



# Technical Service Bulletin

SUBJECT:		No: <b>TSB-23-11-002</b>	
<b>CORRECTION AND CHANGE TO THE SERVICE PROCEDURES – SERVICE MANUAL REVISION</b>		DATE: <b>May 2023</b>	
		MODEL: <b>2023 Outlander PHEV</b>	
<b>CIRCULATE TO:</b>	<input type="checkbox"/> GENERAL MANAGER	<input checked="" type="checkbox"/> PARTS MANAGER	<input checked="" type="checkbox"/> TECHNICIAN
<input checked="" type="checkbox"/> SERVICE ADVISOR	<input checked="" type="checkbox"/> SERVICE MANAGER	<input checked="" type="checkbox"/> WARRANTY PROCESSOR	<input type="checkbox"/> SALES MANAGER

## PURPOSE

This TSB provides service procedure correction and changes to the service procedures in the applicable Service Manual sections.

## AFFECTED VEHICLES

2023 Outlander PHEV

## AFFECTED SERVICE MANUAL

- 2023 Outlander PHEV Service Manual, Groups 11 and 35

## PROCEDURE

Please use the following chart as a guide to replace the indicated pages in the affected Service Manual, Group 11, General Information and Group 35, Engine Mechanical.



Copyright 2023, Mitsubishi Motors North America, Inc.

The information contained in this bulletin is subject to change. For the latest version of this document, go to the Mitsubishi Dealer Link, MEDIC, or the Mitsubishi Service Information website ([www.mitsubishitechinfo.com](http://www.mitsubishitechinfo.com)).

Applicable manual	Pub. No.	Applicable title	Content
2023 OUTLANDER (PHEV) Service Manual	MSCD-027B-2023	GENERAL INFORMATION ↳ GENERAL INFORMATION ↳ PRECAUTIONS ↳ PRECAUTIONS FOR REMOVING BATTERY TERMINAL	Attached sheet 2
		ENGINE ↳ ENGINE MECHANICAL ↳ SERVICE SPECIFICATIONS	Attached sheet 3
		ENGINE ↳ ENGINE MECHANICAL ↳ ON-VEHICLE SERVICE ↳ COMPRESSION PRESSURE CHECK	Attached sheet 4
		ELECTRIC POWER TRAIN ↳ ELECTRIC MOTOR CONTROL UNIT (EMCU) AND MOTOR (ELECTRIC MOTOR UNIT) ↳ GENERATOR ↳ DISASSEMBLY AND ASSEMBLY	Attached sheet 5
		ELECTRIC POWER TRAIN ↳ ON BOARD CHARGER (OBC) /DC-DC CONVERTER ↳ TROUBLESHOOTING ↳ DIAGNOSTIC TROUBLE CODE PROCEDURES<OBC> ↳ DTC No. P1C65-63: QC time out	Attached sheet 6
		Added below ELECTRIC POWER TRAIN ↳ ON BOARD CHARGER (OBC) /DC-DC CONVERTER ↳ JUNCTION BOX ↳ REMOVAL AND INSTALLATION	Attached sheet 7
		ELECTRIC POWER TRAIN ↳ EV COOLING SYSTEM ↳ ON-VEHICLE SERVICE <OIL COOLING SYSTEM> ↳ OIL CHANGE	Attached sheet 8
		TRANSMISSION & DRIVELINE ↳ FRONT AXLE ↳ PRECAUTION ↳ PRECAUTIONS ↳ Precautions for Removing Battery Terminal	Attached sheet 2
		TRANSMISSION & DRIVELINE ↳ REAR AXLE ↳ PRECAUTION ↳ PRECAUTIONS ↳ Precautions for Removing Battery Terminal	Attached sheet 2
		SUSPENSION ↳ FRONT SUSPENSION ↳ PRECAUTION ↳ PRECAUTIONS ↳ Precautions for Removing Battery Terminal	Attached sheet 2
		SUSPENSION ↳ REAR SUSPENSION ↳ PRECAUTION ↳ PRECAUTIONS ↳ Precautions for Removing Battery Terminal	Attached sheet 2
		SUSPENSION ↳ ROAD WHEELS & TIRES ↳ PRECAUTION ↳ PRECAUTIONS ↳ Precautions for Removing Battery Terminal	Attached sheet 2
		BRAKES ↳ BRAKE SYSTEM ↳ PRECAUTION ↳ PRECAUTIONS ↳ Precautions for Removing Battery Terminal	Attached sheet 2

Applicable manual	Pub. No.	Applicable title	Content
2023 OUTLANDER (PHEV) Service Manual	MSCD-027B-2023	BRAKES └ BRAKE SYSTEM └ PERIODIC MAINTENANCE └ BRAKE FLUID └ Draining	Attached sheet 9
		BRAKES └ BRAKE SYSTEM └ PERIODIC MAINTENANCE └ BRAKE FLUID └ Refilling	Attached sheet 9
		BRAKES └ BRAKE SYSTEM └ PERIODIC MAINTENANCE └ BRAKE FLUID └ Bleeding Brake System	Attached sheet 10
		BRAKES └ PARKING BRAKE SYSTEM └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
		BRAKES └ BRAKE CONTROL SYSTEM └ WITH ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT) └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
		BRAKES └ BRAKE CONTROL SYSTEM └ AUTOMATIC BRAKE HOLD └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
		BRAKES └ BRAKE CONTROL SYSTEM └ FORWARD COLLISION MITIGATION (FCM) └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
		BRAKES └ BRAKE CONTROL SYSTEM └ REAR AUTOMATIC BRAKING └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
		STEERING └ STEERING SYSTEM └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
		STEERING └ STEERING CONTROL SYSTEM └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
RESTRAINTS └ SEAT BELT └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2		

Applicable manual	Pub. No.	Applicable title	Content
2023 OUTLANDER (PHEV) Service Manual	MSCD-027B-2023	RESTRAINTS └ SEAT BELT CONTROL SYSTEM └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
		RESTRAINTS └ SRS AIRBAG └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
		RESTRAINTS └ SRS AIRBAG CONTROL SYSTEM └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
		BODY INTERIOR └ INTERIOR └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
		BODY INTERIOR └ INSTRUMENT PANEL └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
		BODY INTERIOR └ INSTRUMENT PANEL └ REMOVAL AND INSTALLATION └ CLUSTER LID AND STEERING COLUMN COVER └ Removal and Installation	Attached sheet 11
		BODY INTERIOR └ SEAT └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
		BODY INTERIOR └ AUTOMATIC DRIVE POSITIONER └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
		BODY EXTERIOR, DOORS, ROOF & VEHICLE SECURITY └ DOOR & LOCK └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
		BODY EXTERIOR, DOORS, ROOF & VEHICLE SECURITY └ SECURITY CONTROL SYSTEM └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
		BODY EXTERIOR, DOORS, ROOF & VEHICLE SECURITY └ GLASS & WINDOW SYSTEM └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
		BODY EXTERIOR, DOORS, ROOF & VEHICLE SECURITY └ POWER WINDOW CONTROL SYSTEM └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2

**<OUTLANDER PHEV>**

Applicable manual	Pub. No.	Applicable title	Content
2023 OUTLANDER (PHEV) Service Manual	MSCD-027B-2023	BODY EXTERIOR, DOORS, ROOF & VEHICLE SECURITY └ ROOF └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
		BODY EXTERIOR, DOORS, ROOF & VEHICLE SECURITY └ ROOF └ REMOVAL AND INSTALLATION └ DRAIN CONNECTOR └ Removal and Installation	Attached sheet 12
		BODY EXTERIOR, DOORS, ROOF & VEHICLE SECURITY └ EXTERIOR └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
		VENTILATION, HEATER & AIR CONDITIONER └ VENTILATION SYSTEM └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
		VENTILATION, HEATER & AIR CONDITIONER └ HEATER & AIR CONDITIONING SYSTEM └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
		VENTILATION, HEATER & AIR CONDITIONER └ HEATER & AIR CONDITIONING CONTROL SYSTEM └ AUTOMATIC AIR CONDITIONING └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
		DRIVER CONTROLS └ MIRRORS └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
		DRIVER CONTROLS └ EXTERIOR LIGHTING SYSTEM └ LED HEADLIGHT └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
		DRIVER CONTROLS └ INTERIOR LIGHTING SYSTEM └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
		DRIVER CONTROLS └ WIPER & WASHER └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
		DRIVER CONTROLS └ DEFOGGER └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2

**<OUTLANDER PHEV>**

Applicable manual	Pub. No.	Applicable title	Content
2023 OUTLANDER (PHEV) Service Manual	MSCD-027B-2023	DRIVER CONTROLS └ HORN └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
		DRIVER CONTROLS └ ACOUSTIC VEHICLE ALERTING SYSTEM (AVAS) └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
		ELECTRICAL & POWER CONTROL └ POWER OUTLET └ POWER SOCKET └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
		ELECTRICAL & POWER CONTROL └ POWER OUTLET └ USB CHARGE PORT └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
		ELECTRICAL & POWER CONTROL └ POWER OUTLET └ WIRELESS CHARGER └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
		ELECTRICAL & POWER CONTROL └ POWER OUTLET └ WIRELESS CHARGER └ SYSTEM DESCRIPTION └ DIAGNOSIS SYSTEM (WIRELESS CHARGER UNIT) └ M.U.T.-III SE FUNCTION	Attached sheet 13
		ELECTRICAL & POWER CONTROL └ POWER OUTLET └ WIRELESS CHARGER └ ECU DIAGNOSIS INFORMATION └ WIRELESS CHARGER UNIT └ DTC Inspection Priority Chart	Attached sheet 14
		ELECTRICAL & POWER CONTROL └ POWER OUTLET └ WIRELESS CHARGER └ ECU DIAGNOSIS INFORMATION └ WIRELESS CHARGER UNIT └ DTC Index	Attached sheet 15
		ELECTRICAL & POWER CONTROL └ POWER OUTLET └ WIRELESS CHARGER └ BASIC INSPECTION └ ADDITIONAL SERVICE WHEN REPLACING (WIRELESS CHARGER UNIT) └ Description	Attached sheet 16
		ELECTRICAL & POWER CONTROL └ POWER OUTLET └ WIRELESS CHARGER └ BASIC INSPECTION └ ADDITIONAL SERVICE WHEN REPLACING (WIRELESS CHARGER UNIT) └ Work Procedure	Attached sheet 16

## &lt;OUTLANDER PHEV&gt;

Applicable manual	Pub. No.	Applicable title	Content
2023 OUTLANDER (PHEV) Service Manual	MSCD-027B-2023	ELECTRICAL & POWER CONTROL └ POWER OUTLET └ WIRELESS CHARGER └ DTC/CIRCUIT DIAGNOSIS └ B1B04-55 Wireless charger unit └ DTC Description	Attached sheet 17
		ELECTRICAL & POWER CONTROL └ POWER OUTLET └ WIRELESS CHARGER └ DTC/CIRCUIT DIAGNOSIS └ B1B04-55 Wireless charger unit └ Diagnosis Procedure	Attached sheet 18
		ELECTRICAL & POWER CONTROL └ POWER OUTLET └ WIRELESS CHARGER └ DTC/CIRCUIT DIAGNOSIS └ B1B05-09 Wireless charger unit └ DTC Description	Attached sheet 19
		ELECTRICAL & POWER CONTROL └ POWER OUTLET └ WIRELESS CHARGER └ DTC/CIRCUIT DIAGNOSIS └ B1B05-09 Wireless charger unit └ Diagnosis Procedure	Attached sheet 19, 20
		ELECTRICAL & POWER CONTROL └ BODY CONTROL SYSTEM └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
		ELECTRICAL & POWER CONTROL └ LAN SYSTEM └ CAN └ PRECAUTION └ PRECAUTIONS └ PRECAUTIONS FOR REMOVING BATTERY TERMINAL : Precautions	Attached sheet 2
		ELECTRICAL & POWER CONTROL └ LAN SYSTEM └ CAN GATEWAY └ PRECAUTION └ PRECAUTIONS └ PRECAUTIONS FOR REMOVING BATTERY TERMINAL : Precautions	Attached sheet 2
		ELECTRICAL & POWER CONTROL └ POWER CONTROL SYSTEM └ IPDM E/R └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
		ELECTRICAL & POWER CONTROL └ POWER CONTROL SYSTEM └ POWER DISTRIBUTION SYSTEM └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
		ELECTRICAL & POWER CONTROL └ CHARGING SYSTEM └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2

