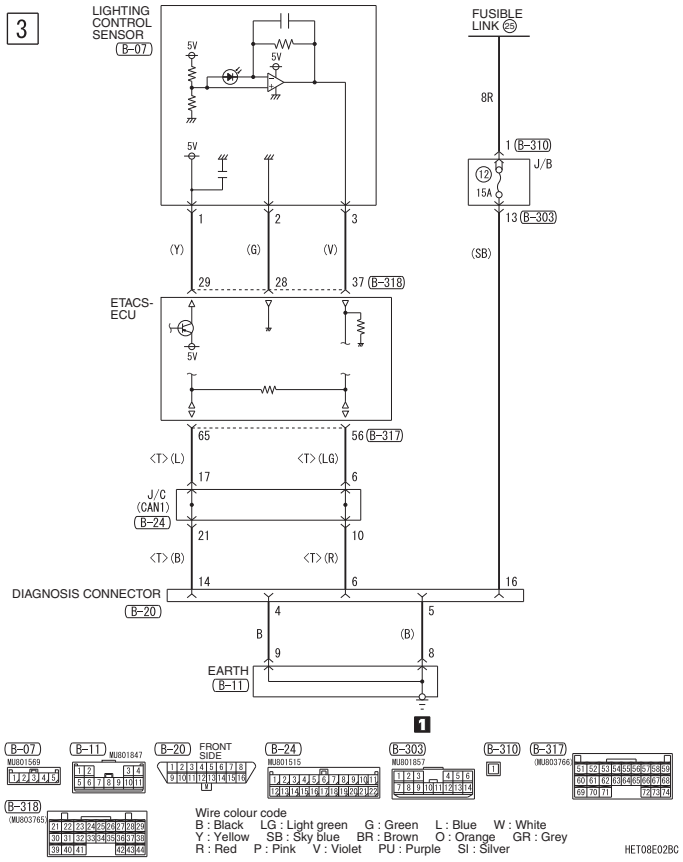
# DAYTIME RUNNING LAMP (DRL)

## DAYTIME RUNNING LAMP (DRL) <RHD>

M1901030701025



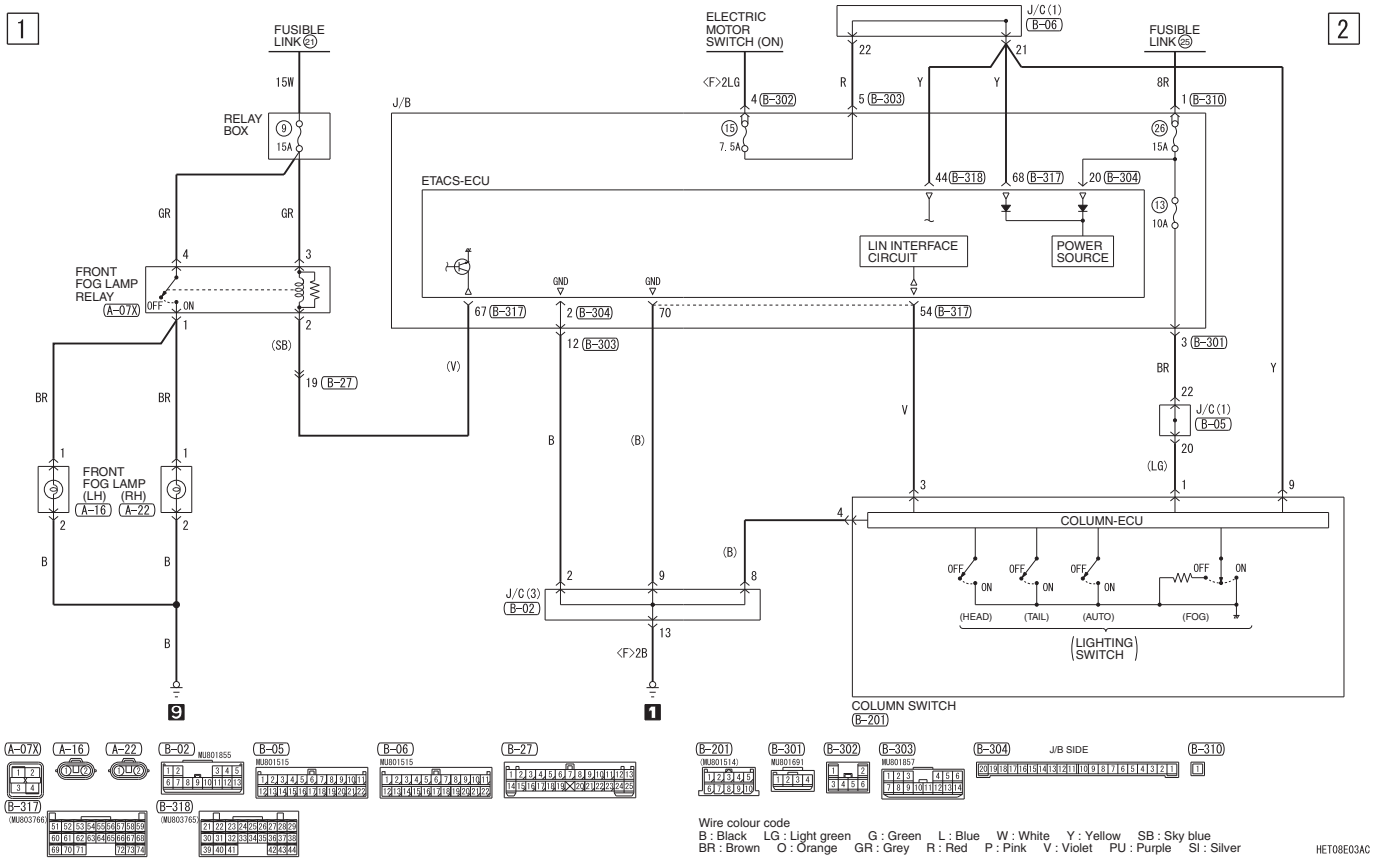
## DAYTIME RUNNING LAMP (DRL) <RHD> (CONTINUED)



# FRONT FOG LAMP

## FRONT FOG LAMP <RHD>

M1901011902830



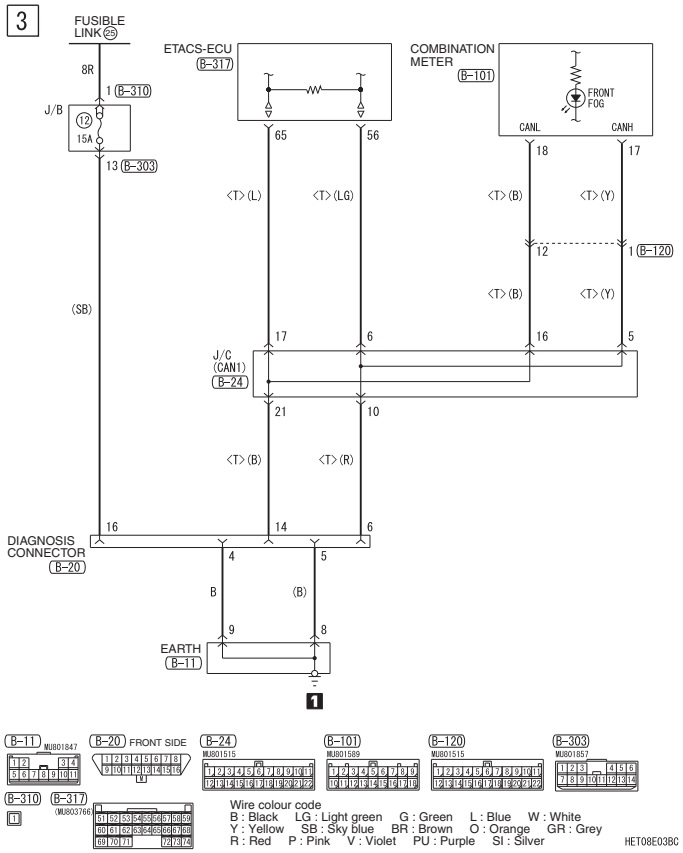




Wire colour code
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BR : Brown O : Orange GR : Grey R : Red P : Pink V : Violet PU : Purple SI : Silver

HET08E03AC

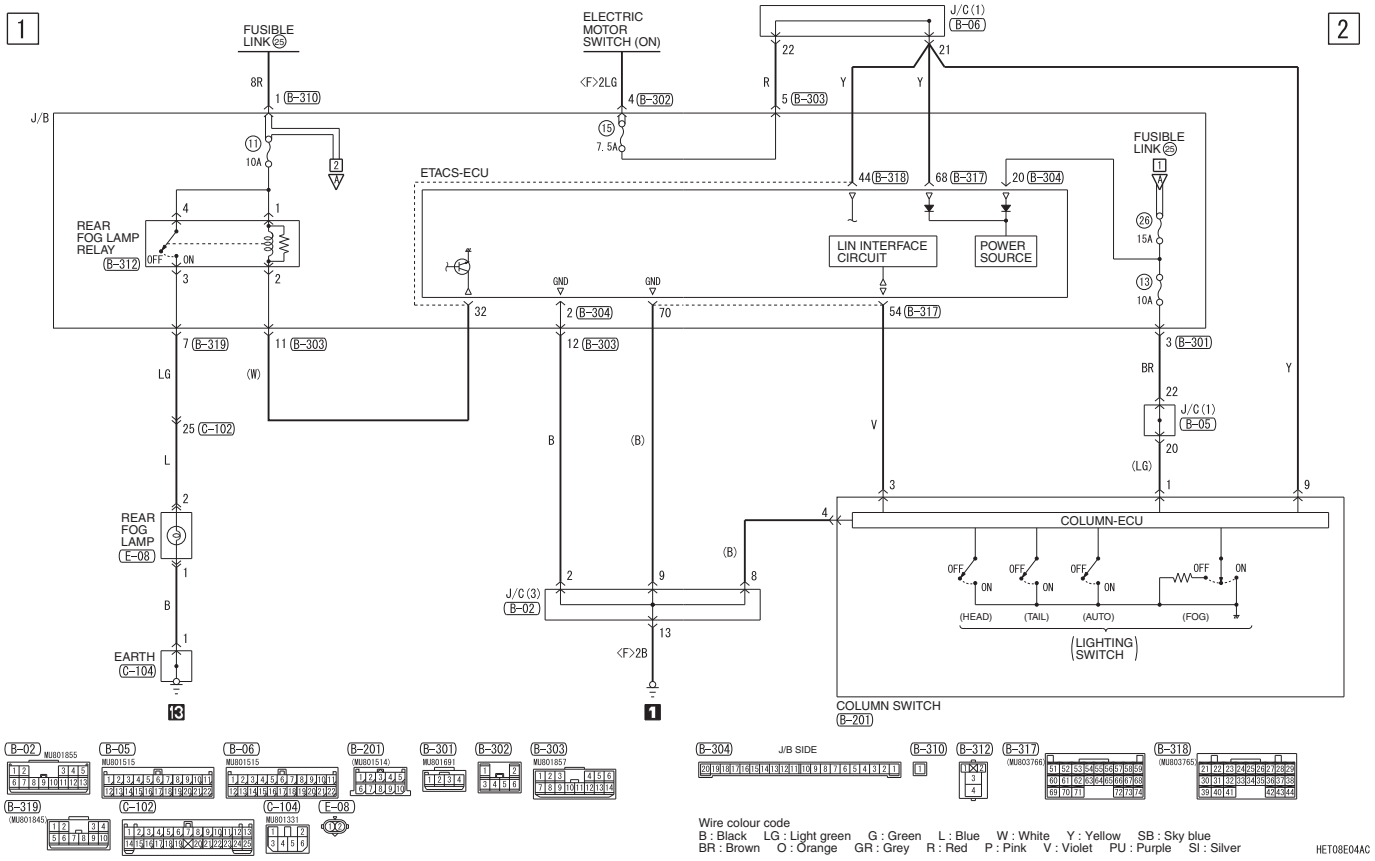
## FRONT FOG LAMP <RHD> (CONTINUED)



