# SECTION LAN SYSTEM

HOW TO USE THIS SECTION ......24

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PSB BRANCH LINE CIRCUIT	G
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HV BAT BRANCH LINE CIRCUIT	Ν
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CAN COMMUNICATION CIRCUIT 2	P
ITS COMMUNICATION CIRCUIT	
HEV SYSTEM CAN CIRCUIT	

# HOW TO USE THIS MANUAL HOW TO USE THIS SECTION

# Information

INFOID:000000008139529

- "CAN FUNDAMENTAL" of LAN Section describes the basic knowledge of the CAN communication system and the method of trouble diagnosis.
- For information peculiar to a vehicle and inspection procedure, refer to "CAN".

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# < PRECAUTION > PRECAUTION PRECAUTIONS Precautions for Trouble Diagnosis

#### **CAUTION:**

Follow the instructions listed below. Failure to do this may cause damage to parts:

- Never apply 7.0 V or more to the measurement terminal.
- Use a tester with open terminal voltage of 7.0 V or less.
- Turn the ignition switch OFF and disconnect the 12V battery cable from the negative terminal when checking the harness.

# Precautions for Harness Repair

• Solder the repaired area and wrap tape around the soldered area. **NOTE:** 

A fray of twisted lines must be within 110 mm (4.33 in).



• Bypass connection is never allowed at the repaired area. **NOTE:** 

Bypass connection may cause CAN communication error. The spliced wire becomes separated and the characteristics of twisted line are lost.



 Replace the applicable harness as an assembly if error is detected on the shield lines of CAN communication line. Κ

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# SYSTEM DESCRIPTION

# SYSTEM CAN COMMUNICATION SYSTEM

CAN COMMUNICATION SYSTEM : System Description

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN-H line, CAN-L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only. DIAG ON CAN

# **DIAG ON CAN : Description**

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"Diag on CAN" is a diagnosis method which uses the CAN communication line for the communication between the control unit and the diagnostic tool.

# DIAG ON CAN : System Diagram



# SYSTEM

# < SYSTEM DESCRIPTION >

# [CAN FUNDAMENTAL]

Name	Harness	Description	
DDL1	Tx Rx	For communications with the diagnostic tool. (CAN-H and CAN-L are used for control- ling)	Α
DDL2	K-LINE	For communications with the diagnostic tool. (CAN-H and CAN-L are used for control- ling)	В
Diag on CAN	CAN-H CAN-L	For communications with the diagnostic tool. (CAN-H and CAN-L are also used for con- trol and diagnoses.)	
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# < SYSTEM DESCRIPTION >

# **TROUBLE DIAGNOSIS**

[CAN FUNDAMENTAL]

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System Diagram



Component	Description
Main line	CAN communication line between splices
Branch line	CAN communication line between splice and a control unit
Splice	A point connecting a branch line with a main line
Termination circuit	Circuit connected across the CAN communication system. (Resistor)

# Condition of Error Detection

INFOID:000000008139536

DTC (e.g. U1000 and U1001) of CAN communication is indicated on SELF-DIAG RESULTS on CONSULT if a CAN communication signal is not transmitted or received between units for 2 seconds or more.

# CAN COMMUNICATION SYSTEM ERROR

- CAN communication line open (CAN-H, CAN-L, or both)
- CAN communication line short (ground, between CAN communication lines, other harnesses)
- Error of CAN communication control circuit of the unit connected to CAN communication line

# WHEN DTC OF CAN COMMUNICATION IS INDICATED EVEN THOUGH CAN COMMUNICATION SYSTEM IS NORMAL

- Removal/installation of parts: Error may be detected when removing and installing CAN communication unit and related parts while turning the ignition switch ON. (A DTC except for CAN communication may be detected.)
- Fuse blown out (removed): CAN communication of the unit may cease.
- Voltage drop: Error may be detected if voltage drops due to discharged 12V battery when turning the ignition switch ON (Depending on the control unit which carries out CAN communication).
- Error may be detected if the power supply circuit of the control unit, which carries out CAN communication, malfunctions (Depending on the control unit which carries out CAN communication).
- Error may be detected if reprogramming is not completed normally.

#### NOTE:

CAN communication system is normal if DTC of CAN communication is indicated on SELF-DIAG RESULTS of CONSULT under the above conditions. Erase the memory of the self-diagnosis of each unit.

#### < SYSTEM DESCRIPTION >

# Symptom When Error Occurs in CAN Communication System

In CAN communication system, multiple units mutually transmit and receive signals. Each unit cannot transmit and receive signals if any error occurs on CAN communication line. Under this condition, multiple control units related to the root cause malfunction or go into fail-safe mode.

#### ERROR EXAMPLE

#### NOTE:

Each vehicle differs in symptom of each unit under fail-safe mode and CAN communication line wiring.

Example: Main Line Between Data Link Connector and ABS Actuator and Electric Unit (Control Unit) Open Circuit



Unit name	Major symptom	
ECM	Engine torque limiting is affected, and shift harshness increases.	
BCM	<ul> <li>Reverse warning chime does not sound.</li> <li>The front wiper moves under continuous operation mode even though the front wiper switch being in the intermittent position.</li> </ul>	J
EPS control unit	The steering effort increases.	K
Combination meter	<ul> <li>The shift position indicator and OD OFF indicator turn OFF.</li> <li>The speedometer is inoperative.</li> <li>The odo/trip meter stops.</li> </ul>	L
ABS actuator and electric unit (control unit)	Normal operation.	
ТСМ	No impact on operation.	
IPDM E/R	<ul><li>When the ignition switch is ON,</li><li>The headlamps (Lo) turn ON.</li><li>The cooling fan continues to rotate.</li></ul>	LAN



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# < SYSTEM DESCRIPTION >

#### Example: TCM Branch Line Open Circuit



Unit name	Major symptom
ECM	Engine torque limiting is affected, and shift harshness increases.
BCM	Reverse warning chime does not sound.
EPS control unit	Normal operation.
Combination meter	<ul><li>Shift position indicator and O/D OFF indicator turn OFF.</li><li>Warning lamps turn ON.</li></ul>
ABS actuator and electric unit (control unit)	Normal operation.
ТСМ	No impact on operation.
IPDM E/R	Normal operation.

#### NOTE:

The model (all units on CAN communication system are Diag on CAN) cannot perform CAN diagnosis with CONSULT if the following error occurs. The error is judged by the symptom.

Error	Difference of symptom
Data link connector branch line open circuit	Normal operation.
CAN-H, CAN-L harness short-circuit	Most of the units which are connected to the CAN communication system enter fail-safe mode or are deactivated.

Example: Data Link Connector Branch Line Open Circuit



# < SYSTEM DESCRIPTION >

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Unit name	Major symptom	A
ECM		
BCM		
EPS control unit		B
Combination meter	Normal operation.	
ABS actuator and electric unit (control unit)		C
ТСМ		
IPDM E/R		
		D

# NOTE:

When data link connector branch line is open, transmission and reception of CAN communication signals are not affected. Therefore, no symptoms occur. However, be sure to repair malfunctioning circuit.

Example: CAN-H, CAN-L Harness Short Circuit



Unit name	Major symptom	K
ECM	<ul><li>Engine torque limiting is affected, and shift harshness increases.</li><li>Engine speed drops.</li></ul>	
	<ul> <li>Reverse warning chime does not sound.</li> <li>The front wiper moves under continuous operation mode even though the front wiper switch being in the intermittent position.</li> <li>The room lamp does not turn ON</li> </ul>	L
BCM	<ul> <li>The engine does not start (if an error or malfunction occurs while turning the ignition switch OFF.)</li> <li>The steering lock does not release (if an error or malfunction occurs while turning the ignition switch OFF.)</li> </ul>	LA
EPS control unit	The steering effort increases.	
Combination meter	<ul> <li>The tachometer and the speedometer do not move.</li> <li>Warning lamps turn ON.</li> <li>Indicator lamps do not turn ON.</li> </ul>	0
ABS actuator and electric unit (control unit)	Normal operation.	
ТСМ	No impact on operation.	Ρ
IPDM E/R	<ul><li>When the ignition switch is ON,</li><li>The headlamps (Lo) turn ON.</li><li>The cooling fan continues to rotate.</li></ul>	

# CAN Diagnosis with CONSULT

CAN diagnosis on CONSULT extracts the root cause by receiving the following information.

# **LAN-15**

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#### < SYSTEM DESCRIPTION >

• Response to the system call

- Control unit diagnosis information
- Self-diagnosis
- CAN diagnostic support monitor

# Self-Diagnosis

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If communication signals cannot be transmitted or received among units communicating via CAN communication line, CAN communication-related DTC is displayed on the CONSULT "Self Diagnostic Result" screen. **NOTE:** 

The following table shows examples of CAN communication-related DTC. For other DTC, refer to the applicable sections.

DTC	Self-diagnosis item (CONSULT indication)	DTC detection condition		Inspection/Action
111000			When ECM is not transmitting or receiving CAN communication signal of OBD (emission-related diagnosis) for 2 seconds or more.	
01000		Except for ECM	When a control unit (except for ECM) is not transmitting or receiving CAN communication signal for 2 seconds or more.	Start the inspection. Re- fer to the applicable sec-
U1001	CAN COMM CIRCUIT	When EC cation sig for 2 seco	M is not transmitting or receiving CAN communi- nal other than OBD (emission-related diagnosis) onds or more.	control unit.
U1002	SYSTEM COMM	When a control unit is not transmitting or receiving CAN communication signal for 2 seconds or less.		
U1010	CONTROL UNIT(CAN)	When an error is detected during the initial diagnosis for CAN controller of each control unit.		Replace the control unit indicating "U1010".

# CAN Diagnostic Support Monitor

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# MONITOR ITEM (CONSULT)

# Example: CAN DIAG SUPPORT MNTR indication



Item	PRESENT	Description
Initial diagnosis	OK	Normal at present
	NG	Control unit error (Except for some control units)

### < SYSTEM DESCRIPTION >

# [CAN FUNDAMENTAL]

Item	PRESENT	Description	
Transmission diagnosis	OK	Normal at present	A
		Unable to transmit signals for 2 seconds or more.	
	UNKWN	Diagnosis not performed	В
Control unit name (Reception diagnosis)	ОК	Normal at present	
		Unable to receive signals for 2 seconds or more.	
	UNKWN	Diagnosis not performed	С
		No control unit for receiving signals. (No applicable optional parts)	

#### With PAST

Item	PRESENT	PAST	Description		
Transmission diagnosis	ОК	OK	Normal at present and in the past		
		1 – 39	Normal at present, but unable to transmit signals for 2 seconds or more in the past. (The number indicates the number of ignition switch cycles from OFF to ON.)		
	UNKWN	0	Unable to transmit signals for 2 seconds or more at present.		
Control unit name (Reception diagnosis)	ОК	OK	Normal at present and in the past		
		1 – 39	Normal at present, but unable to receive signals for 2 seconds or more in the past. (The number indicates the number of ignition switch cycles from OFF to ON.)		
	Ignosis) UNKWN 0 Unable to receive signals for 2 seconds or more at present.		Unable to receive signals for 2 seconds or more at present.		
	Not diagnood		Diagnosis not performed.		
	Not diagnosed	—	No control unit for receiving signals. (No applicable optional parts)		

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#### < SYSTEM DESCRIPTION >

# How to Use CAN Communication Signal Chart

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The CAN communication signal chart lists the signals transmitted/received among control units. It is useful for detecting the root cause by finding a signal related to the symptom, and by checking transmission and reception unit.



#### < BASIC INSPECTION >

# [CAN FUNDAMENTAL]

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# BASIC INSPECTION DIAGNOSIS AND REPAIR WORKFLOW

# Trouble Diagnosis Flow Chart



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Interview with customer       • Interview with customer. (Since when? In which condition? What symptoms? etc.)         Check vehicle condition       • Check whether or not it is reproduced error.         Check CAN system type       • Check CAN system type with CAN system type specification chart.         Create interview sheet       • Fill in interviewed items from customer on the interview sheet.
Check vehicle condition       • Check whether or not it is reproduced error.         Image: Check CAN system type       • Check CAN system type with CAN system type specification chart.         Image: Check can be ca
Check CAN system type Check CAN system type with CAN system type specification chart. Create interview sheet Fill in interviewed items from customer on the interview sheet.
Check CAN system type       • Check CAN system type with CAN system type specification chart.         Image: Check CAN system type with CAN system type specification chart.         Image: Check CAN system type with CAN system type specification chart.         Image: Check CAN system type with CAN system type specification chart.         Image: Check CAN system type with CAN system type specification chart.         Image: Check CAN system type with CAN system type specification chart.         Image: Check CAN system type with CAN system type specification chart.         Image: Check CAN system type with CAN system type specification chart.         Image: Check CAN system type with CAN system type specification chart.         Image: Check CAN system type with CAN system type specification chart.         Image: Check CAN system type with CAN system type specification chart.         Image: Check CAN system type with CAN system type specification chart.         Image: Check CAN system type specification chart. </td
Create interview sheet • Fill in interviewed items from customer on the interview sheet.
Create interview sheet  • Fill in interviewed items from customer on the interview sheet.
• Detect the root cause with CONSULT.
• Inspect the root cause and repair or replace the applicable parts.

# **Trouble Diagnosis Procedure**

# INTERVIEW WITH CUSTOMER

Interview with the customer is important to detect the root cause of CAN communication system errors and to understand vehicle condition and symptoms for proper trouble diagnosis.

Points in interview

- What: Parts name, system name
- When: Date, Frequency
- Where: Road condition, Place
- In what condition: Driving condition/environment
- Result: Symptom

#### Notes for checking error symptoms:

- Check normal units as well as error symptoms.
- Example: Circuit between ECM and the combination meter is judged normal if the customer indicates tachometer functions normally.
- When a CAN communication system error is present, multiple control units may malfunction or go into failsafe mode.



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#### < BASIC INSPECTION >

# [CAN FUNDAMENTAL]

• Indication of the combination meter is important to detect the root cause because it is the most obvious to the customer, and it performs CAN communication with many units.



# INSPECTION OF VEHICLE CONDITION

Check whether the symptom is reproduced or not.

#### NOTE:

Do not turn the ignition switch OFF or disconnect the 12V battery cable while reproducing the error. The error may temporarily correct itself, making it difficult to determine the root cause.

CHECK OF CAN SYSTEM TYPE (HOW TO USE CAN SYSTEM TYPE SPECIFICATION CHART) Determine CAN system type based on vehicle equipment.

#### NOTE:

- This chart is used if CONSULT does not automatically recognize CAN system type.
- There are two styles for CAN system type specification charts. Depending on the number of available system types, either style A or style B may be used.

CAN System Type Specification Chart (Style A) **NOTE:** 

#### < BASIC INSPECTION >

#### [CAN FUNDAMENTAL]



#### CAN System Type Specification Chart (Style B) NOTE:

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#### < BASIC INSPECTION >



#### CREATE INTERVIEW SHEET

Fill out the symptom described by the customer, vehicle condition, and CAN system type on the interview sheet.

< BASIC INSPECTION >

[CAN FUNDAMENTAL]

Interview Sheet (Example)

-	
	Date received: 3, Feb. 2006
Type: DBA-KG11	VIN No.: KG11-005040
Model: BDRARGZG11EDA-E-J-	
First registration: 10, Jan. 2001	Mileage: 62,140
CAN system type: Type 19	
Symptom (Results from interview with customer)	
Headlamps suddenly turn ON while driving the     The engine does not restart after stopping the v     switch OFF.     The cooling fan continues rotating while turning	vehicle. vehicle and turning the ignition the ignition switch ON.
Condition at inspection	
Error Symptom: Present / Past	
The engine does not start. While turning the ignition switch ON, • The headlamps (Lo) turn ON, and the cooling fa • The interior lamp does not turn ON.	an continues rotating.

# DETECT THE ROOT CAUSE

CAN diagnosis function of CONSULT detects the root cause.

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# HOW TO USE THIS MANUAL HOW TO USE THIS SECTION

# Information

- "CAN" of LAN Section describes information peculiar to a vehicle and inspection procedures.
- For trouble diagnosis procedure, refer to <u>LAN-19, "Trouble Diagnosis Flow Chart"</u> of "CAN FUNDAMEN-TAL".

# Abbreviation List

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Unit name abbreviations in CONSULT CAN diagnosis and in this section are as per the following list.

Abbreviation	Unit name	
A-BAG	Air bag diagnosis sensor unit	
ABS	ABS actuator and electric unit (control unit)	
ADP	Driver seat control unit	
AFS	AFS control unit	
APA	Accelerator pedal actuator	
AV	AV control unit	
BCM	BCM	
BRAKE	Electrically-driven intelligent brake unit	
CGW	CAN gateway	
DLC	Data link connector	
E-OP	Sub electric oil pump inverter	
ECM	ECM	
EPS	Power steering control module	
EV/HEV	НРСМ	
HV BAT	Li-ion battery controller	
HVAC	A/C auto amp.	
ICC	ADAS control unit	
INV/MC	Traction motor inverter	
IPDM-E	IPDM E/R	
LANE	Lane camera unit	
LASER	ICC sensor	
M&A	Combination meter	
PSB	Pre-crash seat belt control unit (driver side)	
RDR-L	Side radar LH	
RDR-R	Side radar RH	
STRG	Steering angle sensor	
ТСМ	ТСМ	
TCU	TCU	
TPMS	Low tire pressure warning control unit	

# < PRECAUTION > PRECAUTION PRECAUTIONS

# High Voltage Precautions

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#### WARNING:

- Because hybrid vehicles and electric vehicles contain a high voltage battery, there is the risk of electric shock, electric leakage, or similar accidents if the high voltage component and vehicle are handled incorrectly. Be sure to follow the correct work procedures when performing inspection and maintenance.
- Be sure to remove the service plug in order to shut off the high voltage circuits before performing D inspection or maintenance of high voltage system harnesses and parts.
- To prevent the removed service plug from being connected by mistake during the procedure, always carry it in your pocket or put it in the tool box.
- Be sure to wear insulating protective equipment consisting of glove, shoes, face shield, and glasses before beginning work on the high voltage system.
- Clearly identify the persons responsible for high voltage work and ensure that other persons do not touch the vehicle. When not working, cover high voltage parts with an insulating cover sheet or similar item to prevent other persons from contacting them.

#### CAUTION:

There is the possibility of a malfunction occurring if the vehicle is changed to READY status while the service plug is removed. Therefore do not change the vehicle to READY status unless instructed to do so in the Service Manual.

#### HIGH VOLTAGE HARNESS AND EQUIPMENT IDENTIFICATION

The colors of the high voltage harnesses and connectors are all orange. Orange "High Voltage" labels are applied to the Li-ion battery and other high voltage devices. Do not carelessly touch these harnesses and parts.

#### HANDLING OF HIGH VOLTAGE HARNESS AND TERMINALS

Immediately insulate disconnected high voltage connectors and terminals with insulating tape.

#### REGULATIONS ON WORKERS WITH MEDICAL ELECTRONICS

#### WARNING:

The vehicle contains parts that contain powerful magnets. If a person who is wearing a heart pacemaker or other medical device is close to these parts, the medical device may be affected by the magnets. Such persons must not perform work on the vehicle.

#### PROHIBITED ITEMS TO CARRY DURING THE WORK

Because this vehicle uses components that contain high voltage and powerful magnetism, due not carry any metal products which may cause short circuits, or any magnetic media (cash cards, prepaid cards, etc.) which may be damaged on your person when working.

POSTING A SIGN OF "DANGER! HIGH VOLTAGE AREA. KEEP OUT"

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To call the attention of other workers, indicate "High voltage work in progress. Do not touch!" on vehicles where work is being performed on the high voltage systems.



Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER", used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS



# PRECAUTIONS

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system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the "SRS AIR BAG" and "SEAT BELT" of this Service Manual.

#### WARNING:

Always observe the following items for preventing accidental activation.

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision that would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see "SRS AIR BAG".
- Never use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.

#### PRECAUTIONS WHEN USING POWER TOOLS (AIR OR ELECTRIC) AND HAMMERS

#### WARNING:

Always observe the following items for preventing accidental activation.

- When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the ignition ON or engine running, never use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.
- When using air or electric power tools or hammers, always switch the ignition OFF, disconnect the 12V battery, and wait at least 3 minutes before performing any service.

#### Precautions for Trouble Diagnosis

#### CAUTION:

Follow the instructions listed below. Failure to do this may cause damage to parts:

- Never apply 7.0 V or more to the measurement terminal.
- Use a tester with open terminal voltage of 7.0 V or less.
- Turn the ignition switch OFF and disconnect the 12V battery cable from the negative terminal when checking the harness.

#### Precautions for Harness Repair

 Solder the repaired area and wrap tape around the soldered area. NOTE:

A fray of twisted lines must be within 110 mm (4.33 in).



 Bypass connection is never allowed at the repaired area. NOTE:

Bypass connection may cause CAN communication error. The spliced wire becomes separated and the characteristics of twisted line are lost.



# < PRECAUTION >

• Replace the applicable harness as an assembly if error is detected on the shield lines of CAN communication line.

# PREPARATION

# < PREPARATION > PREPARATION

# PREPARATION

# **Commercial Service Tools**

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Тос	Description	
Insulated gloves [Guaranteed insulation performance for 1000V/300A]	UN JMCIA0149ZZ	Removing and installing high voltage components
Leather gloves [Use leather gloves that can fasten the wrist tight]	JPCIA0066ZZ	<ul> <li>Removing and installing high voltage components</li> <li>Protect insulated gloves</li> </ul>
Insulated safety shoes	JPCIA0011ZZ	Removing and installing high voltage components
Safety glasses [ANSI Z87.1]	JPCIA0012ZZ	<ul> <li>Removing and installing high voltage components</li> <li>To protect eye from the spatter on the work to electric line</li> </ul>

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#### < SYSTEM DESCRIPTION >

SYSTEM DESCRIPTION **COMPONENT PARTS** 

# **Component Parts Location**

INFOID:000000008139551



- Air bag diagnosis sensor unit 1.
- 4. CAN gateway
- ECM 7.
- 10. Traction motor inverter
- 13. ICC sensor
- 16. BCM
- 19. Data link connector
- 22. Driver seat control unit
- 25. Side radar LH
- 28. HPCM

- 2. Lane camera unit
- 5. Low tire pressure warning control unit
- IPDM E/R 8.
- 11. TCU
- 14. Electrically-driven intelligent brake unit
- 17. Accelerator pedal actuator
- 20. Combination meter
- 23. Pre-crash seat belt control unit (driv- 24. Sub electric oil pump inverter er side)
- 26. Li-ion battery
- 29. Side radar RH

- 3. A/T assembly
- 6. A/C auto amp.
- 9. Power steering control module
- 12. AV control unit
- 15. ABS actuator and electric unit (control unit)
- 18. AFS control unit
- 21. Steering angle sensor
- 27. ADAS control unit

# SYSTEM CAN COMMUNICATION SYSTEM

CAN COMMUNICATION SYSTEM : System Diagram



# CAN COMMUNICATION SYSTEM : System Description

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Description

Revision: 2013 March

# SYSTEM

# < SYSTEM DESCRIPTION >

- CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle
  multiplex communication line with high data communication speed and excellent error detection ability. Many
  electronic control units are equipped onto a vehicle, and each control unit shares information and links with
  other control units during operation (not independent). In CAN communication, control units are connected
  with 2 communication lines (CAN-H line, CAN-L line) allowing a high rate of information transmission with
  less wiring. Each control unit transmits/receives data but selectively reads required data only.
- The following control units include a gateway function and communicate signals between the different CAN communication circuits.

CAN communication circuit	Gateway control unit	Reference
CAN communication circuit 1 $\Leftrightarrow$ CAN communication circuit 2	CAN gateway	LAN-119, "System Description"
CAN communication circuit 1 $\Leftrightarrow$ HEV system CAN circuit	НРСМ	HBC-38, "CAN COMMUNICATION : System Description"
CAN communication circuit 2 $\Leftrightarrow$ ITS communication circuit	ADAS control unit	DAS-15, "System Description"

• Termination circuits (resistors) are connected across the CAN communication system. When transmitting a CAN communication signal, each control unit passes a current to the CAN-H line and the current returns to the CAN-L line. The current flows separately into the termination circuits connected across the CAN communication system and the termination circuits drop voltage to generate a potential difference between the CAN-H line and the CAN-L line. The system produces digital signals for signal communications, by using the potential difference.