## &lt;OUTLANDER PHEV&gt;

Applicable manual	Pub. No.	Applicable title	Content
2023 OUTLANDER (PHEV) Service Manual	MSCD-027B-2023	ELECTRICAL & POWER CONTROL └ POWER SUPPLY, GROUND & CIRCUIT ELEMENTS └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
		DRIVER INFORMATION & MULTIMEDIA └ METER, WARNING LAMP & INDICATOR └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
		DRIVER INFORMATION & MULTIMEDIA └ WARNING CHIME SYSTEM └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
		DRIVER INFORMATION & MULTIMEDIA └ SONAR SYSTEM └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
		ELECTRICAL & POWER CONTROL └ AUDIO, VISUAL & NAVIGATION SYSTEM └ Mitsubishi Connect └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
		DRIVER INFORMATION & MULTIMEDIA └ REAR VIEW MONITOR └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
		DRIVER INFORMATION & MULTIMEDIA └ MULTI AROUND MONITOR └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
		DRIVER INFORMATION & MULTIMEDIA └ TELEMATICS SYSTEM └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
		CRUISE CONTROL & DRIVER ASSISTANCE └ CRUISE CONTROL SYSTEM └ CRUISE CONTROL SYSTEM └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
		CRUISE CONTROL & DRIVER ASSISTANCE └ CRUISE CONTROL SYSTEM └ ADAPTIVE CRUISE CONTROL SYSTEM (ACC) └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
		CRUISE CONTROL & DRIVER ASSISTANCE └ CRUISE CONTROL SYSTEM └ MI-PILOT └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2



Applicable manual	Pub. No.	Applicable title	Content
2023 OUTLANDER (PHEV) Service Manual	MSCD-027B-2023	CRUISE CONTROL & DRIVER ASSISTANCE └ DRIVER ASSISTANCE SYSTEM └ ADAS CONTROL UNIT └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
		CRUISE CONTROL & DRIVER ASSISTANCE └ DRIVER ASSISTANCE SYSTEM └ DRIVER ASSISTANCE SYSTEM └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
		CRUISE CONTROL & DRIVER ASSISTANCE └ DRIVER ASSISTANCE SYSTEM └ DRIVER ASSISTANCE SYSTEM └ BASIC INSPECTION └ CAMERA AIMING ADJUSTMENT └ Work Procedure	Attached sheet 21
		CRUISE CONTROL & DRIVER ASSISTANCE └ DRIVER ASSISTANCE SYSTEM └ CHASSIS CONTROL └ PRECAUTION └ PRECAUTIONS └ Precautions for Removing Battery Terminal	Attached sheet 2
		CIRCUIT DIAGRAM └ SMARTPHONE LINK DISPLAY AUDIO <WITHOUT BOSE>	Attached sheet 22
		CIRCUIT DIAGRAM └ SMARTPHONE LINK DISPLAY AUDIO <WITH BOSE>	Attached sheet 23

## GENERAL INFORMATION

## PRECAUTIONS FOR REMOVING BATTERY TERMINAL

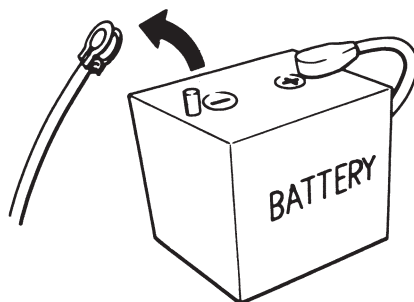
## WARNING:

- **Battery posts, terminals and related accessories contain lead and lead compounds. WASH HANDS AFTER HANDLING.**
- **Certain components of this vehicle, such as air bag modules and seat belt pre-tensioners, may contain perchlorate materials. Before deployment and/or disposal of these components, review and comply with all applicable Federal, state and local regulations.**

## CAUTION:

If 12V battery is disconnected, the control timer which operates the engine forcibly will be reset. If the engine does not start for prolonged period after the reset, the fuel injection system may be clogged. To avoid this, press the battery charging switch to start the engine. Note that the battery charging switch may not be turned on if the drive battery is almost fully charged. In that case, wait until the drive battery is partially discharged.

- With the adoption of Auto ACC function, ACC power is automatically supplied by operating the Keyless operation key or remote keyless entry or by opening/closing the driver side door. In addition, ACC power is supplied even after the electric motor switch is turned to the OFF position, i.e. ACC power is supplied for a certain fixed time.
- When disconnecting the 12V battery terminal, turn off the ACC power before disconnecting the 12V battery terminal, observing "How to disconnect 12V battery terminal" described below.



DF1009KEBB00USA

## NOTE:

Some ECUs operate for a certain fixed time even after electric motor switch is turned OFF and ignition power supply is stopped. If the battery terminal is disconnected before ECU stops, accidental DTC detection or ECU data damage may occur.

- Be sure to connect the battery before turning ON the electric motor switch.

## NOTE:

If the electric motor switch is turned ON with the terminals of the battery disconnected, then DTC may be detected.

- After installing the 12V battery, always check the DTC of all ECUs and erase DTC.

## NOTE:

The removal of 12V battery may cause a DTC detection error.

## How to disconnect 12V battery terminal

Disconnect 12V battery terminal according to instruction described below.

1. If charging is in progress, disconnect the charging connector.

## CAUTION:

During charging, do not remove the battery terminal.

2. Change the power supply mode of the electric motor switch to OFF

<Incorrect> 3. ~~Open the back door.~~ ← 3. Open both the hood and the back door. <Correct>

## NOTE:

<Incorrect> Perform all subsequent work with the back door left open. ← Perform all subsequent work with both the hood and the back door left open. <Correct>

4. Press the electric motor switch once to turn power supply mode to ON, and then press and hold the electric motor switch again for at least five seconds.
5. Close the driver door and wait for at least 5 minutes.

## CAUTION:

- Do not disconnect the negative terminal of 12V battery for 5 minutes after closing the driver door.
- Do not perform vehicle operations such as door lock or door open/close while waiting, because automatic ACC function turns accessory power supply to ON.

## ENGINE MECHANICAL

## 6.BALANCER SHAFT AND OIL PUMP MODULE

- The counter balancer shaft is located inside the oil pan to achieve a compact engine.
- The balancer shaft and oil pump module integrates an oil pump and a balancer unit to realise a compact and lightweight package. The balancer shaft and oil pump module cannot be disassembled.

Item	Specification
Displacement dm <sup>3</sup> /min (qt/min) [6,000 r/min]	43 (45.4)

## SERVICE SPECIFICATIONS

Item	Standard value	Limit
Water pump drive belt tension	Vibration frequency Hz (Reference)	117 – 338
	Deflection mm (in) (Reference)	Less than 22 (0.86)
Valve clearance (at cold) mm (in)	Inlet valve	0.20 ± 0.03 (0.007 ± 0.001)
	Exhaust valve	0.30 ± 0.03 (0.011 ± 0.001)
Basic ignition timing	5°BTDC ± 3°	-
Ignition timing	Approximately 36°BTDC	-
CO contents %	0.3 or less	-
HC contents ppm	200 or less	-
Compression pressure (at engine speed of 300 r/min) kPa (psi)	1,150 (467) ← 1,080 (157)	Minimum 850 (123) ← Minimum 750 (109)
Compression pressure difference of all cylinders kPa (psi)	-	Maximum 98 (14)
Intake manifold vacuum kPa (psi)	-	Minimum 60 (8.7)

## SEALANTS AND ADHESIVES

Item	Specified sealant and adhesive
Rocker cover (matching area of the cylinder head and the timing chain case assembly)	Semi-drying sealant: ThreeBond 1217G (MITSUBISHI MOTORS GENUINE Part No.1000A923) [0.3 dm <sup>3</sup> (0.31 qt)], ThreeBond 1227D (MITSUBISHI MOTORS GENUINE Part No.MZ100792) [0.3 dm <sup>3</sup> (0.31 qt)], LOCTITE® 5900
Engine oil pan	Semi-drying sealant: ThreeBond 1217G (MITSUBISHI MOTORS GENUINE Part No.1000A923) [0.3 dm <sup>3</sup> (0.31 qt)], ThreeBond 1227D (MITSUBISHI MOTORS GENUINE Part No.MZ100792) [0.3 dm <sup>3</sup> (0.31 qt)], ThreeBond 1207F (MITSUBISHI MOTORS GENUINE Part No.MZ100191) (150 g), LOCTITE® 5970, LOCTITE® 5900
Cylinder head gasket (matching area of the cylinder block and the cylinder head)	Semi-drying sealant: ThreeBond 1217G (MITSUBISHI MOTORS GENUINE Part No.1000A923) [0.3 dm <sup>3</sup> (0.31 qt)], LOCTITE® 5900

## ENGINE MECHANICAL

## COMPRESSION PRESSURE CHECK

1. Before inspection, set the vehicle to the pre-inspection condition (Refer to [PRE-INSPECTION CONDITION](#)).
2. Disconnect the ignition coil connectors and then remove all of the ignition coils and spark plugs (Refer to [REMOVAL AND INSTALLATION](#)).

## NOTE:

Do not disconnect the injector connectors.

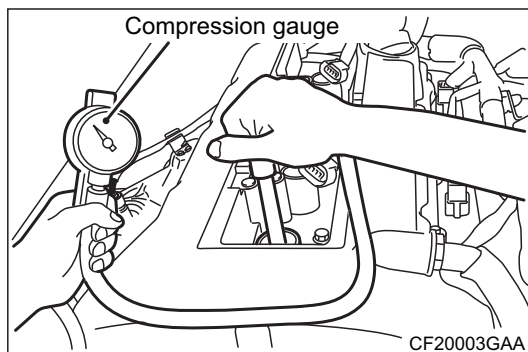
## WARNING:

Keep away from the spark plug hole when cranking. If compression is measured with water, oil, fuel, etc., that has come from cracks inside the cylinder, these materials will become heated and will gush out from the spark plug hole, which is dangerous.

## CAUTION:

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

3. Illuminate the READY (ready to drive) indicator. Then cover the spark plug hole with a shop towel etc. Select item No. 4 (Engine compression measurement) from Test of PHEV-ECU special function on the scan tool (M.U.T.-III SE). Crank the engine, and then check that no foreign material is adhering to the shop towel.
4. Set compression gauge to one of the spark plug holes.



5. Select item No. 4 (Engine compression measurement) from Test of PHEV-ECU special function on the scan tool (M.U.T.-III SE) and measure the compression pressure.

Standard value (at engine speed of 300 r/min):

<Incorrect> ~~1,150 kPa (167 psi)~~ ← ~~1,080 kPa (157 psi)~~ <Correct>

Limit (at engine speed of 300 r/min):

<Incorrect> ~~Minimum 250 kPa (123 psi)~~ ← ~~Minimum 750 kPa (109 psi)~~ <Correct>

6. Measure the compression pressure for all the cylinders, and check that the pressure differences of the cylinders are below the limit.

Limit: Maximum 98 kPa (14 psi)

7. If there is a cylinder with compression or a compression difference that is outside the limit, pour a small amount of engine oil through the spark plug hole, and repeat the operations in steps from 5 to 7.

- (1) If the compression increases after oil is added, the cause of the malfunction is a worn or damaged piston ring and/or cylinder inner surface.
- (2) If the compression does not rise after oil is added, the cause is a burnt or defective valve seat, or pressure is leaking from the gasket.

8. Install the spark plugs and ignition coils (Refer to [REMOVAL AND INSTALLATION](#)).

9. If the diagnostic trouble code is set during the check, use the scan tool (M.U.T.-III SE) to erase the diagnostic trouble codes.

## ELECTRIC MOTOR CONTROL UNIT (EMCU) AND MOTOR (ELECTRIC MOTOR UNIT)

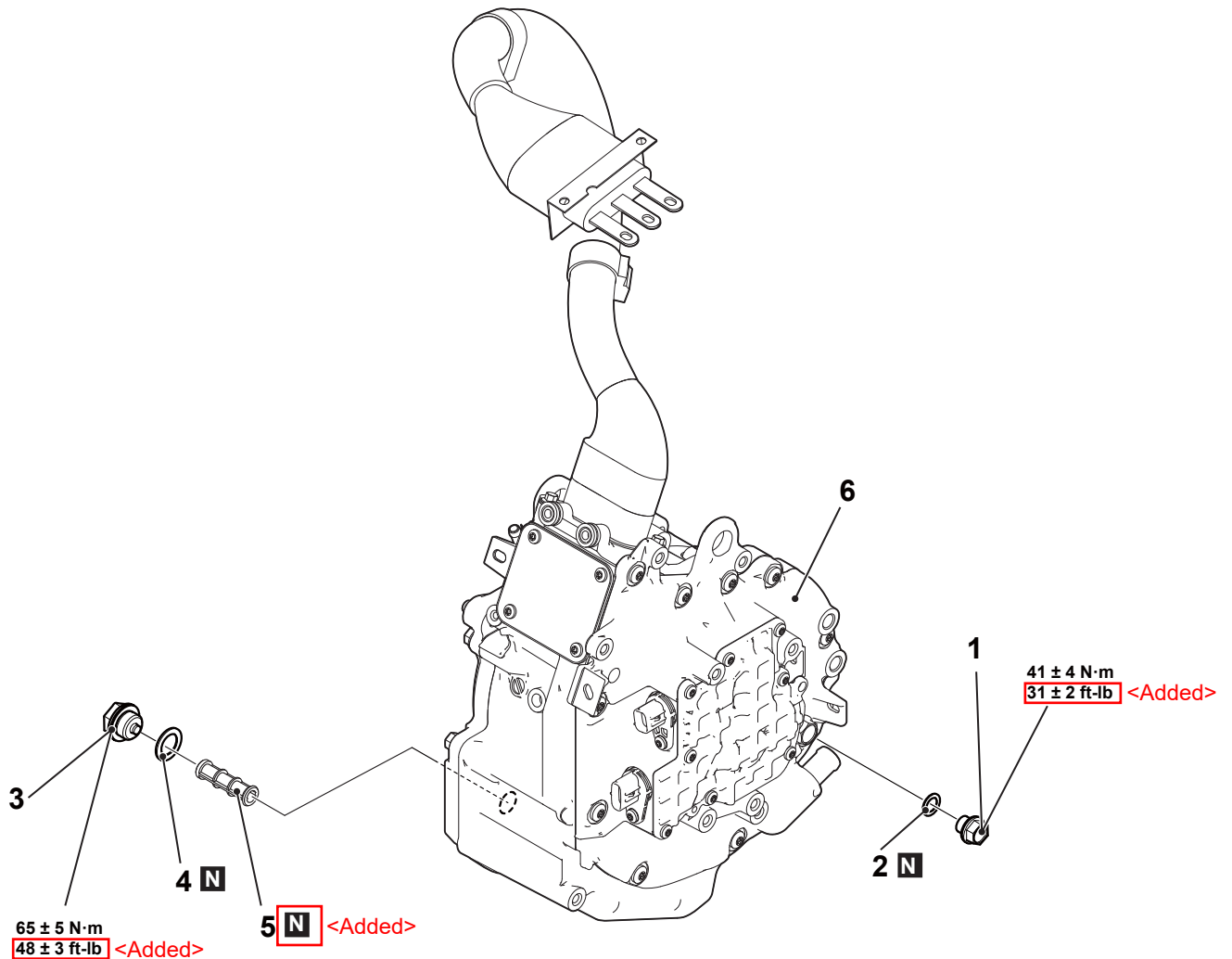
## Removal steps

10. O-ring
11. Generator protector
12. Generator cable protector

## DISASSEMBLY AND ASSEMBLY

## CAUTION:

Do not disassemble any generator components other than those described in this manual.