# REAR FOG LAMP

## REAR FOG LAMP <RHD>

M1901012002186





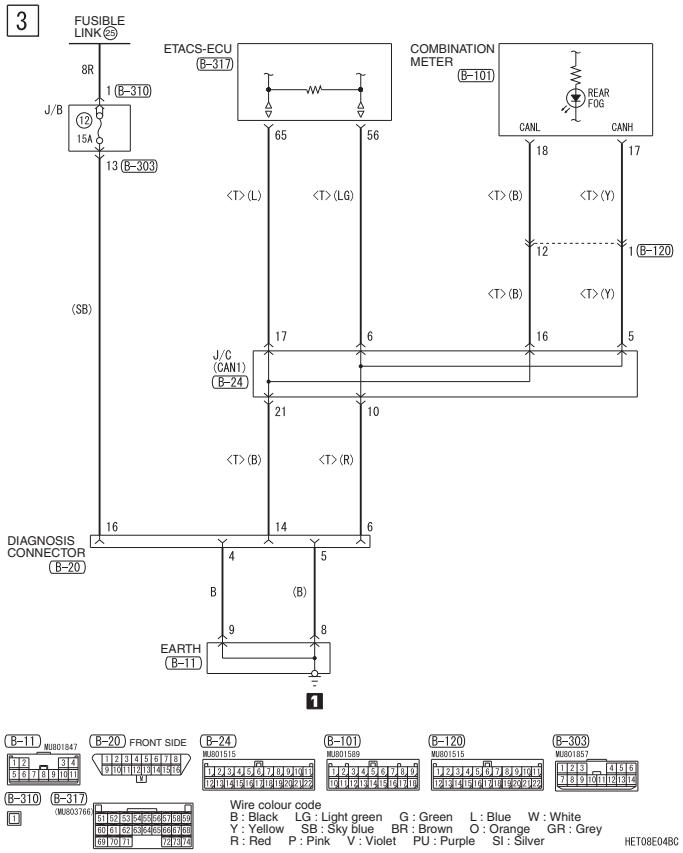





Wire colour code
B : Black LG : Light green G : Green L : Blue W : White Y : Yellow SB : Sky blue
BR : Brown O : Orange GR : Grey R : Red P : Pink V : Violet PU : Purple SI : Silver

HET08E04AC

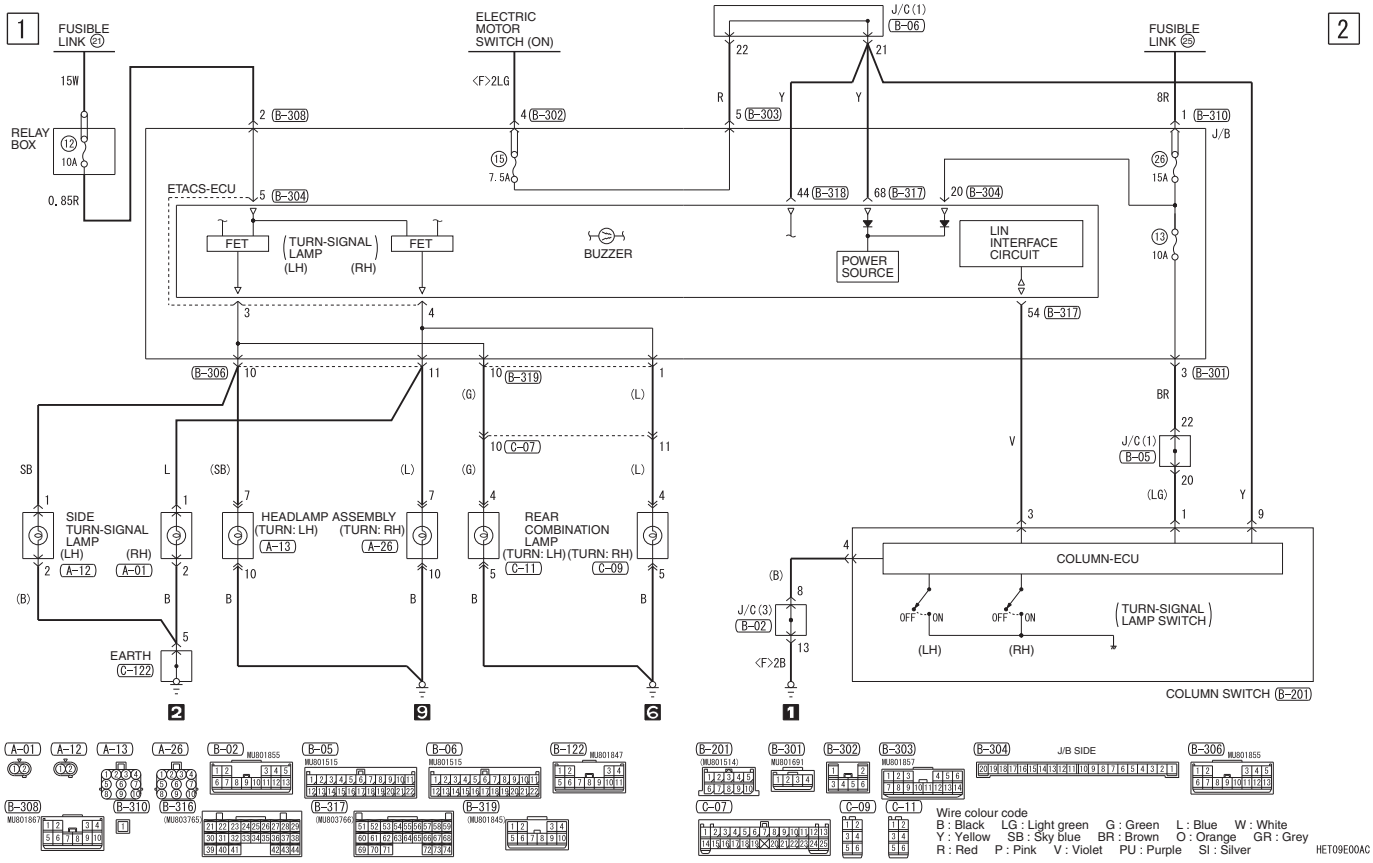
## REAR FOG LAMP <RHD> (CONTINUED)



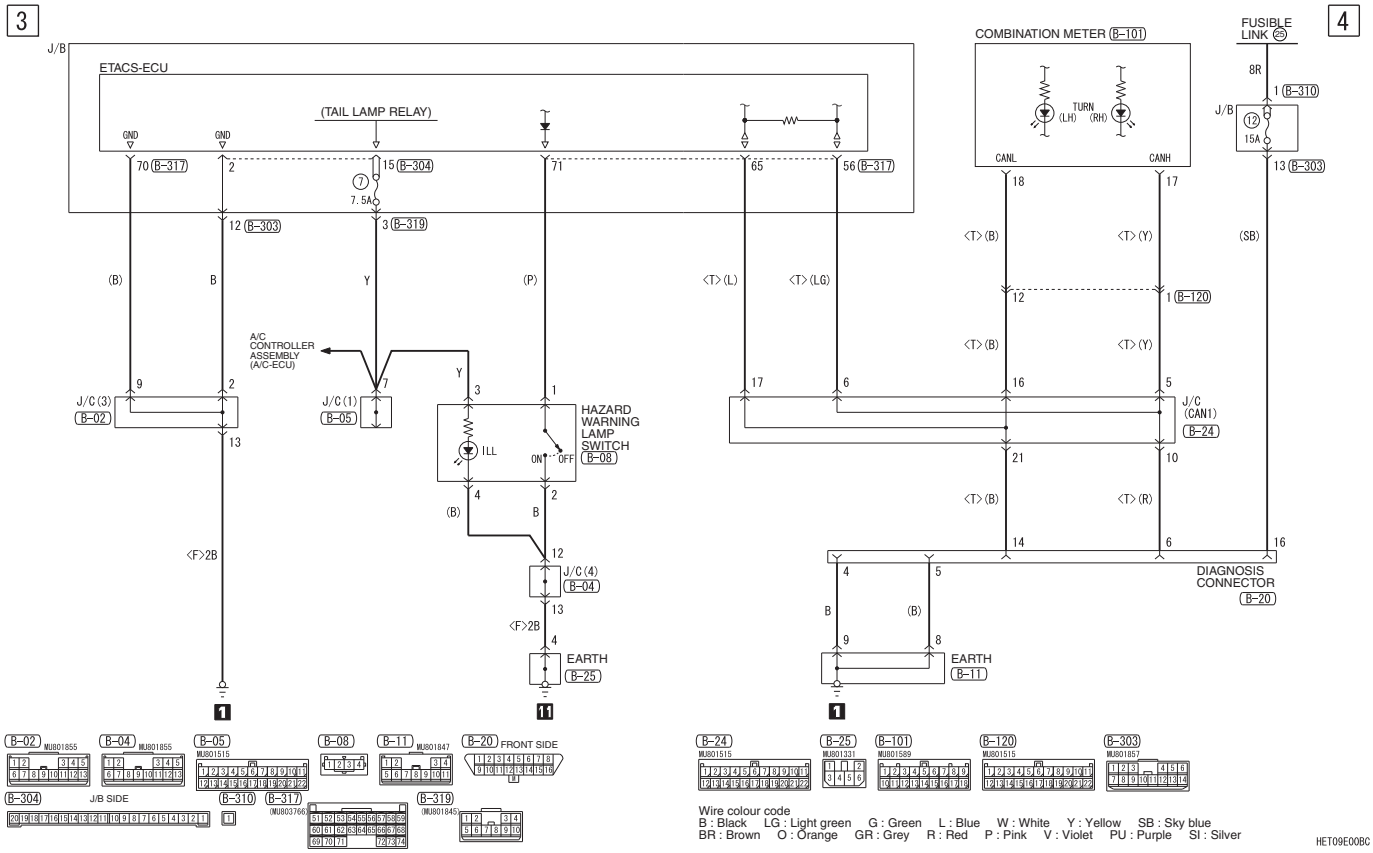
# TURN-SIGNAL LAMP AND HAZARD WARNING LAMP