#### **CAN** Communication Line

The CAN communication line is a twisted pair wire consisting of strands of CAN-H (1) and CAN-L (2) and has noise immunity.



#### NOTE:

The CAN communication system has the characteristics of noise-resistant because this system produces digital signals by using the potential difference between the CAN-H line and the CAN-L line and has the twisted pair wire structure.

# SYSTEM

#### < SYSTEM DESCRIPTION >

Since the CAN-H line and the CAN-L line are always adjacent to each other, the same degree of noise occurs, respectively, when a noise (1) occurs. Although the noise changes the voltage, the potential difference (2) between the CAN-H line and the CAN-L line is insensitive to noise. Therefore, noise-resistant signals can be obtained.



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#### **CAN Signal Communications**

Each control unit of the CAN communication system transmits signals through the CAN communication control circuit included in the control unit and receives only necessary signals from each control unit to perform various kinds of control.

• Example: Transmitted signals



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# < SYSTEM DESCRIPTION >

#### • Example: Received signals



#### NOTE:

The above signal names and signal communications are provided for reference purposes. For CAN communications signals of this vehicle, refer to <u>LAN-36</u>, <u>"CAN COMMUNICATION SYSTEM : CAN Communication Signal Chart"</u>.

CAN COMMUNICATION SYSTEM : CAN Communication Control Circuit

CAN communication control circuit is incorporated into the control unit and transmits/receives CAN communication signals.



Component	System description
CAN controller	It controls CAN communication signal transmission and reception, error detection, etc.
Transceiver IC	It converts digital signal into CAN communication signal, and CAN communication signal into digital signal.

# SYSTEM

# SVSTEM DESCRIPTION -

Component		System description			
Noise filter	It eliminates noise of CAN	It eliminates noise of CAN communication signal.			
Termination circuit <sup>*</sup> (Resistance of approx. 120 $\Omega$	Generates a potential diffe	Generates a potential difference between CAN-H and CAN-L.			
These are the only control u	nits wired with both ends of CAN	I communication system			
CAN COMMUNICA	TION SYSTEM : CA	N System Spec	cification Chart	INFOID:000000008139555	
Notormino CAN evetom	tupo from the following on	ocification chart			
IOTE:	type from the following sp	ecilication chart.			
Refer to <u>LAN-19, "Troubl</u>	e Diagnosis Procedure" fo	or how to use CAN s	system specification	chart.	
Body type			Sedan		
Axle			2WD		
Engine			VQ35HR-HM34		
Transmission			A/T		
Brake control			VDC		
Telematics system			×	×	
ICC system				×	
CAN system type		1	2	3	
	CAN com	munication control unit	++		
ECM		×	×	×	
Low tire pressure warning control unit		×	×	×	
CAN gateway		×	×	×	
A/C auto amp.		×	×	×	
Air bag diagnosis sensor uni	t	×	×	×	
TCU			×	×	
AV control unit		×	×	×	
Combination meter		×	×	×	
Data link connector		×	×	×	
BCM		×	×	×	
НРСМ		×	×	×	
Electrically-driven intelligent	brake unit	×	×	×	
Power steering control module		×	×	×	
IPDM E/R		×	×	×	
Steering angle sensor		×	×	×	
ABS actuator and electric unit (control unit)		×	×	×	
AFS control unit				×	
Driver seat control unit		×	×	×	
ADAS control unit				×	
Pre-crash seat belt control u	nit (ariver side)			×	
ADAS control unit	IIS comn				
				×	
Side radar LH				×	
				×	
Accelerator pedal actuator				×	
				~	

# SYSTEM

# < SYSTEM DESCRIPTION >

Body type	Sedan			
Axle 2WD				
Engine VQ35HR-HM34				
Transmission	A/T			
Brake control	VDC			
Telematics system		×	×	
ICC system			×	
CAN system type	1	2	3	
HEV system CAN control unit				
ECM × × ×				
Traction motor inverter	×	×	×	
ТСМ	×	×	×	
Data link connector	×	×	×	
Sub electric oil pump inverter	×	×	×	
НРСМ	×	×	×	
Li-ion battery controller	×	×	×	

 $\times$ : Applicable

# VEHICLE EQUIPMENT IDENTIFICATION INFORMATION NOTE:

Check CAN system type from the vehicle shape and equipment.



1. ICC sensor

- 2. Telematics switch
- A. With ICC system
- B. With telematics system

CAN COMMUNICATION SYSTEM : CAN Communication Signal Chart

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Refer to <u>LAN-18</u>, "How to Use CAN Communication Signal Chart" for how to use CAN communication signal chart. NOTE:

Refer to LAN-24, "Abbreviation List" for the abbreviations of the connecting units.

T: Transmit R: Receive
## < SYSTEM DESCRIPTION >

Signal name	ECM	TPMS	CGW	HVAC	A-BAG	TCU	AV	M&A	BCM	EV/HEV	BRAKE	EPS	IPDM-E	STRG	ABS	AFS	ADP	ICC	PSB	INV/MC	TCM	E-OP	HV BAT	А
A/C cut request sig-	Т			D						R														В
ASCD OD cancel re-	т			ĸ						1											R			
quoor olghai	R									т			R											С
Cooling fan speed re-	т									R														
quest signal										R										Т				D
Engine and A/T inte-	Т																				R			
grated control signal	R																				Т			F
Engine coolant tem- perature signal	Т			R				R		R T														
Engine no load re- quest 1 signal	т									R														F
Engine no load re- quest 2 signal	Т									R														G
Engine speed signal	Т									R					R					R	R			0
								R		Т								R						
Engine status signal	Т					R	R																	Η
Engine stop permit signal	R									Т														
	1									R														
signal	Т									R														
Engine torque limit signal	Т									R														J
Engine torque signal	Т									R										R				
										Т											R			Κ
Fuel consumption monitor signal	Т						R	R		Т														
Fuel cut inhibit signal	Т									R														L
Fuel filler cap warn- ing display signal	Т							R		R T														
Idling stop inhibit sig- nal	т									R														LAN
Intake air tempera- ture signal	т									R														Ν
	R									R										Т	T T		Т	0
Malfunctioning indi-	R									т														0
cator lamp signal	Т									R														
						R		R		Т														Ρ
Oil pressure warning	Т					R				R														
lamp signal								R		Т														
Self-diagnosis signal	Т									R										Т	Т		Т	
Target idling speed signal	т									R														

[CAN]

Signal name	ECM	TPMS	CGW	HVAC	A-BAG	TCU	AV	M&A	BCM	EV/HEV	BRAKE	EPS	IPDM-E	STRG	ABS	AFS	ADP	ICC	PSB	INV/MC	TCM	E-OP	HV BAT
Voltage request sig-	Т									R													
										R	Т												
Buzzer request sig- nal		Т						D	R														
Hozord request sig								IX.	1														<u> </u>
nal		Т							R														
Low tire pressure								R	Т														
							R		R														<u> </u>
Tire pressure data signal		Т					R																
A/C display signal				Т			R																
A/C evaporator tem-				Т						R													
perature signal	R									Т													
A/C ON signal				Т						R													
	R									Т													
Ambient sensor sig- nal				т				R															
				Т						R													
Blower fan ON signal	R									т													
500				Т				R										R			R		
ECO mode signal										R											Т		
Engine ON request				Т						R													
signal	R									Т													
				Т				R										R			R		
SNOW mode signal										R											Т		
SPORT mode signal				Т				R										R			R		
of Orth mode signal										R											Т		
STANDARD mode				Т				R										R			R		
signal										R											Т		
Target A/C evapora-				Т						R													
nal	R									Т													
Car crash information signal					т	R				R													
Door lock/unlock re-						т			R														
quest signal									-														
						Т			R														<u> </u>
Sleep-ready signal								Т	R				т										
						т																	
Wake up signal						1		Т	R														<u> </u>
A/C switch operation signal				R			Т																
ECO pedal reaction force setting signal							т			R													

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Signal name	ECM	TPMS	CGW	HVAC	A-BAG	TCU	AV	M&A	BCM	EV/HEV	BRAKE	EPS	IPDM-E	STRG	ABS	AFS	ADP	S	PSB	INV/MC	TCM	E-OP	HV BAT	А
Engine start request signal							т			R														В
Rear window defog- ger switch signal							т		R															
System selection sig- nal							т											R						С
System setting signal							T R		Т								R R							D
							R										Т							
							Т														R			Е
Vehicle speed signal	R			R			R	Т	R	R		R	R			R	R		R		R			
		R						R	R		R	R			Т						R			E
Voice recognition sig- nal				R			Т																	F
Brake fluid level switch signal								Т							R									G
Distance to empty signal							R	т																
Fuel filler cap warn- ing reset signal	R							Т		T R														Η
Fuel level low warn- ing signal							R	Т																
Fuel level signal	R							Т		R T														.1
Manual mode shift down signal								т													R			0
Manual mode shift up signal								Т													R			Κ
Manual mode signal								Т													R			
Non-manual mode signal								т													R			L
Odometer signal							R	Т	R			R												
Parking brake switch signal								т										R						LAN
Seat belt buckle switch signal (driver side)								т	R															Ν
Buzzer output signal								R R	Т									Т						0
Daytime running light request signal									т				R											)
Dimmer signal								R	Т									R						Ρ
Door lock status sig- nal						R			т															
Door switch signal							R	R	Т	R	R		R				R		R					
Door unlock signal									Т								R							
Front fog light re- quest signal								R	т				R											

# < SYSTEM DESCRIPTION >

Signal name	ECM	TPMS	CGW	HVAC	A-BAG	TCU	AV	M&A	BCM	EV/HEV	BRAKE	EPS	IPDM-E	STRG	ABS	AFS	ADP	ICC	PSB	INV/MC	TCM	E-OP	HV BAT
Front wiper request signal									т				R					R					
High beam request signal								R	Т				R										
Horn reminder signal									Т				R										
Ignition switch ON signal									T R		R		R T				R		R				
Intelligent Key sys- tem warning display signal								R	Т														
Key ID signal				R					Т								R						
Low beam request signal									т				R										
Meter display signal								R R	Т									Т					
Meter ring illumina- tion request signal								R	т														
Position light request signal								R	т				R										
READY signal									Т								R						
Rear window defog-	R						R		-				Т										
Sleep wake up signal	R		R			R		R	T		R		R				R		R				
										Т								R					
Stop lamp switch sig-									Т		<b>D</b>				<b>–</b>			6			R		
Theft warning horn request signal									т		ĸ		R		I			ĸ					
Trunk switch signal							R	R	Т														
Turn indicator signal								R	Т									R					
12-volt battery charge warning lamp signal								R		т													
A/C blower motor speed signal										т													R
A/C intake door sta- tus signal										т													R
Accel start assist op- eration request signal										т	R												
Acceleration guide signal								R		т													
Accelerator pedal po- sition signal	R							<u> </u>		т					R			R			R		
Air outlet request sig- nal				R						R T													Т
ASCD status signal				-				R		Т													
Assist charge signal								R		т													
Brake switch signal										т								R					

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Signal name	ECM	TPMS	CGW	HVAC	A-BAG	TCU	AV	M&A	BCM	EV/HEV	BRAKE	EPS	IPDM-E	STRG	ABS	AFS	ADP	CC	PSB	INV/MC	TCM	E-OP	HV BAT
Closed throttle posi- tion signal										т								R			R		
Clutch 1 operation signal										т											R		
Clutch 2 control com- mand signal										Т											R		
DC/DC converter cooling mode signal				R						R T													Т
Drive command sig- nal										т										R			
Drive mode select signal	R									R T								R			Т		
Driving mode signal										Т											R		<u> </u>
ECO drive indicator control signal								R		т													
ECO pedal reaction force setting signal							R			т													
Energy monitor sig- nal							R	R		т													
Engine idle request signal	R									Т													
Engine stop com- mand signal	R									Т													
Engine stop notice signal	R									Т													
Engine torque re- quest signal	R									т													
Engine no load signal	R									Т													
EV indicator lamp signal								R		Т													
High voltage harness connector detection signal										т													R
High voltage power supply status signal										т										R			
HPCM control signal										Т	R				R								
HPCM status signal									R	Т													
Hybrid system over heat warning signal								R		Т													
Hybrid system warn- ing lamp signal								R		Т													
ICC operation signal										R T								Т			R		<u> </u>
ICC prohibition signal										Т								R				<u> </u>	
ICC steering switch signal										т								R					
Input torque signal										Т											R		
In-vehicle tempera- ture signal										т													R

Signal name	ECM	TPMS	CGW	HVAC	A-BAG	TCU	AV	M&A	BCM	EV/HEV	BRAKE	EPS	IPDM-E	STRG	ABS	AFS	ADP	00	PSB	INV/MC	TCM	E-OP	HV BAT
Li-ion battery state of charge signal							R	R		Т													
Motor charge prepa- ration request signal										т										R			
Motor discharge re- quest signal										т										R			
Motor speed control signal										т										R			
Motor speed signal										R T										Т	R		R
Power steering start activation request signal										т		R											
Power switch OFF permission signal									R	т													
READY condition signal									R	Т								R					
READY to drive indi- cator lamp signal								R		т													
Shift P warning signal								R		Т													
Snow mode switch signal										т								R					
Sub electric oil pump start up request sig- nal										т											R		
System cut off signal										Т										R			
Target cooperative generative torque signal										т	R												
Target engine torque signal	R									т													
Total power signal										Т													R
Vibration control switching signal										т										R			
Wide open throttle position signal										т											R		
Accel start assist op- eration signal										R	т												
Brake assist request signal											Т				R								
Brake fluid pressure request signal											Т				R								
Brake pedal stroke sensor diagnosis sig- nal											т								R				
Brake pedal stroke sensor voltage signal											Т								R				
Brake power supply backup unit operation signal											т				R								
Braking force signal										R	Т												

< SYSTEM DESC	RIP	TIC	)N >																			[C/	AN]	
Signal name	ECM	TPMS	CGW	HVAC	A-BAG	TCU	AV	M&A	BCM	EV/HEV	BRAKE	EPS	IPDM-E	STRG	ABS	AFS	ADP	CC	PSB	INV/MC	TCM	E-OP	HV BAT	А
Cooperative genera- tive practicable torque signal										R	т													В
Cooperative genera- tive torque signal										R	т													С
Driver brake opera- tion detection signal											т							R						
Electrically-driven in- telligent brake unit control signal											т				R									D
Power steering warn- ing lamp signal								R				Т												Ε
A/C compressor feedback signal	R			R									т											F
A/T shift selector (de- tention switch) signal									R				Т				R							I
Front wiper position signal									R				Т											G
High beam status signal	R												Т											Ц
Hood switch signal									R				Т											
Low beam status sig- nal	R												т			R								I
Push-button ignition switch status signal									R				Т											I
Steering angle sen- sor malfunction sig- nal												R		т				R	R					J
Steering angle sen- sor signal							R				R	R		т	R	R		R	R					Κ
Steering angle speed signal														т				R	R					
Steering calibration signal														т					R					L
A/T shift schedule change demand sig- nal															т						R			LAN
ABS actuator and electric unit (control unit) control signal											R				т									Ν
ABS malfunction sig- nal															т			R						0
ABS operation signal															Т			R	R		R			0
ABS warning lamp signal						R		R							т			R						Ρ
Brake warning lamp signal						R		R T							Т									-
Decel G sensor sig- nal										R	R				т						R			
Front LH wheel speed signal										R	R				т			R			R			

Signal name	ECM	TPMS	CGW	HVAC	A-BAG	TCU	AV	M&A	BCM	EV/HEV	BRAKE	EPS	IPDM-E	STRG	ABS	AFS	ADP	20	PSB	INV/MC	TCM	E-OP	HV BAT
Front RH wheel speed signal										R	R				Т			R			R		
Pressure sensor sig- nal															Т						R		
Rear LH wheel speed signal											R				Т			R			R		
Rear RH wheel speed signal											R				Т			R			R		
Side G sensor signal											R				Т			R			R		
Stop lamp off relay signal											R				Т								
Target throttle posi- tion signal	R														Т								
TCS gear keep re- quest signal															Т						R		
TCS malfunction sig- nal															Т			R					
TCS operation signal															Т			R					
VDC OFF indicator lamp signal								R							т								
VDC OFF switch sig- nal															Т			R					
VDC operation signal															Т			R					
VDC malfunction sig- nal															т			R					
VDC warning lamp signal						R		R							т								
Yaw rate signal											R				Т			R					
AFS OFF indicator lamp signal								R								Т							
Active trace control signal											R							т					
Brake fluid pressure control signal											R							т					
BSI ON indicator lamp signal								R										Т					
BSW/BSI warning lamp signal								R										Т					
IBA OFF indicator lamp signal								R										т					
IBA operation signal																		Т	R				
ICC warning lamp signal								R										т					
Lane departure warn- ing lamp signal								R										Т					
LDP ON indicator lamp signal								R										Т					
Motor torque limit sig- nal										R										т			

< SYSTEM DESC	RIP	TIC	)N >	•																		[C/	AN]	
Signal name	ECM	TPMS	CGW	HVAC	A-BAG	TCU	AV	M&A	BCM	EV/HEV	BRAKE	EPS	IPDM-E	STRG	ABS	AFS	ADP	<u>CC</u>	PSB	INV/MC	TCM	E-OP	HV BAT	А
Motor output torque signal										R										т			R	В
Traction motor invert- er status signal										R										т				
Traction motor invert- er temperature signal										R										т				С
Traction motor inver- tor voltage signal										R										т				D
A/T CHECK indicator lamp signal								R													т			
ATF temperature sig- nal										R											т			E
Clutch 2 temperature signal										R											т			F
Current gear position signal										R	R				R			R			т			
Input speed signal										R								R			Т			G
Manual mode shift refusal signal								R													т			
Motor speed control request signal										R											т			Н
Output shaft revolu- tion signal	R									R								R			т		R	I
Shift position signal								R					R		R	R	R	R			Т			
Shift schedule signal										R											Т			
Sub electric oil pump oil pressure com- mand signal																					т	R		J
Target gear position signal										R											т			K
Target sub electric oil pump torque signal																					т	R		L
TCM malfunction sig- nal											R										т			
Sub electric oil pump error signal																					R	т		LA
Sub electric oil pump inverter preparation signal																					R	т		Ν
Sub electric oil pump speed signal																					R	Т		0
Sub electric oil pump torque signal																					R	Т		0
Charge control elec- tricity signal										R													т	Ρ
Discharge control electricity signal										R													т	
Li-ion battery current signal										R													т	
Li-ion battery state of charge signal										R													т	

Signal name	ECM	TPMS	CGW	HVAC	A-BAG	TCU	AV	M&A	BCM	EV/HEV	BRAKE	EPS	IPDM-E	STRG	ABS	AFS	ADP	CC	PSB	INV/MC	TCM	E-OP	HV BAT
Li-ion battery temper- ature signal										R													т
Li-ion battery voltage signal										R													Т

< WIRING DIAGRAM >

# WIRING DIAGRAM

**CAN SYSTEM** 

# Wiring Diagram

For connector terminal arrangements, harness layouts, and alphabets in a  $\bigcirc$  (option abbreviation; if not described in wiring diagram), refer to GI-13. "Connector Information".



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# DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

# BASIC INSPECTION

# DIAGNOSIS AND REPAIR WORKFLOW

# **Interview Sheet**

INFOID:000000008139558

#### NOTE:

Refer to LAN-19, "Trouble Diagnosis Procedure" for how to use interview sheet.

CAN Communication System	Diagnosis Interview Sheet
	Date received:
Туре:	VIN No.:
Model:	
First registration:	Mileage:
CAN system type:	
Symptom (Results from interview with custor	mer)
Condition at inspection	
Error symptom : Present / Past	
	SKIB8898E

# DTC/CIRCUIT DIAGNOSIS MALFUNCTION AREA CHART

# **CAN** Communication Circuit

#### MAIN LINE

Malfunction area	Reference	(
Main line between low tire pressure warning control unit and A/C auto amp.	LAN-55, "Diagnosis Procedure"	-
Main line between A/C auto amp. and air bag diagnosis sensor unit	LAN-56, "Diagnosis Procedure"	[
Main line between air bag diagnosis sensor unit and AV control unit	LAN-57, "Diagnosis Procedure"	-
Main line between AV control unit and combination meter	LAN-58, "Diagnosis Procedure"	-
Main line between combination meter and data link connector	LAN-59, "Diagnosis Procedure"	- 0
Main line between data link connector and BCM	LAN-60, "Diagnosis Procedure"	-
Main line between BCM and HPCM	LAN-61, "Diagnosis Procedure"	F
Main line between HPCM and power steering control module	LAN-62, "Diagnosis Procedure"	-
Main line between steering angle sensor and ABS actuator and electric unit (control unit)	LAN-63, "Diagnosis Procedure"	-
Main line between ABS actuator and electric unit (control unit) and driver seat control unit	LAN-64, "Diagnosis Procedure"	- (

#### **BRANCH LINE**

Malfunction area	Reference
ECM branch line circuit (CAN communication circuit 1)	LAN-72, "Diagnosis Procedure"
Low tire pressure warning control unit branch line circuit	LAN-74, "Diagnosis Procedure"
CAN gateway branch line circuit (CAN communication circuit 1)	LAN-75, "Diagnosis Procedure"
A/C auto amp. branch line circuit	LAN-76, "Diagnosis Procedure"
Air bag diagnosis sensor unit branch line circuit	LAN-77, "Diagnosis Procedure"
TCU branch line circuit	LAN-78, "Diagnosis Procedure"
AV control unit branch line circuit	LAN-79, "Diagnosis Procedure"
Combination meter branch line circuit	LAN-81, "Diagnosis Procedure"
Data link connector branch line circuit (CAN communication circuit 1)	LAN-82, "Diagnosis Procedure"
BCM branch line circuit	LAN-84, "Diagnosis Procedure"
HPCM branch line circuit (CAN communication circuit 1)	LAN-85, "Diagnosis Procedure"
Electrically-driven intelligent brake unit branch line circuit (CAN communication circuit 1)	LAN-87, "Diagnosis Procedure"
Electrically-driven intelligent brake unit branch line circuit (CAN communication circuit 2)	LAN-88, "Diagnosis Procedure"
Power steering control module branch line circuit	LAN-89. "Diagnosis Procedure"
IPDM E/R branch line circuit	LAN-90, "Diagnosis Procedure"
Steering angle sensor branch line circuit	LAN-91, "Diagnosis Procedure"
ABS actuator and electric unit (control unit) branch line circuit	LAN-93, "Diagnosis Procedure"
AFS control unit branch line circuit	LAN-94, "Diagnosis Procedure"
Driver seat control unit branch line circuit	LAN-95, "Diagnosis Procedure"
ADAS control unit branch line circuit	LAN-96, "Diagnosis Procedure"
Pre-crash seat belt control unit (driver side) branch line circuit	LAN-97, "Diagnosis Procedure"

#### SHORT CIRCUIT OR OPEN CIRCUIT

[CAN]

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INFOID:000000008139559 B

# **MALFUNCTION AREA CHART**

#### < DTC/CIRCUIT DIAGNOSIS >

[CAN]

Malfunction area	Reference
CAN communication circuit 1	LAN-108, "Diagnosis Procedure"
CAN communication circuit 2	LAN-110, "Diagnosis Procedure"

# **ITS** Communication Circuit

INFOID:000000008139560

INFOID:000000008139561

#### MAIN LINE

Malfunction area	Reference
Main line between side radar LH and side radar RH	LAN-65, "Diagnosis Procedure"
Main line between side radar RH and accelerator pedal actuator	LAN-66, "Diagnosis Procedure"
Main line between accelerator pedal actuator and lane camera unit	LAN-68, "Diagnosis Procedure"

#### **BRANCH LINE**

Malfunction area	Reference
Side radar LH branch line circuit	LAN-98, "Diagnosis Procedure"
Side radar RH branch line circuit	LAN-99, "Diagnosis Procedure"
Accelerator pedal actuator branch line circuit	LAN-100, "Diagnosis Procedure"
Lane camera unit branch line circuit	LAN-101, "Diagnosis Procedure"
ICC sensor branch line circuit	LAN-102, "Diagnosis Procedure"

# SHORT CIRCUIT OR OPEN CIRCUIT

Malfunction area	Reference
ITS communication circuit	LAN-112, "Diagnosis Procedure"

# HEV System CAN Circuit

#### MAIN LINE

Malfunction area	Reference
Main line between traction motor inverter and TCM	LAN-69, "Diagnosis Procedure"
Main line between TCM and data link connector	LAN-70, "Diagnosis Procedure"
Main line between data link connector and HPCM	LAN-71, "Diagnosis Procedure"

#### **BRANCH LINE**

Malfunction area	Reference
ECM branch line circuit (HEV system CAN circuit)	LAN-73, "Diagnosis Procedure"
Traction motor inverter branch line circuit	LAN-103, "Diagnosis Procedure"
TCM branch line circuit	LAN-104, "Diagnosis Procedure"
Data link connector branch line circuit (HEV system CAN circuit)	LAN-83, "Diagnosis Procedure"
Sub electric oil pump inverter branch line circuit	LAN-105, "Diagnosis Procedure"
HPCM branch line circuit (HEV system CAN circuit)	LAN-86, "Diagnosis Procedure"
Li-ion battery controller branch line circuit	LAN-106, "Diagnosis Procedure"

#### SHORT CIRCUIT

Malfunction area	Reference
HEV system CAN circuit	LAN-114, "Diagnosis Procedure"

DIG/GIRCOIT DIAG	NU212 >			
MAIN LINE BET	WEEN TPMS	AND HVAC CIF	CUIT	
Diagnosis Procedu	ure			INFOID:00000000813956
I.CHECK HARNESS	CONTINUITY (OPEN	N CIRCUIT)		
2. Disconnect the 12	/ battery cable from t owing harness conne	the negative terminal. ectors.		
ECM Low tire pressure v A/C auto amp. I. Check the continui auto amp. harness	varning control unit ity between the low t connector.	tire pressure warning o	control unit harness c	connector and the A/C
ECM Low tire pressure v A/C auto amp. I. Check the continui auto amp. harness Low tire pressure w harness c	varning control unit ity between the low t connector. varning control unit connector	tire pressure warning o A/C auto amp. ha	control unit harness c	connector and the A/C
ECM Low tire pressure v A/C auto amp. 4. Check the continui auto amp. harness Low tire pressure w harness c	varning control unit ity between the low to connector. varning control unit connector Terminal No.	tire pressure warning of A/C auto amp. ha Connector No.	control unit harness c arness connector Terminal No.	connector and the A/C
ECM Low tire pressure v A/C auto amp. 4. Check the continui auto amp. harness Low tire pressure w harness c Connector No.	warning control unit ity between the low to connector. varning control unit connector Terminal No. 2	tire pressure warning of A/C auto amp. ha Connector No.	control unit harness connector Terminal No. 12	connector and the A/C Continuity Existed

#### Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.