DF2000BPAC

## Disassembly steps

1. Oil level plug
2. Gasket
3. Drain plug
4. Gasket
5. Oil filter
6. Generator

## ON BOARD CHARGER (OBC) /DC-DC CONVERTER

### 9. Check the installation of the drive battery rear cable (junction box).

**DANGER:**

- Carry out the check on the high-voltage circuit while reading carefully the precautions on handling a high-voltage vehicle.
- Wear the specified protection equipment during the check.

Check that the terminals of the drive battery rear cable (junction box) is installed to the junction box with specified torque.

Is the check result normal?

YES >>

[Go to Step 10.](#)

NO >>

Repair the installation.

### 10. Check whether the DTC is set again.

- (1) Erase the set DTC.
- (2) Charge the drive battery by using the quick charger (external power supply equipment) other than the defective one.
- (3) Check whether the DTC is set again.

Is the DTC set?

YES >>

Replace the On Board Charger (OBC)/DC-DC converter (Refer to [REMOVAL AND INSTALLATION](#)).

NO >>

Ask the user to inspect the quick charger/external power supply equipment.

## DTC No. P1C65-63: QC time out

### TROUBLE JUDGMENT

**Check Condition**

- During quick charging (external power supply)

**Judgment Criterion**

- The timeout of the DC charging is detected.

### TROUBLESHOOTING HINTS

- Malfunction of the CAN bus line
  - Damaged wiring harness and connectors
  - Malfunction of the EV home & quick charger cable
  - Malfunction of the PHEV-ECU system
  - Malfunction of the BMU system
  - Malfunction of the On Board Charger (OBC)/DC-DC converter
  - Malfunction of the quick charger
- Malfunction of the charging equipment communication module system <Added>


**NOTE:**

- The DTC No. P1C65-63 may be set due to the following external factor.
- Malfunction of the quick charger or external power supply facility

# ON BOARD CHARGER (OBC) /DC-DC CONVERTER

## DIAGNOSIS

### Required Special Tools:

- MB992744: Vehicle communication interface-Lite (V.C.I.-Lite)
- MB992745: V.C.I.-Lite main harness A
- MB992747: V.C.I.-Lite USB cable short
- MB992748: V.C.I.-Lite USB cable long
- MB991223: Wiring harness set
- MB992006: Extra fine probe

### 1. M.U.T.-IIISE other DTC check

Check whether the following DTCs is set.

- DTC No. U1D45-87: QC CAN communication failure

Is the DTC set?

YES >>

Troubleshoot the set DTCs (Refer to [DTC No. U1D45-87: QC CAN communication failure](#)).

NO >> <Old>

[Go to Step 1](#)

1-1 <New>

<Added>

#### 1-1. M.U.T.-III SE other system DTC

Check whether the charging equipment communication module sets the DTC.

Is the DTC set?

YES >>

Troubleshoot the set DTCs.

NO >>

Go to Step 2.

### 2. M.U.T.-IIISE other system DTC

Check whether the PHEV-ECU sets the DTC.

Is the DTC set?

YES >>

Troubleshoot the set DTCs (Refer to [DIAGNOSTIC TROUBLE CODE CHART](#)).

NO >>

[Go to Step 3](#).

### 3. M.U.T.-IIISE other system DTC

Check whether the BMU sets the DTC.

Is the DTC set?

YES >>

Troubleshoot the set DTCs (Refer to [DIAGNOSTIC TROUBLE CODE CHART](#)).

NO >>

[Go to Step 4](#).

### 4. Visually check of the quick charge port

Visually check the quick charge port of EV home & quick charger cable (Refer to [EV HOME & QUICK CHARGER CABLE VISUAL INSPECTION](#)).

Is the check result normal?

YES >> <Old>

[Go to Step 1](#)

4-1 <New>

NO >>

Replace the EV home & quick charger cable (Refer to [REMOVAL AND INSTALLATION](#)).

#### <Added> 4-1. Check of wiring harness between charging equipment communication module and quick charger port

(1) Disconnect the charging equipment communication module connector (B555), and check at the wiring harness side.

(2) Check the following wiring harness for open circuit.

- Open circuit between charging equipment communication module connector (No. 1 terminal) and quick charger port connector (No. 9 terminal)
- Open circuit between charging equipment communication module connector (No. 13 terminal) and quick charger port connector (No. 8 terminal)

(3) Check the following wiring harness for short circuit.

Short circuit between charging equipment communication module connector (No. 1 terminal and No. 13 terminal)

(4) Check the following wiring harness for short to ground circuit.

- Short to ground circuit between charging equipment communication module connector (No. 1 terminal) and body ground
- Short to ground circuit between charging equipment communication module connector (No. 13 terminal) and body ground

Is the check result normal?

YES >>

Go to Step 4-2.

NO >>

Repair or replace the connector(s) or wiring harness.

## ON BOARD CHARGER (OBC) /DC-DC CONVERTER

**5. Check of wiring harness between On Board Charger (OBC)/DC-DC converter and quick charge port (charging start/stop signal 1 line, charging start/stop signal 2 line, charging permission/prohibition signal line)**

- (1) Check the following wiring harness for short to ground circuit.
  - Short to ground circuit between On Board Charger (OBC)/DC-DC converter connector (No. 2 terminal) and quick charge port connector (No. 4 terminal)
  - Short to ground circuit between On Board Charger (OBC)/DC-DC converter connector (No. 9 terminal) and quick charge port connector (No. 10 terminal)
- (2) Check the following wiring harness for open circuit.
  - Open circuit between On Board Charger (OBC)/DC-DC converter connector (No. 2 terminal) and quick charge port connector (No. 4 terminal)
  - Open circuit between On Board Charger (OBC)/DC-DC converter connector (No. 9 terminal) and quick charge port connector (No. 10 terminal)
  - Open circuit between On Board Charger (OBC)/DC-DC converter connector (No. 3 terminal) and quick charge port connector (No. 6 terminal)

Is the check result normal?

YES >>

[Go to Step 6.](#)

NO >>

Repair the connector(s) or wiring harness, or replace the EV home & quick charger cable (Refer to [REMOVAL AND INSTALLATION](#)).

**6. Check of wiring harness between On Board Charger (OBC)/DC-DC converter and quick charge port (charging start/stop signal 1 line)**

- (1) Disconnect the On Board Charger (OBC)/DC-DC converter connector (B532), and measure at the wiring harness side.
- (2) Change the power supply mode of the electric motor switch to ON (READY indicator: OFF).
- (3) Measure the voltage between the following terminals.
  - Voltage between On Board Charger (OBC)/DC-DC converter connector (No. 2 terminal) and body ground

OK: 1 V or less

Is the check result normal?

YES >>

[Go to Step 7.](#)

NO >>

Repair the connector(s) or wiring harness, or replace the EV home & quick charger cable.

**7. Check whether the DTC is set again.**

- (1) Erase the set DTC.
- (2) Perform quick charging (external power supply).
- (3) Check whether the DTC is set again.

Is the DTC set?

YES >> <Old>

[Go to Step 7.](#)

NO >>

<Added>

**7-1. Check whether the DTC is set again.**

- (1) Erase the set DTC.
- (2) Charge the drive battery by using the quick charger (external power supply equipment) other than the defective one.
- (3) Check whether the DTC is set again.

Is the DTC set?

YES >>

Replace the charging equipment communication module. Then, Go to Step 8.

NO >>

Ask the user to inspect the quick charger/external power supply equipment.

The trouble can be an intermittent malfunction (Refer to General Information - How to Use Troubleshooting/Inspection Service Points, How to Cope with Intermittent Malfunctions [HOW TO COPE WITH INTERMITTENT MALFUNCTIONS](#)).

**8. Check whether the DTC is set again.**

- (1) Erase the set DTC.
- (2) Charge the drive battery by using the quick charger (external power supply equipment) other than the defective one.
- (3) Check whether the DTC is set again.

Is the DTC set?

YES >>

Replace the On Board Charger (OBC)/DC-DC converter (Refer to [REMOVAL AND INSTALLATION](#)).

NO >>

<Incorrect>

Ask the user to inspect the quick charger/external power supply equipment.

<Correct>

The procedure is complete.

**4-2. Charging equipment communication module terminating resistance measurement**

- (1) Disconnect the charging equipment communication module connector (B555), and measure at the charging equipment communication module side.
- (2) Measure the resistance between the following terminals.

Resistance between charging equipment communication module connector (No. 1 terminal and No. 13 terminal)

OK:  $120 \pm 12 \Omega$

Is the check result normal?

YES >>

Go to Step 5.

NO >>

Replace the charging equipment communication module (Refer to ).

<Added>

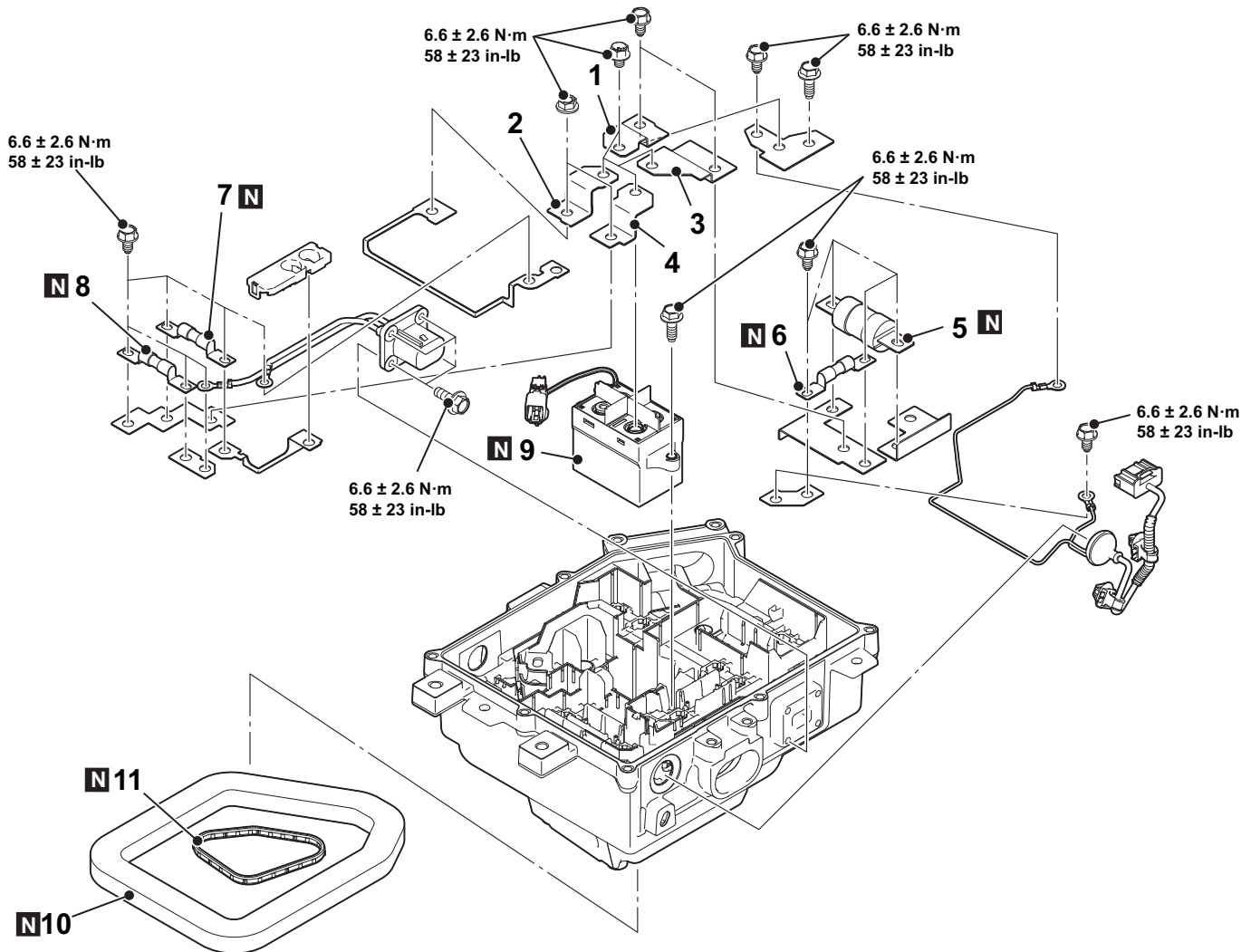


## ON BOARD CHARGER (OBC) /DC-DC CONVERTER

## JUNCTION BOX DISASSEMBLY AND ASSEMBLY

**DANGER:**

- When servicing the junction box, On Board Charger (OBC)/DC-DC converter, and AC inverter, disconnect the rear interlock connector in addition to the service plug removal. (Refer to ).