## TURN-SIGNAL LAMP AND HAZARD WARNING LAMP <RHD>

M1901002905057



## TURN-SIGNAL LAMP AND HAZARD WARNING LAMP <RHD> (CONTINUED)



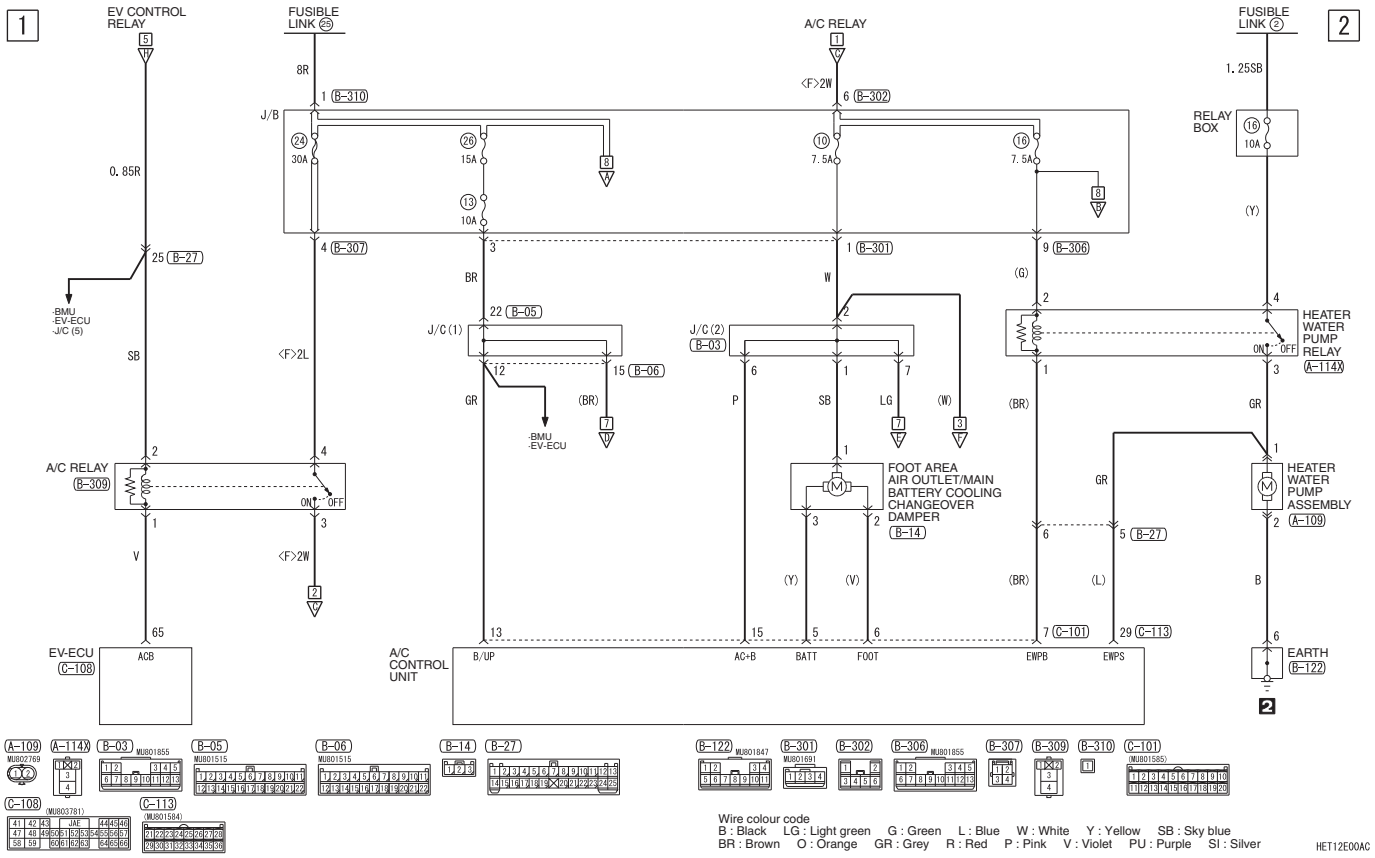

Wire colour code
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HET09E00BC

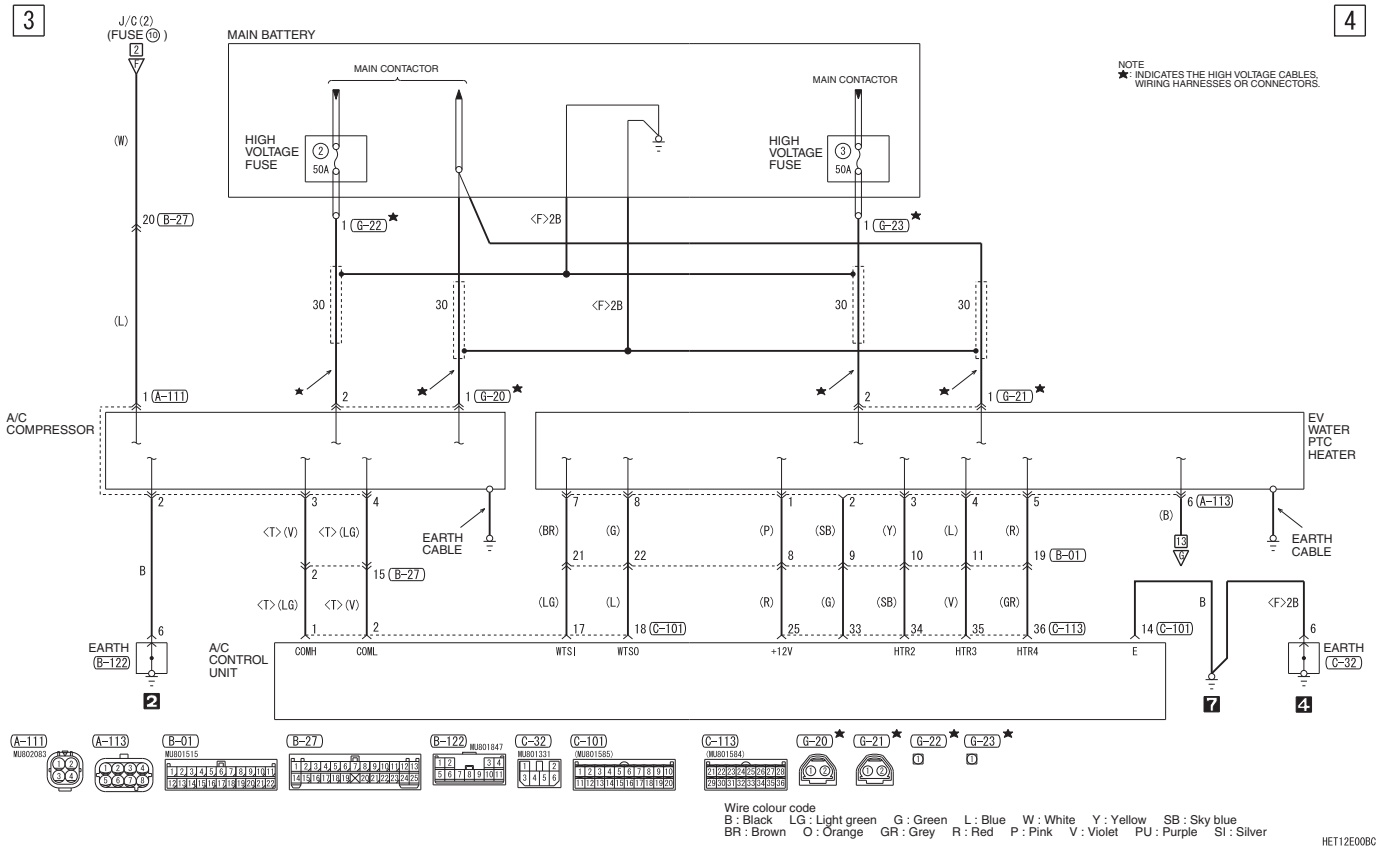