YES (Past error)>>Error was detected in the main line between the low tire pressure warning control unit and the A/C auto amp.

NO >> Replace the PCB harness.

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# MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT

Revision: 2013 March

# MAIN LINE BETWEEN HVAC AND A-BAG CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

# MAIN LINE BETWEEN HVAC AND A-BAG CIRCUIT

## Diagnosis Procedure

INFOID:000000008139563

[CAN]

# 1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Disconnect the following harness connectors.
- ECM
- A/C auto amp.
- AV control unit
- Check the continuity between the A/C auto amp. harness connector and the AV control unit harness connector.
- Models with navigation system

A/C auto amp. h	arness connector	AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No. Terminal No.		Continuity
Mee	12	M210	90	Existed
1000	11		74	Existed

#### Models without navigation system

A/C auto amp. h	arness connector	AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No. Terminal No.		
Mee	12	M84	81	Existed
WOO	11	10104	80	Existed

#### Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.

YES (Past error)>>Error was detected in the main line between the A/C auto amp. and the air bag diagnosis sensor unit.

NO >> Replace the PCB harness.

I	MAIN LINE BET	WEEN A-BAG A	ND AV CIRCUIT	
< DTC/CIRCUIT DIAC	GNOSIS >			[CAN]
MAIN LINE BET	WEEN A-BAG	G AND AV CIRC	UIT	
Diagnosis Proced	ure			INFOID:00000008139564
1.CHECK HARNESS	CONTINUITY (OPE	N CIRCUIT)		
<ol> <li>Turn the ignition state in the ignition is a constrained in the ignition is a state in the ignition in the ignition is a state in the ignition is a state in the ignition is a state in the ignition in the ignition is a state in the ignition in the ignition in the ignition is a state in the ignition in the ignition in the ignition is a state in the ignition in the ignition in the ignition is a state in the ignition in the ignitine in the ignitinet in the ignited state in the ignition in the</li></ol>	witch OFF. V battery cable from lowing harness conne ity between the A/C a ation system	the negative terminal. ectors. auto amp. harness cor	nnector and the AV co	ntrol unit harness con-
A/C auto amp. h	arness connector	AV control unit h	arness connector	
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
Mee	12	90		Existed
MOO	11		74	Existed
- Models without na	vigation system			
A/C auto amp. harness connector AV control unit harness connector				
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
12				
Mee	12	M84	81	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.

YES (Past error)>>Error was detected in the main line between the air bag diagnosis sensor unit and the AV control unit.

NO >> Replace the PCB harness.

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# MAIN LINE BETWEEN AV AND M&A CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

# MAIN LINE BETWEEN AV AND M&A CIRCUIT

# **Diagnosis Procedure**

[CAN]

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Disconnect the following harness connectors.
- ECM
- AV control unit
- Combination meter
- 4. Check the continuity between the AV control unit harness connector and the combination meter harness connector.
- Models with navigation system

AV control unit h	arness connector	Combination meter	Combination meter harness connector	
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
M210	90	M53	14	Existed
	74	- Wibb	15	Existed

#### Models without navigation system

AV control unit h	arness connector Combination meter harness connector		Continuity	
Connector No.	Terminal No.	Connector No. Terminal No.		Continuity
M84	81	M53	14	Existed
10104	80		15	Existed

#### Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.

YES (Past error)>>Error was detected in the main line between the AV control unit and the combination meter.

NO >> Replace the PCB harness.

	MAIN LINE BET	WEEN M&A ANI	D DLC CIRCUIT	
< DTC/CIRCUIT DIA	[CAN]			
MAIN LINE BE	TWEEN M&A A	ND DLC CIRCU	JIT	
Diagnosis Proced	lure			INFOID:00000008139566
1.CHECK HARNESS		N CIRCUIT)		
<ol> <li>Furn the ignition s</li> <li>Disconnect the 12</li> <li>Disconnect the fo</li> <li>ECM</li> <li>Combination mete</li> <li>Harness connector</li> <li>Check the continu</li> </ol>	Wilch OFF. 2V battery cable from t llowing harness conne ors M105 and M181 lity between the comb	the negative terminal. actors. ination meter harness	connector and the ha	rness connector.
Combination meter	er harness connector	Harness	connector	Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
ME2	14	M105	7	Existed
IND3	M53 M105 8 Existed			
Is the inspection resul	t normal?	1	L. L	

NO >> Replace the PCB harness.

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# MAIN LINE BETWEEN DLC AND BCM CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

# MAIN LINE BETWEEN DLC AND BCM CIRCUIT

#### **Diagnosis Procedure**

INFOID:000000008139567

[CAN]

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Disconnect the following harness connectors.
- ECM
- Harness connectors M181 and M105
- BCM
- 4. Check the continuity between the harness connector and the BCM harness connector.

Harness	connector	BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
M105	7	M400	39	Existed
IMITO5	8	WII20	40	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.

YES (Past error)>>Error was detected in the main line between the data link connector and the BCM.

NO >> Replace the PCB harness.

Μ	AIN LINE BETW	EEN BC	M AND	<b>EV/HEV CIRC</b>	UIT
< DTC/CIRCUIT DIAC	GNOSIS >				[CAN]
MAIN LINE BET	WEEN BCM A	ND EV/	HEV C	IRCUIT	
Diagnosis Proced	ure				INFOID:00000008139568
1. CHECK CONNECT	OR				
1. Turn the ignition s	witch OFF.				
<ol> <li>Disconnect the 12</li> <li>Check the followir and harness side)</li> <li>Harness connecto</li> <li>Harness connecto</li> <li>Harness connecto</li> </ol>	V battery cable from t ng terminals and con r M20 and PCB harne r M7 r B1	he negative nectors for ess side co	e terminal. damage, nnector	bend and loose co	onnection (connector side
Is the inspection result	normal?				
YES >> GO TO 2.	terminal and connect	or			
2.CHECK HARNESS	CONTINUITY (OPEN	N CIRCUIT	)		
<ol> <li>Disconnect the fol</li> <li>BCM</li> <li>Harness connecto</li> <li>Check the continu</li> </ol>	lowing harness conne r M20 ity between the BCM	ctors. harness co	onnector ar	nd the PCB harnes	s connector.
BCM harne	ss connector	PCB harness connector			
Connector No.	Terminal No.		Termi	nal No.	Continuity
M120	39		(	35	Existed
le the increase of a second	40		3	36	Existed
YES >> GO TO 3. NO >> Replace the CHECK HARNESS 1. Disconnect the ha	ne PCB harness. CONTINUITY (OPEN rness connectors M7	I CIRCUIT	)		
2. Check the continu	ity between the harne	ss connect	ors.		
Harness	connector		Harness	connector	Orationity
Connector No.	Terminal No.	Conne	ctor No.	Terminal No.	Continuity
M20	35	Ν	17	72	Existed
_	36			71	Existed
Is the inspection resultYES>> GO TO 4.NO>> Repair the4.CHECK HARNESSCheck the continuity be	normal? main line between th CONTINUITY (OPEN etween the harness c	e harness I CIRCUIT	connectors ) erminals.	s M20 and M7.	
Connector No.		Termi	nal No.		Continuity
	72			82	Existed
B1	71			81	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again. YES (Past error)>>Error was detected in the main line between the BCM and the HPCM. NO >> Replace the body harness.

# MAIN LINE BETWEEN EV/HEV AND EPS CIRCUIT

### < DTC/CIRCUIT DIAGNOSIS >

# MAIN LINE BETWEEN EV/HEV AND EPS CIRCUIT

# Diagnosis Procedure

INFOID:000000008139569

[CAN]

# 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector B1
- Harness connector M7
- Harness connector M6
- Harness connector E106

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

#### 1. Disconnect the harness connectors B1 and M7.

2. Check the continuity between the harness connector terminals.

Connector No.	Termir	Continuity	
B1	72	82	Existed
	71 81		Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace the body harness.

## **3.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

#### 1. Disconnect the harness connectors M6 and E106.

2. Check the continuity between the harness connectors.

Harness	connector	Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
M7	82	Мб	22	Existed
1117	81		23	Existed

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair the main line between the harness connectors M7 and M6.

#### **4.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Disconnect the connector of power steering control module.
- 2. Check the continuity between the harness connector and the power steering control module harness connector.

Harness	connector	Power steering control module harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
E106	22	E07	5	Existed
ETUO	23	E97	6	Existed

#### Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.

- YES (Past error)>>Error was detected in the main line between the HPCM and the power steering control module.
- NO >> Repair the main line between the harness connector E106 and the power steering control module.

# LAN-62

< DTC/CIRCUIT DIA	GNOSIS >			
			CON	
Diagnosis Proced	lure			INFOID:00000008139570
1.CHECK CONNECT	ΓOR			
<ol> <li>Turn the ignition s</li> <li>Disconnect the 12</li> <li>Check the followi and harness side)</li> <li>Harness connector</li> <li>Harness connector</li> <li>Harness connector</li> <li>Harness connector</li> <li>Sthe inspection result</li> <li>YES &gt;&gt; GO TO 2.</li> <li>NO &gt;&gt; Repair the</li> <li>CHECK HARNESS</li> </ol>	witch OFF. V battery cable from the ng terminals and conru- M20 and PCB harned M6 Sor E106 t normal? t terminal and connect CONTINUITY (OPEN	he negative termina nectors for damage ess side connector tor.	l. , bend and loose coni	nection (connector side
<ul> <li>Disconnect the fo Steering angle se Harness connecto</li> <li>Check the continu- tor.</li> </ul>	lowing harness conne nsor or M20 lity between the steerii	ctors. ng angle sensor har	ness connector and the	e PCB harness connec-
Steering angle sens	or harness connector	PCB harr	ess connector	Continuity
Steering angle sens Connector No.	or harness connector Terminal No.	PCB harn Terr	ess connector ninal No.	Continuity
Steering angle sens Connector No. M37	or harness connector Terminal No.	PCB harr Terr	ess connector ninal No. 24	- Continuity Existed
Steering angle sens Connector No. M37 s the inspection resul	For harness connector Terminal No. 1 2 t normal?	PCB harn Terr	ess connector ninal No. 24 27	Continuity Existed Existed
Steering angle sens Connector No. M37 Sthe inspection resul YES >> GO TO 3. NO >> Replace t CHECK HARNESS . Disconnect the ha . Check the continu	t normal? CONTINUITY (OPEN Interst connectors M6 Interst connectors M6 Interst connectors M6	PCB harr Terr N CIRCUIT) and E106. ss connectors.	ess connector ninal No. 24 27	Continuity Existed Existed
Steering angle sens Connector No. M37 Sthe inspection resul YES >> GO TO 3. NO >> Replace t CHECK HARNESS . Disconnect the ha . Check the continu Harness	sor harness connector Terminal No. 1 2 t normal? he PCB harness. CONTINUITY (OPEN irness connectors M6 ity between the harne	PCB harr Terr N CIRCUIT) and E106. ss connectors. Harnes	ess connector ninal No. 24 27 27 s connector	Continuity Existed Existed
Steering angle sens Connector No. M37 Sthe inspection resul YES >> GO TO 3. NO >> Replace t CHECK HARNESS Disconnect the ha Disconnect the ha Check the continu Harness Connector No.	sor harness connector Terminal No. 1 2 t normal? he PCB harness. CONTINUITY (OPEN trness connectors M6 ity between the harne connector Terminal No.	PCB harr Terr N CIRCUIT) and E106. ss connectors. Harnes Connector No.	ess connector ninal No. 24 27 s connector Terminal No.	- Continuity Existed Existed
Steering angle sens Connector No. M37 Sthe inspection resul YES >> GO TO 3. NO >> Replace t CHECK HARNESS Disconnect the ha Check the continu Harness Connector No.	sor harness connector Terminal No. 1 2 t normal? he PCB harness. CONTINUITY (OPEN ity between the harne connector Terminal No. 24	PCB harr Terr N CIRCUIT) and E106. ss connectors. Harnes Connector No.	ess connector ninal No. 24 27 27 s connector s connector Terminal No. 69	Continuity Existed Existed Continuity Existed
Steering angle sens Connector No. M37 Sthe inspection resul YES >> GO TO 3. NO >> Replace t CHECK HARNESS Disconnect the ha Check the continu Harness Connector No. M20	sor harness connector Terminal No. 1 2 t normal? he PCB harness. CONTINUITY (OPEN irness connectors M6 ity between the harne connector Terminal No. 24 27 t normal?	PCB harr Terr N CIRCUIT) and E106. ss connectors. Harnes Connector No. M6	ess connector ninal No. 24 27 s connector s connector Terminal No. 69 70	Continuity Existed Existed Continuity Existed Existed
Steering angle sens Connector No. M37 s the inspection resul YES >> GO TO 3. NO >> Replace t 3.CHECK HARNESS 1. Disconnect the ha 2. Check the continu Harness Connector No. M20 s the inspection resul YES >> GO TO 4. NO >> Repair the 4.CHECK HARNESS Check the continuity b	sor harness connector Terminal No. 1 2 t normal? he PCB harness. CONTINUITY (OPEN arness connectors M6 ity between the harne connector 24 27 t normal? main line between the CONTINUITY (OPEN etween the harness con	PCB harr Terr N CIRCUIT) and E106. ss connectors. Harnes Connector No. M6 e harness connecto N CIRCUIT) onnector terminals.	ess connector ninal No. 24 27 s connector s connector Terminal No. 69 70 rs M20 and M6.	Continuity Existed Existed Continuity Existed Existed
Steering angle sens Connector No. M37 <u>s the inspection resul</u> YES >> GO TO 3. NO >> Replace t <b>3.</b> CHECK HARNESS Disconnect the ha Check the continu Harness Connector No. M20 <u>s the inspection resul</u> YES >> GO TO 4. NO >> Repair the <b>1.</b> CHECK HARNESS Check the continuity b Connector No.	sor harness connector Terminal No. 1 2 t normal? he PCB harness. CONTINUITY (OPEN arness connectors M6 ity between the harne connector Terminal No. 24 27 t normal? e main line between the CONTINUITY (OPEN retween the harness con	PCB harr Terr N CIRCUIT) and E106. ss connectors. Harnes Connector No. M6 e harness connecto N CIRCUIT) onnector terminals. Terminal No.	ess connector ninal No. 24 27 s connector s connector 69 70 rs M20 and M6.	Continuity Existed Existed Continuity Existed Existed Existed
Steering angle sens Connector No. M37 s the inspection resul YES >> GO TO 3. NO >> Replace t 3.CHECK HARNESS 1. Disconnect the ha 2. Check the continu. Harness Connector No. M20 s the inspection resul YES >> GO TO 4. NO >> Repair the 4.CHECK HARNESS Check the continuity b Connector No.	sor harness connector          Terminal No.         1         2         t normal?         he PCB harness.         CONTINUITY (OPEN arness connectors M6 lity between the harne         connector         Terminal No.         24         27         t normal?         main line between the between the harness context of the harness context	PCB harr Terr N CIRCUIT) and E106. ss connectors. Harnes Connector No. M6 e harness connecto N CIRCUIT) onnector terminals. Terminal No.	ess connector ninal No. 24 27 s connector s connector 69 70 rs M20 and M6.	Continuity Existed Continuity Continuity Existed Continuity Existed Continuity Existed Continuity Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again. YES (Past error)>>Error was detected in the main line between the steering angle sensor and the ABS actuator and electric unit (control unit).

NO >> Repair the main line between the harness connector E106 and the ABS actuator and electric unit (control unit).

# **LAN-63**

# MAIN LINE BETWEEN ABS AND ADP CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

# MAIN LINE BETWEEN ABS AND ADP CIRCUIT

# Diagnosis Procedure

INFOID:000000008139571

[CAN]

# 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector E106
- Harness connector M6
- Harness connector M7
- Harness connector B1

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

#### 1. Disconnect the harness connectors E106 and M6.

2. Check the continuity between the harness connector terminals.

Connector No.	Termir	Continuity		
E106	69	Existed		
LIUO	70	70 55		

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the harness connector E106.

# **3.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Disconnect the harness connectors M7 and B1.
- 2. Check the continuity between the harness connectors.

Harness	connector	Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
Me	54	MZ	34	Existed
IVIO	55		35	Existed

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair the main line between the harness connectors M6 and M7.

#### **4.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector terminals.

Connector No.	Termi	Continuity	
R1	34	32	Existed
	35	33	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.

YES (Past error)>>Error was detected in the main line between the ABS actuator and electric unit (control unit) and the driver seat control unit.

NO >> Replace the body harness.

M	AIN LINE BETWI	EEN RDR-L AND	D RDR-R CIRCU	IT
DTC/CIRCUIT DIAC	GNOSIS >			[CAN]
1AIN LINE BET	WEEN RDR-L	AND RDR-R C	IRCUIT	
agnosis Proced	ure			INFOID:000000008139572
.CHECK CONNECT	OR			
Turn the ignition s Disconnect the 12 Check the followir and harness side) Harness connecto Harness connecto the inspection result YES >> GO TO 2. NO >> Repair the CHECK HARNESS Disconnect the fol Side radar LH	witch OFF. V battery cable from the ng terminals and conr r B33 r B245 <u>normal?</u> terminal and connect CONTINUITY (OPEN lowing harness connect	ne negative terminal. hectors for damage, b or. I CIRCUIT) ctors.	pend and loose conne	ection (connector side
Harness connecto Check the continu	rs B33 and B245 ity between the side ra	adar LH harness conn	ector and the harness	s connector.
Side radar LH h	arness connector	Harness	connector	Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B52	4	B33	13	Existed
	3		14	Existed
<pre>'ES &gt;&gt; GO TO 3. NO &gt;&gt; Repair the .CHECK HARNESS Disconnect the co Check the continu</pre>	e main line between the CONTINUITY (OPEN nnector of side radar F ity between the harnes	e side radar LH and th I CIRCUIT) RH. ss connector and the Side radar RH ha	ne harness connector side radar RH harnes	B33. s connector.
Connector No.	Terminal No.	Connector No.	Terminal No.	
B245	13	B252	4	Existed
	14		3	EXISTED
YES (Present error)> YES (Past error)>>Er NO >> Repair the	Check CAN system t ror was detected in th main line between the	type decision again. e main line between t e harness connector E	he side radar LH and 3245 and the side rad	the side radar RH. ar RH.

Ρ

# MAIN LINE BETWEEN RDR-R AND APA CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

# MAIN LINE BETWEEN RDR-R AND APA CIRCUIT

## Diagnosis Procedure

INFOID:000000008139573

[CAN]

## 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector B201
- Harness connector M117
- Harness connector M20 and PCB harness side connector
- Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Disconnect the following harness connectors.
- Side radar RH
- Harness connectors B201 and M117
- 2. Check the continuity between the side radar RH harness connector and the harness connector.

Side radar RH h	arness connector	Harness connector		Continuity
Connector No.	Terminal No.	Connector No. Terminal No.		
<b>B</b> 252	4	<b>B</b> 201	66	Existed
6232	3		67	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the main line between the side radar RH and the harness connector B201.

3. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Disconnect the harness connector M20.
- 2. Check the continuity between the harness connectors.

Harness	connector	Harness connector		Continuity
Connector No.	Terminal No.	Connector No. Terminal No.		Continuity
M117	66	M20	38	Existed
11117	67	IVIZU	40	Existed

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair the main line between the harness connectors M117 and M20.

#### **4.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors M150 and M151.

2. Check the continuity between the PCB harness connector and the harness connector.

PCB harness connector	Harness connector		Continuity
Terminal No.	Connector No.	Terminal No.	Continuity
38	M150	11	Existed
40	- 10150	10	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.

YES (Past error)>>Error was detected in the main line between the side radar RH and the accelerator pedal actuator.

NO	>> Replace the PCB harness.	[0/11]

# MAIN LINE BETWEEN APA AND LANE CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

# MAIN LINE BETWEEN APA AND LANE CIRCUIT

### **Diagnosis Procedure**

INFOID:000000008139574

[CAN]

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Disconnect the following harness connectors.
- ADAS control unit
- Harness connectors M151 and M150
- Harness connectors M110 and R7
- 4. Check the continuity between the harness connectors.

Harness	connector	Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	ector No. Terminal No.	
M150	11	M110	13	Existed
WI 150	10	MITO	2	Existed

#### Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.

- YES (Past error)>>Error was detected in the main line between the accelerator pedal actuator and the lane camera unit.
- NO >> Replace the PCB harness.