DF4000HCAA

**Disassemble steps**

- Battery bus bar (A)
- Battery bus bar (B)
- Battery bus bar (C)
- Battery bus bar (D)
- High voltage fuse for quick charging (225 A) <Vehicle with quick charging system>
- High voltage fuse for current sensor (10 A)
- High voltage fuse for On Board Charger (OBC)/DC-DC converter (30 A)
- High voltage fuse for AC inverter (30 A) <Vehicle with AC power supply>
- Battery contactor
- EV battery package
- EV control electrical packing

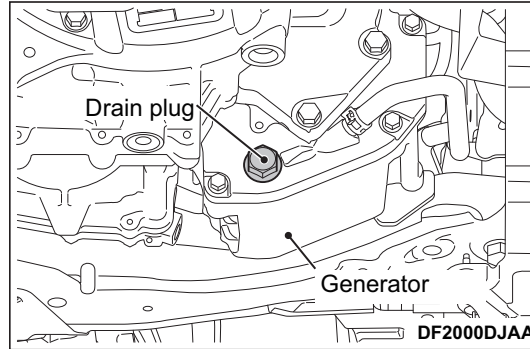
&lt;Added&gt;

## EV COOLING SYSTEM

## OIL CHANGE

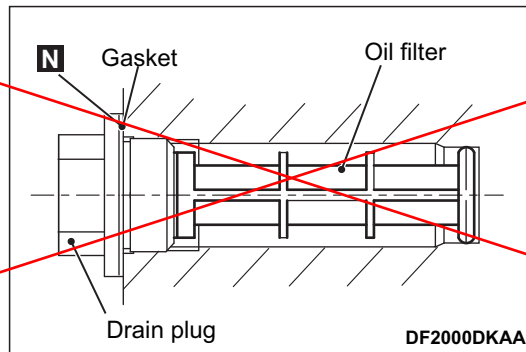
## WHEN NOT REPLACING THE EV OIL COOLER

- 1.Remove the front wheel and tire (LH) (Refer to Suspension - Road Wheel Tire Assembly [Removal & Installation](#)).
- 2.Remove the engine room under cover front B and engine room side cover (Refer to Body Exterior, Doors, Roof & Vehicle Security - Exterior, Under Cover [Removal and Installation](#)).
- 3.Remove the drain plug and gasket to drain the oil.



&lt;Deleted&gt;

NOTE:

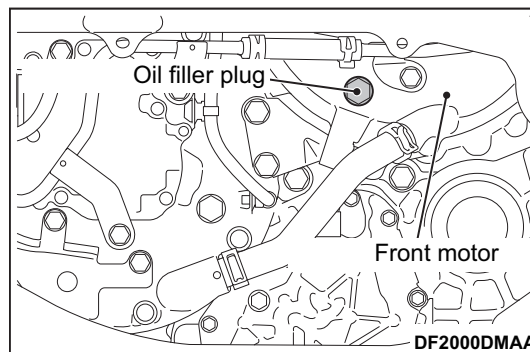


When removing the drain plug, check that the oil filter behind it is not clogged or damaged. If necessary, clean or replace the oil filter.

- 4.Install the drain plug with a new gasket, then tighten them to the specified torque.

**Tightening torque: 65 ± 5 N·m (48 ± 3 ft-lb)**

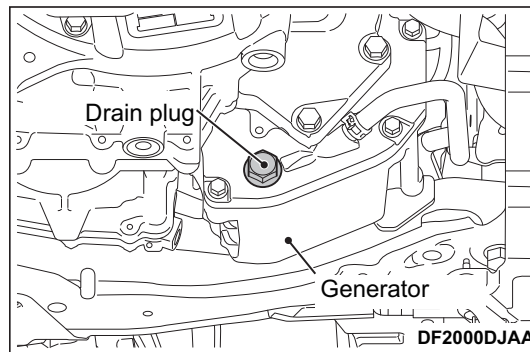
- 5.Remove the oil filler plug and gasket.



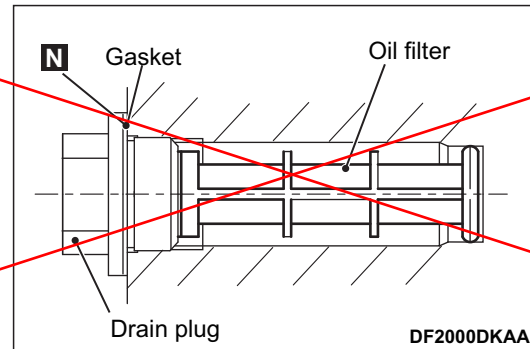
## EV COOLING SYSTEM

## WHEN REPLACING THE EV OIL COOLER

- 1.Remove the front wheel and tire (LH) (Refer to Suspension - Road Wheel Tire Assembly [Removal & Installation](#)).
- 2.Remove the engine room under cover front B and engine room side cover (Refer to Body Exterior, Doors, Roof & Vehicle Security - Exterior, Under Cover [Removal and Installation](#)).
- 3.Remove the drain plug and gasket to drain the oil.



## NOTE

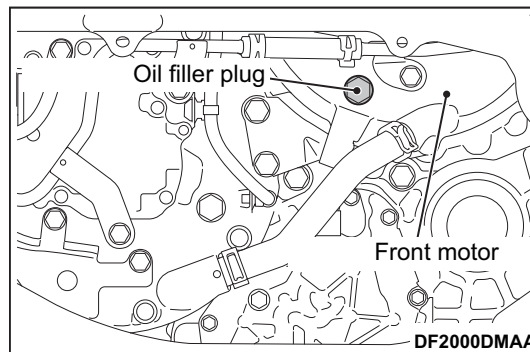


When removing the drain plug, check that the oil filter behind it is not clogged or damaged. If necessary, clean or replace the oil filter.

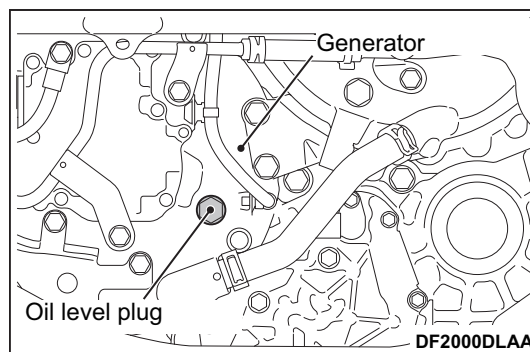
- 4.Install the drain plug with a new gasket, then tighten them to the specified torque.

**Tightening torque:  $65 \pm 5 \text{ N}\cdot\text{m}$  ( $48 \pm 3 \text{ ft}\cdot\text{lb}$ )**

- 5.Remove the oil filler plug and gasket.



- 6.Remove the oil level plug and gasket.



## BRAKE SYSTEM

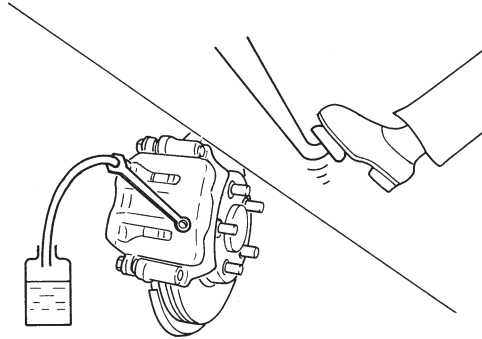
## Draining

## CAUTION:

- Never spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it off immediately and wash with water if it gets on a painted surface. For brake component parts, never wash them with water.
- Turn the electric motor switch OFF and disconnect the harness connector of the electric driven intelligent brake unit and the ABS actuator and electric unit (control unit), or the 12V battery negative terminal before performing work.

&lt;Added&gt;

1. Connect a vinyl tube to the bleed valve.



CF100AJUAA00USA

2. Depress the brake pedal and loosen the bleeder valve to gradually discharge brake fluid.

## Refilling

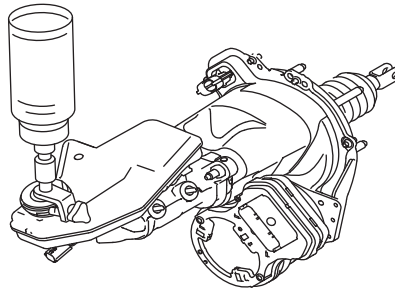
## CAUTION:

- Turn the electric motor switch OFF and disconnect the harness connector of the electric driven intelligent brake unit and the ABS actuator and electric unit (control unit), or the 12V battery negative terminal before performing work.
- Never spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it off immediately and wash with water if it gets on a painted surface. For brake component parts, never wash them with water.

&lt;Added&gt;

&lt;Deleted&gt;

1. Check that there is no foreign material in the reservoir tank, and refill with new brake fluid.



DF100AJVAC00USA

## CAUTION:

- Never reuse drained brake fluid.
- Never allow foreign matter (e.g. dust) and oils other than the specified brake fluid to enter the reservoir tank.

&lt;Added&gt;

2. Loosen the bleeder valve, slowly depress the brake pedal to the full stroke, and then release the pedal. Repeat this operation at intervals of 2 or 3 seconds until new brake fluid is discharged. Then close the bleeder valve with the brake pedal depressed. Repeat the same work on each wheel.

3. Perform the air bleeding. Refer to [Bleeding Brake System](#).

• If brake fluid adheres to the disc rotor or brake caliper assembly, wipe it off immediately. <Added>

## BRAKE SYSTEM

• Use new brake fluid. Do not reuse the brake fluid which has been drained. <Added>

### Bleeding Brake System

#### CAUTION:

e.g. <Correct>

- Turn the electric motor switch OFF and disconnect the ABS actuator and electric unit (control unit) harness connector or the 12V battery negative terminal before performing the work. <Added>
- Monitor the fluid level in the reservoir tank while performing the air bleeding
- Never spill or splash brake fluid on painted surfaces. Brake fluid may seriously damage paint. Wipe it off immediately and wash with water if it gets on a painted surface. For brake component parts, never wash them with water. <Added>
- Never allow foreign matter (e.g. dust) and oil other than the specified brake fluid to enter the reservoir tank. <Added>

1. Connect a vinyl tube to the bleeder valve of the rear ~~right~~ <sup><Incorrect></sup> brake.
2. Fully depress the brake pedal 4 to 5 times.
3. Loosen the bleeder valve and bleed air ~~with the brake pedal depressed, and then quickly tighten the bleeder valve.~~ <sup><Deleted></sup> left <sup><Correct></sup>
4. Repeat steps 2 and 3 until all of the air is out of the brake line.
5. In case of rear brake caliper with electric parking brake system, operate parking brake 5 times to bleed the air. <Deleted>
6. Tighten the bleeder valve to the specified torque.
  - Front disc brake : Refer to [Exploded View](#).
  - Rear disc brake : Refer to [Exploded View](#).

7. Perform steps 2 to 6. Occasionally fill with the brake fluid in order to keep it in the reservoir tank at least half of MAX line. Bleed air in the following order: rear right brake → front left brake → rear left brake → and front right brake in order.

8. Check that the fluid level in the reservoir tank is within the specified range after air bleeding. Refer to Inspection [Inspection](#).

9. Check each item of brake pedal. Adjust it if the measurement value is not the standard. Refer to [Inspection and Adjustment](#).

7. Perform steps 1 to 5. Occasionally fill with the brake fluid in order to keep it in the reservoir tank at least half of the maximum amount. Bleed air in the following order: rear left brake → front right brake → rear right brake → and front left brake in order.

## BRAKE MASTER CYLINDER

### Inspection

#### FLUID LEAK

Check for brake fluid leakage from the master cylinder mounting face, reservoir tank mounting face and brake tube connections.

## BRAKE BOOSTER

### Inspection

#### OPERATION

Depress the brake pedal with the electric motor switch OFF. Electrical motor switch ON with the brake pedal fully depressed. Check that the clearance between brake pedal and dash lower panel decreases.