# AIR CONDITIONER

## AIR CONDITIONER <LHD>

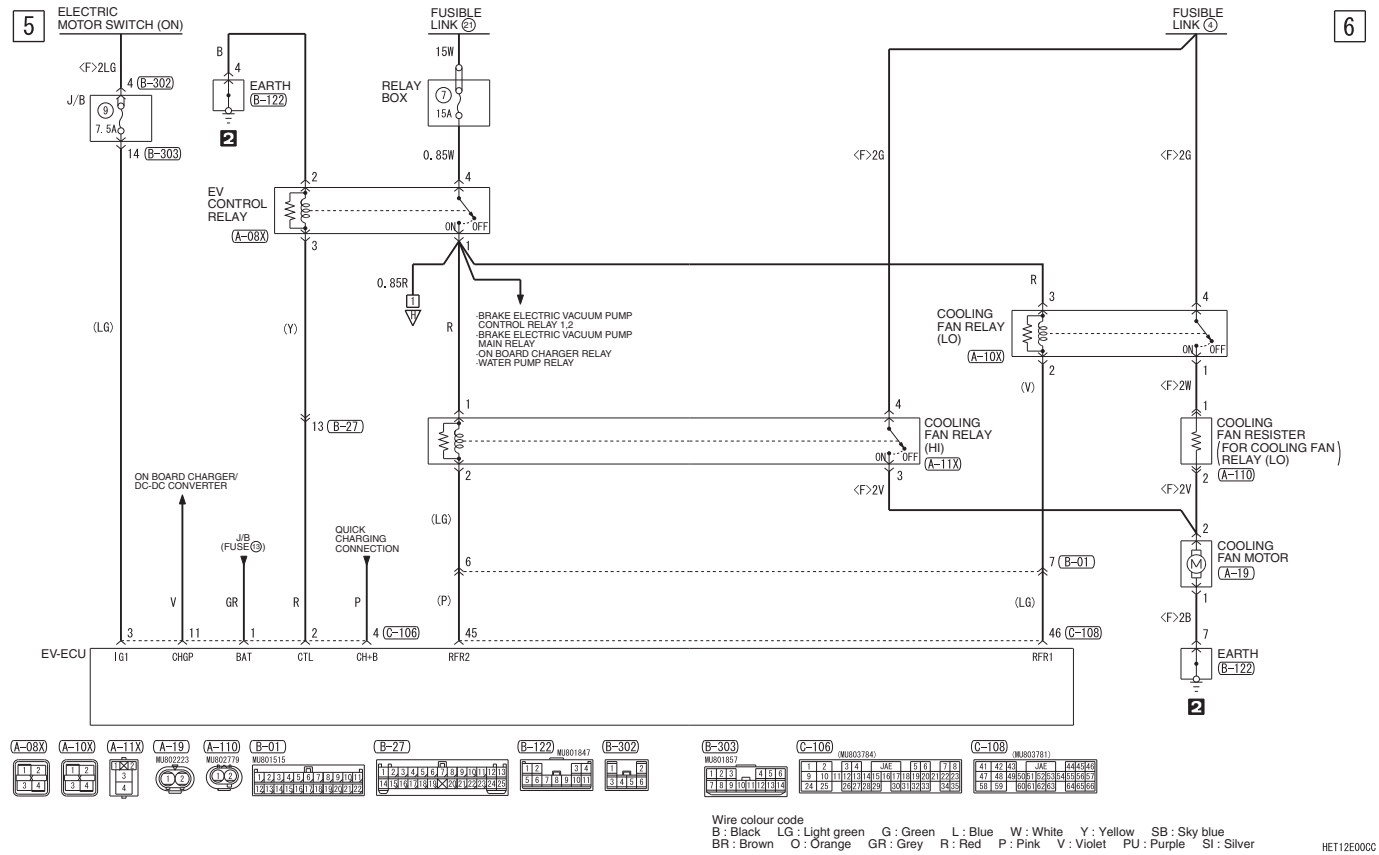
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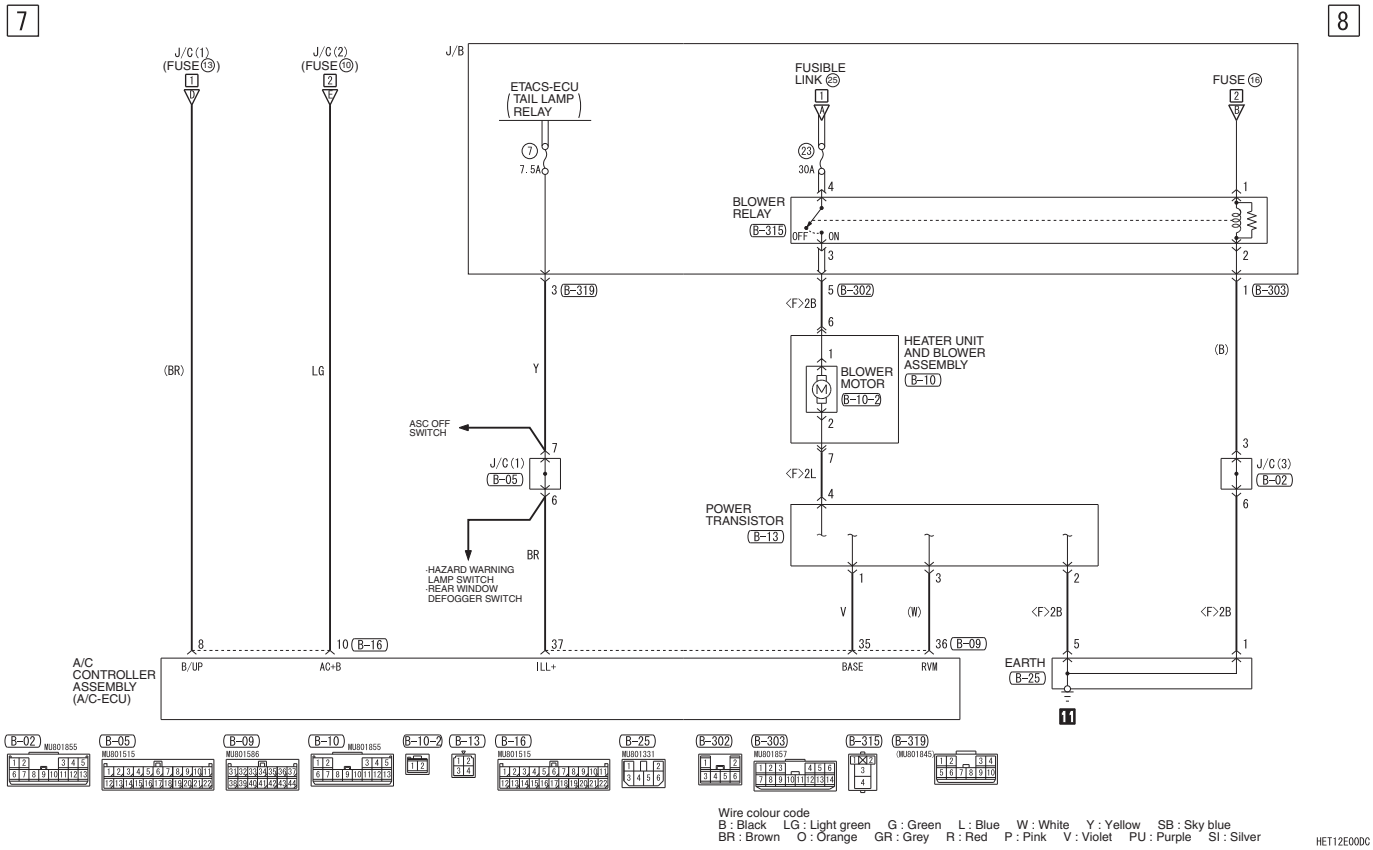
## AIR CONDITIONER <LHD> (CONTINUED)




## AIR CONDITIONER <LHD> (CONTINUED)



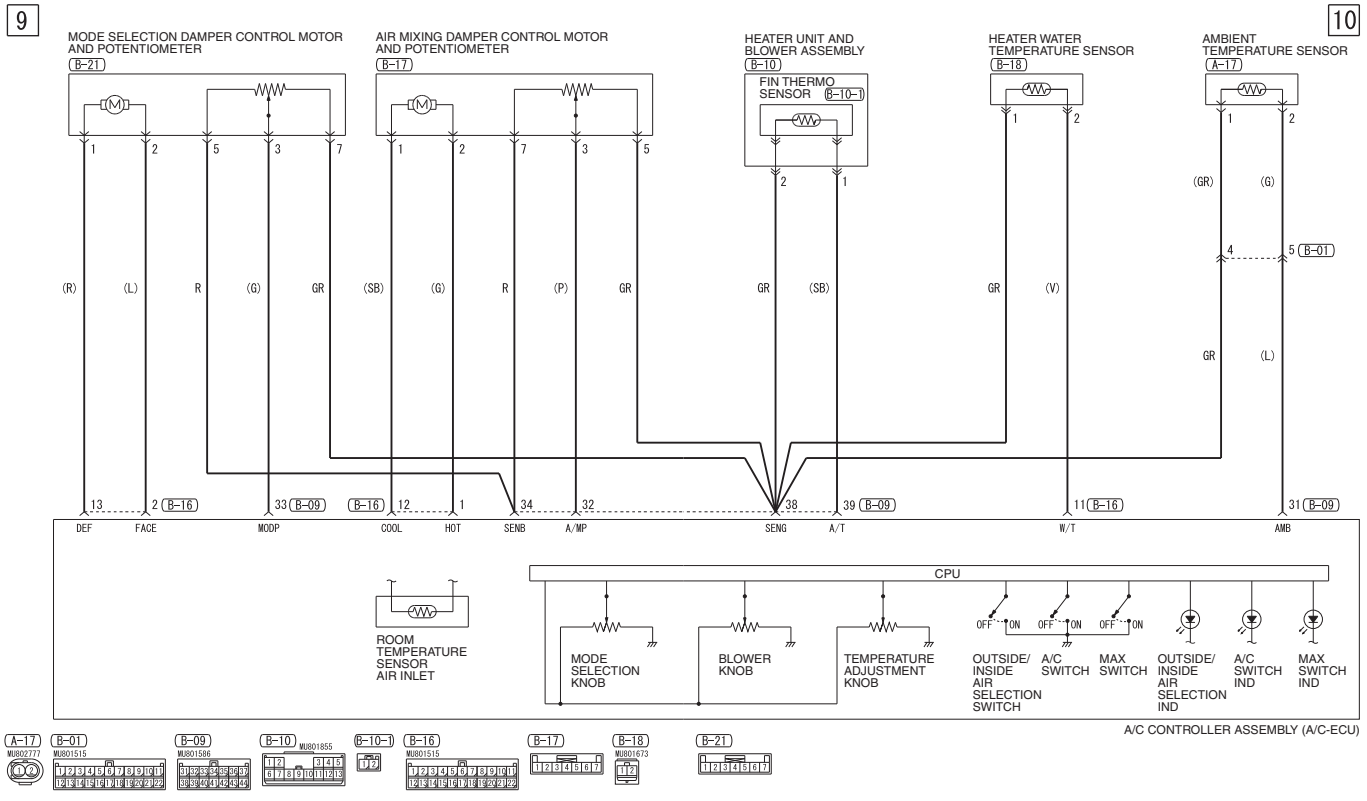
## AIR CONDITIONER <LHD> (CONTINUED)