< DTC/CIRCUIT DIA				
	GNOSIS >			[CAN]
MAIN LINE BE	FWEEN INV/MC	C AND TCM CII	RCUIT	
Diagnosis Proced	lure			INFOID:000000008139575
1. CHECK CONNEC	FOR			
<ol> <li>Turn the ignition s</li> <li>Disconnect the 12</li> <li>Check the followi and harness side)</li> <li>Harness connector</li> <li>Harness connector</li> <li>Harness connector</li> <li>Is the inspection result</li> <li>YES &gt;&gt; GO TO 2.</li> </ol>	witch OFF. 2V battery cable from t ng terminals and conr b. or E106 or M6 or M29 and PCB harne t normal?	he negative terminal. nectors for damage, t ess side connector	pend and loose conne	ection (connector side
2 CHECK HARNESS				
<ol> <li>Disconnect the fo</li> <li>Traction motor inv</li> <li>Harness connecto</li> <li>Check the continu</li> </ol>	llowing harness conne 'erter ors E106 and M6 uity between the tractic	ctors. on motor inverter harn	ess connector and the	harness connector.
Traction motor inver	ter harness connector	Harness	connector	Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
E78	9	E106	58	Existed
1 <u></u>	28		59	Existed
<u>IS the inspection resul</u>	<u>t normal?</u>			
Is the inspection resultYES>> GO TO 3.NO>> Repair the <b>3.</b> CHECK HARNESS1.Disconnect the ha2.Check the continue	t normal? main line between th CONTINUITY (OPEN arness connector M29. ity between the harne	e traction motor invert I CIRCUIT) ss connectors.	er and the harness co	nnector E106.
Is the inspection result         YES       >> GO TO 3.         NO       >> Repair the <b>3.</b> CHECK HARNESS         1.       Disconnect the ha         2.       Check the continu	t normal? main line between th CONTINUITY (OPEN arness connector M29. uity between the harne connector	e traction motor invert N CIRCUIT) ss connectors. Harness	ter and the harness co	nnector E106.
Is the inspection result         YES       >> GO TO 3.         NO       >> Repair the <b>3.</b> CHECK HARNESS         1.       Disconnect the has         2.       Check the continu         Harness         Connector No.	t normal? e main line between th CONTINUITY (OPEN arness connector M29. uity between the harne connector Terminal No.	e traction motor invert N CIRCUIT) ss connectors. Harness Connector No.	ter and the harness co connector Terminal No.	onnector E106.
Is the inspection result         YES       >> GO TO 3.         NO       >> Repair the <b>3.</b> CHECK HARNESS         1.       Disconnect the ha         2.       Check the continu         Harness         Connector No.         M6	t normal? main line between th CONTINUITY (OPEN arness connector M29. wity between the harne connector Terminal No. 58	e traction motor invert N CIRCUIT) ss connectors. Harness Connector No.	ter and the harness co connector Terminal No. 398	Continuity
Is the inspection result         YES       >> GO TO 3.         NO       >> Repair the <b>3.</b> CHECK HARNESS         1. Disconnect the ha         2. Check the continu         Harness         Connector No.         M6	t normal? main line between th CONTINUITY (OPEN arness connector M29. uity between the harne connector Terminal No. 58 59	e traction motor invert N CIRCUIT) ss connectors. Harness Connector No. M29	connector Terminal No. 398 397	Continuity Existed Existed
$\frac{\text{Is the inspection result}}{\text{YES}} >> \text{GO TO 3.} \\ \text{NO} >> \text{Repair the} \\ \textbf{3.CHECK HARNESS} \\ \textbf{1. Disconnect the ha} \\ \textbf{2. Check the continu} \\ \hline \\ \hline \\ \text{Harness} \\ \hline \\ \hline \\ \text{Connector No.} \\ \hline \\ \text{M6} \\ \hline \\ \textbf{Is the inspection result} \\ \text{YES} >> \text{GO TO 4.} \\ \text{NO} >> \text{Repair the} \\ \textbf{4.CHECK HARNESS} \\ \hline \\ \textbf{1. Disconnect the ha} \\ \textbf{2. Check the continu} \\ \hline \\ \textbf{2. Check the continu} \\ \hline \\ \textbf{3. Check the continu} \\ \hline \\ \textbf{4. CHECK HARNESS} \\ \hline \\ \textbf{1. Disconnect the ha} \\ \hline \\ \textbf{2. Check the continu} \\ \hline \\ \hline \\ \textbf{3. Check the continu} \\ \hline \\ \hline \\ \hline \\ \textbf{3. Check the continu} \\ \hline \\ $	t normal? e main line between th S CONTINUITY (OPEN arness connector M29. uity between the harne connector Terminal No. 58 59 t normal? e main line between th S CONTINUITY (OPEN urness connectors M11 uity between the PCB b	e traction motor invert N CIRCUIT) ss connectors. Harness Connector No. M29 e harness connectors N CIRCUIT) 6 and F103. harness connector and	ter and the harness co connector Terminal No. 398 397 M6 and M29. d the harness connect	Continuity Existed Existed
Is the inspection result         YES       >> GO TO 3.         NO       >> Repair the <b>3.</b> CHECK HARNESS         1.       Disconnect the ha         2.       Check the continu         Harness         Connector No.         M6         Is the inspection result         YES       >> GO TO 4.         NO       >> Repair the <b>4.</b> CHECK HARNESS         1.       Disconnect the ha         2.       Check the continu	t normal? e main line between th S CONTINUITY (OPEN arness connector M29. uity between the harne connector Terminal No. 58 59 t normal? e main line between th S CONTINUITY (OPEN urness connectors M11 uity between the PCB to ss connector	e traction motor invert N CIRCUIT) ss connectors. Harness Connector No. M29 e harness connectors N CIRCUIT) 6 and F103. harness connector and	ter and the harness co connector Terminal No. 398 397 M6 and M29. d the harness connect	Continuity Existed Existed Or.
Is the inspection result         YES       >> GO TO 3.         NO       >> Repair the <b>3.</b> CHECK HARNESS         1.       Disconnect the ha         2.       Check the continu         Harness         Connector No.         M6         Is the inspection result         YES       >> GO TO 4.         NO       >> Repair the <b>4.</b> CHECK HARNESS         1.       Disconnect the ha         2.       Check the continu	t normal? e main line between th S CONTINUITY (OPEN arness connector M29. uity between the harne connector Terminal No. 58 59 t normal? e main line between th S CONTINUITY (OPEN arness connectors M11 ity between the PCB to ss connector inal No.	e traction motor invert N CIRCUIT) ss connectors. Harness Connector No. M29 e harness connectors N CIRCUIT) 6 and F103. harness connector and Harness Connector No.	ter and the harness co connector Terminal No. 398 397 M6 and M29. d the harness connect connector Terminal No.	Continuity Existed Existed Or.
$\frac{\text{Is the inspection result}}{\text{YES}} >> \text{GO TO 3.} \\ \text{NO} >> \text{Repair the} \\ \textbf{3.CHECK HARNESS} \\ \textbf{1. Disconnect the ha} \\ \textbf{2. Check the continu} \\ \hline \\ \hline \\ \textbf{Harness} \\ \hline \\ \hline \\ \textbf{Connector No.} \\ \hline \\ \textbf{M6} \\ \hline \\ \textbf{Is the inspection result} \\ \text{YES} >> \text{GO TO 4.} \\ \text{NO} >> \text{Repair the} \\ \textbf{4.CHECK HARNESS} \\ \hline \textbf{1. Disconnect the ha} \\ \textbf{2. Check the continu} \\ \hline \\ \textbf{2. Check the continu} \\ \hline \\ \hline \\ \textbf{PCB harne} \\ \hline \\ \hline \\ \hline \\ \textbf{3. Term} \\ \hline \\ \textbf{3. Comparison of the continu} \\ \hline \\ $	t normal? e main line between th S CONTINUITY (OPEN arness connector M29. uity between the harne connector Terminal No. 58 59 t normal? e main line between th S CONTINUITY (OPEN arness connectors M11 uity between the PCB f ss connector inal No. 398	e traction motor invert N CIRCUIT) ss connectors. Harness Connector No. M29 e harness connectors N CIRCUIT) 6 and F103. harness connector and Harness Connector No.	ter and the harness co connector Terminal No. 398 397 M6 and M29. d the harness connect connector Terminal No. 11	Continuity Existed Existed Or. Continuity Existed

YES (Present error)>>Check CAN system type decision again. YES (Past error)>>Error was detected in the main line between the traction motor inverter and the TCM.

NO >> Replace the PCB harness.

# MAIN LINE BETWEEN TCM AND DLC CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

# MAIN LINE BETWEEN TCM AND DLC CIRCUIT

#### Diagnosis Procedure

INFOID:000000008139576

[CAN]

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Disconnect the following harness connectors.
- ECM
- Harness connectors F103 and M116
- Harness connectors M105 and M181
- 4. Check the continuity between the harness connectors.

Harness	connector	Harness connector		Continuity
Connector No.	Terminal No.	Connector No. Terminal No.		Continuity
M116	11	M105	32	Existed
MITO	12	MITUS	33	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.

YES (Past error)>>Error was detected in the main line between the TCM and the data link connector.

NO >> Replace the PCB harness.

		EEN DLC AND	EV/HEV CIRCUI	Γ
MAIN LINE BET		ND EV/HEV CI	RCUIT	
Diagnosis Proced	lure			INEQID:00000008139577
	TOR			
Turn the ignition s	witch OFF			
<ol> <li>Disconnect the 12</li> <li>Check the following and harness side) Harness connector</li> </ol>	V battery cable from t ng terminals and con m M20 and PCB barne	he negative terminal. nectors for damage,	bend and loose conne	ection (connector side
Harness connector Harness connector	or M7 or B1			
s the inspection result	t normal?			
YES >> GO TO 2. NO >> Repair the	e terminal and connec	tor.		
2. CHECK HARNESS		N CIRCUIT)		
<ol> <li>Disconnect the fol Harness connector</li> <li>Harness connector</li> <li>Check the continut</li> </ol>	lowing harness conne ors M181 and M105 or M20 ity between the harne	ectors. ess connector and the	PCB harness connect	or.
Harness	connector	PCB harness connector		Continuity
Connector No.	Terminal No.	Termi	nal No.	Continuity
M105	32	2	23	Existed
	33	2	22	Existed
YES >> GO TO 3. NO >> Replace the heat of	ne PCB harness.	N CIRCUIT)		
2. Check the continu	ity between the harne	ess connectors.		
Harness	connector	Harness	connector	Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
M20	23	M7	38	Existed
	22		39	Existed
s the inspection result YES >> GO TO 4. NO >> Repair the <b>1.</b> CHECK HARNESS	e main line between th CONTINUITY (OPEN	e harness connectors N CIRCUIT)	s M20 and M7.	
2. Check the continu	ity between the harne	ess connector and the	HPCM harness conne	ector.
Harness	connector	HPCM harne	ess connector	Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
B1	38	B159	42	Existed
	39		54	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again. YES (Past error)>>Error was detected in the main line between the data link connector and the HPCM.

NO >> Replace the body harness.

# ECM BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

#### < DTC/CIRCUIT DIAGNOSIS >

# ECM BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

# Diagnosis Procedure

INFOID:000000008139578

[CAN]

# 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
- ECM
- Harness connector M30 and PCB harness side connector

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect the connector of ECM.
- 2. Check the resistance between the ECM harness connector terminals.

ECM harness connector			Posistanco (O)
Connector No.	Terminal No.		
M107	114	113	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> GO TO 4.

 $\mathbf{3}$ . Check power supply and ground circuit

Check the power supply and the ground circuit of the ECM. Refer to <u>EC-137, "Diagnosis Procedure"</u>. <u>Is the inspection result normal?</u>

YES (Present error)>>Replace the ECM. Refer to EC-444, "Removal and Installation".

- YES (Past error)>>Error was detected in the ECM branch line (CAN communication circuit 1 side). Refer to LAN-31, "CAN COMMUNICATION SYSTEM : System Diagram".
- NO >> Repair the power supply and the ground circuit.

#### CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M30.

2. Check the continuity between the ECM harness connector and the harness connector.

ECM harne	ss connector	Harness connector		Continuity
Connector No.	Terminal No.	Connector No. Terminal No.		Continuity
M107	114	M20	439	Existed
WITO7	113	WISO	438	Existed

#### Is the inspection result normal?

YES >> Replace the PCB harness.

NO >> Repair the harness between the ECM harness connector M107 and the harness connector M30.
ECM BRA	NCH LINE CIRCUIT	(HEV SYSTEM CAN	CIRCUIT)		
< DTC/CIRCUIT DIAGNOS	SIS >	-	[CAN]		
ECM BRANCH LINI	E CIRCUIT (HEV S	SYSTEM CAN CIRC	CUIT)		
Diagnosis Procedure			A INFOID:000000008139579		
1.CHECK CONNECTOR			E		
<ol> <li>Turn the ignition switch</li> <li>Disconnect the 12V batt</li> <li>Check the following term nector side).</li> <li>ECM</li> <li>Harness connector F1</li> </ol>	OFF. ery cable from the negative ninals and connectors for d	e terminal. lamage, bend and loose col	nnection (unit side and con-		
<ul> <li>Harness connector E3</li> <li>Is the inspection result norm</li> </ul>	al?				
YES >> GO TO 2. NO >> Repair the termi	nal and connector.		E		
2. CHECK HARNESS FOR	OPEN CIRCUIT				
<ol> <li>Disconnect the connect</li> <li>Check the resistance be</li> </ol>	or of ECM. Stween the ECM harness co	onnector terminals.	F		
	ECM harness connector		Posistance (O)		
Connector No.	Connector No. Terminal No. Resistance (Ω)				
F102	55	54	Approx. 108 – 132		
Is the measurement value w YES >> GO TO 3. NO >> Repair the ECN <u>CATION SYSTE</u> 3.CHECK POWER SUPPL Check the power supply and Is the inspection result norm YES (Present error)>>Repl YES (Past error)>>Error wa NO >> Repair the power	ithin the specification? I branch line (HEV system <u>M : System Diagram"</u> . Y AND GROUND CIRCUIT I the ground circuit of the E al? ace the ECM. Refer to <u>EC</u> as detected in the ECM bra er supply and the ground ci	CAN circuit side). Refer to CM. Refer to <u>EC-137, "Diac</u> -444, "Removal and Installa anch line (HEV system CAN rcuit.	LAN-31. "CAN COMMUNI- anosis Procedure". J tion". circuit side).		
			L		

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## TPMS BRANCH LINE CIRCUIT

## Diagnosis Procedure

INFOID:000000008139580

[CAN]

### 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
- Low tire pressure warning control unit
- Harness connector M29 and PCB harness side connector

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect the connector of low tire pressure warning control unit.
- 2. Check the resistance between the low tire pressure warning control unit harness connector terminals.

Low tire pre	Resistance (0)		
Connector No.	Termi		
M43	2	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> GO TO 4.

### $\mathbf{3}$ . CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the low tire pressure warning control unit. Refer to <u>WT-45.</u> <u>"Diagnosis Procedure"</u>.

Is the inspection result normal?

YES (Present error)>>Replace the low tire pressure warning control unit. Refer to <u>WT-60, "Removal and</u> <u>Installation"</u>.

YES (Past error)>>Error was detected in the low tire pressure warning control unit branch line.

NO >> Repair the power supply and the ground circuit.

#### **4.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Disconnect the harness connector M29.
- Check the continuity between the low tire pressure warning control unit harness connector and the harness connector.

Low tire pressure harness	warning control unit connector	Harness	connector	Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M43	2	M20	396	Existed
	1	WZ9	395	Existed

#### Is the inspection result normal?

YES >> Replace the PCB harness.

NO >> Repair the harness between the low tire pressure warning control unit harness connector M43 and the harness connector M29.

## CGW BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

< DTC/CIRCUIT DIAGNOSIS >

# CGW BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

		(		
Diagnosis Procedure				INFOID:000000008139581
1. СНЕСК ДТС				
Check DTC of the CAN gat	eway with CONS	ULT.		
Is U1010 or B2600 indicate	<u>d?</u>			
YES >> Perform a diag	nosis of the indic	ated DTC.		
2  CHECK CONNECTOR				
1 Turn the ignition switch				
<ol> <li>Disconnect the 12V bat</li> <li>Check the following ter nector side).</li> <li>CAN gateway</li> </ol>	ttery cable from t minals and conn	he negative terminal. ectors for damage, be	nd and loose connec	tion (unit side and con-
<ul> <li>Harness connector M2</li> </ul>	8 and PCB harne	ess side connector		
Is the inspection result norn	nal?			
YES >> GO TO 3.	vinal and connect	or		
		г		
<ol> <li>Disconnect the connect</li> <li>Check the resistance b</li> </ol>	etween the CAN	ay. gateway harness cor	nector terminals.	
	CAN gateway harn	ess connector		Resistance ( $\Omega$ )
M125	1	Terminal No.	7	
	l	vation 2	1	Approx. 54 – 66
YES $>>$ GO TO 4. NO $>>$ GO TO 5. <b>4</b> CHECK POWER SUPPL				
Check the newer supply				
dure".	na the ground c	rcuit of the CAN gate	eway. Refer to <u>LAN-1</u>	29, "Diagnosis Proce-
Is the inspection result norn	nal?			
YES (Present error)>>Rep	blace the CAN ga	teway. Refer to LAN-	130, "Removal and In	stallation".
YES (Past error)>>Error w	as detected in th	ne CAN gateway brar	ich line (CAN commu	nication circuit 1 side).
NO >> Repair the pow	er supply and the	e around circuit.	: System Diagram <sup>®</sup> .	
5. CHECK HARNESS CON		N CIRCUIT)		
<ol> <li>Disconnect the harness</li> <li>Check the continuity be</li> </ol>	s connector M28. Stween the CAN	gateway harness con	nector and the harnes	s connector.
CAN gateway harness	connector	Harness	connector	Questin it
	Tanta INI	Connector No.	Terminal No.	Continuity

Is the inspection result normal?

M125

YES >> Replace the PCB harness.

1

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NO >> Repair the harness between the CAN gateway harness connector M125 and the harness connector M28.

M28

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Existed

Existed

[CAN]

## HVAC BRANCH LINE CIRCUIT

## Diagnosis Procedure

INFOID:000000008139582

[CAN]

### 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
- A/C auto amp.
- Harness connector M28 and PCB harness side connector

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect the connector of A/C auto amp.
- 2. Check the resistance between the A/C auto amp. harness connector terminals.

Connector No.         Terminal No.         M66         12         11         Approx. 54 - 66		Posistanco (O)		
M66 12 11 Approx. 54 – 66	Connector No.	Termi	Resistance (22)	
	M66	12	11	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> GO TO 4.

## $\mathbf{3.}$ CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the A/C auto amp. Refer to <u>HAC-153, "A/C AUTO AMP. :</u> <u>Diagnosis Procedure"</u>.

Is the inspection result normal?

YES (Present error)>>Replace the A/C auto amp. Refer to HAC-183, "Removal and Installation".

- YES (Past error)>>Error was detected in the A/C auto amp. branch line.
- NO >> Repair the power supply and the ground circuit.

**4.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Disconnect the harness connector M28.
- 2. Check the continuity between the A/C auto amp. harness connector and the harness connector.

A/C auto amp. h	A/C auto amp. harness connector		Harness connector	
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
M66	12	M28	325	Existed
	11	IVIZO	327	Existed

#### Is the inspection result normal?

YES >> Replace the PCB harness.

NO >> Repair the harness between the A/C auto amp. harness connector M66 and the harness connector M28.

## **A-BAG BRANCH LINE CIRCUIT**

< DTC/CIRCUIT DIAGNOSIS > [CAN]	
A-BAG BRANCH LINE CIRCUIT	Λ
Diagnosis Procedure	$\cap$
<ul> <li>WARNING:</li> <li>Always observe the following items for preventing accidental activation.</li> <li>Before servicing, turn ignition switch OFF, disconnect 12V battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.)</li> <li>Never use unspecified tester or other measuring device.</li> <li>CHECK CONNECTOR</li> </ul>	B C
1. Turn the ignition switch OFF.	D
<ol> <li>Disconnect the 12V battery cable from the negative terminal.</li> <li>Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).</li> <li>Air bag diagnosis sensor unit</li> <li>Harness connector M26 and PCB harness side connector</li> </ol>	E
Is the inspection result normal? YES >> GO TO 2. NO >> Replace the main harness and/or the PCB harness.	F
∠.CHECK AIR BAG DIAGNOSIS SENSOR UNIT Check the air bag diagnosis sensor unit Refer to SRC-24 "Work Flow"	G
Is the inspection result normal?         YES       >> Replace the main harness and/or the PCB harness.         NO       >> Replace parts whose air bag system has a malfunction.	Н

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## TCU BRANCH LINE CIRCUIT

## Diagnosis Procedure

1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
- TCU
- Harness connector M26 and PCB harness side connector

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect the connector of TCU.
- 2. Check the resistance between the TCU harness connector terminals.

Connector No.         Terminal No.         Terminal No.           M216         9         10         Approx. 54 – 66		Posistanco (O)		
M216 9 10 Approx. 54 – 66	Connector No.	Termi		
	M216	9	10	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> GO TO 4.

**3.**CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCU. Refer to <u>AV-333. "TCU : Diagnosis Procedure"</u>. Is the inspection result normal?

YES (Present error)>>Replace the TCU. Refer to AV-342, "Removal and Installation".

YES (Past error)>>Error was detected in the TCU branch line.

NO >> Repair the power supply and the ground circuit.

**4.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M26.

2. Check the continuity between the TCU harness connector and the harness connector.

TCU harne	TCU harness connector Harness connector		Continuity	
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
M216	9	M26 -	242	Existed
IVIZ TO	M216 10		262	Existed

Is the inspection result normal?

YES >> Replace the PCB harness.

NO >> Repair the harness between the TCU harness connector M216 and the harness connector M26.

INFOID:00000008491094

## **AV BRANCH LINE CIRCUIT**

AV BRANCH LI	NE CIRCUIT				
Diagnosis Proced	ure			INFOID:00000008139584	
1.CHECK CONNECT	OR				
<ol> <li>Turn the ignition sv</li> <li>Disconnect the 12V</li> <li>Check the following nector side).</li> <li>AV control unit</li> </ol>	vitch OFF. / battery cable from t g terminals and conne	he negative terminal. ectors for damage, be	end and loose connec	tion (unit side and con-	
- Harness connector	M25 and PCB harne	ess side connector			
YES >> GO TO 2.	<u>nonnar:</u>				
NO >> Repair the	terminal and connect	or.			
Z.CHECK HARNESS	FOR OPEN CIRCUIT				
<ol> <li>Disconnect the cor</li> <li>Check the resistan</li> <li>Models with navigation</li> </ol>	ce between the AV control of A	unit. ontrol unit harness co	nnector terminals.		
	AV control unit harne	ess connector		Resistance (Ω)	
Connector No.		Terminal No.			
M210	90		74	Approx. 54 – 66	
- Models without hav	ligation system				
	AV control unit harn	ess connector		Resistance (Ω)	
Connector No.	Connector No. Terminal No.				
M84	81		80	Approx. 54 – 66	
YES >> GO TO 3. NO >> GO TO 4. <b>3.</b> CHECK POWER SU	JPPLY AND GROUN	D CIRCUIT			
<ul> <li>Check the power suppl</li> <li>Base audio without n</li> <li>BOSE audio with nav</li> <li>Is the inspection result</li> </ul>	y and the ground circ avigation system: <u>AV-</u> rigation system: <u>AV-23</u> normal?	uit of the AV control u 73, "AV CONTROL L 37, "AV CONTROL U	init. Refer to the follow INIT : Diagnosis Proc NIT : Diagnosis Proce	ving. edure" edure"	
YES (Present error)>> • Base aud • BOSE au YES (Past error)>>Er NO >> Repair the	Replace the AV cont dio without navigation udio with navigation sy ror was detected in th power supply and the	rol unit. Refer to the f system: <u>AV-104, "Re</u> ystem: <u>AV-264, "Rem</u> le AV control unit brar e ground circuit.	ollowing. moval and Installation oval and Installation" nch line.	<u>)"</u>	
4.CHECK HARNESS	CONTINUITY (OPEN	I CIRCUIT)			
<ol> <li>Disconnect the har</li> <li>Check the continui</li> <li>Models with navigation</li> </ol>	rness connector M25. ty between the AV co ation system	ntrol unit harness cor	nector and the harne	ss connector.	
AV control unit ha	arness connector	Harness	connector	Continuity	
Connector No.	Terminal No.	Connector No.	Terminal No.		
M210	90	M25	201	Existed	
	74		221	Existed	

- Models without navigation system

< DTC/CIRCUIT DIAGNOSIS >

## **AV BRANCH LINE CIRCUIT**

#### < DTC/CIRCUIT DIAGNOSIS >

AV control unit harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
Mga	81	M25	201	Existed
10184	80	- MZJ	221	Existed

Is the inspection result normal?