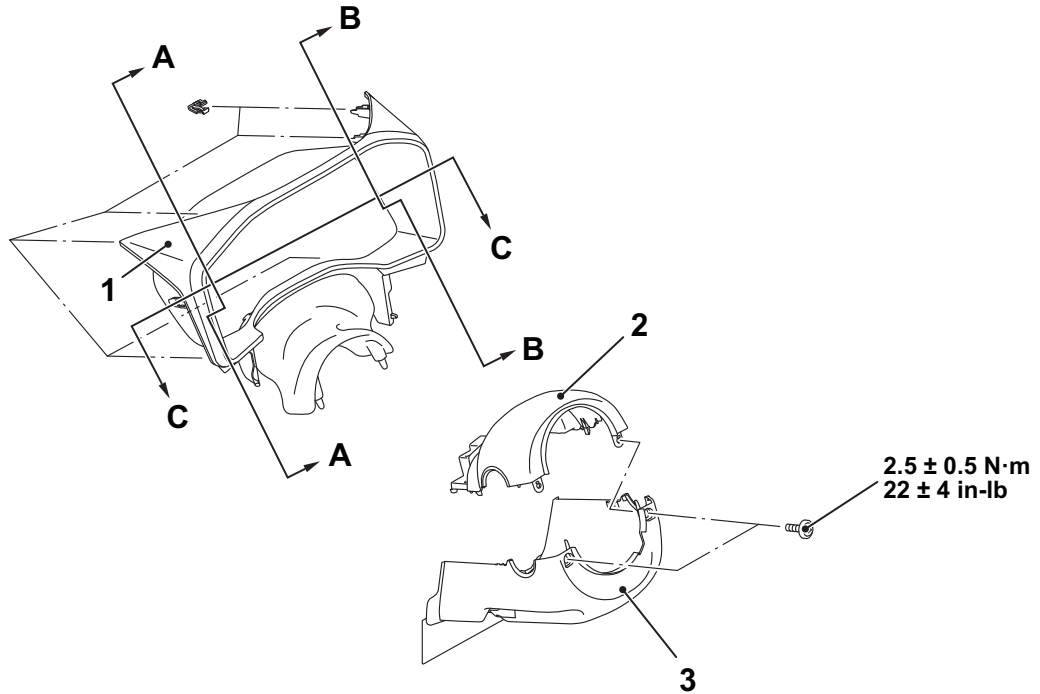
# INSTRUMENT PANEL

## CLUSTER LID AND STEERING COLUMN COVER

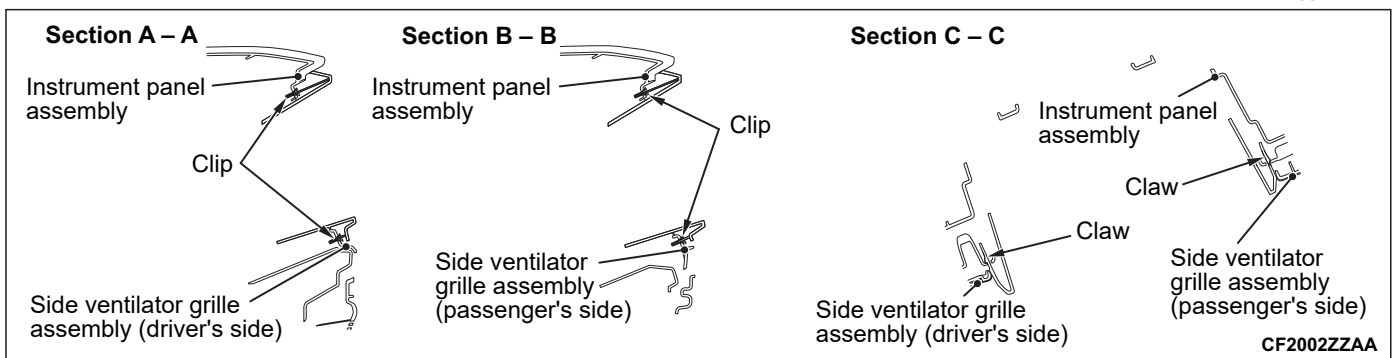
### Removal and Installation

**Pre-removal and Post-installation Operation**

- Instrument pad (Driver's Side) Removal and Installation (Refer to [Removal and Installation](#)).
- Instrument pad (Passenger's Side) Removal and Installation (Refer to [Removal and Installation](#)).



DF2002ZYAA



CF2002ZZAA

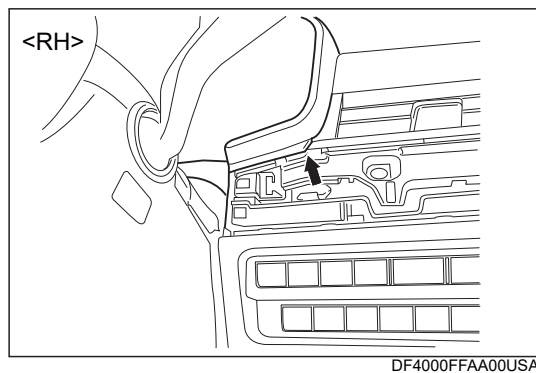
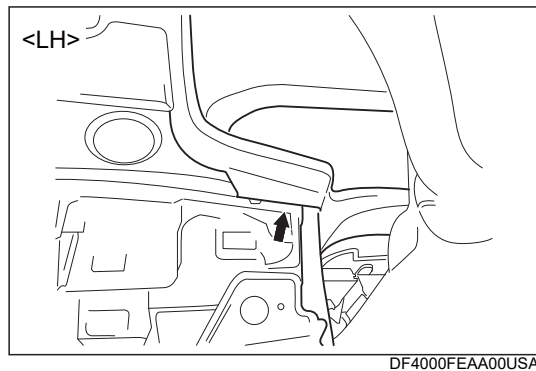
		Removal step
<Added>	<<AA>>	1. Cluster lid assembly
	<<A>>	2. Steering column cover upper
		3. Steering column cover lower

## INSTRUMENT PANEL

## REMOVAL SERVICE POINTS

## &lt;&lt;AA&gt;&gt; CLUSTER LID ASSEMBLY REMOVAL

1. Insert the special tool ornament remover (MB990784) into the position shown in the figure and remove the clip.



2. Pull the cluster lid assembly towards you and remove it.

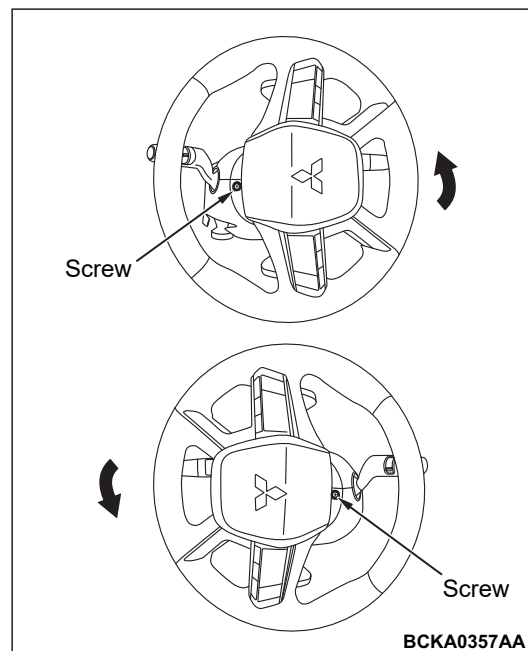


## NOTE:

Take care not to scratch the the surface of the cluster lid assembly when removing it.

&lt;Added&gt;

## &lt;&lt;A&gt;&gt; STEERING COLUMN COVER UPPER REMOVAL



Turn the steering wheel as shown in the illustration so that the screws on the right and left sides can be seen. Then, remove the screws.

## ROOF

## DRAIN CONNECTOR

## Exploded View

Refer to [Exploded View](#).

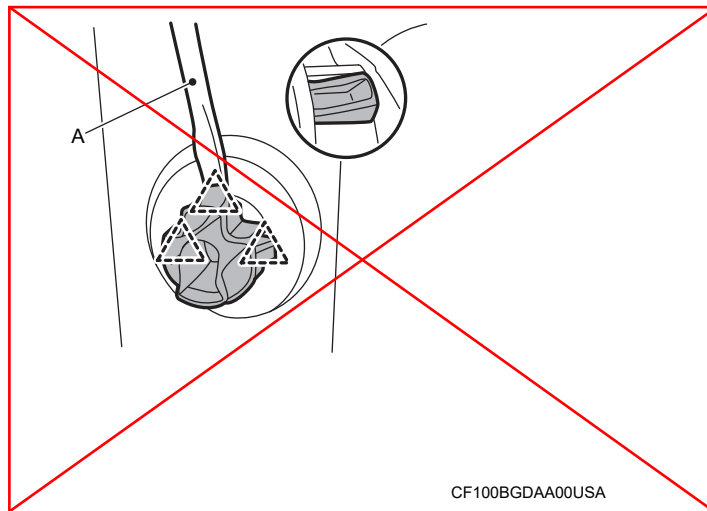
## Removal and Installation

## REMOVAL

## Front

- 1.Remove front squawker.Refer to [Removal and Installation](#).
- 2.Remove front wiper drive assembly. Refer to [Removal and Installation](#).
- 3.Disengage front drain connector fixing pawls using remover tool (A), push it into the vehicle interior.

&lt;Incorrect&gt;



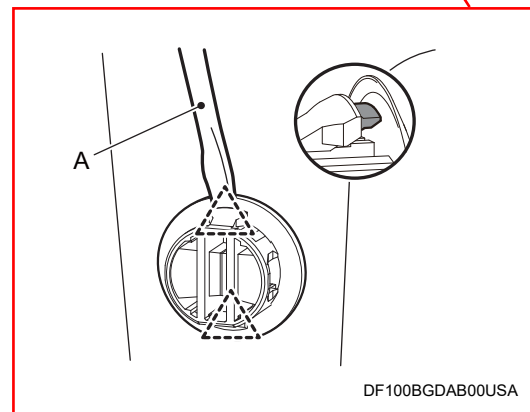
## NOTE:

<Incorrect> ~~Attach a string to the end of drain connector for use when performing installation procedure.~~

- 4.Remove front drain connector from front drain hose.

<Correct> Attach a string to the end of drain connector in advance. When installing the drain connector, pull the attached string to place the drain connector easier.

&lt;Correct&gt;



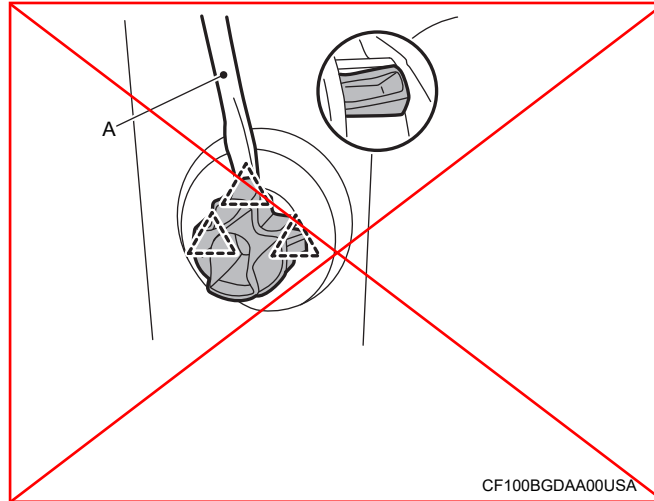


## ROOF

## Rear

- 1.Remove rear bumper fascia. Refer to [Removal and Installation](#).
- 2.Remove luggage side lower finisher RH. Refer to [Removal and Installation](#).
- 3.Remove tool box cover of luggage side lower finisher LH. Refer to [Removal and Installation](#).
- 4.Disengage rear drain connector fixing pawls using remover tool (A), push it into the vehicle interior.

&lt;Incorrect&gt;



: Pawl



## NOTE:

~~Attach a string to the end of drain connector, for use when performing installation procedure.~~

&lt;Incorrect&gt;

- 5.Remove rear drain connector from rear drain hose.

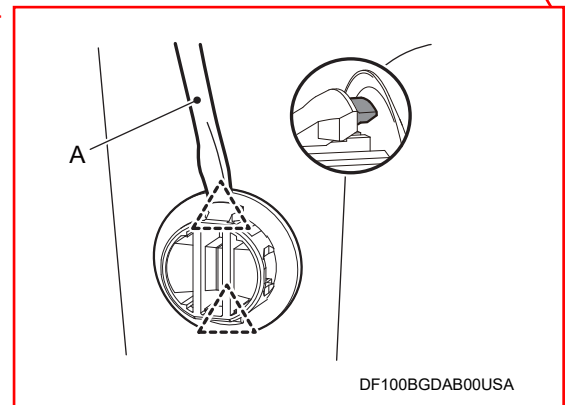
## INSTALLATION

Install in the reverse order of removal.

&lt;Correct&gt;

Attach a string to the end of drain connector in advance. When installing the drain connector, pull the attached string to place the drain connector easier.

&lt;Correct&gt;



## POWER OUTLET

&lt;Added&gt;

\*: After replacement of the wireless charger unit, no need to write VIN data.