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

HET12E00DC

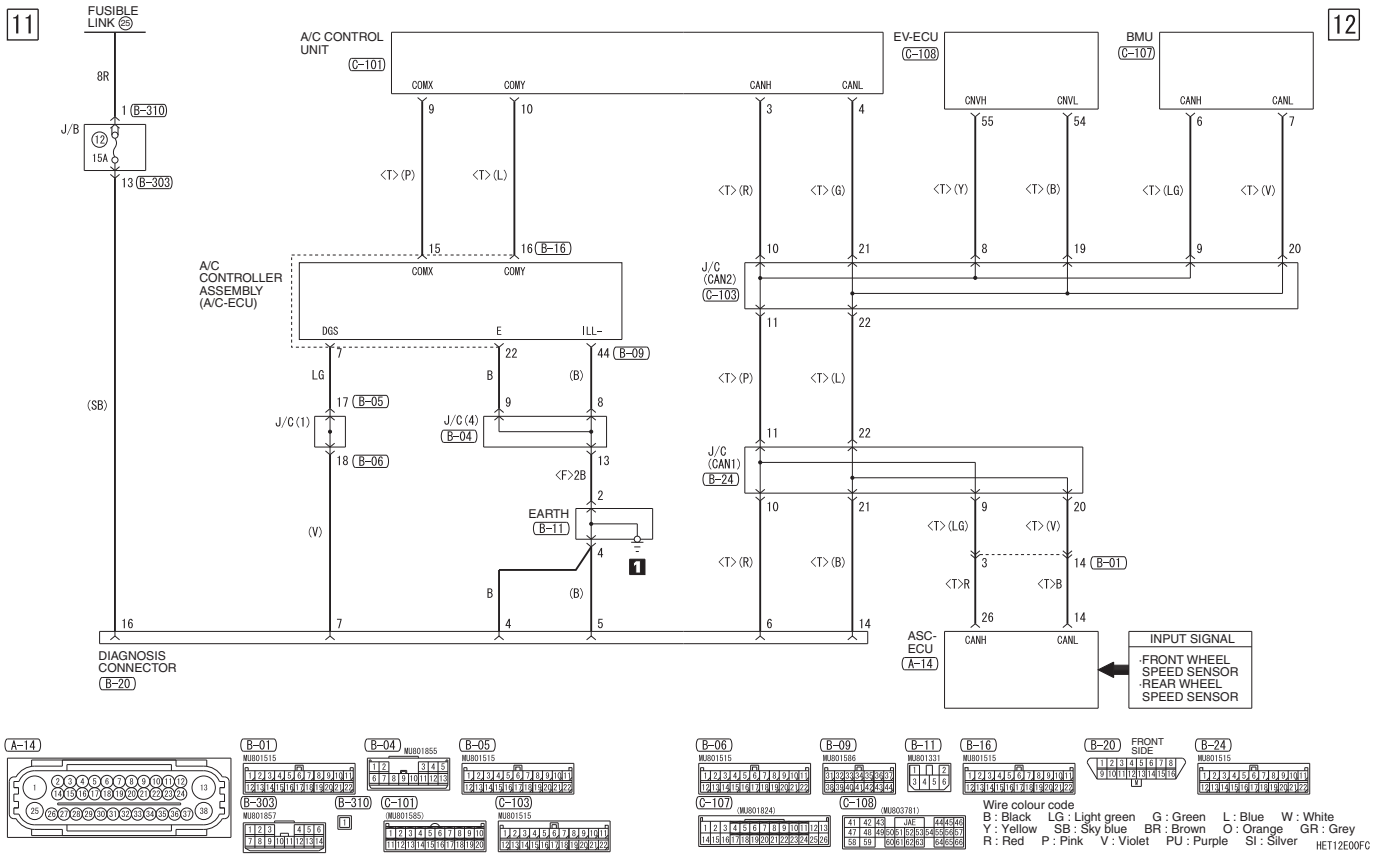
## AIR CONDITIONER <LHD> (CONTINUED)




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

HET12E00EC

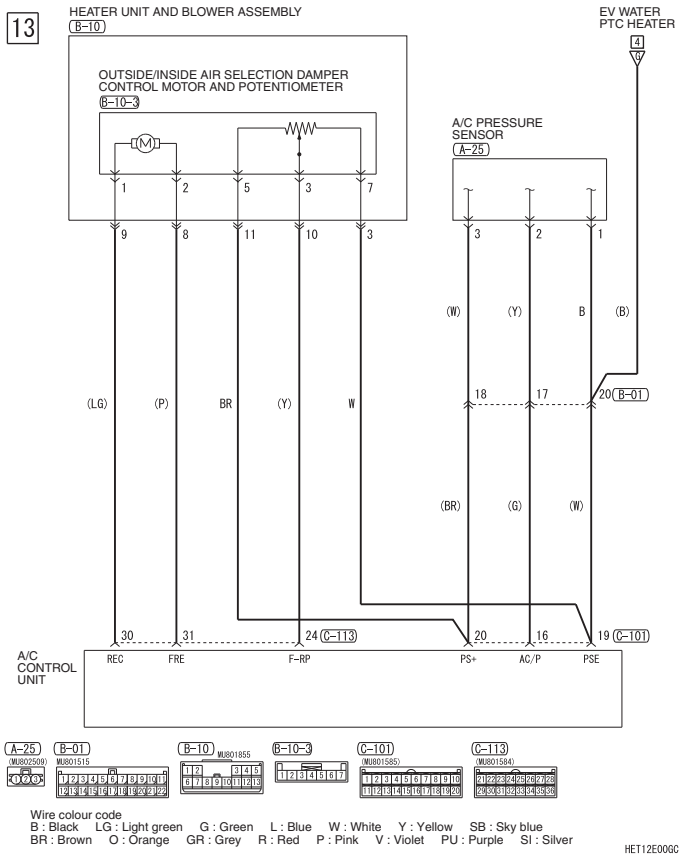
## AIR CONDITIONER <LHD> (CONTINUED)