YES >> Replace the PCB harness.

NO (With navigation system)>>Repair the harness between the AV control unit harness connector M210 and the harness connector M25.

NO (Without navigation system)>>Repair the harness between the AV control unit harness connector M84 and the harness connector M25.

## **M&A BRANCH LINE CIRCUIT**

< DTC/CIRCUIT DIAG	GNOSIS >			[CAN]	
M&A BRANCH	LINE CIRCUIT				
Diagnosis Proced	ure			INFOID:00000008139585	
1.CHECK CONNECT	OR				
<ol> <li>Turn the ignition s</li> <li>Disconnect the 12</li> <li>Check the followin nector side).</li> <li>Combination metering</li> <li>Harness connector</li> <li>Is the inspection result</li> <li>YES &gt;&gt; GO TO 2.</li> <li>NO &gt;&gt; Repair the</li> <li>CHECK HARNESS</li> <li>Disconnect the construction</li> </ol>	witch OFF. V battery cable from t ig terminals and conne r M24 and PCB harne normal? terminal and connect FOR OPEN CIRCUIT	he negative terminal. ectors for damage, be ess side connector tor. T	end and loose co	nnection (unit side and con-	
2. Check the resistar	Combination meter ha	nination meter harnes	s connector term	iinals.	
Connector No		Terminal No		Resistance (Ω)	
M53	14	14 15 Approx. 54 – 6			
<u>s the measurement va</u> YES >> GO TO 3. NO >> GO TO 4. <b>3.</b> CHECK POWER S	alue within the specific UPPLY AND GROUN	<u>cation?</u> D CIRCUIT			
Check the power supp	bly and the ground cir	cuit of the combination	on meter Refer to	o <u>MWI-64, "COMBINATION</u>	
s the inspection result YES (Present error)> YES (Past error)>>E NO >> Repair the <b>4.</b> CHECK HARNESS	normal? >Replace the combination ror was detected in the power supply and the CONTINUITY (OPEN rness connector M24.	ation meter. Refer to j le combination meter e ground circuit. N CIRCUIT)	<u>MWI-81, "Remov</u> branch line.	<u>val and Installation"</u> .	
2. Check the continu	ity between the comb	ination meter harness	connector and t	he harness connector.	
Combination mete	r harness connector	Harness	connector	Continuity	
Connector No.	Terminal No.	Connector No.	Terminal No.		
M53	14	M24	170	Existed	
	15		177	Existed	

#### Is the inspection result normal?

YES >> Replace the PCB harness.

NO >> Repair the harness between the combination meter harness connector M53 and the harness con nector M24.

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## **DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)**

#### < DTC/CIRCUIT DIAGNOSIS >

# DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

### Diagnosis Procedure

INFOID:000000008139586

[CAN]

## 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
- Data link connector
- Harness connector M181
- Harness connector M105
- Harness connector M23 and PCB harness side connector

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

	Posistanco (O)		
Connector No.	Terminal No.		
M182	6	14	Approx. 54 – 66

#### Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.

YES (Past error)>>Error was detected in the data link connector branch line (CAN communication circuit 1 side). Refer to LAN-31, "CAN COMMUNICATION SYSTEM : System Diagram".

NO >> GO TO 3.

**3.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M23.

2. Check the continuity between the data link connector and the harness connector.

Data link	connector	Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
M190	6 M22		151	Existed
111102	14	IVIZ3	150	Existed

Is the inspection result normal?

YES >> Replace the PCB harness.

NO >> Repair the harness between the data link connector M182 and the harness connector M23.

DLC BF	RANCH LINE C	<b>IRCUIT (HEV SY</b>	<b>STEM CAN</b>	CIRCUIT)	
< DTC/CIRCUIT DIAG	NOSIS >	-		[CAN]	
DLC BRANCH LI	NE CIRCUIT	(HEV SYSTEM	I CAN CIRC	CUIT)	
Diagnosis Procedu	re			INFOID:00000008139587	
1.снеск соллесто	R				
<ol> <li>Turn the ignition swi</li> <li>Disconnect the 12V</li> <li>Check the following nector side).</li> <li>Data link connector Harness connector</li> <li>Harness connector</li> <li>Harness connector</li> <li>Sthe inspection result n YES &gt;&gt; GO TO 2.</li> <li>NO &gt;&gt; Repair the to</li> </ol>	tch OFF. battery cable from t terminals and conn W181 W105 W23 and PCB harne ormal? erminal and connec	he negative terminal. ectors for damage, be ess side connector tor.	nd and loose co	nnection (unit side and con-	
CHECK HARNESS F	OR OPEN CIRCUI	г			
Check the resistance be	tween the data link	connector terminals.			
	Data link cor	nector			
Connector No.		Terminal No. Resistance (Ω)			
M182	13		12	Approx. 54 – 66	
YES (Present error)>>0 YES (Past error)>>Error side). Refer NO >> GO TO 3. CHECK HARNESS C Disconnect the harn Check the continuity	Check CAN system or was detected in th to <u>LAN-31, "CAN C</u> CONTINUITY (OPE) ess connector M23 between the data I	type decision again. ne data link connector OMMUNICATION SY: N CIRCUIT) ink connector and the	branch line circu STEM : System harness connec	uit (HEV system CAN circuit <u>Diagram"</u> . tor.	
Data link co	nnector	Harness	connector	Continuity	
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity	
M182	13	M23	140	Existed	
	12		139	Existed	
<u>s the inspection result n</u> YES >> Replace the NO >> Repair the h	ormal? PCB harness. arness between the	e data link connector N	/182 and the ha	rness connector M23.	

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## BCM BRANCH LINE CIRCUIT

## Diagnosis Procedure

INFOID:000000008139588

### 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
- BCM
- Harness connector M22 and PCB harness side connector

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect the connector of BCM.
- 2. Check the resistance between the BCM harness connector terminals.

Connector No.         Terminal No.         Resistance (32)           M120         39         40         Approx. 54 – 66		Resistance (O)		
M120 39 40 Approx. 54 – 66	Connector No.	Termi		
	M120	39	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> GO TO 4.

 $\mathbf{3}$ . Check power supply and ground circuit

Check the power supply and the ground circuit of the BCM. Refer to <u>BCS-73, "Diagnosis Procedure"</u>. Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-80, "Removal and Installation".

YES (Past error)>>Error was detected in the BCM branch line.

NO >> Repair the power supply and the ground circuit.

#### **4.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M22.

2. Check the continuity between the BCM harness connector and the harness connector.

BCM harne	ess connector	Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
M120	39	M22	101	Existed
IVIT20	40	IVIZZ	102	Existed

Is the inspection result normal?

YES >> Replace the PCB harness.

NO >> Repair the harness between the BCM harness connector M120 and the harness connector M22.

EV/HEV BRANCH	LINE CIRCUIT (C		N CIRCUIT 1) [CAN]
EV/HEV BRANCH LIN	IE CIRCUIT (CAI	N COMMUNICATIO	ON CIRCUIT 1)
Diagnosis Procedure			INFOID:00000008139589
1.CHECK CONNECTOR			
<ol> <li>Turn the ignition switch OF</li> <li>Disconnect the 12V battery</li> <li>Check the terminals and co connector side).</li> </ol>	F. cable from the negative onnectors of the HPCM f	terminal. for damage, bend and loose	e connection (unit side and
<u>Is the inspection result normal?</u> YES >> GO TO 2.			
NO >> Repair the terminal	and connector.		
2.check harness for of	'EN CIRCUIT		
<ol> <li>Disconnect the connector of</li> <li>Check the resistance between</li> </ol>	f HPCM. en the HPCM harness of	connector terminals.	
	HPCM harness connector		Resistance ( $\Omega$ )
Connector No.	Termin	al No.	
B159	43	55	Approx. 54 – 66
Is the measurement value within	n the specification?		
YES >> GO TO 3. NO >> Replace the body h	arness.		
${\it 3.}$ check power supply a	ND GROUND CIRCUIT		
Check the power supply and th dure".	ne ground circuit of the	HPCM. Refer to <u>HBC-93, '</u>	HPCM : Diagnosis Proce-
Is the inspection result normal?			
YES (Present error)>>Replace YES (Past error)>>Error was of LAN-31, "CAN COI	the HPCM. Refer to <u>HE</u> letected in the HPCM br MMUNICATION SYSTET	3C-339, "Removal and Insta anch line (CAN communica M : System Diagram".	<u>allation"</u> . tion circuit 1 side). Refer to
NO >> Repair the power s	upply and the ground cir	cuit.	

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## **EV/HEV BRANCH LINE CIRCUIT (HEV SYSTEM CAN CIRCUIT)**

#### < DTC/CIRCUIT DIAGNOSIS >

# EV/HEV BRANCH LINE CIRCUIT (HEV SYSTEM CAN CIRCUIT)

### Diagnosis Procedure

INFOID:000000008139590

[CAN]

## 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the terminals and connectors of the HPCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

### 2.CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect the connector of HPCM.
- 2. Check the resistance between the HPCM harness connector terminals.

	Posistanco (O)		
Connector No.	Terminal No.		
B159	42	54	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Replace the body harness.

**3.**CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the HPCM. Refer to <u>HBC-93, "HPCM : Diagnosis Proce-dure"</u>.

Is the inspection result normal?

YES (Present error)>>Replace the HPCM. Refer to <u>HBC-339, "Removal and Installation"</u>.

- YES (Past error)>>Error was detected in the HPCM branch line (HEV system CAN circuit side). Refer to LAN-31, "CAN COMMUNICATION SYSTEM : System Diagram".
- NO >> Repair the power supply and the ground circuit.

## BRAKE BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1) < DTC/CIRCUIT DIAGNOSIS > [CAN] BRAKE BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

## Diagnosis Procedure

INFOID:000000008139591

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## 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the terminals and connectors of the electrically-driven intelligent brake unit for damage, bend and C loose connection (unit side and connector side).

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

### 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect the connector of electrically-driven intelligent brake unit.
- 2. Check the resistance between the electrically-driven intelligent brake unit harness connector terminals.

Electrically-	Posistanco (O)	F		
Connector No.	Terminal No.			
E87	43	42	Approx. 54 – 66	C

Is the measurement value within the specification?

#### YES >> GO TO 3.

NO >> Repair the electrically-driven intelligent brake unit branch line (CAN communication circuit 1 side). H Refer to LAN-31, "CAN COMMUNICATION SYSTEM : System Diagram".

## **3.**CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the electrically-driven intelligent brake unit. Refer to <u>BR-251,</u> "Diagnosis Procedure".

Is the inspection result normal?

- YES (Present error)>>Replace the electrically-driven intelligent brake unit. Refer to <u>BR-288, "Removal and</u> <u>installation"</u>.
- YES (Past error)>>Error was detected in the electrically-driven intelligent brake unit branch line (CAN communication circuit 1 side).
- NO >> Repair the power supply and the ground circuit.

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## BRAKE BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 2)

#### < DTC/CIRCUIT DIAGNOSIS >

## BRAKE BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 2)

### Diagnosis Procedure

INFOID:000000008139592

[CAN]

### 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the terminals and connectors of the electrically-driven intelligent brake unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

## 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect the connector of electrically-driven intelligent brake unit.
- 2. Check the resistance between the electrically-driven intelligent brake unit harness connector terminals.

Electrically-	Posistanco (O)		
Connector No.	Termi		
E87	41	40	Approx. 54 – 66

Is the measurement value within the specification?

#### YES >> GO TO 3.

### **3.**CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the electrically-driven intelligent brake unit. Refer to <u>BR-251</u>, <u>"Diagnosis Procedure"</u>.

#### Is the inspection result normal?

YES (Present error)>>Replace the electrically-driven intelligent brake unit. Refer to <u>BR-288</u>, "Removal and <u>installation"</u>.

- YES (Past error)>>Error was detected in the electrically-driven intelligent brake unit branch line (CAN communication circuit 2 side).
- NO >> Repair the power supply and the ground circuit.

NO >> Repair the electrically-driven intelligent brake unit branch line (CAN communication circuit 2 side). Refer to LAN-31, "CAN COMMUNICATION SYSTEM : System Diagram".

## **EPS BRANCH LINE CIRCUIT**

< DTC/CIRCUIT DIAGNOS	SIS >		[CAN]
EPS BRANCH LINE	CIRCUIT		
Diagnosis Procedure			INFOID:00000008139593
1.CHECK CONNECTOR			
<ol> <li>Turn the ignition switch</li> <li>Disconnect the 12V batt</li> <li>Check the terminals an connection (unit side an</li> </ol>	OFF. ery cable from the negative d connectors of the power d connector side).	e terminal. steering control module fo	r damage, bend and loose
Is the inspection result norm YES >> GO TO 2. NO >> Repair the term 2.CHECK HARNESS FOR	<u>al?</u> nal and connector. OPEN CIRCUIT		
<ol> <li>Disconnect the connect</li> <li>Check the resistance be</li> </ol>	or of power steering control tween the power steering of	l module. control module harness con	nector terminals.
Power s	teering control module harness co	onnector	Posistance (O)
Connector No.	Termir	nal No.	Resistance (22)
E97	5	6	Approx. 54 – 66
Is the measurement value w YES >> GO TO 3. NO >> Repair the power <b>3.</b> CHECK POWER SUPPL	ithin the specification? If steering control module to AND GROUND CIRCUIT	oranch line. -	
Check the power supply and nosis Procedure".	I the ground circuit of the p	ower steering control modu	le. Refer to <u>STC-27, "Diag-</u>
Is the inspection result norm	<u>al?</u>		
YES (Present error)>>Rep • With heated s • Without heate	ace the power steering oil teering wheel: <u>ST-42, "Rem</u> d steering wheel: ST-69, "F	pump assembly. Refer to the noval and Installation" Removal and Installation"	e following.
YES (Past error)>>Error wa NO >> Repair the powe	as detected in the power st or supply and the ground ci	eering control module branc rcuit.	:h line.

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# **IPDM-E BRANCH LINE CIRCUIT**

## Diagnosis Procedure

1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the terminals and connectors of the IPDM E/R for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of IPDM E/R.

2. Check the resistance between the IPDM E/R harness connector terminals.

	$Posistanco\left(\Omega\right)$		
Connector No.	Terminal No.		
E6	40	39	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the IPDM E/R branch line.

**3.**CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the IPDM E/R. Refer to <u>PCS-28, "Diagnosis Procedure"</u>. <u>Is the inspection result normal?</u>

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-29, "Removal and Installation".

YES (Past error)>>Error was detected in the IPDM E/R branch line.

NO >> Repair the power supply and the ground circuit.

INFOID:000000008139594

## **STRG BRANCH LINE CIRCUIT**

< DTC/CIRCUIT DIAGNOS	ilS >		[CAN]
STRG BRANCH LIN	IE CIRCUIT		
Diagnosis Procedure			INF0ID:00000008139595
1.CHECK CONNECTOR			
1 Turn the ignition switch (	OFF		
2. Disconnect the 12V batt	ery cable from the negative	e terminal.	
<ol> <li>Check the following term</li> </ol>	ninals and connectors for d	lamage, bend and loose cor	nnection (unit side and con-
- Steering angle sensor			
<ul> <li>Harness connector M23</li> <li>CAN gateway</li> </ul>	and PCB harness side co	nnector	
Is the inspection result norm	al?		
YES >> GO TO 2.			
NO >> Repair the termi	nal and connector.		
<b>Z</b> .CHECK HARNESS CON	TINUITY (OPEN CIRCUIT	)	
1. Disconnect the connector	or of CAN gateway.	arness connector terminals	
	ween the OAN gateway ha		
	CAN gateway harness connector	r	Continuity
Connector No.	Termiı	nal No.	
M125	4	6	Existed
le the inerestion result norm		12	Existed
YES >> GO TO 3			
NO >> Check the harne	ess and repair or replace (i	if shield line is open) the roo	ot cause (CAN communica-
tion circuit 2 side	e). Refer to <u>LAN-31, "CAN</u>	COMMUNICATION SYSTE	<u>M : System Diagram"</u> .
<b>3.</b> CHECK HARNESS FOR	OPEN CIRCUIT		
1. Connect the connector of Disconnect the connector	of CAN gateway.		
3. Check the resistance be	tween the steering angle s	ensor harness connector te	erminals.
Connector No	Termi		Resistance ( $\Omega$ )
M37	1	2	Approx, 54 – 66
Is the measurement value w	ithin the specification?	-	
YES >> GO TO 4.			
NO >> GO TO 5.			
4.CHECK POWER SUPPLY	Y AND GROUND CIRCUIT	Γ	
Check the power supply and	d the ground circuit of the	steering angle sensor. Ref	er to BRC-59, "Wiring Dia-
<u>gram</u> . Is the inspection result norm	al?		
YES (Present error)>>Reol	ace the steering angle sen	sor. Refer to BRC-166. "Re	moval and Installation".
YES (Past error)>>Error wa	as detected in the steering	angle sensor branch line.	
NO >> Repair the powe	er supply and the ground ci	rcuit.	
<b>J.</b> CHECK HARNESS CON	TINUITY (OPEN CIRCUIT	)	

1. Disconnect the harness connector M23.

2. Check the continuity between the steering angle sensor harness connector and the harness connector.

## STRG BRANCH LINE CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

Steering angle sens	or harness connector	Harness connector		Continuity	
Connector No.	Terminal No.	Connector No. Terminal No.		Continuity	
M37	1	M22	134	Existed	
10137	2	IVIZ5	136	Existed	

Is the inspection result normal?

YES >> Replace the PCB harness.

NO >> Repair the harness between the steering angle sensor harness connector M37 and the harness connector M23.

## **ABS BRANCH LINE CIRCUIT**

[CAN]

ABS BRANCH LINE	CIRCUIT		
Diagnosis Procedure			INFOID:00000008139596
1.CHECK CONNECTOR			В
<ol> <li>Turn the ignition switch</li> <li>Disconnect the 12V batt</li> <li>Check the following term nector side).</li> <li>ABS actuator and electr</li> <li>CAN gateway</li> <li>Is the inspection result norm</li> <li>YES &gt;&gt; GO TO 2.</li> <li>NO &gt;&gt; Repair the termining</li> <li>CHECK HARNESS CON</li> <li>Disconnect the connector</li> <li>Check the continuity between</li> </ol>	OFF. ery cable from the negative ninals and connectors for d ic unit (control unit) <u>al?</u> inal and connector. TINUITY (OPEN CIRCUIT or of CAN gateway. tween the CAN gateway ha	e terminal. amage, bend and loose con ) arness connector terminals.	nection (unit side and con-
	CAN gateway harness connector	-	
Connector No.	Termir	nal No.	Continuity
M125	4	6	Existed
	10	12	Existed
YES >> GO TO 3. NO >> Check the harne tion circuit 2 side <b>3.</b> CHECK HARNESS FOR 1. Connect the connector of	ess and repair or replace (i e). Refer to <u>LAN-31, "CAN</u> OPEN CIRCUIT of CAN gateway.	f shield line is open) the roo COMMUNICATION SYSTE	t cause (CAN communica- <u>M : System Diagram"</u> . J
<ol> <li>Disconnect the connect</li> <li>Check the resistance be nals.</li> </ol>	or of ABS actuator and electronic electronic actuator a	ctric unit (control unit). Ind electric unit (control unit	) harness connector termi- K
ABS actuator a	and electric unit (control unit) hari	ness connector	Resistance ( $\Omega$ )
	22	9	 Approx, 54 – 66
Is the measurement value w YES >> GO TO 4. NO >> Repair the ABS 4.CHECK POWER SUPPL	ithin the specification? actuator and electric unit ( Y AND GROUND CIRCUIT	control unit) branch line.	LA
Check the power supply an BRC-138, "Diagnosis Proce	d the ground circuit of the dure".	ABS actuator and electric	unit (control unit). Refer to
Is the inspection result norm YES (Present error)>>Rep and Installation"	al? lace the ABS actuator and	electric unit (control unit). Re	Cefer to <u>BRC-163, "Removal</u>
YES (Past error)>>Error wa NO >> Repair the powe	as detected in the ABS actors of the sector	uator and electric unit (contro rcuit.	ol unit) branch line.

## AFS BRANCH LINE CIRCUIT

## Diagnosis Procedure

INFOID:000000008139597

[CAN]

### 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
- AFS control unit
- CAN gateway

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

**2.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Disconnect the connector of CAN gateway.
- 2. Check the continuity between the CAN gateway harness connector terminals.

	CAN gateway harness connector		
Connector No.	Terminal No.		Continuity
M125	4	6	Existed
WI125	10	12	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Check the harness and repair or replace (if shield line is open) the root cause (CAN communication circuit 2 side). Refer to <u>LAN-31, "CAN COMMUNICATION SYSTEM : System Diagram"</u>.

# **3.**CHECK HARNESS FOR OPEN CIRCUIT

- 1. Connect the connector of CAN gateway.
- 2. Disconnect the connector of AFS control unit.
- 3. Check the resistance between the AFS control unit harness connector terminals.

AFS control unit harness connector			Resistance (O)
Connector No.	Terminal No.		Resistance (22)
E104	30 7		Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.

NO >> Repair the AFS control unit branch line.

**4.**CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the AFS control unit. Refer to EXL-70, "AFS CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the AFS control unit. Refer to EXL-113, "Removal and Installation".

YES (Past error)>>Error was detected in the AFS control unit branch line.

NO >> Repair the power supply and the ground circuit.

## **ADP BRANCH LINE CIRCUIT**

DTC/CIRCUIT DIAGNOS	ilS >		[CAN]
ADP BRANCH LINE	CIRCUIT		
Diagnosis Procedure			INFOID:00000008139598
CHECK CONNECTOR			
CHECK CONNECTOR     Turn the ignition switch     Disconnect the 12V batily     Check the following terr     nector side).     Driver seat control unit     Harness connector B50     Harness connector B11     CAN gateway     sthe inspection result norm     YES >> GO TO 2.     NO >> Repair the term     CHECK HARNESS CON	OFF. ery cable from the negative ninals and connectors for da 1 <u>al?</u> nal and connector. TINUITY (OPEN CIRCUIT)	e terminal. amage, bend and loose co	nnection (unit side and con-
Disconnect the connect Check the continuity be	or of CAN gateway. ween the CAN gateway ha	rness connector terminals.	
	CAN gateway harness connector		Continuity
Connector No.	Termin	al No.	Evictod
M125	10	12	Existed
NO >> Check the harn tion circuit 2 sid CONNECK HARNESS FOR Connect the connector Disconnect the connect Check the resistance be	ess and repair or replace (if e). Refer to <u>LAN-31, "CAN (</u> OPEN CIRCUIT of CAN gateway. or of driver seat control unit	shield line is open) the roc COMMUNICATION SYSTE	ot cause (CAN communica- <u>M : System Diagram"</u> .
Connector No.	er sear control unit narness conne	al No.	Resistance ( $\Omega$ )
B514	23	24	Approx. 54 – 66
the measurement value w YES >> GO TO 4. NO >> Repair the drive	Ithin the specification? r seat control unit branch lir Y AND GROUND CIRCUIT		

## ICC BRANCH LINE CIRCUIT

## Diagnosis Procedure

1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
- ADAS control unit
- CAN gateway

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

**2.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Disconnect the connector of CAN gateway.
- 2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.		Continuity
M125	4	6	Existed
11/125	10	12	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Check the harness and repair or replace (if shield line is open) the root cause (CAN communication circuit 2 side). Refer to <u>LAN-31, "CAN COMMUNICATION SYSTEM : System Diagram"</u>.

# **3.**CHECK HARNESS FOR OPEN CIRCUIT

- 1. Connect the connector of CAN gateway.
- 2. Disconnect the connector of ADAS control unit.
- 3. Check the resistance between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Posistanco (O)
Connector No.	Terminal No.		Resistance (12)
B50	14	15	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.

NO >> Replace the body harness.

**4.**CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to <u>DAS-55, "Diagnosis Proce-</u> dure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-56, "Removal and Installation".