## DIAGNOSIS SYSTEM (WIRELESS CHARGER UNIT)

## M.U.T.-III SE FUNCTION

## APPLICATION ITEMS

M.U.T.-III SE performs the following functions via the communication with the wireless charger unit.

Diagnosis mode	Description
Diagnostic Trouble Code	Display DTC which wireless charger unit memorizes
Data List	The wireless charger unit input/output data is displayed in real time. <Added>
Special Function	<ul style="list-style-type: none"> <li>Enables wireless charger unit reset and write VIN data <input type="checkbox"/> ← <input type="checkbox"/> *</li> <li>The part number of wireless charger unit can be checked.</li> <li>Transmits a drive signal to check the operation.</li> </ul>
<Deleted> Configuration	Writes the vehicle specification when replacing wireless charger unit.

## DIAGNOSTIC TROUBLE CODE

Refer to [DTC Index](#).

## DATA LIST



## NOTE:

The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to M.U.T.-III SE display items.

Monitored item	Unit	Description
COMPUTER INTERNAL TEMPERATURE	°C	Monitors the temperature inside the wireless charger unit
DETECTED OBJECT	Initial/Yes/No/Inactive	Monitors the detecting status of object put on the wireless charger.
DETECTED PHONE	UNAVAILABLE/Yes/No/Inactive	Monitors the detecting status of receiver. (such as smart phones)
PRESENCE OF FOREIGN OBJECT(S)	UNAVAILABLE/Yes/No/Inactive	Monitors if foreign objects are detected on the wireless charger.
WCBS Power State	UNAVAILABLE/Yes/No/Inactive	Monitors the start-up status of the wireless charger.
Charging State	UNAVAILABLE/No/Low/Mid/Inactive	Monitors the wireless charging status.
Hardware version	Unknown/v1.1/v1.2/v1.3/v1.4/v1.5/v1.6/v1.7/v1.8/v1.9/v2.0/v2.1/v2.2/v2.3/v2.4/v2.5/Inactive	Monitors the hardware version.
Receiver ChargingIC ID	-	Monitors the IC chip ID of receiver (such as smart phones)
Manufacturer of receiver's charging IC	Unknown/Samsung/LGE/Nokia/motorola/Apple/Others	Monitors the manufacturer of receiver (such as smart phones)
Charging Standard Receiver Version	Unknown/1.0/1.1/1.2/Other/Inactive	Monitors Qi version of receiver (such as smart phones)
Voltage of charging coil	V	Monitors the voltage of charging coil.
Current of charging coil	A	Monitors the electric current of charging coil.
Input voltage	V	Monitors the input voltage in charging coil.
Input current	A	Monitors the input current in charging coil.
Power consumption of charger	W	Monitors the electric current consumption of the wireless charger.
Received power reported by receiver	W	Monitors the electric current consumption of the transmitter and receiver (such as smart phones)
Power loss between charger and receiver	W	Monitors power loss of the wireless charger unit and receiver (such as smart phones)
Charging Time	min	Monitors charging time.
Disconnection of charging coil	UNAVAILABLE/Yes/No/Inactive	Monitors the open circuit of coil inside the wireless charger unit.
Memory fault	UNAVAILABLE/Yes/No/Inactive	Monitors the memory errors of the wireless charger unit.
Reason of stop charging	UNKNOWN/Charge complete/Over temp fault/FOD Error/INPWREXCEED	Monitors the reason of stopping wireless charging.
Stop charging request from HFM	No Request/Stop/Inactive	Monitors the charge stop request signal from Keyless operation key unit
LED (Orange)	UNAVAILABLE/OFF/ON/Inactive	Status of LED (Orange) powered from wireless charger
LED (green)	UNAVAILABLE/OFF/ON/Inactive	Status of LED (Green) powered from the wireless charger
Firmware Version	Unknown/v1.1/v1.2/v1.3/v1.4/v1.5/v1.6/v1.7/v1.8/v1.9/v2.0/v2.1/v2.2/v2.3/v2.4/v2.5/Inactive	Monitors the firmware version.

## POWER OUTLET

## SPECIAL FUNCTION

Function name	Monitor Item	Description
ECU Information	-	The part number of wireless charger unit can be checked.
Chassis No./VIN Registration	-	Write VIN data in wireless charger unit.
RESET	COMPUTER RESET	Reset the wireless charger unit
Actuator Test	-	Transmits a drive signal to check the operation.

## ECU Information

Displays wireless charger unit part number and various information.

## Actuator Test

Monitor Item	Description
GREEN LED	This function able to check wireless charger indicator (green)
ORANGE LED	This function able to check wireless charger indicator (orange)
Battery Charging	This function able to check wireless charging

~~CONFIGURATION~~

~~Writes the vehicle specification when replacing wireless charger unit.~~

## ECU DIAGNOSIS INFORMATION

## WIRELESS CHARGER UNIT

## Reference Value

## VALUES ON THE DIAGNOSIS TOOL



## NOTE:

The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to M.U.T.-III SE display items.

Monitor Item	Condition	Value/Status	
COMPUTER INTERNAL TEMPERATURE	Electric motor switch ON	— Monitors the temperature inside the wireless charger.	
DETECTED OBJECT	Electric motor switch ON	Something is found on the wireless charger.	Yes
		No objects are found on the wireless charger.	No
		Wireless charger unit is starting up.	Initial
		Wireless charger unit is not receiving a signal.	Inactive
DETECTED PHONE	Electric motor switch ON	A receiver (smartphone etc.) is found on the wireless charger.	Yes
		No receivers are found on the wireless charger.	No
		Wireless charger unit is starting up.	UNAVAILABLE
		Wireless charger unit is not receiving a signal.	Inactive
PRESENCE OF FOREIGN OBJECT(S)	Electric motor switch ON	When a foreign object is detected on the wireless charger.	Yes
		When no foreign objects are detected on the wireless charger.	No
		Wireless charger unit is starting up.	UNAVAILABLE
		Wireless charger unit is not receiving a signal.	Inactive

## POWER OUTLET

## PHYSICAL VALUES

## PHYSICAL VALUES

Terminal No. (Wire color)		Description		Condition	Standard	Reference value
+	-	Signal name	Input/ Output			
1 (LA/Y)	Ground	Ignition power supply	Input	Electric motor switch ON	9.0 — 16.0 V	Battery power supply
2 (LA/SB)	Ground	CAN-H	Input/ Output	Electric motor switch ON	—	—
4 (LA/B)	Ground	Ground	—	Electric motor switch ON	—	Approx. 0 V
5 (GR)	Ground	Wireless charger indicator ground	—	Electric motor switch ON	—	Approx. 0 V
6 (LA/V)	Ground	CAN-L	Input/ Output	Electric motor switch ON	—	—
7 (G)	5 (GR)	Wireless charger indicator (green) signal	Output	• Electric motor switch ON • Wireless charger indicator (green) ON	—	Approx. 3.0 V
				• Electric motor switch ON • Wireless charger indicator (green) OFF	—	Approx. 0 V
8 (P)	5 (GR)	Wireless charger indicator (orange) signal	Output	• Electric motor switch ON • Wireless charger indicator (orange) ON	—	Approx. 2.0 V
				• Electric motor switch ON • Wireless charger indicator (orange) OFF	—	Approx. 0 V

## Fail-safe

Refer to [Fail-safe](#).

## DTC Inspection Priority Chart

If multiple DTCs are detected simultaneously, check them one by one depending on the following DTC inspection priority chart.

Priority	Detected items (DTC)
1	<ul style="list-style-type: none"> <li>U0079-00: Control module comm Bus G Off</li> <li>U214F-87: CAN comm err (BCM)</li> <li>U2118-87: CAN comm err (Keyless operation key)</li> <li>U214E-87: CAN comm err (combination meter)</li> <li>U215B-87: CAN comm err (IPDM E/R)</li> <li>U2148-87: CAN comm err (brake control unit)</li> </ul>
<del>2</del>	<del>B1B04-55: Wireless charger unit</del>
2	<ul style="list-style-type: none"> <li>B1B00-08: CAN COMMUNICATION</li> <li>B1B01-1C: Wireless charger unit</li> <li>B1B02-1D: Wireless charger unit</li> <li>B1B03-49: Wireless charger unit</li> <li>B1B05-09: Wireless charger unit</li> </ul>

&lt;Deleted&gt;

&lt;Correct&gt;

2

&lt;Incorrect&gt;

X

## POWER OUTLET

## DTC Index

## Self Diagnostic Result

DTC	Display contents of M.U.T.-III SE	Reference
B1B00-08	CAN COMMUNICATION	<a href="#">DTC Description</a>
B1B01-1C	Wireless charger unit	<a href="#">DTC Description</a>
B1B02-1D	Wireless charger unit	<a href="#">DTC Description</a>
B1B03-49	Wireless charger unit	<a href="#">DTC Description</a>
<del>B1B04-55</del>	<del>Wireless charger unit</del>	<del><a href="#">DTC Description</a></del>
B1B05-09	Wireless charger unit	<a href="#">DTC Description</a>

&lt;Deleted&gt;

## Network-DTC

DTC	Display contents of M.U.T.-III SE	Reference
U0079-00	Control module comm Bus G Off	<a href="#">DTC Description</a>
U214F-87	CAN comm err (BCM)	<a href="#">DTC Description</a>
U2118-87	CAN comm err (Keyless operation key)	<a href="#">DTC Description</a>
U214E-87	CAN comm err (combination meter)	<a href="#">DTC Description</a>
U215B-87	CAN comm err (IPDM E/R)	<a href="#">DTC Description</a>
U2148-87	CAN comm err (brake control unit)	<a href="#">DTC Description</a>

## POWER OUTLET

**6. MALFUNCTIONING PART REPAIR**

Repair or replace the identified malfunctioning parts.

>>

[GO TO 7](#)

**7. REPAIR CHECK (DIAGNOSTIC TROUBLE CODE WITH M.U.T.-III SE)**

 With M.U.T.-III SE

1. Erases Diagnostic Trouble Code results.
2. Perform Diagnostic Trouble Code of "Wireless charger" again after repairing or replacing the specific items.
3. Check if any DTC is detected in Diagnostic Trouble Code results of "Wireless charger" .

Is any DTC detected?

YES >>

[GO TO 3](#)

NO >>

[GO TO 8](#)

**8. REPAIR CHECK (OPERATION TEST)**

Perform operation test. Check that the malfunction symptom is solved or no other symptoms occur.

Is there a malfunction symptom?

YES >>

[GO TO 5](#)

NO >>

INSPECTION END

<Deleted>

**ADDITIONAL SERVICE WHEN REPLACING (WIRELESS CHARGER UNIT)****Description**


When replacing wireless charger unit, the procedures of AFTER REPLACEMENT must be performed. For work procedure, refer to [Work Procedure](#).

**AFTER REPLACEMENT**

After replacing wireless charger unit, the following items must be performed:

- Writing VIN information

**Work Procedure****1. WRITING OF VIN DATA TO WIRELESS CHARGER UNIT**

 WITH M.U.T.-III SE

1. Electric motor switch ON.
2. Select "WRITE VIN" of "Special Function" item using M.U.T.-III SE.
3. Touch "Start" at "WRITE VIN" screen to write the VIN data into new wireless charger unit.

>>

END

## POWER OUTLET

&lt;Deleted&gt;

## B1B04-55 Wireless charger unit

## DTC Description

## DTC DETECTION LOGIC

DTC	M.U.T.-III SE screen terms (Trouble diagnosis contents)	DTC detection condition		
		Diagnosis condition	Signal (terminal)	
B1B04-55	Wireless charger unit (Wireless charger unit)	1	When electric motor switch is ON	-
			Configuration is incomplete	-
			1 second or more	-
			When electric motor switch is ON	-
		2	When errors are detected in the configuration data stored in the wireless charger unit.	-
			1 second or more	-
			When electric motor switch is ON	-
			1 second or more	-

## POSSIBLE CAUSE

- Configuration is incomplete
- Wireless charger unit malfunction

## FAIL-SAFE

-

## DTC CONFIRMATION PROCEDURE

## 1. PERFORM DTC CONFIRMATION PROCEDURE

 With M.U.T.-III SE

1. Turn the electric motor switch ON.
2. Select "Diagnostic Trouble Code" mode of "Wireless charger" using M.U.T.-III SE.
3. Check DTC.

Is DTC "B1B04-55" detected?

YES >>

Refer to [Diagnosis Procedure](#).

NO-1 >>

To check malfunction symptom before repair: Refer to [Intermittent Incident](#).

NO-2 >>

Confirmation after repair: INSPECTION END

## POWER OUTLET

&lt;Deleted&gt;

## Diagnosis Procedure

### 1. PERFORM CONFIGURATION OF WIRELESS CHARGER UNIT

Perform configuration of wireless charger unit. Refer to [Description](#).

&gt;&gt;

[GO TO 2](#)

### 2. PERFORM DTC CONFIRMATION PROCEDURE AGAIN

 With M.U.T.-III SE

1. Turn the electric motor switch ON.
2. Erase DTC.
3. Perform DTC confirmation procedure again. Refer to [DTC Description](#).

Is DTC "B1B04-55" detected again?

YES >>

Replace wireless charger unit. Refer to [Removal and Installation](#).