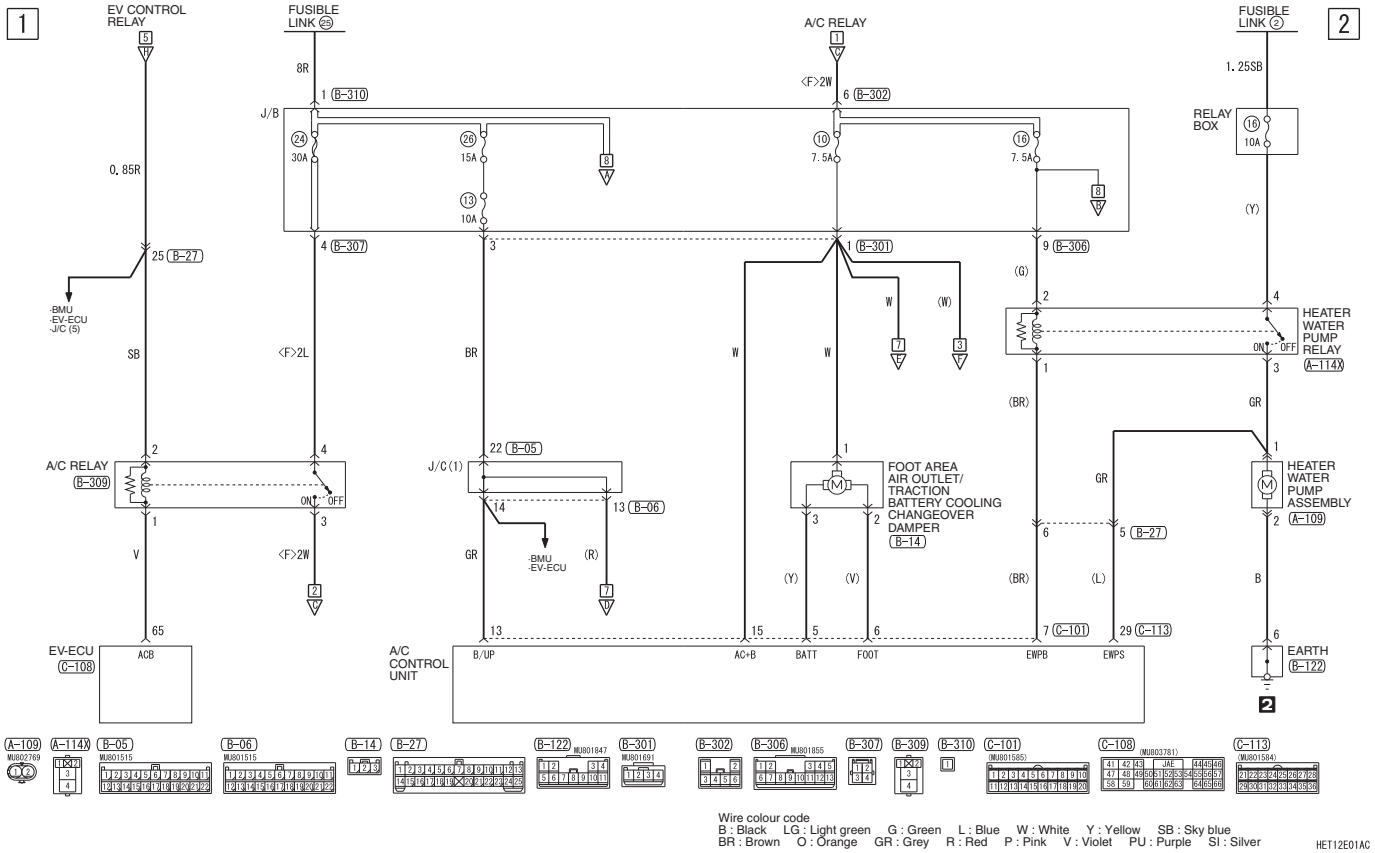


## AIR CONDITIONER <LHD> (CONTINUED)



# AIR CONDITIONER <RHD>

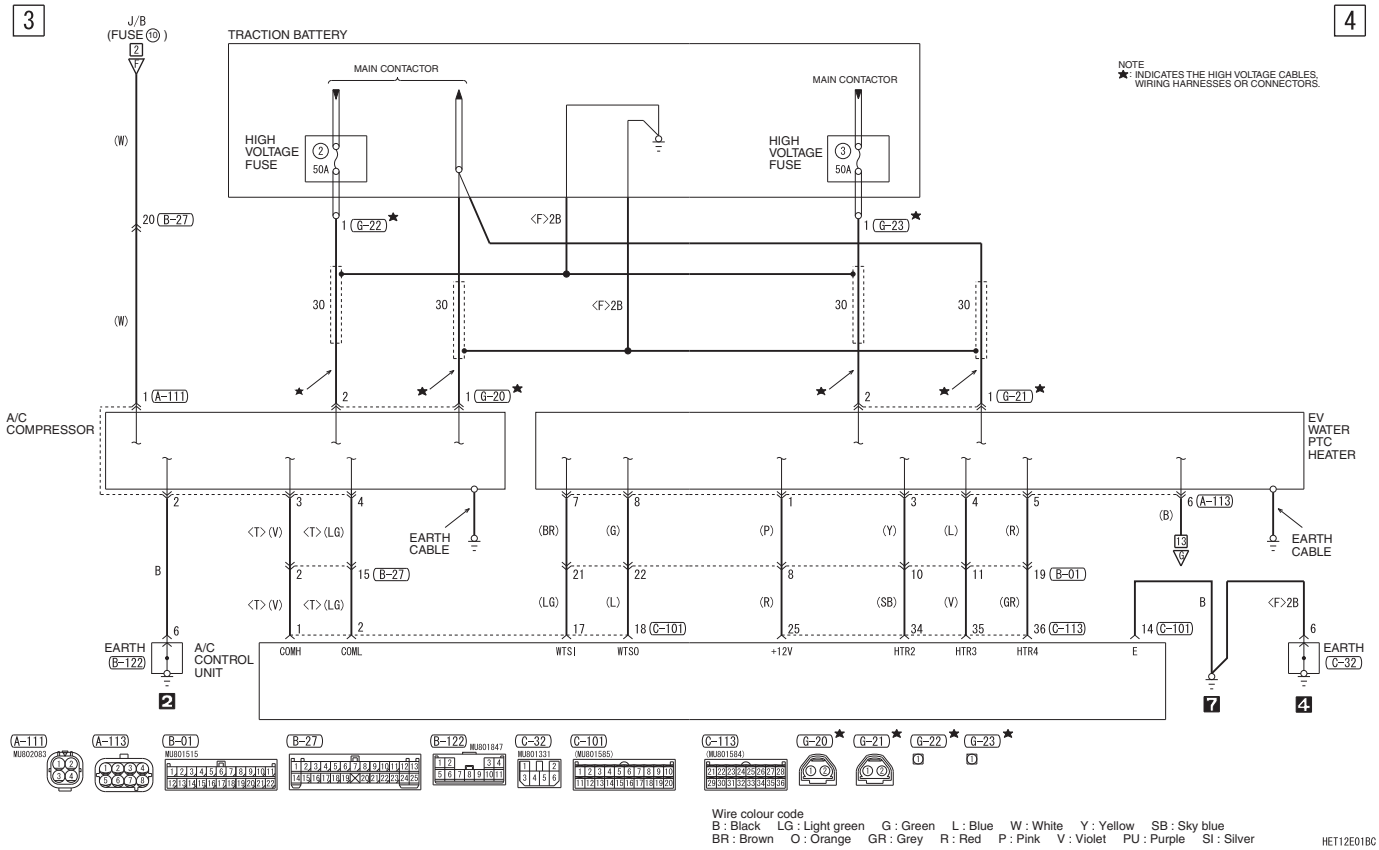
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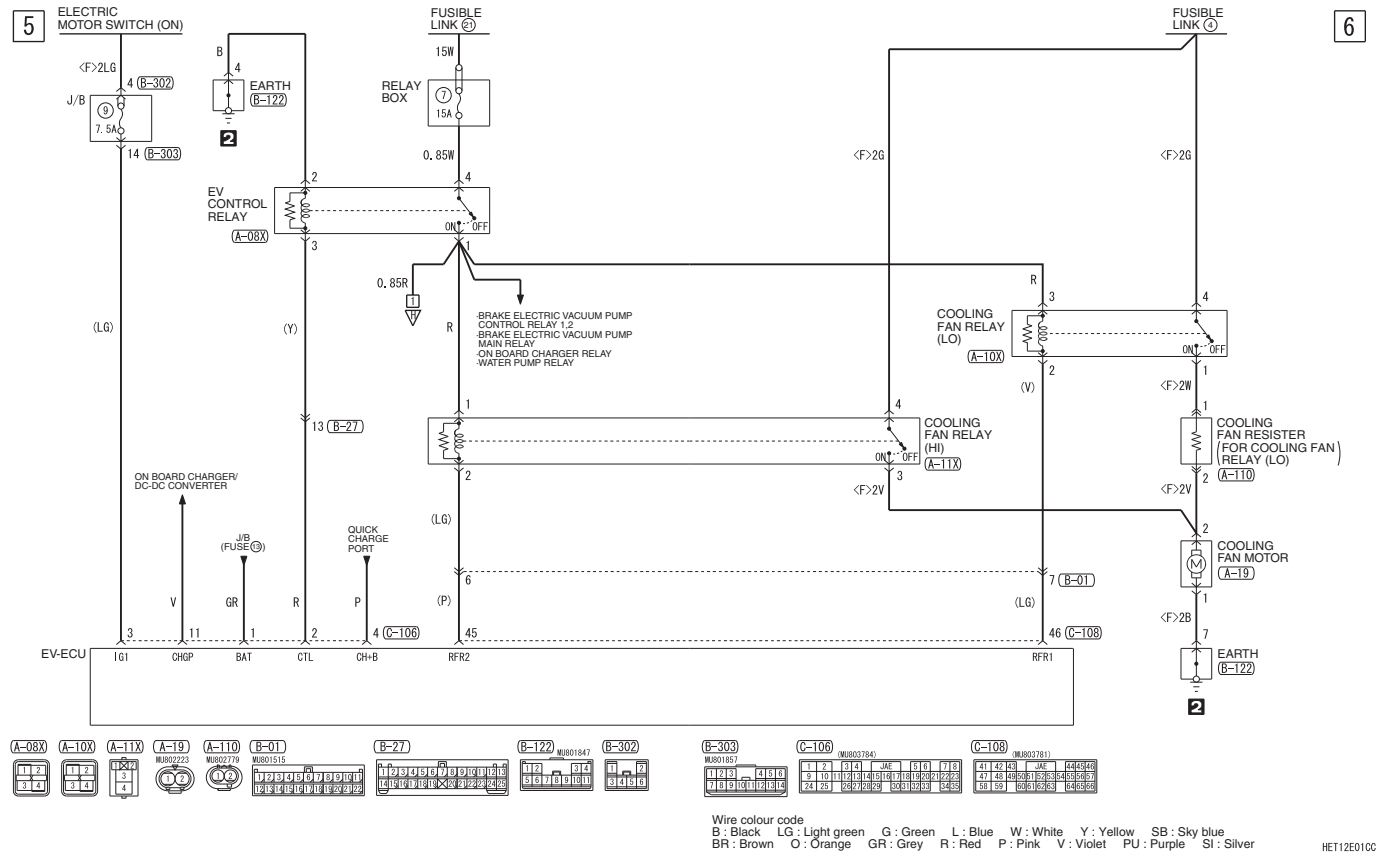

Wire colour code
B : Black LG : Light green G : Green L : Blue W : White Y : Yellow SB : Sky blue
BR : Brown O : Orange GR : Grey R : Red P : Pink V : Violet PU : Purple SI : Silver

HET12E01AC

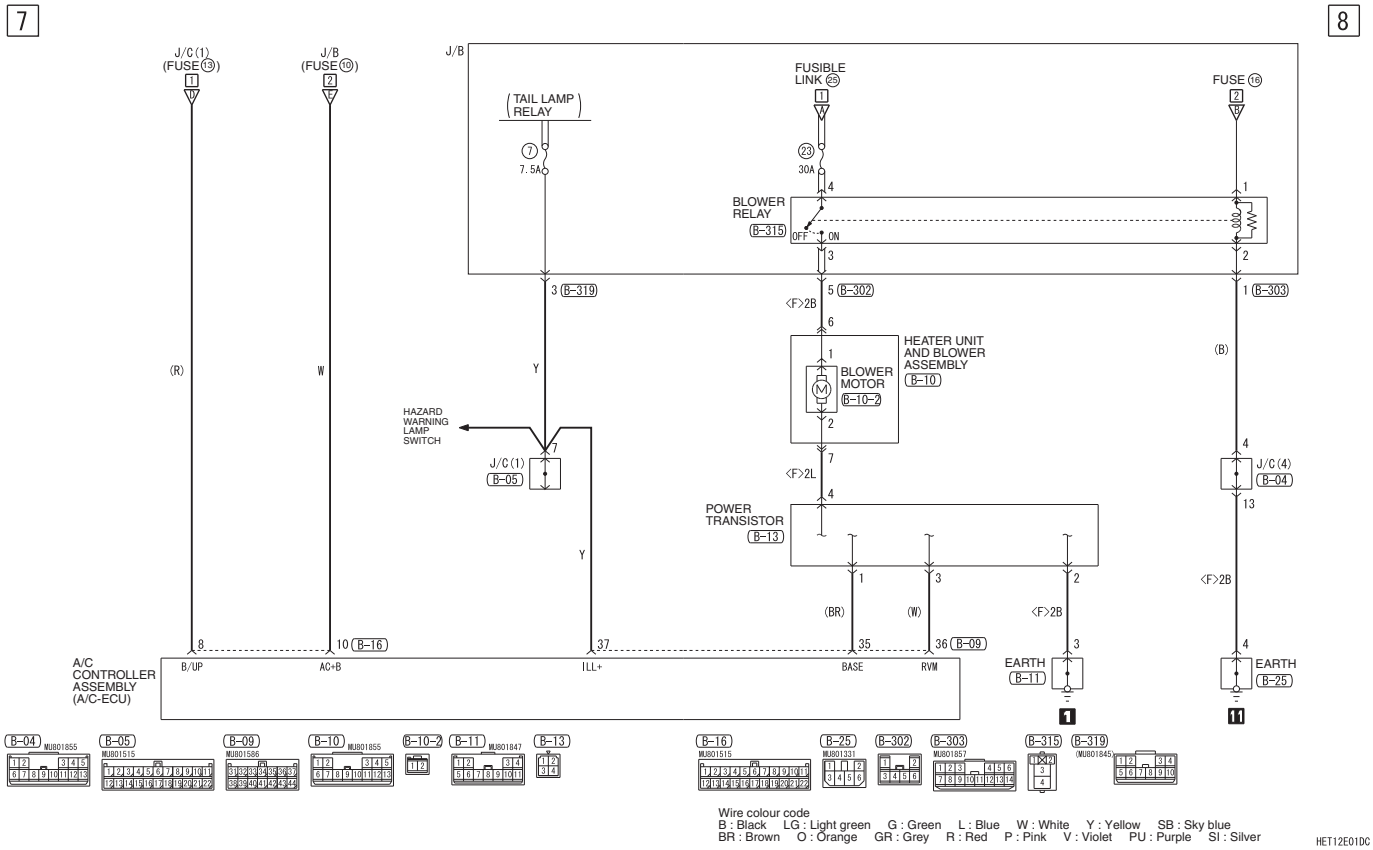
## AIR CONDITIONER <RHD> (CONTINUED)