YES (Past error)>>Error was detected in the ADAS control unit branch line.

NO >> Repair the power supply and the ground circuit.

## **PSB BRANCH LINE CIRCUIT**

< DTC/CIRCUIT DIAGNOSIS >	
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## **PSB BRANCH LINE CIRCUIT**

**Diagnosis** Procedure

### 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
- Pre-crash seat belt control unit (driver side)
- CAN gateway

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

#### **2.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.

#### 2. Check the continuity between the CAN gateway harness connector terminals.

CAN gateway harness connector			Continuity	
Connector No.	Terminal No.		Continuity	
MADE	4	6	Existed	
IVI 125	10	12	Existed	

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Check the harness and repair or replace (if shield line is open) the root cause (CAN communication circuit 2 side). Refer to LAN-31, "CAN COMMUNICATION SYSTEM : System Diagram".

# **3.**CHECK HARNESS FOR OPEN CIRCUIT

- 1. Connect the connector of CAN gateway.
- 2. Disconnect the connector of pre-crash seat belt control unit (driver side).
- 3. Check the resistance between the pre-crash seat belt control unit (driver side) harness connector terminals.

Pre-crash seat belt control unit (driver side) harness connector			$Resistance\left(\Omega\right)$
Connector No.	Termi		
В9	14	4	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.

NO >> Repair the pre-crash seat belt control unit (driver side) branch line.

#### ${f 4}$ . CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the pre-crash seat belt control unit (driver side). Refer to <u>SBC-40, "Diagnosis Procedure"</u>.

#### Is the inspection result normal?

- YES (Present error)>>Replace the seat belt pre-tensioner retractor (driver side). Refer to <u>SB-7, "SEAT BELT</u> <u>RETRACTOR : Removal and Installation"</u>.
- YES (Past error)>>Error was detected in the pre-crash seat belt control unit (driver side) branch line.
- NO >> Repair the power supply and the ground circuit.

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## **RDR-L BRANCH LINE CIRCUIT**

< DTC/CIRCUIT DIAGNOSIS >

## **RDR-L BRANCH LINE CIRCUIT**

### Diagnosis Procedure

1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the terminals and connectors of the side radar LH for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

## 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect the connector of side radar LH.
- 2. Check the resistance between the side radar LH harness connector terminals.

	Posistanco (O)		
Connector No.	Termi		
B52	4	3	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the side radar LH branch line.

## **3.**CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar LH. Refer to <u>DAS-524, "SIDE RADAR LH :</u> <u>Diagnosis Procedure"</u>.

Is the inspection result normal?

YES (Present error)>>Replace the side radar LH. Refer to DAS-541, "Removal and Installation".

YES (Past error)>>Error was detected in the side radar LH branch line.

NO >> Repair the power supply and the ground circuit.

INFOID:000000008139601

## **RDR-R BRANCH LINE CIRCUIT**

< DTC/CIRCUIT DIAGNOS	SIS >		[CAN]
RDR-R BRANCH L	INE CIRCUIT		
Diagnosis Procedure			INF01D:00000008139602
1.CHECK CONNECTOR			
<ol> <li>Turn the ignition switch</li> <li>Disconnect the 12V bat</li> <li>Check the terminals an side and connector side</li> </ol>	OFF. tery cable from the negative d connectors of the side ra e).	e terminal. dar RH for damage, bend	and loose connection (unit
s the inspection result norm YES >> GO TO 2. NO >> Repair the term	<u>ial?</u> inal and connector.		
2.CHECK RIGHT/LEFT SV	VITCHING SIGNAL CIRCU		
s the inspection result norm	j signal circuit of the side ra <u>ial?</u>	idar RH. Refer to <u>DAS-527.</u>	<u>"Diagnosis Procedure"</u> .
YES >> GO TO 3. NO >> Repair the root	Cause.		
<ol> <li>Disconnect the connect</li> <li>Check the resistance be</li> </ol>	or of side radar RH. wween the side radar RH ha	arness connector terminals	
Connector No.	Termin	al No.	Resistance ( $\Omega$ )
B252	4	3	Approx. 54 – 66
s the measurement value w	vithin the specification?		
YES >> GO TO 4. NO >> Repair the side <b>1.</b> CHECK POWER SUPPL	radar RH branch line. Y AND GROUND CIRCUIT		
Check the power supply an <u>Diagnosis Procedure"</u> . s the inspection result norm	d the ground circuit of the s	ide radar RH. Refer to <u>DA</u>	S-525, "SIDE RADAR RH :
YES (Present error)>>Rep YES (Past error)>>Error w NO >> Repair the powe	lace the side radar RH. Ref as detected in the side rada er supply and the ground cir	er to <u>DAS-541, "Removal a</u> Ir RH branch line. rcuit.	nd Installation".

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## APA BRANCH LINE CIRCUIT

## **Diagnosis Procedure**

INFOID:000000008139603

[CAN]

### **1.**CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
- Accelerator pedal actuator
- Harness connector M151
- Harness connector M150
- Harness connector M23 and PCB harness side connector

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect the connector of accelerator pedal actuator.
- 2. Check the resistance between the accelerator pedal actuator harness connector terminals.

Accel	Posistanco (O)		
Connector No.	Terminal No.		
M152	5	4	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> GO TO 4.

 ${
m 3.}$  CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the accelerator pedal actuator. Refer to <u>DAS-183, "ACCEL-</u> <u>ERATOR PEDAL ACTUATOR : Diagnosis Procedure"</u>.

Is the inspection result normal?

YES (Present error)>>Replace the accelerator pedal assembly. Refer to <u>ACC-4, "MODELS WITH DIS-</u> <u>TANCE CONTROL ASSIST SYSTEM : Removal and Installation"</u>.

- YES (Past error)>>Error was detected in the accelerator pedal actuator branch line.
- NO >> Repair the power supply and the ground circuit.

**4.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M23.

2. Check the continuity between the accelerator pedal actuator harness connector and the harness connector.

Accelerator pedal actu	ator harness connector	Harness connector		Continuity
Connector No.	Terminal No.	Connector No. Terminal No.		Continuity
M152	5		138	Existed
WIT32	4	IVI25	137	Existed

#### Is the inspection result normal?

YES >> Replace the PCB harness.

NO >> Repair the harness between the accelerator pedal actuator harness connector M152 and the harness connector M23.

## LANE BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAC	GNOSIS >			[CAN]
LANE BRANCH	LINE CIRCUIT	Г		
Diagnosis Proced	ure			INFOID:00000008139604
1.CHECK CONNECT	OR			
<ol> <li>Turn the ignition s<sup>a</sup></li> <li>Disconnect the 12</li> <li>Check the followin nector side).</li> <li>Lane camera unit</li> <li>Harness connecto</li> <li>Harness connecto</li> <li>Harness connecto</li> </ol>	witch OFF. V battery cable from t g terminals and conne r R7 r M110 r M24 and PCB harne	he negative terminal. ectors for damage, be ess side connector	end and loose connec	tion (unit side and con-
Is the inspection resultYES>> GO TO 2.NO>> Repair the	normal? terminal and connect	or.		
Z.CHECK HARNESS	FOR OPEN CIRCUIT	Γ		
<ol> <li>Disconnect the co</li> <li>Check the resistar</li> </ol>	nnector of lane camer ace between the lane	a unit. camera unit harness	connector terminals.	
	Lane camera unit har	ness connector		Resistance (0)
Connector No.		Terminal No.		
R8	4		8	Approx. 54 – 66
YES >> GO TO 3. NO >> GO TO 4. <b>3.</b> CHECK POWER S	UPPLY AND GROUN	ation? D CIRCUIT		
Check the power supp	ly and the ground cire	cuit of the lane came	ra unit. Refer to <u>DAS</u>	-365, "LANE CAMERA
Is the inspection result YES (Present error)> YES (Past error)>>Er NO >> Repair the 4-CHECK HARNESS	normal? >Replace the lane can ror was detected in th power supply and the CONTINUITY (OPEN	mera unit. Refer to <u>D</u> le lane camera unit b e ground circuit.	A <u>S-381, "Removal an</u> ranch line.	d Installation".
1 Disconnect the ha	rness connector M24			
2. Check the continu	ity between the lane c	amera unit harness c	connector and the har	ness connector.
Lane camera unit	harness connector	Harness	connector	Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
R8	4	M24	179	Existed
	8		178	Existed

Is the inspection result normal?

YES >> Replace the PCB harness.

NO >> Repair the harness between the lane camera unit harness connector R8 and the harness connector M24.

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# LASER BRANCH LINE CIRCUIT

## Diagnosis Procedure

1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
- ICC sensor
- Harness connector E106
- Harness connector M6
- Harness connector M28 and PCB harness side connector

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ICC sensor.

2. Check the resistance between the ICC sensor harness connector terminals.

ICC sensor harness connector			$Resistance\left( \mathbf{O}\right)$
Connector No.	Termi		
E67	3	6	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> GO TO 4.

 $\mathbf{3.}$  CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ICC sensor. Refer to <u>CCS-150, "ICC SENSOR : Diagno-</u> sis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ICC sensor. Refer to CCS-168, "Removal and Installation".

YES (Past error)>>Error was detected in the ICC sensor branch line.

NO >> Repair the power supply and the ground circuit.

#### **4.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M28.

2. Check the continuity between the ICC sensor harness connector and the harness connector.

ICC sensor ha	rness connector	Harness connector		Continuity
Connector No.	Terminal No.	Connector No. Terminal No.		Continuity
E67	3	M28	343	Existed
207	6	ινίζο	345	Existed

Is the inspection result normal?

YES >> Replace the PCB harness.

NO >> Repair the harness between the ICC sensor harness connector E67 and the harness connector M28.

# **INV/MC BRANCH LINE CIRCUIT**

< DTC/CIRCUIT DIAGNOS	IS >		[CAN]
INV/MC BRANCH L	INE CIRCUIT		
Diagnosis Procedure			INFOID:00000008139606
1.CHECK CONNECTOR			
<ol> <li>Turn the ignition switch 0</li> <li>Disconnect the 12V batters</li> <li>Check the terminals and (unit side and connector)</li> </ol>	DFF. ery cable from the negative connectors of the traction i side).	terminal. motor inverter for damage,	bend and loose connection
Is the inspection result normative YES >> GO TO 2. NO >> Repair the termin <b>2.</b> CHECK HARNESS FOR	<u>או?</u> nal and connector. OPEN CIRCUIT		
<ol> <li>Disconnect the connector</li> <li>Check the resistance be</li> </ol>	r of traction motor inverter. tween the traction motor inv	verter harness connector to	erminals.
Tract	ion motor inverter harness conne	ctor	Resistance (O)
Connector No.	Termina	al No.	
E78	9	28	Approx. 54 – 66
Is the measurement value wi YES >> GO TO 3. NO >> Repair the traction <b>3.</b> CHECK POWER SUPPL`	thin the specification? on motor inverter branch lin 7 AND GROUND CIRCUIT	e.	
Check the power supply and cedure". Is the inspection result norma YES (Present error)>>Repla YES (Past error)>>Error wa NO >> Repair the powe	the ground circuit of the tra al? ace the traction motor inver is detected in the traction m r supply and the ground cir	ction motor inverter. Refer ter. Refer to <u>TMS-121, "Re</u> notor inverter branch line. cuit.	to <u>TMS-53, "Diagnosis Pro-</u> emoval and Installation".

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## TCM BRANCH LINE CIRCUIT

## Diagnosis Procedure

INFOID:000000008139607

[CAN]

### 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
- A/T assembly
- Harness connector F103
- Harness connector M116
- Harness connector M28 and PCB harness side connector

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of A/T assembly.

2. Check the resistance between the A/T assembly harness connector terminals.

	$Resistance\left( \mathbf{O}\right)$		
Connector No.	Termi		
F61	3	8	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> GO TO 4.

#### ${ m 3.}$ Check power supply and ground circuit

Check the power supply and the ground circuit of the TCM. Refer to <u>TM-158, "Diagnosis Procedure"</u>. <u>Is the inspection result normal?</u>

YES (Present error)>>Replace the control valve &TCM. Refer to <u>TM-13</u>, <u>"A/T CONTROL SYSTEM : Compo-</u> <u>nent Parts Location"</u>. (Replace A/T assembly if control valve &TCM is not listed in the latest parts list.)

YES (Past error)>>Error was detected in the TCM branch line.

NO >> Repair the power supply and the ground circuit.

#### **4.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M28.

2. Check the continuity between the A/T assembly harness connector and the harness connector.

A/T assembly h	arness connector	Harness connector           Connector No.         Terminal No.		Continuity
Connector No.	Terminal No.			Continuity
E61	3	MOR	341	Existed
FOI	8	IVIZO	342	Existed

#### Is the inspection result normal?

YES >> Replace the PCB harness.

NO >> Repair the harness between the A/T assembly harness connector F61 and the harness connector M28.

## **E-OP BRANCH LINE CIRCUIT**

< DTC/CIRCUIT DIAGNOSIS >			[CAN]
E-OP BRANCH LINE (	CIRCUIT		
Diagnosis Procedure			INFOID:00000008139608
1.CHECK CONNECTOR			
<ol> <li>Turn the ignition switch OFF.</li> <li>Disconnect the 12V battery of 3. Check the terminals and connection (unit side and connection)</li> </ol>	able from the negative nectors of the sub elect ctor side).	terminal. ric oil pump inverter for da	amage, bend and loose con-
Is the inspection result normal?YES>> GO TO 2.NO>> Repair the terminal a	and connector.		
2. CHECK HARNESS FOR OPE	EN CIRCUIT		
<ol> <li>Disconnect the connector of</li> <li>Check the resistance between</li> </ol>	sub electric oil pump inv an the sub electric oil pu	verter. Imp inverter harness conn	ector terminals.
Sub electric o	il pump inverter harness con	nector	Resistance ( $\Omega$ )
Connector No.	Termina	ll No.	
	4	0	Appi0x. 54 – 66
YES >> GO TO 3. NO >> Repair the sub elect <b>3.</b> CHECK POWER SUPPLY AN	ric oil pump inverter brai	nch line.	
Check the power supply and the sis Procedure".	ground circuit of the sub	o electric oil pump inverter	Refer to <u>TM-160, "Diagno-</u>
<u>Is the inspection result normal?</u> YES (Present error)>>Replace <u>tion"</u> . YES (Past error)>>Error was de NO >> Repair the power su	the sub electric oil pur etected in the sub electri pply and the ground circ	np inverter. Refer to <u>TM-1</u> ic oil pump inverter brancl cuit.	1 <u>88, "Removal and Installa-</u> n line.

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## **HV BAT BRANCH LINE CIRCUIT**

INFOID:000000008139609

[CAN]

#### WARNING:

- Because hybrid vehicles and electric vehicles contain a high voltage battery, there is the risk of electric shock, electric leakage, or similar accidents if the high voltage component and vehicle are handled incorrectly. Be sure to follow the correct work procedures when performing inspection and maintenance.
- Be sure to remove the service plug in order to shut off the high voltage circuits before performing inspection or maintenance of high voltage system harnesses and parts.
- Be sure to put the removed service plug in your pocket and carry it with you so that another person does not accidentally connect it while work is in progress.
- Be sure to wear insulating protective equipment consisting of glove, shoes and glasses before beginning work on the high voltage system.
- Clearly identify the persons responsible for high voltage work and ensure that other persons do not touch the vehicle. When not working, cover high voltage parts with an insulating cover sheet or similar item to prevent other persons from contacting them.
- Refer to LAN-25, "High Voltage Precautions".

#### CAUTION:

There is the possibility of a malfunction occurring if the vehicle is changed to READY status while the service plug is removed. Therefore do not change the vehicle to READY status unless instructed to do so in the Service Manual.

1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the terminals and connectors of the Li-ion battery for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

- YES >> GO TO 2.
- NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect the connector of Li-ion battery.
- 2. Check the resistance between the Li-ion battery harness connector terminals.

Li-ion battery harness connector			Resistance (O)
Connector No.	Terminal No.		
B160	3	15	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Replace the body harness.

**3.**PRECONDITIONING

#### WARNING:

Shut off high voltage circuit. Refer to GI-30, "How to Cut Off High Voltage".

Check voltage in high voltage circuit. (Check that condenser are discharged.)

1. Remove trunk finisher front. Refer to <u>INT-51, "Exploded View"</u>.

#### < DTC/CIRCUIT DIAGNOSIS >

- 2. Remove harness cover (1).
  - DANGER:

Touching high voltage components without using the appropriate protective equipment will cause electrocution.





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3. Measure voltage between high voltage harness terminals.

Standard

: 5 V or less

## DANGER:

Touching high voltage components without using the appropriate protective equipment will cause electrocution.



**CAUTION:** For voltage measurements, use a tester which can measure to 500 V or higher.

>> GO TO 4.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Li-ion battery controller. Refer to <u>HBB-184, "LI-ION BAT-</u> TERY CONTROLLER : Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair the power supply and the ground circuit.

5.CHECK HARNESS FOR OPEN CIRCUIT

- 1. Remove Li-ion battery controller. Refer to <u>HBB-200</u>, "LI-ION BATTERY CONTROLLER : Disassembly and <u>Assembly</u>".
- Check the continuity between vehicle communication harness (harness between Li-ion battery harness connector side and Li-ion battery controller side) connector terminals. Refer to <u>HBB-23</u>, "Circuit Diagram".

			LAN
Vehicle commun	ication harness		
Li-ion battery harness connector side	Li-ion battery controller side	Continuity	
Terminal No.	Terminal No.		Ν
3	1	Existed	
15	13	Existed	0

Is the measurement value within the specification?

YES (Present error)>>Replace the Li-ion battery controller. Refer to <u>HBB-200. "LI-ION BATTERY CON-</u> <u>TROLLER : Disassembly and Assembly"</u>.

YES (Past error)>>Error was detected in the Li-ion battery controller branch line.

NO >> Repair the vehicle communication harness.

## **CAN COMMUNICATION CIRCUIT 1**

< DTC/CIRCUIT DIAGNOSIS >

# **CAN COMMUNICATION CIRCUIT 1**

### **Diagnosis Procedure**

**1**.CONNECTOR INSPECTION

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Disconnect all the unit connectors on CAN communication circuit 1.
  - NOTE:

For identification of CAN communication circuit 1, CAN communication circuit 2, ITS communication circuit, and HEV system CAN circuit, refer to <u>LAN-31</u>, <u>"CAN COMMUNICATION SYSTEM : System Dia-</u> <u>gram"</u>.

4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2. CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		Continuity
M182	6	14	Not existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Check the harness and repair or replace (if shield line or PCB harness is short) the root cause.

## **3.**CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector			Continuity
Connector No.	Terminal No.	Cround	Continuity
M182	6	Giouna	Not existed
	14	1	Not existed

Is the inspection result normal?

YES >> GO TO 4.

NO >> Check the harness and repair or replace (if shield line or PCB harness is short) the root cause.

**4.**CHECK ECM AND IPDM E/R TERMINATION CIRCUIT

1. Remove the ECM and the IPDM E/R.

2. Check the resistance between the ECM terminals.

ECM		Resistance (Ω)
Terminal No.		
114	113	Approx. 108 – 132

3. Check the resistance between the IPDM E/R terminals.

IPDM E/R		Resistance (0)	
Terminal No.			
40	39	Approx. 108 – 132	

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.
# **CAN COMMUNICATION CIRCUIT 1**

#### < DTC/CIRCUIT DIAGNOSIS >

#### 5. СНЕСК ЗҮМРТОМ А Connect all the connectors. Check if the symptoms described in the "Symptom (Results from interview with customer)" are reproduced. Inspection result В Reproduced>>GO TO 6. Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected. С 6. CHECK UNIT REPRODUCTION Perform the reproduction test as per the following procedure for each unit. Turn the ignition switch OFF. D 1. Disconnect the 12V battery cable from the negative terminal. 2. 3. Disconnect one of the unit connectors of CAN communication circuit 1. NOTE: Е ECM and IPDM E/R have a termination circuit. Check other units first. 4. Connect the 12V battery cable to the negative terminal. Check if the symptoms described in the "Symptom (Results from interview with customer)" are reproduced. F NOTE: Although unit-related error symptoms occur, do not confuse them with other symptoms. Inspection result Reproduced>>Connect the connector. Check other units as per the above procedure. Non-reproduced>>Replace the unit whose connector was disconnected. Н

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# CAN COMMUNICATION CIRCUIT 2

# Diagnosis Procedure

INFOID:000000008139611

[CAN]

## **1.**CHECK CAN DIAGNOSIS

Check the CAN diagnosis results from CONSULT to see that the CAN communication circuit 1 has no malfunction.

#### NOTE:

For identification of CAN communication circuit 1, CAN communication circuit 2, ITS communication circuit, and HEV system CAN circuit, refer to <u>LAN-31</u>, "CAN COMMUNICATION SYSTEM : System Diagram".

Is the CAN communication circuit 1 normal?

YES >> GO TO 2.

NO >> Check and repair CAN communication circuit 1.

2.CONNECTOR INSPECTION

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
- CAN gateway
- Harness connector M23 and PCB harness side connector

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the terminal and connector.

# **3.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of CAN gateway.

2. Check the continuity between the CAN gateway harness connector terminals.

	CAN gateway harness connector				
Connector No.	Termi	Continuity			
M125	4	6	Existed		
WIZS	10	12	Existed		

Is the inspection result normal?

YES >> GO TO 5.

NO >> GO TO 4.

**4.**CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

1. Disconnect the harness connector M23.

2. Check the continuity between the CAN gateway harness connector and the harness connector.

CAN gateway h	arness connector	Harness connector Connector No. Terminal No.		Continuity
Connector No.	Terminal No.			Continuity
M125	4	MOO	133	Existed
101125	10	IVIZ3	135	Existed

#### Is the inspection result normal?

YES >> Replace the PCB harness.

NO >> Repair the harness between the CAN gateway harness connector M125 and the harness connector M23.

# **5.**CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

1. Disconnect all the unit connectors on CAN communication circuit 2.

2. Check the continuity between the CAN gateway harness connector terminals.

# **CAN COMMUNICATION CIRCUIT 2**

#### < DTC/CIRCUIT DIAGNOSIS >

[CAN]

CAN gateway harness connector		Continuity	
Connector No.	Termin	Terminal No.	
M125	4	10	Not existed
Is the measurement value w YES >> GO TO 6. NO >> Check the harm 6.CHECK HARNESS CON	vithin the specification? ess and repair or replace the ITINUITY (SHORT CIRCUIT	e root cause.	
	in the CAN gateway names	s connector and the grou	
CAN gateway h	arness connector		Continuity
Connector No.	Terminal No.	Ground	,
M125	4		Not existed
	10		Not existed
<ol> <li>Remove the CAN gatev</li> <li>Check the resistance be</li> </ol>	/ay. htween the CAN gateway ter	rminals.	
(	JAN gateway		Resistance ( $\Omega$ )
			Approx 108 - 122
6	10		Approx. 108 – 132 Approx. 108 – 132
Is the measurement value w	vithin the specification?		
YES >> GO TO 8. NO >> Replace the CA 8.CHECK SYMPTOM	N gateway.		
Connect all the connectors. customer)" are reproduced. Inspection result Reproduced>>GO TO 9. Non-reproduced>>Start th	Check if the symptoms de e diagnosis again. Follow	scribed in the "Symptom the trouble diagnosis p	(Results from interview wit
detected. 9.CHECK UNIT REPRODU	JCTION		
<ul> <li>Perform the reproduction ter</li> <li>1. Turn the ignition switch</li> <li>2. Disconnect the 12V bat</li> <li>3. Disconnect one of the university o</li></ul>	st as per the following proce OFF. tery cable from the negative nit connectors of CAN comr ermination circuits. Check o y cable to the negative tern riew with customer)" are rep	edure for each unit. terminal. munication circuit 2. ther units first. ninal. Check if the sympt roduced.	toms described in the "Symp
Inspection result			aymptoma.
Reproduced>>Connect the Non-reproduced>>Replace	connector. Check other un the unit whose connector v	its as per the above proc was disconnected.	edure.