NO >>

INSPECTION END

## B1B05-09 Wireless charger unit

### DTC Description

### DTC DETECTION LOGIC

DTC	M.U.T.-III SE screen terms (Trouble diagnosis contents)	DTC detection condition		
		Diagnosis condition	Diagnosis delay time	
B1B05-09	Wireless charger unit (Wireless charger unit)	1	Diagnosis condition	When electric motor switch is ON
			Signal (terminal)	Wireless charger indicator signal
			Threshold	Green and Yellow LED is not controlled
			Diagnosis delay time	At system startup
		2	Diagnosis condition	When electric motor switch is ON
			Signal (terminal)	Wireless charger indicator signal
			Threshold	Green and Yellow LED is not controlled
			Diagnosis delay time	At system startup

### POSSIBLE CAUSE

- Wireless charger indicator circuit open or short
- Wireless charger indicator malfunction
- Wireless charger unit malfunction.

### FAIL-SAFE



## POWER OUTLET

**DTC CONFIRMATION PROCEDURE**

&lt;Deleted&gt;

**1. CHECK DTC PRIORITY**

If DTC B1B05-09 is displayed with DTC B1B04-55, first perform the confirmation procedure (trouble diagnosis) for DTC B1B04-55.

Is applicable DTC detected?

YES >>

Perform diagnosis of applicable. Refer to [DTC Description](#).

NO >>

[GO TO 2](#)

&lt;Incorrect&gt;

**2. PERFORM DTC CONFIRMATION PROCEDURE**

 With M.U.T.-III SE

1. Turn the electric motor switch ON.
2. Select "Diagnostic Trouble Code" mode of "Wireless charger" using M.U.T.-III SE.
3. Check DTC.

Is DTC "B1B05-09" detected?

YES >>

Refer to [Diagnosis Procedure](#).

NO-1 >>

To check malfunction symptom before repair: Refer to [Intermittent Incident](#).

NO-2 >>

Confirmation after repair: INSPECTION END

**Diagnosis Procedure**

&lt;Deleted&gt;

**1. CHECK DTC PRIORITY**

If DTC B1B05-09 is displayed with DTC B1B04-55, first perform the confirmation procedure (trouble diagnosis) for DTC B1B04-55.

Is applicable DTC detected?

YES >>

Perform diagnosis of applicable. Refer to [DTC Description](#).

NO >>

[GO TO 2](#)

## POWER OUTLET

**2 CHECK HARNESS BETWEEN WIRELESS CHARGER UNIT AND WIRELESS CHARGER INDICATOR**

With M.U.T.-III SE

1. Turn electric motor switch OFF.
2. Disconnect the wireless charger unit and wireless charger indicator connector.
3. Check for continuity between the wireless charger unit harness connector and wireless charger indicator harness connector.

Wireless charger unit		Wireless charger indicator		Continuity
Connector	Terminal	Connector	Terminal	
M213	6	M214	1	Existed
	5		2	

4. Check for continuity between wireless charger unit harness connector and ground.

Wireless charger unit		Ground	Continuity
Connector	Terminal		
M213	7		Not existed
	8		

Is the inspection result normal?

YES >>

GO TO **2** <Correct>

<Incorrect>

NO >>

Repair the harnesses or connectors.

**3 CHECK WIRELESS CHARGER INDICATOR GROUND CIRCUIT**

Check for continuity between the wireless charger indicator harness connector and ground.

Wireless charger unit		Ground	Continuity
Connector	Terminal		
M213	1		Existed

Is the inspection result normal?

YES >>

GO TO **3** <Correct>

<Incorrect>

NO >>

Repair the harnesses or connectors.

**4 REPLACE WIRELESS CHARGER INDICATOR**

1. Replace wireless charger indicator.
2. Turn electric motor switch ON.
3. Erase DTC.
4. Perform DTC confirmation procedure again. Refer to [DTC Description](#).

Is DTC B1B05-09 detected again?

YES >>

Replace wireless charger unit. Refer to [Removal and Installation](#).

NO >>

INSPECTION END

## DRIVER ASSISTANCE SYSTEM

## 2. CAMERA AIMING ADJUSTMENT

 With M.U.T.-III SE

**CAUTION:**

Operate M.U.T.-III SE outside the vehicle, and close all the doors. (To retain vehicle attitude appropriately)

1. Select "Special Function" on "LANE CAMERA" with M.U.T.-III SE.
2. Select "AUTO AIM".
3. Confirm the following items;
  - The target should be accurately placed.
  - The vehicle should be stopped.
4. Select "OK" to perform camera aiming.

**CAUTION:**

- Never select "OK" when the J-52266-2 alignment target is not accurately placed.
- Wait 5 seconds or more after selecting "OK".

5. Input the following parameters, and then select "OK".

Dh : Calculated value in 1. CHECK VEHICLE HEIGHT

VP : 0

Dt : 3,000 mm

Dbt : 720 mm

Htu : 1,420 mm

Htl : 1,180 mm

Ts : 120 mm

**NOTE:**

- As the M.U.T.-III SE receives the input value in increments of 2 mm, input 0 or an even number.
- When the value of Dh is an odd number, add or subtract 1 from the value, then input the even number. Entering either an added or subtracted value has no effect on the aiming result.

6. Confirm the displayed item.
  - "Normally Completed" : Select "OK".
  - "SUSPENSION", "Abnormally completed": Perform the following services.

&lt;Incorrect&gt;

Displayed item	Possible cause	Service procedure
SUSPENSION	<ul style="list-style-type: none"> <li>• Temporary malfunction in internal processing of the front camera unit.</li> <li>• Front camera unit malfunction.</li> </ul>	Position the target appropriately again. Then perform the aiming again.
Abnormally completed	2 Front camera unit cannot detect the target <ul style="list-style-type: none"> <li>• A target is not-yet-placed.</li> <li>• The position of the targets is not correct.</li> <li>• The position of the front camera unit is not correct.</li> <li>• Inappropriate work environment.</li> <li>• Inappropriate vehicle condition.</li> <li>• Input value is not correct against actual setting position.</li> </ul>	Position the target appropriately again. Then perform the aiming again.
	3 Roll angle is outside the threshold <ul style="list-style-type: none"> <li>• The position of the targets is not correct.</li> <li>• The position of the front camera unit is not correct.</li> <li>• Inappropriate work environment.</li> <li>• Inappropriate vehicle condition.</li> <li>• Input value is not correct against actual setting position.</li> </ul>	

&lt;Correct&gt;

Attached sheet 21 (3/3)

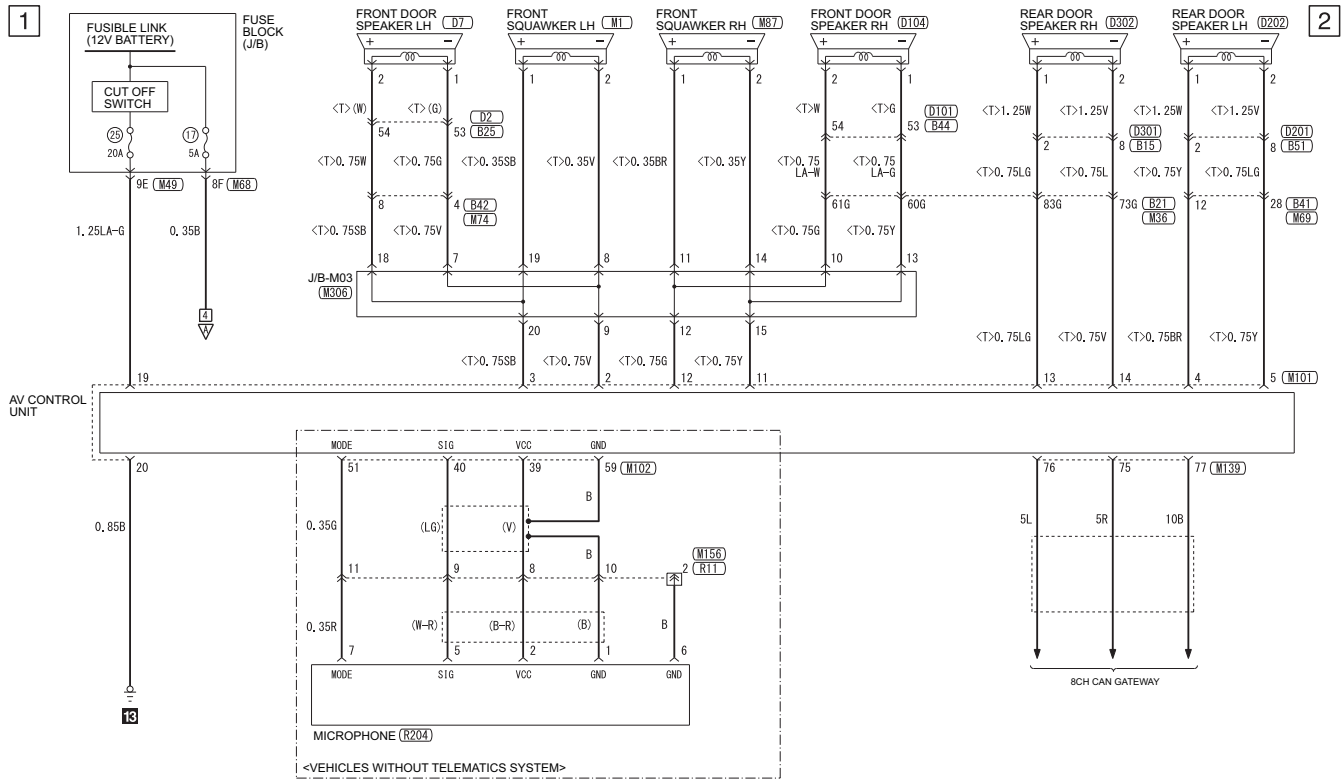
## DRIVER ASSISTANCE SYSTEM

Displayed item		Possible cause	Service procedure
Abnormally completed	4	Yaw/pitch angle is outside the threshold. <ul style="list-style-type: none"> <li>The position of the targets is not correct.</li> <li>The position of the front camera unit is not correct.</li> <li>Inappropriate work environment.</li> <li>Inappropriate vehicle condition.</li> <li>Input value is not correct against actual setting position.</li> </ul>	Position the target appropriately again. Then perform the aiming again.
	5	Input value of aiming is invalid. <ul style="list-style-type: none"> <li>Input value is not correct against actual setting position.</li> </ul>	Correct input value of aiming and perform camera aiming again.
	6	The size of target is different. (A numerical value input to M.U.T.-III SE differs from detected size) <ul style="list-style-type: none"> <li>The position of the targets is not correct.</li> <li>The position of the front camera unit is not correct.</li> <li>Inappropriate work environment.</li> <li>Inappropriate vehicle condition.</li> <li>Input value is not correct against actual setting position.</li> </ul>	
	7	The size of target is different. (A numerical value input to M.U.T.-III SE differs from detected size) <ul style="list-style-type: none"> <li>The position of the targets is not correct.</li> <li>The position of the front camera unit is not correct.</li> <li>Inappropriate work environment.</li> <li>Inappropriate vehicle condition.</li> <li>Input value is not correct against actual setting position.</li> </ul>	
	8	Yaw/pitch angle is outside the threshold. <ul style="list-style-type: none"> <li>The position of the targets is not correct.</li> <li>The position of the front camera unit is not correct.</li> <li>Inappropriate work environment.</li> <li>Inappropriate vehicle condition.</li> <li>Input value is not correct against actual setting position.</li> </ul>	Position the target appropriately again. Then perform the aiming again.
	9	Yaw/pitch angle is outside the threshold. <ul style="list-style-type: none"> <li>The position of the targets is not correct.</li> <li>The position of the front camera unit is not correct.</li> <li>Inappropriate work environment.</li> <li>Inappropriate vehicle condition.</li> <li>Input value is not correct against actual setting position.</li> </ul>	
	10	Detect several targets. <ul style="list-style-type: none"> <li>The position of the targets is not correct.</li> <li>The position of the front camera unit is not correct.</li> <li>Inappropriate work environment.</li> <li>Inappropriate vehicle condition.</li> <li>Input value is not correct against actual setting position.</li> </ul>	
	11	Internal process malfunction	<ul style="list-style-type: none"> <li>Then turn the turn the electric motor switch OFF→ON. Accurately set target and perform camera aiming again.</li> <li>If ABNORMALLY COMPLETED again after aiming, replace front camera unit.</li> </ul>
12	Internal process time out	<ul style="list-style-type: none"> <li>Then turn the turn the electric motor switch OFF→ON. Accurately set target and perform camera aiming again.</li> <li>If ABNORMALLY COMPLETED again after aiming, replace front camera unit.</li> </ul>	