## AIR CONDITIONER <RHD> (CONTINUED)



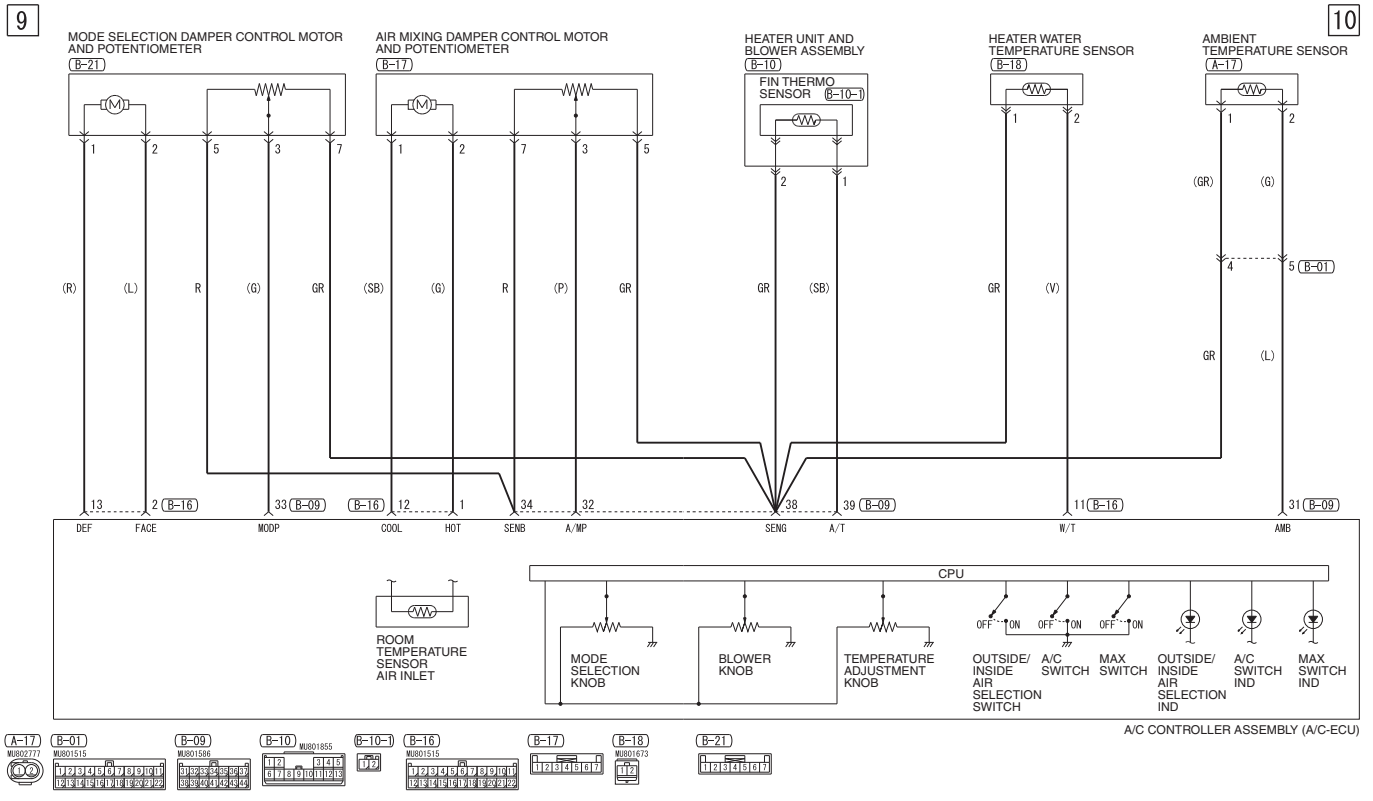
## AIR CONDITIONER <RHD> (CONTINUED)




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

HET12E01DC

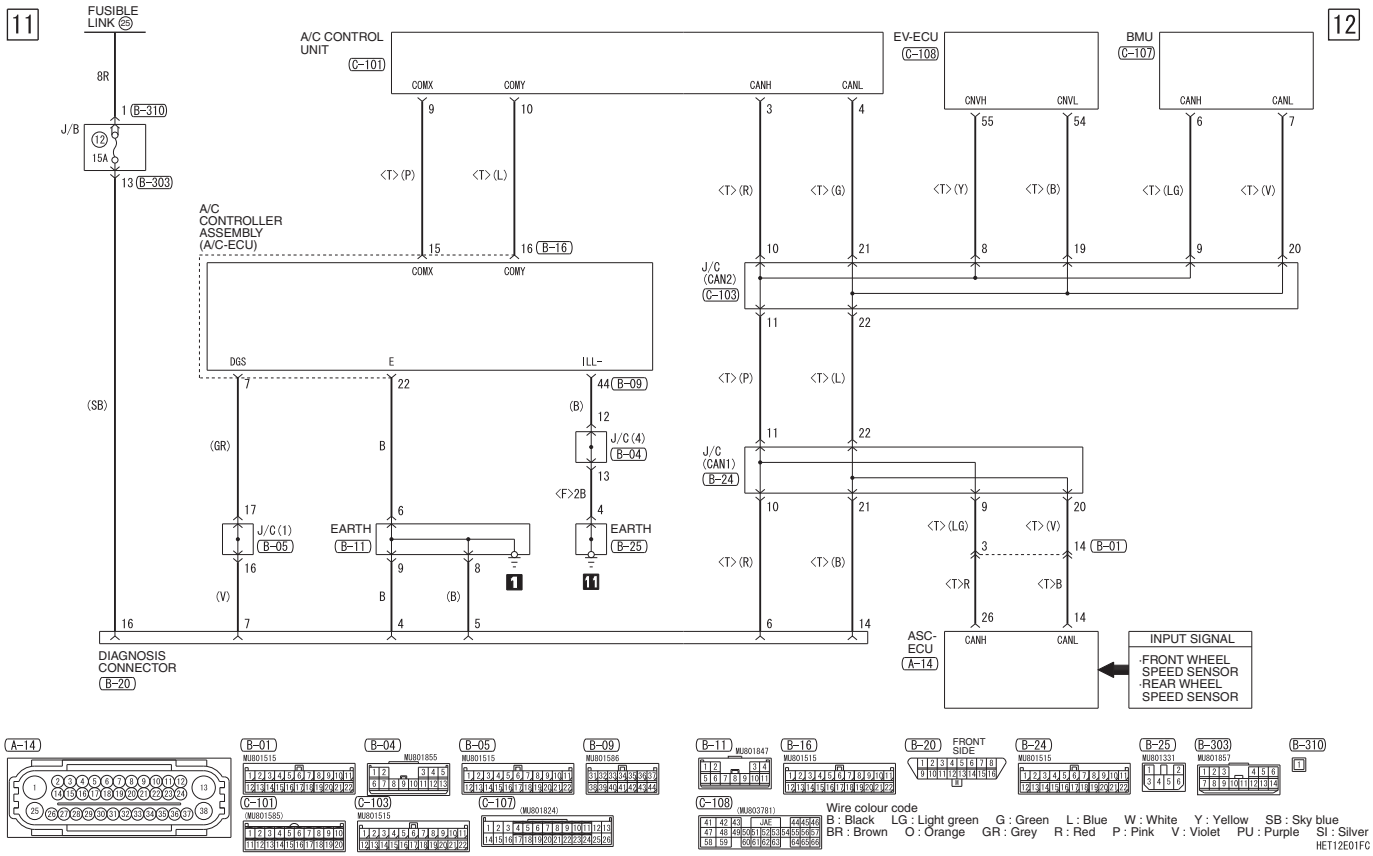
## AIR CONDITIONER <RHD> (CONTINUED)



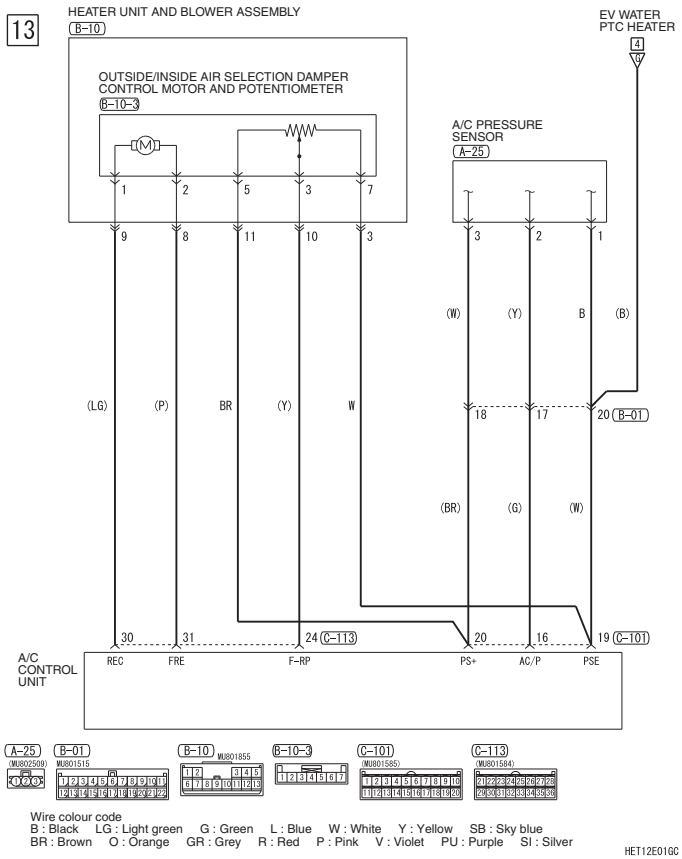

Wire colour code
B : Black LG : Light green G : Green L : Blue W : White Y : Yellow SB : Sky blue
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HET12E01EC