# **ITS COMMUNICATION CIRCUIT**

## < DTC/CIRCUIT DIAGNOSIS >

# **ITS COMMUNICATION CIRCUIT**

# Diagnosis Procedure

INFOID:000000008139612

[CAN]

## **1.**CHECK CAN DIAGNOSIS

Check the CAN diagnosis results from CONSULT to see that the CAN communication circuit 1 and CAN communication circuit 2 have no malfunction.

#### NOTE:

For identification of CAN communication circuit 1, CAN communication circuit 2, ITS communication circuit, and HEV system CAN circuit, refer to LAN-31, "CAN COMMUNICATION SYSTEM : System Diagram".

Are the CAN communication 1 and CAN communication 2 circuits normal?

YES >> GO TO 2.

NO >> Check and repair CAN communication circuit 1 and/or CAN communication circuit 2.

# 2.connector inspection

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the terminals and connectors of the ADAS control unit for damage, bend and loose connection (unit side and connector side).

#### Is the inspection result normal?

- YES >> GO TO 3.
- NO >> Repair the terminal and connector.

# **3.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Disconnect the following harness connectors.
- ADAS control unit
- ICC sensor
- Check the continuity between the ADAS control unit harness connector and the ICC sensor harness connector.

ADAS control uni	t harness connector	ICC sensor harness connector Connector No. Terminal No.		Continuity	
Connector No.	Terminal No.				
<b>B</b> 50	7	<b>F</b> 67	3	Existed	
600	8	207	6	Existed	

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Replace the body harness.

#### **4.**CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

- 1. Disconnect the following harness connectors.
- Side radar LH
- Side radar RH
- Accelerator pedal actuator
- Lane camera unit
- 2. Check the continuity between the ADAS control unit harness connector terminals.

A	Continuity		
Connector No.	Termi	Continuity	
B50	7	8	Not existed

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Check the harness and repair or replace (if shield line or PCB harness is short) the root cause.

 $\mathbf{5.}$ CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the ADAS control unit harness connector and the ground.

# **ITS COMMUNICATION CIRCUIT**

#### < DTC/CIRCUIT DIAGNOSIS >

[CAN]

ADAS control unit I	narness connector		
Connector No.	Terminal No.	- Crown d	Continuity
DE0	7	_ Ground	Not existed
600	8	_	Not existed
Is the inspection result norm.         YES       >> GO TO 6.         NO       >> Check the harne         6.CHECK TERMINATION COLSPANE	<u>al?</u> ess and repair or replace CIRCUIT	(if shield line or PCB harnes	s is short) the root cause.
<ol> <li>Remove the ADAS contract.</li> <li>Check the resistance be</li> </ol>	rol unit and the ICC sense tween the ADAS control	or. unit terminals.	
AD	AS control unit		Desistance (O)
1	erminal No.		Resistance (12)
7	8	Aţ	oprox. 108 – 132
3. Check the resistance be	tween the ICC sensor ter	minals.	
	ICC sensor		Resistance (O)
1	erminal No.		
3	6	Ap	oprox. 108 – 132
NO >> Replace the AD/ 7.CHECK SYMPTOM Connect all the connectors. customer)" are reproduced. Inspection result Reproduced>>GO TO 8. Non-reproduced>>Start the detected.	AS control unit and/or the Check if the symptoms of e diagnosis again. Follow	e ICC sensor. described in the "Symptom w the trouble diagnosis pro	(Results from interview with
8.CHECK UNIT REPRODU Perform the reproduction tes 1. Turn the ignition switch (	CTION t as per the following pro DFF.	cedure for each unit.	
<ol> <li>Disconnect the 12V batters</li> <li>Disconnect one of the ur NOTE:</li> </ol>	ery cable from the negati nit connectors of ITS com	ve terminal. Imunication circuit.	
<ul> <li>ADAS control unit and IC</li> <li>Connect the 12V battery tom (Results from intervi NOTE:</li> </ul>	CC sensor have a termina cable to the negative te iew with customer)" are re	ation circuit. Check other uni erminal. Check if the sympto eproduced.	ts first. ms described in the "Symp-
Although unit-related err Inspection result	or symptoms occur, do n	ot confuse them with other s	ymptoms.
Reproduced>>Connect the Non-reproduced>>Replace	the unit whose connecto	r was disconnected.	aure.

#### < DTC/CIRCUIT DIAGNOSIS >

# HEV SYSTEM CAN CIRCUIT

## **Diagnosis** Procedure

INFOID:000000008139613

[CAN]

#### WARNING:

- Because hybrid vehicles and electric vehicles contain a high voltage battery, there is the risk of electric shock, electric leakage, or similar accidents if the high voltage component and vehicle are handled incorrectly. Be sure to follow the correct work procedures when performing inspection and maintenance.
- Be sure to remove the service plug in order to shut off the high voltage circuits before performing inspection or maintenance of high voltage system harnesses and parts.
- Be sure to put the removed service plug in your pocket and carry it with you so that another person does not accidentally connect it while work is in progress.
- Be sure to wear insulating protective equipment consisting of glove, shoes and glasses before beginning work on the high voltage system.
- Clearly identify the persons responsible for high voltage work and ensure that other persons do not touch the vehicle. When not working, cover high voltage parts with an insulating cover sheet or similar item to prevent other persons from contacting them.
- Refer to LAN-25, "High Voltage Precautions".

#### CAUTION:

There is the possibility of a malfunction occurring if the vehicle is changed to READY status while the service plug is removed. Therefore do not change the vehicle to READY status unless instructed to do so in the Service Manual.

**1.**PRECONDITIONING

#### WARNING:

Shut off high voltage circuit. Refer to GI-30, "How to Cut Off High Voltage".

- Check voltage in high voltage circuit. (Check that condenser are discharged.)
- 1. Remove trunk finisher front. Refer to INT-51, "Exploded View".
- 2. Remove harness cover (1).

#### DANGER:

Touching high voltage components without using the appropriate protective equipment will cause electrocution.





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3. Measure voltage between high voltage harness terminals.

#### Standard

: 5 V or less

### DANGER:

Touching high voltage components without using the appropriate protective equipment will cause electrocution.

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#### CAUTION:

For voltage measurements, use a tester which can measure to 500 V or higher.

>> GO TO 2.

2.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.

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# **HEV SYSTEM CAN CIRCUIT**

< DTC/CIRCUIT DIAGNOSIS >

- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Disconnect all the control unit connectors on HEV system CAN circuit. For the removal of Li-ion battery

controller, refer to <u>HBB-200, "LI-ION BATTERY CONTROLLER : Disassembly and Assembly"</u>. **NOTE:** 

For identification of CAN communication circuit 1, CAN communication circuit 2, ITS communication circuit, and HEV system CAN circuit, refer to <u>LAN-31</u>, <u>"CAN COMMUNICATION SYSTEM : System Dia-</u><u>gram"</u>.

4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the terminal and connector.

**3.**CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

				E
	Data link connector		Continuity	
Connector No.	Termi	Continuity		
M182	13	12	Not existed	F

Is the inspection result normal?

YES >> GO TO 4.

NO >> Check the harness and repair or replace (if shield line or PCB harness is short) the root cause.

**4.**CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector			Continuity
Connector No.	Terminal No.	Ground	Fround
M182	13	Ground	Not existed
	12		Not existed

Is the inspection result normal?

YES >> GO TO 5.

NO >> Check the harness and repair or replace (if shield line or PCB harness is short) the root cause.

 ${f 5.}$  CHECK ECM AND LI-ION BATTERY CONTROLLER TERMINATION CIRCUIT

1. Remove the ECM.

2. Check the resistance between the ECM terminals.

ECM		Resistance (0)	
Terminal No.			LAN
55 54		Approx. 108 – 132	

 Remove the Li-ion battery controller. Refer to <u>HBB-200</u>, "LI-ION BATTERY CONTROLLER : <u>Disassembly</u> and <u>Assembly</u>".

4. Check the resistance between the Li-ion battery controller terminals.

0	Posistanco (O)	Li-ion battery controller	
		Terminal No.	
Р	Approx. 108 – 132	13	1

Is the measurement value within the specification?

YES >> GO TO 6.

NO >> Replace the ECM and/or the Li-ion battery controller.

**6.**CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the "Symptom (Results from interview with customer)" are reproduced.

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< DTC/CIRCUIT DIAGNOSIS >

#### Inspection result

Reproduced>>GO TO 7.

Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

## **7.**CHECK CONTROL UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each control unit.

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Disconnect one of the control unit connectors of HEV system CAN circuit.
- NOTE:

ECM and Li-ion battery controller have a termination circuit. Check other control units first.

Connect the 12V battery cable to the negative terminal. Check if the symptoms described in the "Symptom (Results from interview with customer)" are reproduced.
 NOTE:

Although control unit-related error symptoms occur, do not confuse them with other symptoms.

#### Inspection result

Reproduced>>Connect the connector. Check other control units as per the above procedure. Non-reproduced>>Replace the control unit whose connector was disconnected.

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# < PRECAUTION > PRECAUTION PRECAUTIONS

Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER", used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the "SRS AIR BAG" and "SEAT BELT" of this Service Manual.

#### WARNING:

Always observe the following items for preventing accidental activation.

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision that would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see "SRS AIR BAG".
- Never use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.

#### PRECAUTIONS WHEN USING POWER TOOLS (AIR OR ELECTRIC) AND HAMMERS

#### WARNING:

Always observe the following items for preventing accidental activation.

- When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the ignition ON or engine running, never use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.
- When using air or electric power tools or hammers, always switch the ignition OFF, disconnect the 12V battery, and wait at least 3 minutes before performing any service.
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# < SYSTEM DESCRIPTION > SYSTEM DESCRIPTION

COMPONENT PARTS

**Component Parts Location** 

INFOID:000000008139615



- 1. CAN gateway
- A. Over the glove box

# SYSTEM

# < SYSTEM DESCRIPTION >

# SYSTEM



• This system selects and transmits only necessary information.

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[CAN GATEWAY]

# **DIAGNOSIS SYSTEM (CAN GATEWAY)**

#### < SYSTEM DESCRIPTION >

# DIAGNOSIS SYSTEM (CAN GATEWAY)

# **CONSULT** Function

INFOID:000000008139617

[CAN GATEWAY]

#### APPLICATION ITEM

CONSULT performs the following functions via CAN communication with CAN gateway.

Diagnosis mode	Function Description
Ecu Identification	The CAN gateway part number is displayed.
Self Diagnostic Result	Displays the diagnosis results judged by CAN gateway.
CAN Diag Support Monitor	The results of transmit/receive diagnosis of CAN communication can be read.
Configuration	<ul><li>Read and save the vehicle specification.</li><li>Write the vehicle specification when replacing CAN gateway.</li></ul>

SELF DIAGNOSTIC RESULT

Refer to LAN-121, "DTC Index".

# ECU DIAGNOSIS INFORMATION CAN GATEWAY

## **Reference Value**

### **TERMINAL LAYOUT**



# PHYSICAL VALUES

Termi	nal No.	Description					
(Wire +	e color) —	Signal name	Input/ Output	Condition	Standard	Reference value	(
1 (L)	_	CAN-H (CAN commu- nication circuit 1)	Input/ Output	—	_		-
3 (GR)	5 (B) 11 (B)	Battery power supply	Input	Ignition switch OFF	6 – 16 V	Battery voltage	-
4 (L)	_	CAN-H (CAN commu- nication circuit 2)	Input/ Output	_	—		-
6 (L)	_	CAN-H (CAN commu- nication circuit 2)	Input/ Output	_	_	_	
7 (P)	_	CAN-L (CAN commu- nication circuit 1)	Input/ Output	_	—		
9 (W)	5 (B) 11 (B)	Ignition power supply	Input	Ignition switch ON	4.5 – 16 V	Battery voltage	-
10 (P)	_	CAN-L (CAN commu- nication circuit 2)	Input/ Output	—	—	_	- L/
12 (P)	_	CAN-L (CAN commu- nication circuit 2)	Input/ Output	_	_		-

# DTC Inspection Priority Chart

If some DTCs are displayed at the same time, perform inspections one by one based on the following priority chart.

Priority	DTC	
1	<ul><li>B2600: CONFIG ERROR</li><li>U1010: CONTROL UNIT(CAN)</li></ul>	Ρ
2	U1000: CAN COMM CIRCUIT	

# DTC Index

#### NOTE:

• The details of time display are as follows.

INFOID:000000008139620

INFOID:000000008139619

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INFOID:000000008139618

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# CAN GATEWAY

#### < ECU DIAGNOSIS INFORMATION >

- CRNT: A malfunction is detected now
- PAST: A malfunction was detected in the past.
- IGN counter is displayed on FFD (Freeze Frame Data).
- The number is 0 when is detected now
- The number increases like 1  $\rightarrow$  2  $\cdots$  38  $\rightarrow$  39 after returning to the normal condition whenever IGN OFF  $\rightarrow$  ON.

- The number is fixed to 39 until the self-diagnosis results are erased if it is over 39.

DTC	;	Reference
No DTC is detected. Further testing may be requir	ed.	_
U1000: CAN COMM CIRCUI	Т	LAN-126
U1010: CONTROL UNIT(CA	N)	LAN-127
	WRONG DATA	L AN-128
B2000. CONING ERROR	NOT CONFIGURED	

INFOID:000000008139621

# WIRING DIAGRAM CAN GATEWAY SYSTEM

# Wiring Diagram

For connector terminal arrangements, harness layouts, and alphabets in a  $\bigcirc$  (option abbreviation; if not described in wiring diagram), refer to <u>GI-13, "Connector Information"</u>.



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CAN GATEWAY SYSTEM

# ADDITIONAL SERVICE WHEN REPLACING CAN GATEWAY

< BASIC INSPECTION >

# BASIC INSPECTION

# ADDITIONAL SERVICE WHEN REPLACING CAN GATEWAY

Description

INFOID:000000008139622

[CAN GATEWAY]

#### **BEFORE REPLACEMENT**

When replacing CAN gateway, save or print current vehicle specification with CONSULT configuration before replacement.

#### NOTE:

If "Before Replace ECU" of "Read / Write Configuration" can not be used, use the "Manual Configuration" after replacing CAN gateway.

#### AFTER REPLACEMENT

#### **CAUTION:**

Follow the instructions listed below. Failure to do this may cause malfunctions to the CAN gateway.:

- When replacing CAN gateway, you must perform "Read / Write Configuration" or "Manual Configuration" with CONSULT.
- Complete the procedure of "Read / Write Configuration" or "Manual Configuration" in order.
- If you set incorrect "Read / Write Configuration" or "Manual Configuration", incidents might occur.
- Configuration is different for each vehicle model. Confirm configuration of each vehicle model.
- Never perform "Read / Write Configuration" or "Manual Configuration" except for new CAN gateway.

### Work Procedure

INFOID:000000008139623

## **1.**SAVING VEHICLE SPECIFICATION

#### CONSULT Configuration

Perform "Before Replace ECU" of "Read / Write Configuration" to save or print current vehicle specification. Refer to <u>LAN-125</u>, "Description".

#### NOTE:

If "Before Replace ECU" of "Read / Write Configuration" can not be used, use the "Manual Configuration" after replacing CAN gateway.

>> GO TO 2.

## **2.**REPLACE CAN GATEWAY

Replace CAN gateway. Refer to LAN-130, "Removal and Installation".

>> GO TO 3.

**3.**WRITING VEHICLE SPECIFICATION

#### CONSULT Configuration

Perform "After Replace ECU" of "Read / Write Configuration" or "Manual Configuration" to write vehicle specification. Refer to <u>LAN-125, "Work Procedure"</u>.

>> WORK END

# **CONFIGURATION (CAN GATEWAY)**

< BASIC INSPECTION >

# CONFIGURATION (CAN GATEWAY)

# Description

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Vehicle specification needs to be written with CONSULT because it is not written after replacing CAN gateway. B Configuration has three functions as follows

Function	on	Description
Read / Write Configuration	Before Replace ECU	<ul> <li>Reads the vehicle configuration of current CAN gateway.</li> <li>Saves the read vehicle configuration.</li> </ul>
	After Replace ECU	Writes the vehicle configuration with saved data.
Manual Configuration	-	Writes the vehicle configuration with manual selection.
CAUTION: Follow the instructions li When replacing CAN ga tion" with CONSULT. Complete the procedur If you set incorrect "Re Configuration is differe Never perform "Read/	isted below. Failure ateway, you must pe e of "Read / Write C ad / Write Configur ent for each vehicle Write Configuration	to do this may cause malfunctions to the CAN gateway.: erform "Read / Write Configuration" or "Manual Configura- Configuration" or "Manual Configuration" in order. ation" or "Manual Configuration", incidents might occur. model. Confirm configuration of each vehicle model. " or "Manual Configuration" except for new CAN gateway.
Nork Procedure		INFOID:000000008139625
1.WRITING MODE SELE	CTION	
CONSULT Configuration	า	
Select "Re/programming, (	Configuration" of CAN	l gateway.
When writing across data		
When writing manually>>	•GO TO 3.	
2.PERFORM "AFTER RE	PLACE ECU" OF "R	EAD / WRITE CONFIGURATION"
CONSULT Configuration	n	
Perform "After Replace EC	CU" of "Read / Write C	Configuration".
3. PERFORM "MANUAL (	CONFIGURATION"	
<ol> <li>Select "Manual Config</li> </ol>	uration".	
2. Touch "Next".		
4. Check that the configu	ration has been suc	cessfully written and touch "End".
-		
>> GO TO 4.		
4.CHECK ALL ECU SELI	F-DIAGNOSIS RESU	ILTS
1. Erase all ECU self-dia	gnosis results using	CONSULT.
<ol> <li>Erase all ECU self-dia</li> <li>Turn the ignition switc</li> <li>Turn the ignition switc</li> </ol>	gnosis results using h OFF. h ON and wait for 2 s	CONSULT.

>> WORK END

# DTC/CIRCUIT DIAGNOSIS U1000 CAN COMM CIRCUIT

# Description

INFOID:000000008139626

CAN (Controller Area Network) is a serial communication line for real time applications. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Modern vehicle is equipped with many electronic control unit, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with two communication lines (CAN-H and CAN-L) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only. CAN Communication Signal Chart. Refer to <u>LAN-36, "CAN COMMUNICATION SYSTEM : CAN Communication Signal Chart"</u>.

### DTC Logic

INFOID:000000008139627

## DTC DETECTION LOGIC

DTC	CONSULT display descrip- tion	DTC Detection Condition	Possible cause
U1000	CAN COMM CIRCUIT	When CAN gateway cannot communicate CAN communication signal continuously for 2 seconds or more.	CAN communication system

## **Diagnosis Procedure**

INFOID:000000008139628

## **1.**PERFORM SELF DIAGNOSTIC

- 1. Turn the ignition switch ON and wait for 2 seconds or more.
- 2. Check "Self Diagnostic Result".
- Is "U1000: CAN COMM CIRCUIT" displayed?
- YES >> Refer to LAN-19, "Trouble Diagnosis Flow Chart".
- NO >> Refer to <u>GI-49, "Intermittent Incident"</u>.

#### < DTC/CIRCUIT DIAGNOSIS >

# U1010 CONTROL UNIT (CAN)

# Description

CAN (Controller Area Network) is a serial communication line for real time applications. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Modern vehicle is equipped with many electronic control unit, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with two communication lines (CAN-H and CAN-L) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only. CAN Communication Signal Chart. Refer to LAN-36, "CAN COMMUNICATION SYSTEM : CAN Communication in the selection of the s

## DTC Logic

#### DTC DETECTION LOGIC

DTC	CONSULT display descrip- tion	DTC Detection Condition	Possible cause
U1010	CONTROL UNIT(CAN)	When an error is detected during the initial diagnosis for CAN controller of CAN gateway.	CAN gateway

## Diagnosis Procedure

**1.**REPLACE CAN GATEWAY

When DTC "U1010: CONTROL UNIT(CAN)" is detected, replace CAN gateway.

>> Replace CAN gateway. Refer to LAN-130, "Removal and Installation".

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## < DTC/CIRCUIT DIAGNOSIS >

# B2600 CONFIG ERROR

## Description

INFOID:000000008139632

[CAN GATEWAY]

The CAN gateway requires initial settings to judge necessary information, according to a vehicle specification. DTC Logic

## DTC DETECTION LOGIC

DTC	CONSULT display descrip- tion	DTC Detection Condition	Probable cause
B2600	CONFIG ERROR WRONG DATA	When errors are detected in the configuration data stored in the CAN gateway.	
62000	CONFIG ERROR NOT CONFIGURED	When no data are stored in the CAN gateway.	Unit galeway

## **Diagnosis Procedure**

INFOID:000000008139634

# **1.**REPLACE CAN GATEWAY

When DTC "B2600: CONFIG ERROR" is detected, replace CAN gateway.

>> Replace CAN gateway. Refer to LAN-130, "Removal and Installation".

# POWER SUPPLY AND GROUND CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

# POWER SUPPLY AND GROUND CIRCUIT

## **Diagnosis Procedure**

# 1.CHECK FUSE

Check that the following fuse are not blown.

Signal name	Fuse No.	С
Battery power supply	9	
Ignition power supply	3	D

#### Is the fuse fusing?

YES >> Replace the blown fuse after repairing the affected circuit if a fuse is blown.

NO >> GO TO 2.

2. CHECK POWER SUPPLY CIRCUIT

- 1. Turn the ignition switch OFF.
- 2. Disconnect the connector of CAN gateway.

3. Check voltage between CAN gateway harness connector and ground.

	Terminals		Condition		
(	+)	()	Condition	Voltage	Voltage
CAN g	ateway		Ignition	(Standard)	(Reference value)
Connector	Terminal		switch		
M125	3	Ground	OFF	6 – 16 V	Battery voltage
WIT25	9		ON	4.5 – 16 V	Battery voltage

Is the measurement value normal?

YES >> GO TO 3.

NO >> Repair harness or connector.

3.CHECK GROUND CIRCUIT

Check continuity between CAN gateway harness connector and ground.

CAN g	Jateway		Continuity
Connector	Terminal	Ground	Continuity
M125	5	Glound	Existed
101725	11		LXISIEU

Does continuity exist?

YES >> INSPECTION END

NO >> Repair harness or connector.

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# REMOVAL AND INSTALLATION CAN GATEWAY

## Removal and Installation

INFOID:000000008139636

[CAN GATEWAY]

#### NOTE:

Before replacing CAN gateway, perform "Before Replace ECU" of "Read / Write Configuration" to save or print current vehicle specification. Refer to <u>LAN-124</u>, "<u>Description</u>".

#### REMOVAL

- 1. Remove instrument lower panel RH. Refer to IP-13, "Removal and Installation".
- 2. Disconnect CAN gateway connector.
- 3. Remove mounting screw to remove CAN gateway.

#### INSTALLATION

Install in the reverse order of removal.

#### CAUTION:

To prevent malfunction, be sure to perform "After Replace ECU" of "Read / Write Configuration" or "Manual Configuration" when replacing CAN gateway. Refer to <u>LAN-124, "Description"</u>.

#### [CAN SYSTEM (TYPE 1)] < DTC/CIRCUIT DIAGNOSIS > DTC/CIRCUIT DIAGNOSIS А MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT **Diagnosis Procedure** INFOID:000000008491270 В 1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT) 1. Turn the ignition switch OFF. Disconnect the 12V battery cable from the negative terminal. 2. Disconnect the following harness connectors. ECM -D Low tire pressure warning control unit \_ A/C auto amp. 4. Check the continuity between the low tire pressure warning control unit harness connector and the A/C Е auto amp. harness connector. Low tire pressure warning control unit A/C auto amp. harness connector harness connector Continuity F Connector No. Terminal No. Connector No. Terminal No. 2 12 Existed M43 M66 11 1 Existed Is the inspection result normal? YES (Present error)>>Check CAN system type decision again. Н YES (Past error)>>Error was detected in the main line between the low tire pressure warning control unit and the A/C auto amp. NO >> Replace the PCB harness. Κ L LAN Ν Ρ

MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT

## MAIN LINE BETWEEN HVAC AND A-BAG CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

# MAIN LINE BETWEEN HVAC AND A-BAG CIRCUIT

### Diagnosis Procedure

INFOID:000000008491271

[CAN SYSTEM (TYPE 1)]

# 1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Disconnect the following harness connectors.
- ECM
- A/C auto amp.
- AV control unit
- Check the continuity between the A/C auto amp. harness connector and the AV control unit harness connector.
- Models with navigation system

A/C auto amp. h	arness connector	AV control unit h	arness connector	Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
Mee	12	M210	90	Existed
	11		74	Existed

#### Models without navigation system

A/C auto amp. h	arness connector	AV control unit h	arness connector	Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
Mee	12	M84	81	Existed
WOO	11	1104	80	Existed

#### Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.