Displayed item		Possible cause	Service procedure
SUSPENSION		<ul style="list-style-type: none"> <li>Temporary malfunction in internal processing of the front camera unit.</li> <li>Front camera unit malfunction.</li> </ul>	Position the target appropriately again. Then perform the aiming again.
Abnormally completed	0	Aiming completed (no error)	—
	1	Aiming status determination (SPI) protocol version mismatch	<ul style="list-style-type: none"> <li>Turn the electric motor switch to the ON from OFF. Accurately set target and perform camera aiming again.</li> <li>If abnormally completed again after aiming, replace front camera unit.</li> </ul>
	2	Header CRC abnormality in SPI message	
	3	Object CRC abnormality in SPI message	
	4	Abnormality in "CLB Stat Run Mode" due to "Calibration static"	
	5	Aiming not completed within 5 seconds	Position the target appropriately again. Then perform the aiming again.
	6	Failure to activate aiming mode	
	7	Internal error during aiming	
	8	Bottom value threshold exceeded	Correct the input values of the parameters and carry out the aiming again.
	9	Aiming completion value is outside a certain range.	<ul style="list-style-type: none"> <li>Correct the input parameters and carry out the aiming again.</li> <li>Ensure that the target is correctly placed and the front camera unit is correctly installed, then carry out the aiming again.</li> </ul>
	18	<ul style="list-style-type: none"> <li>Target not detected</li> <li>The distance between the target and the camera input during the aiming differs more than 50 % of the actual distance.</li> </ul>	<ul style="list-style-type: none"> <li>Ensure that the front camera unit is correctly installed, then carry out the aiming again.</li> <li>Ensure that the hood is not open, then carry out the aiming again.</li> <li>Ensure that there is no obstruction on the windshield in front of the front camera unit, then carry out the aiming again.</li> <li>Brightly illuminate the targets, check that the targets are within the range of the front camera unit and that all targets are clearly visible, then carry out the aiming again.</li> <li>Ensure that the distance from the vehicle to the target is correct, then carry out the aiming again.</li> </ul>
	19	Aiming result exceeds tolerances in the roll direction.	<ul style="list-style-type: none"> <li>Check that the input parameters are correct, then carry out the aiming again.</li> <li>Ensure that the target is correctly placed and the front camera unit is correctly installed, then carry out the aiming again.</li> <li>Check that there is no reflection of strong light on the target and that there is no object around the target that could be mistaken for the target, then carry out the aiming again.</li> </ul>
	20	Aiming result exceeds the tolerances in the yaw/pitch direction.	
	21	Input parameters were not read correctly.	Correct the input parameters, then carry out the aiming again.
	22	Input parameters were not read correctly.	
	23	Target size is outside the recognisable range. (Target size is too small compared to the recognisable size.)	Position the target appropriately again. Then perform the aiming again.
	24	Aiming result exceeds the tolerances in the yaw direction.	
	25	Aiming result exceeds the tolerances in the pitch direction.	
26	Too many targets	<ul style="list-style-type: none"> <li>Position the target appropriately again.</li> <li>Check that there is no reflection of strong light on the target and that there is no object around the target that could be mistaken for the target, then carry out the aiming again.</li> </ul>	
27	Malfunction of internal processes	<ul style="list-style-type: none"> <li>Turn the electric motor switch to the ON from OFF. Accurately set target and perform camera aiming again.</li> <li>If abnormally completed again after aiming, replace front camera unit.</li> </ul>	

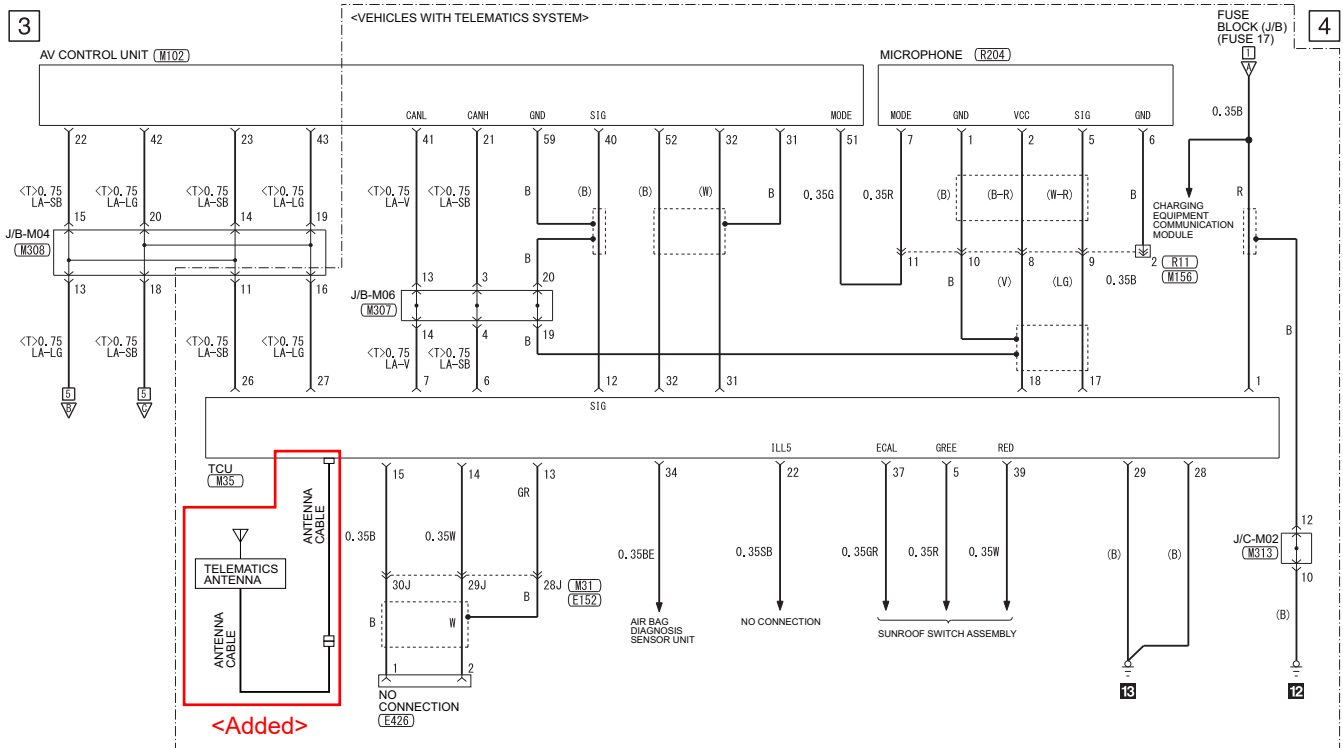
# CIRCUIT DIAGRAM

## SMARTPHONE LINK DISPLAY AUDIO <WITHOUT BOSE>



DF3000KHA

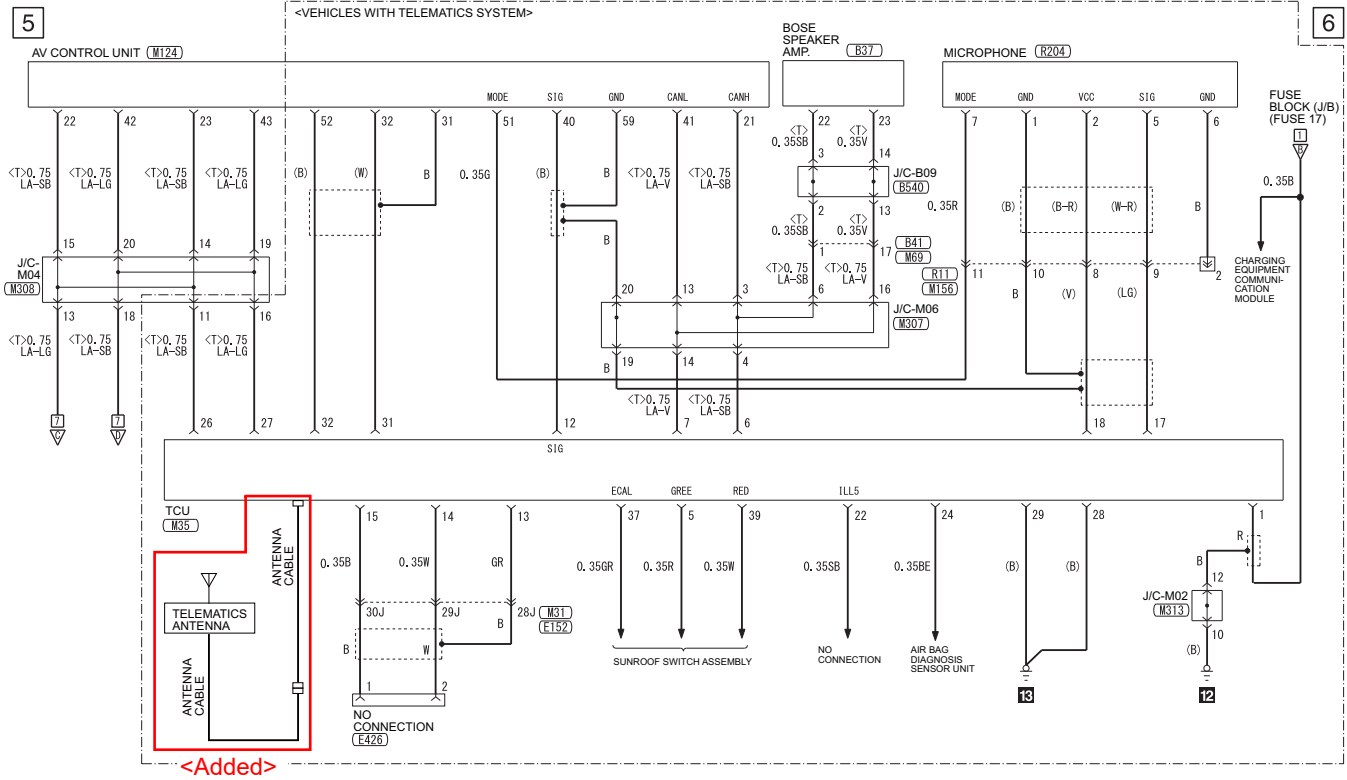
## SMARTPHONE LINK DISPLAY AUDIO <WITHOUT BOSE> (CONTINUED)



DF3000KIA

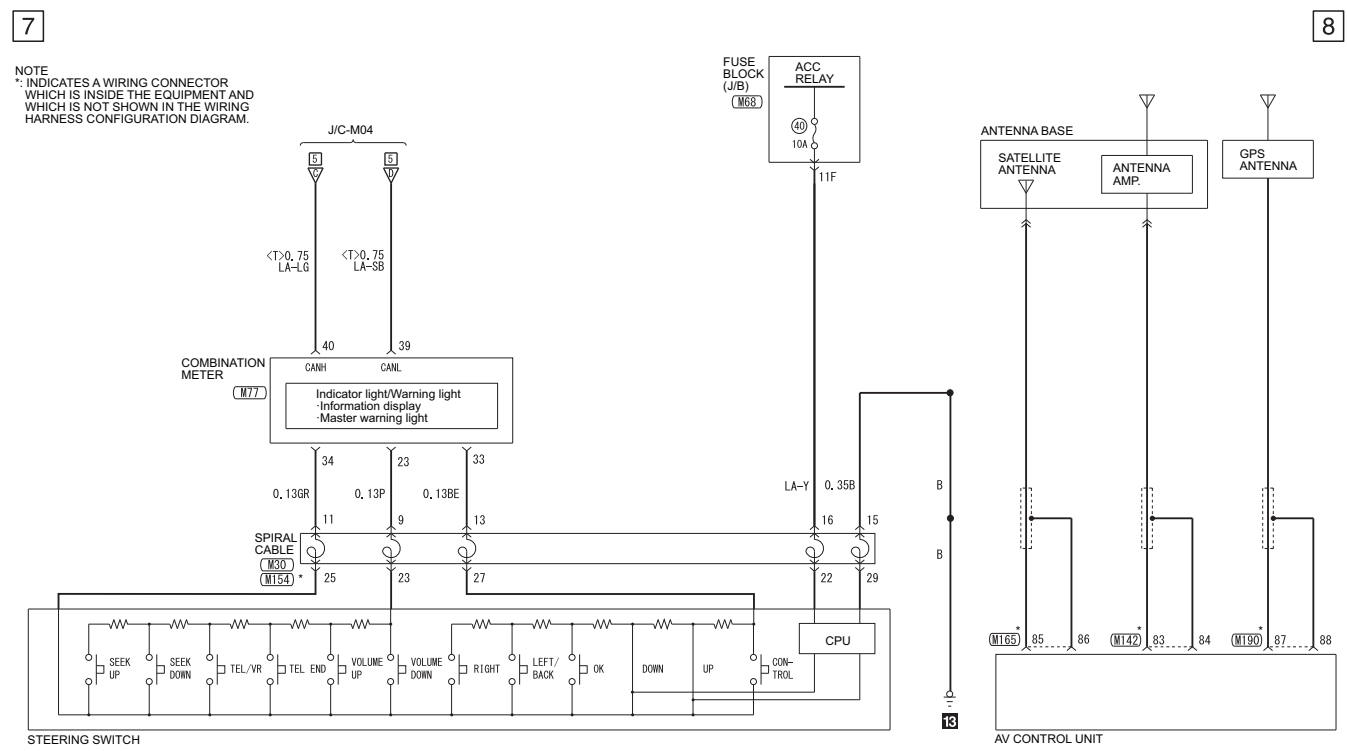
# CIRCUIT DIAGRAM

## SMARTPHONE LINK DISPLAY AUDIO <WITH BOSE> (CONTINUED)



DF3000KNA

## SMARTPHONE LINK DISPLAY AUDIO <WITH BOSE> (CONTINUED)



DF3000KOA