## AIR CONDITIONER <RHD> (CONTINUED)



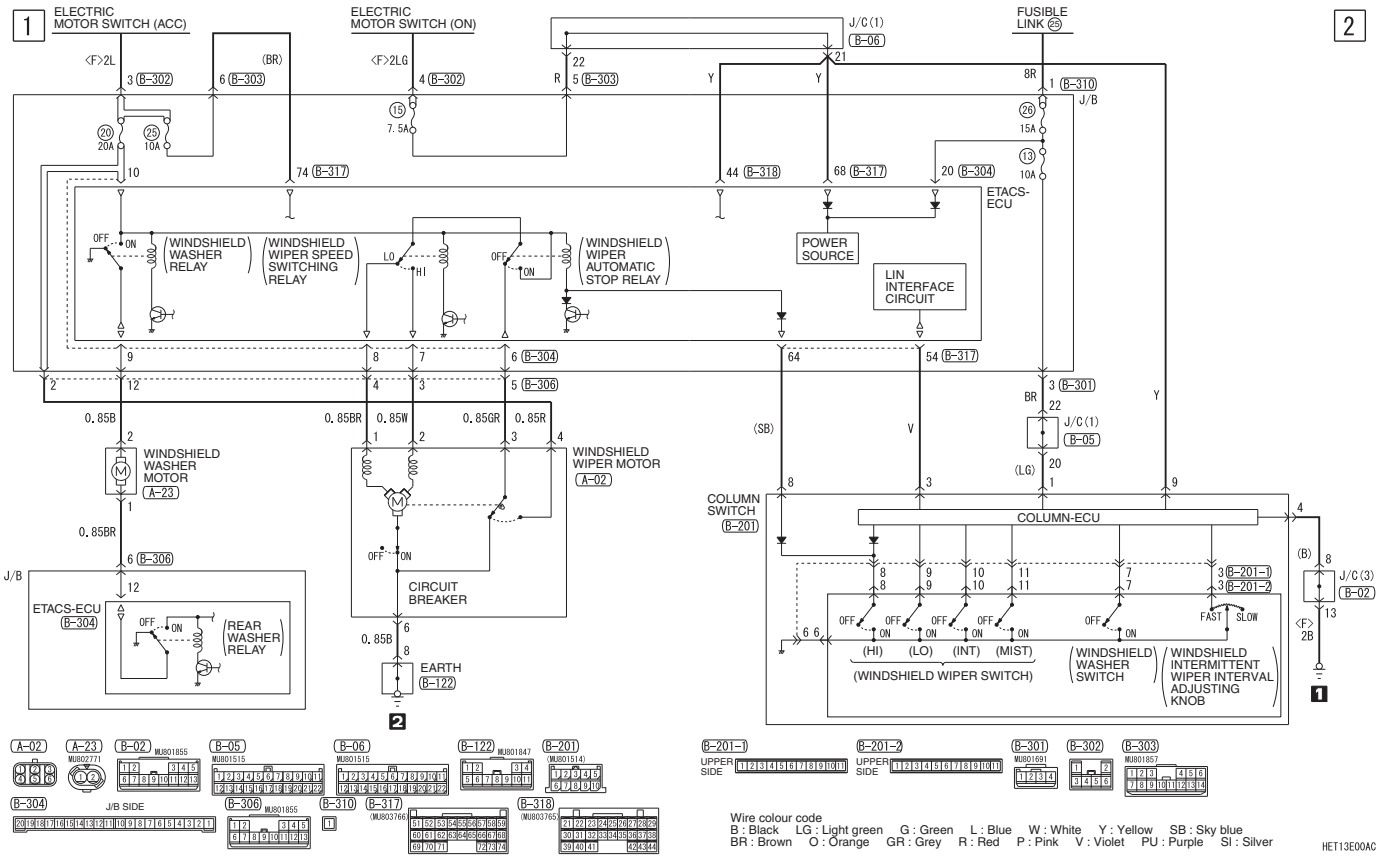

## AIR CONDITIONER <RHD> (CONTINUED)



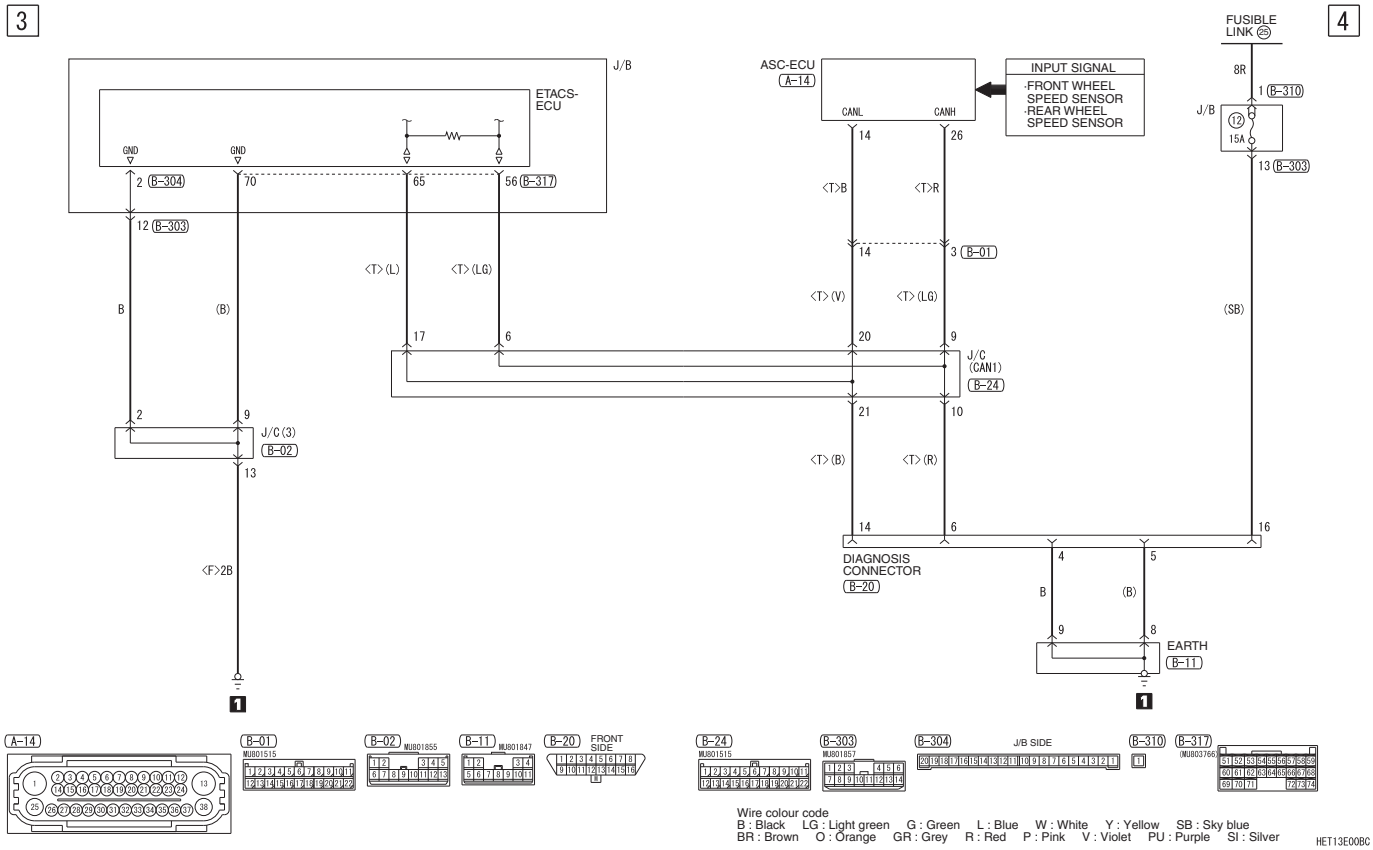
# WINDSHIELD WIPER AND WASHER

## WINDSHIELD WIPER AND WASHER <RHD>

M1901006106078



## WINDSHIELD WIPER AND WASHER <RHD> (CONTINUED)



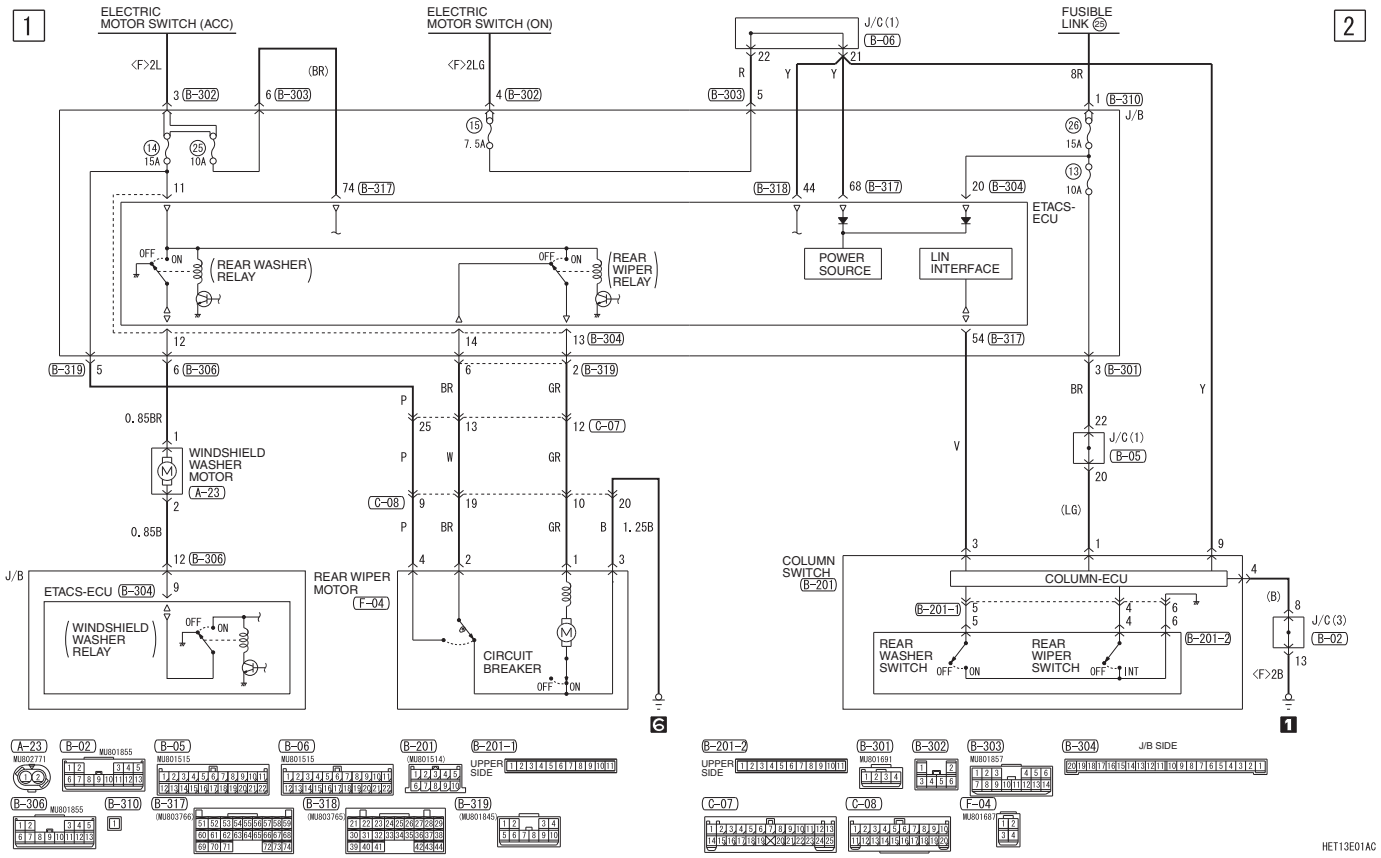

Wire colour code
B : Black LG : Light green G : Green L : Blue W : White Y : Yellow SB : Sky blue
BR : Brown O : Orange GR : Grey R : Red P : Pink V : Violet PU : Purple SI : Silver

HET13E00BC

# REAR WIPER AND WASHER

## REAR WIPER AND WASHER <RHD>

M1901006204154



## REAR WIPER AND WASHER <RHD> (CONTINUED)