YES (Past error)>>Error was detected in the main line between the A/C auto amp. and the air bag diagnosis sensor unit.

NO >> Replace the PCB harness.

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MAIN LINE BETWEEN A-BAG AND AV CIRCUIT

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#### < DTC/CIRCUIT DIAGNOSIS >

# MAIN LINE BETWEEN AV AND M&A CIRCUIT

## Diagnosis Procedure

INFOID:000000008491273

[CAN SYSTEM (TYPE 1)]

# 1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Disconnect the following harness connectors.
- ECM
- AV control unit
- Combination meter
- 4. Check the continuity between the AV control unit harness connector and the combination meter harness connector.
- Models with navigation system

AV control unit h	AV control unit harness connector		Combination meter harness connector	
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
M210	90	M53	14	Existed
	74	M53	15	Existed

#### Models without navigation system

AV control unit h	AV control unit harness connector		harness connector	Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
M84	81	14	14	Existed
10104	80	0000	15	Existed

#### Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.

YES (Past error)>>Error was detected in the main line between the AV control unit and the combination meter.

NO >> Replace the PCB harness.

Revision: 2013 March	LAN-135	

# MAIN LINE BETWEEN M&A AND DLC CIRCUIT

# < DTC/CIRCUIT DIAGNOSIS >

# MAIN LINE BETWEEN M&A AND DLC CIRCUIT

## Diagnosis Procedure

# 1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Disconnect the following harness connectors.
- ECM
- Combination meter
- Harness connectors M105 and M181
- 4. Check the continuity between the combination meter harness connector and the harness connector.

Combination meter	er harness connector	Harness connector		Harness connector		Continuity	
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity	1		
MEQ	14	M105	7	Existed			
IVI33	15	WITU5	8	Existed			

#### Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.

- YES (Past error)>>Error was detected in the main line between the combination meter and the data link connector.
- NO >> Replace the PCB harness.

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[CAN SYSTEM (TYPE 1)]

INFOID:000000008491274

## MAIN LINE BETWEEN DLC AND BCM CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

# MAIN LINE BETWEEN DLC AND BCM CIRCUIT

## **Diagnosis Procedure**

INFOID:000000008491275

[CAN SYSTEM (TYPE 1)]

# 1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Disconnect the following harness connectors.
- ECM
- Harness connectors M181 and M105
- BCM
- 4. Check the continuity between the harness connector and the BCM harness connector.

Harness	connector	BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
M105	7	M120	39	Existed
IMITO5	8	WII20	40	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.

YES (Past error)>>Error was detected in the main line between the data link connector and the BCM.

NO >> Replace the PCB harness.

IAIN LINE BET	10313 >		IVAN	
iagnosis Procedu	WEEN BCM A	ND EV/HEV CI	RCUIT	
agriosis i roceuc				
				INFOID:000000008491276
.CHECK CONNECTO	)R			
<ul> <li>Disconnect the 12V</li> <li>Check the following and harness side).</li> <li>Harness connector</li> <li>Harness connector</li> <li>Harness connector</li> <li>the inspection result r</li> <li>YES &gt;&gt; GO TO 2.</li> <li>NO &gt;&gt; Repair the t</li> <li>CHECK HARNESS (</li> <li>Disconnect the follo BCM Harness connector</li> <li>Check the continuit</li> </ul>	battery cable from the terminals and conrols M20 and PCB harne M7 B1 tormal? terminal and connect CONTINUITY (OPEN twing harness conne M20 y between the BCM	ne negative terminal. nectors for damage, b ss side connector or. I CIRCUIT) ctors.	end and loose conne	ection (connector side
BCM harness	s connector	PCB harnes	s connector	
Connector No.	Terminal No.	Termin	al No.	Continuity
M120	39	35	5	Existed
WITZO	40	36	6	Existed
the inspection result r YES >> GO TO 3. NO >> Replace the CHECK HARNESS ( Disconnect the harr	<u>ormal?</u> PCB harness. CONTINUITY (OPEN ness connectors M7 and the secons with the secons with the secons with the secons with the second secon	I CIRCUIT) and B1. ss connectors.		
. Check the continuity		Harness c	connector	
. Check the continuity Harness co	onnector			
Check the continuit	onnector Terminal No.	Connector No.	Terminal No.	Continuity
. Check the continuit	Terminal No.	Connector No.	Terminal No.	Continuity

**4.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector terminals.

Connector No.	Terminal No.		Continuity	
D1	72	82	Existed	
DI	71	81	Existed	

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again. YES (Past error)>>Error was detected in the main line between the BCM and the HPCM.

>> Replace the body harness. NO

# MAIN LINE BETWEEN EV/HEV AND EPS CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

# MAIN LINE BETWEEN EV/HEV AND EPS CIRCUIT

## Diagnosis Procedure

INFOID:000000008491277

[CAN SYSTEM (TYPE 1)]

## 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector B1
- Harness connector M7
- Harness connector M6
- Harness connector E106

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

#### 1. Disconnect the harness connectors B1 and M7.

2. Check the continuity between the harness connector terminals.

Connector No.	Terminal No.		Continuity
R1	72	82	Existed
	71	81	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace the body harness.

## **3.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

#### 1. Disconnect the harness connectors M6 and E106.

2. Check the continuity between the harness connectors.

Harness	connector	Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
M7	82	M6	22	Existed
1117	81		23	Existed

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair the main line between the harness connectors M7 and M6.

#### **4.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Disconnect the connector of power steering control module.
- 2. Check the continuity between the harness connector and the power steering control module harness connector.

Harness	connector	Power steering control module harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
E106	E100 22	E07	5	Existed
ETUO	23	E97	6	Existed

#### Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.

- YES (Past error)>>Error was detected in the main line between the HPCM and the power steering control module.
- NO >> Repair the main line between the harness connector E106 and the power steering control module.

Ν	AIN LINE BET	VEEN STRG AN	ID ABS CIRCUIT	-
< DTC/CIRCUIT DIAG	NOSIS >		[CAN	I SYSTEM (TYPE 1)]
MAIN LINE BET	WEEN STRG	AND ABS CIRC	CUIT	
Diagnosis Proced	ure			INFOID:00000008491278
1.CHECK CONNECT	OR			
<ol> <li>Turn the ignition sw</li> <li>Disconnect the 12V</li> <li>Check the followin and harness side).</li> <li>Harness connector</li> <li>Harness connector</li> <li>Harness connector</li> <li>Harness connector</li> <li>Harness connector</li> <li>Steering angle sen</li> <li>Harness connector</li> <li>Check the continuit tor.</li> </ol>	vitch OFF. / battery cable from the g terminals and connect M20 and PCB harner M6 E106 normal? terminal and connect CONTINUITY (OPEN owing harness conners owing harness conners M20 ty between the steering	ne negative terminal. nectors for damage, I ss side connector or. I CIRCUIT) ctors.	bend and loose conn	ection (connector side
Steering angle sense	Torminal No	PCB harnes		Continuity
	1			Existed
M37	2	2	27	Existed
Is the inspection resultYES>> GO TO 3.NO>> Replace th3.CHECK HARNESS1.Disconnect the har2.Check the continuit	normal? e PCB harness. CONTINUITY (OPEN mess connectors M6 ty between the harne	I CIRCUIT) and E106. ss connectors.		
Harness	connector	Harness	connector	
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
M20	24	M6	69	Existed
	27		70	Existed
YES >> GO TO 4. NO >> Repair the 4.CHECK HARNESS Check the continuity be	normal? main line between th CONTINUITY (OPEN etween the harness co	e harness connectors I CIRCUIT) onnector terminals.	6 M20 and M6.	

Connector No.	Terminal No.		Continuity	•
E106	69	54	Existed	Р
E100	70	55	Existed	-

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.

YES (Past error)>>Error was detected in the main line between the steering angle sensor and the ABS actuator and electric unit (control unit).

NO >> Repair the main line between the harness connector E106 and the ABS actuator and electric unit (control unit).

# MAIN LINE BETWEEN ABS AND ADP CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

# MAIN LINE BETWEEN ABS AND ADP CIRCUIT

## Diagnosis Procedure

INFOID:000000008491279

[CAN SYSTEM (TYPE 1)]

# 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector E106
- Harness connector M6
- Harness connector M7
- Harness connector B1

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

#### 1. Disconnect the harness connectors E106 and M6.

2. Check the continuity between the harness connector terminals.

Connector No.	Termir	Continuity	
E106	69	54	Existed
LIUO	70	55	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the main line between the ABS actuator and electric unit (control unit) and the harness connector E106.

**3.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Disconnect the harness connectors M7 and B1.
- 2. Check the continuity between the harness connectors.

Harness	connector	Harness connector		Continuity	
Connector No.	Terminal No.	Connector No. Terminal No.		Continuity	
Me	54	N/7	34	Existed	
IVIO	55	1017	35	Existed	

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair the main line between the harness connectors M6 and M7.

#### **4.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector terminals.

Connector No.	Termi	Continuity	
R1	34	32	Existed
B1	35	33	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.

YES (Past error)>>Error was detected in the main line between the ABS actuator and electric unit (control unit) and the driver seat control unit.

NO >> Replace the body harness.

# MAIN LINE BETWEEN INV/MC AND TCM CIRCUIT

[CAN SYSTEM (TYPE 1)]

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< DTC/CIRCUIT DIAGNOSIS >	
MAIN LINE BETWEEN I	NV/MC AND TCM CIRCUIT

Diagnosis Proced	lure			INFOID:00000008491283
1.CHECK CONNECT	TOR			
<ol> <li>Turn the ignition s</li> <li>Disconnect the 12</li> <li>Check the followi and harness side)</li> <li>Harness connector</li> <li>Harness connector</li> <li>Harness connector</li> <li>Harness connector</li> <li>Is the inspection result</li> <li>YES &gt;&gt; GO TO 2. NO &gt;&gt; Repair the</li> <li>2.CHECK HARNESS</li> </ol>	witch OFF. V battery cable from t ng terminals and con or E106 or M6 or M29 and PCB harne t normal? e terminal and connect S CONTINUITY (OPEN	he negative terminal. nectors for damage, b ess side connector tor. N CIRCUIT)	pend and loose conn	ection (connector side
<ol> <li>Disconnect the fol Traction motor inv Harness connector         Check the continu         </li> </ol>	lowing harness conne rerter ors E106 and M6 ity between the tractic	ectors. on motor inverter harn	ess connector and the	harness connector.
Traction motor inver	ter harness connector	Harness	connector	Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
F 70	9	F400	58	Existed
E78	28	59		Existed
Is the inspection result YES >> GO TO 3.	t normal?	o traction motor inver	tor and the harness of	opportor E106

>> Repair the main line between the traction motor inverter and the harness connector E106.

**3.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Disconnect the harness connector M29.
- 2. Check the continuity between the harness connectors.

Harness of	connector	Harness connector		Continuity	
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity	L
140	58	1400	398	Existed	_
IVIO	59	WI29	397	Existed	
	10				LA

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair the main line between the harness connectors M6 and M29.

## **4.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors M116 and F103.

2. Check the continuity between the PCB harness connector and the harness connector.

PCB harness connector	Harness connector		Continuity	_
Terminal No.	Connector No.	Terminal No.	Continuity	
398	M116	11	Existed	_
397	IVI I TO	12	Existed	_

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.

YES (Past error)>>Error was detected in the main line between the traction motor inverter and the TCM.

NO >> Replace the PCB harness.

#### < DTC/CIRCUIT DIAGNOSIS >

# MAIN LINE BETWEEN TCM AND DLC CIRCUIT

## Diagnosis Procedure

INFOID:000000008491284

[CAN SYSTEM (TYPE 1)]

# 1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Disconnect the following harness connectors.
- ECM
- Harness connectors F103 and M116
- Harness connectors M105 and M181
- 4. Check the continuity between the harness connectors.

Harness	connector	Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
M116	M116 11 12	M105	32	Existed
MITO		WITU5	33	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.

YES (Past error)>>Error was detected in the main line between the TCM and the data link connector.

NO >> Replace the PCB harness.

M	AIN LINE BETW	EEN DLC AND	EV/HEV CIRCU	IT
< DTC/CIRCUIT DIAG	SNOSIS >		[CAN	N SYSTEM (TYPE 1)]
MAIN LINE BET	WEEN DLC A	ND EV/HEV CI	RCUIT	
Diagnosis Proced	ure			INFOID:000000008491285
1.CHECK CONNECT	OR			
<ol> <li>Turn the ignition si</li> <li>Disconnect the 12<sup>1</sup></li> <li>Check the followin and harness side).</li> <li>Harness connector</li> <li>Harness connector</li> <li>Harness connector</li> <li>Harness connector</li> <li>Is the inspection result</li> <li>YES &gt;&gt; GO TO 2. NO &gt;&gt; Repair the</li> <li>CHECK HARNESS</li> <li>Disconnect the foll</li> <li>Harness connector</li> <li>Harness connector</li> </ol>	witch OFF. V battery cable from the opterminals and conr r M20 and PCB harned r M7 r B1 <u>normal?</u> terminal and connect CONTINUITY (OPEN owing harness conne rs M181 and M105 r M20	he negative terminal. hectors for damage, b ess side connector or. I CIRCUIT) ctors.	end and loose conn	nection (connector side
2. Check the continui	ty between the harne	ss connector and the	PCB harness connec	ctor.
Harness	connector	PCB harnes	s connector	Continuity
Connector No.	Terminal No.	Termin	al No.	Continuity
M105	32	2	3	Existed
	33	2	2	Existed
YES >> GO TO 3. NO >> Replace th <b>3.</b> CHECK HARNESS 1. Disconnect the han 2. Check the continui	e PCB harness. CONTINUITY (OPEN mess connectors M7 ty between the harne	I CIRCUIT) and B1. ss connectors.		
Harness	connector	Harness of	connector	
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
M20	23	M7	38	Existed
	22		39	Existed
Is the inspection resultYES>> GO TO 4.NO>> Repair the4.CHECK HARNESS1Disconnect the content of the conte	normal? main line between th CONTINUITY (OPEN	e harness connectors I CIRCUIT)	M20 and M7.	

2. Check the continuity between the harness connector and the HPCM harness connector.

Harness	connector	HPCM harness connector		Continuity	-
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity	
<b>P1</b>	38	P150	42	Existed	-
Ы	39	B139	54	Existed	-

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.

YES (Past error)>>Error was detected in the main line between the data link connector and the HPCM.

NO >> Replace the body harness.

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#### ECM BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1) [CAN SYSTEM (TYPE 1)]

#### < DTC/CIRCUIT DIAGNOSIS >

# ECM BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

# **Diagnosis** Procedure

INFOID:000000008491286

## 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- Disconnect the 12V battery cable from the negative terminal. 2.
- Check the following terminals and connectors for damage, bend and loose connection (unit side and con-3. nector side).
- ECM
- Harness connector M30 and PCB harness side connector

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2 , CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect the connector of ECM.
- Check the resistance between the ECM harness connector terminals. 2.

ECM harness connector			Resistance (O)
Connector No.	Terminal No.		
M107	114	113	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> GO TO 4.

 ${
m 3.check}$  power supply and ground circuit

Check the power supply and the ground circuit of the ECM. Refer to EC-137, "Diagnosis Procedure". Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to EC-444, "Removal and Installation".

- YES (Past error)>>Error was detected in the ECM branch line (CAN communication circuit 1 side). Refer to LAN-31, "CAN COMMUNICATION SYSTEM : System Diagram".
- >> Repair the power supply and the ground circuit. NO

## **4.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M30.

Check the continuity between the ECM harness connector and the harness connector. 2.

ECM harne	ss connector	Harness connector		Continuity	
Connector No.	Terminal No.	Connector No. Terminal No.		Continuity	
M107	114	M20	439	Existed	
WITO7	113	WISO	438	Existed	

#### Is the inspection result normal?

YES >> Replace the PCB harness.

NO >> Repair the harness between the ECM harness connector M107 and the harness connector M30.
#### ECM BRANCH LINE CIRCUIT (HEV SYSTEM CAN CIRCUIT) [CAN SYSTEM (TYPE 1)] < DTC/CIRCUIT DIAGNOSIS > ECM BRANCH LINE CIRCUIT (HEV SYSTEM CAN CIRCUIT) А **Diagnosis** Procedure INFOID:00000008491287 **1.**CHECK CONNECTOR В 1. Turn the ignition switch OFF. Disconnect the 12V battery cable from the negative terminal. 2. Check the following terminals and connectors for damage, bend and loose connection (unit side and con-3. С nector side). ECM Harness connector F1 D

Harness connector E3

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of ECM.

2. Check the resistance between the ECM harness connector terminals.

ECM harness connector			Posistanoo (O)	(
Connector No.	Terminal No.		- Resistance (12)	
F102	55	54	Approx. 108 – 132	_
<i>i</i> 1 141				

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the ECM branch line (HEV system CAN circuit side). Refer to <u>LAN-31, "CAN COMMUNI-</u> <u>CATION SYSTEM : System Diagram"</u>.

**3.**CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to <u>EC-137, "Diagnosis Procedure"</u>. Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to EC-444, "Removal and Installation".

YES (Past error)>>Error was detected in the ECM branch line (HEV system CAN circuit side).

NO >> Repair the power supply and the ground circuit.

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# TPMS BRANCH LINE CIRCUIT

## Diagnosis Procedure

INFOID:000000008491288

[CAN SYSTEM (TYPE 1)]

#### **1.**CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
- Low tire pressure warning control unit
- Harness connector M29 and PCB harness side connector

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect the connector of low tire pressure warning control unit.
- 2. Check the resistance between the low tire pressure warning control unit harness connector terminals.

Low tire pre	Resistance (O)		
Connector No.	Termi		
M43	2 1		Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> GO TO 4.

## $\mathbf{3}$ . Check power supply and ground circuit

Check the power supply and the ground circuit of the low tire pressure warning control unit. Refer to <u>WT-45.</u> <u>"Diagnosis Procedure"</u>.

Is the inspection result normal?

YES (Present error)>>Replace the low tire pressure warning control unit. Refer to <u>WT-60, "Removal and</u> <u>Installation"</u>.

YES (Past error)>>Error was detected in the low tire pressure warning control unit branch line.

NO >> Repair the power supply and the ground circuit.

#### **4.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Disconnect the harness connector M29.
- Check the continuity between the low tire pressure warning control unit harness connector and the harness connector.

Low tire pressure harness	Low tire pressure warning control unit harness connector		Harness connector	
Connector No.	Terminal No.	Connector No.	Terminal No.	
M43	2	M20	396	Existed
	1	WZ9	395	Existed

#### Is the inspection result normal?

YES >> Replace the PCB harness.

NO >> Repair the harness between the low tire pressure warning control unit harness connector M43 and the harness connector M29.

## CGW BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

[CAN SYSTEM (TYPE 1)]

#### < DTC/CIRCUIT DIAGNOSIS >

# CGW BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

Diagnosis Proced	ure	· ·		, INFOID:000000008491289	A
<b>1.</b> CHECK DTC					В
Check DTC of the CAN	ateway with CONS				
Is U1010 or B2600 indi	cated?	OLI.			
YES >> Perform a	diagnosis of the indic	ated DTC.			С
NO >> GO TO 2.					
Z.CHECK CONNECT	OR				D
<ol> <li>Turn the ignition sv</li> <li>Disconnect the 12<sup>1</sup></li> <li>Check the followin nector side).</li> <li>CAN gateway</li> <li>Harness connector</li> </ol>	vitch OFF. V battery cable from t g terminals and conne r M28 and PCB harne	he negative terminal ectors for damage, b ess side connector	end and loose con	nection (unit side and con-	E
Is the inspection result	normal?				F
YES >> GO TO 3.					
NO >> Repair the	terminal and connect	tor.			G
<b>J.</b> CHECK HARNESS	FOR OPEN CIRCUIT	Γ			0
<ol> <li>Disconnect the cor</li> <li>Check the resistant</li> </ol>	nnector of CAN gatew ce between the CAN	/ay. gateway harness co	nnector terminals.		Н
	CAN gateway harne	ess connector		Pacistance (0)	
Connector No.		Terminal No.		Resistance (22)	
M125	1		7	Approx. 54 – 66	
Is the measurement va	lue within the specific	cation?			I
YES >> GO TO 4.					J
4.CHECK POWER SI	JPPLY AND GROUN				
Check the power supp dure".	bly and the ground ci	rcuit of the CAN gat	teway. Refer to LA	N-129, "Diagnosis Proce-	K
Is the inspection result	normal?				
YES (Present error)>:	Replace the CAN gathered in the constraint of	iteway. Refer to <u>LAN</u>	-130, "Removal an	d Installation".	
YES (Past error)>>Er	ror was detected in th	ne CAN gateway bra	nch line (CAN com	munication circuit 1 side).	
NO >> Repair the	power supply and the	e ground circuit.		L.	LAN
5.CHECK HARNESS	CONTINUITY (OPEN				
<ol> <li>Disconnect the har</li> <li>Check the continuit</li> </ol>	mess connector M28. ty between the CAN (	gateway harness cor	nnector and the har	ness connector.	Ν
CAN gateway ha	arness connector	Harness	s connector	Continuity	0
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity	-
M125	1	M28	326	Existed	
IVI I ZJ	7	IVIZO	328	Existed	Ρ

Is the inspection result normal?

YES >> Replace the PCB harness.

NO >> Repair the harness between the CAN gateway harness connector M125 and the harness connector M28.

# HVAC BRANCH LINE CIRCUIT

## Diagnosis Procedure

INFOID:000000008491290

[CAN SYSTEM (TYPE 1)]

## 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
- A/C auto amp.
- Harness connector M28 and PCB harness side connector

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect the connector of A/C auto amp.
- 2. Check the resistance between the A/C auto amp. harness connector terminals.

A/C auto amp. harness c	Posistanco (O)		
Connector No.	Terminal No.		
M66 12	12 11		

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> GO TO 4.

## $\mathbf{3}$ . CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the A/C auto amp. Refer to <u>HAC-153, "A/C AUTO AMP. :</u> <u>Diagnosis Procedure"</u>.

Is the inspection result normal?

YES (Present error)>>Replace the A/C auto amp. Refer to HAC-183, "Removal and Installation".

- YES (Past error)>>Error was detected in the A/C auto amp. branch line.
- NO >> Repair the power supply and the ground circuit.

#### **4.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Disconnect the harness connector M28.
- 2. Check the continuity between the A/C auto amp. harness connector and the harness connector.

A/C auto amp. h	arness connector	Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
Mee	12	M28	325	Existed
NICO	11	IVIZO	327	Existed

#### Is the inspection result normal?

YES >> Replace the PCB harness.

NO >> Repair the harness between the A/C auto amp. harness connector M66 and the harness connector M28.

#### < DTC/CIRCUIT DIAGNOSIS > A-BAG BRANCH LINE CIRCUIT А **Diagnosis** Procedure INFOID:000000008491291 WARNING: В Always observe the following items for preventing accidental activation. Before servicing, turn ignition switch OFF, disconnect 12V battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.) С Never use unspecified tester or other measuring device. **1.**CHECK CONNECTOR 1. Turn the ignition switch OFF. D 2. Disconnect the 12V battery cable from the negative terminal. Check the following terminals and connectors for damage, bend and loose connection (unit side and con-3. nector side). Е Air bag diagnosis sensor unit Harness connector M26 and PCB harness side connector Is the inspection result normal? F YES >> GO TO 2. NO >> Replace the main harness and/or the PCB harness. 2.CHECK AIR BAG DIAGNOSIS SENSOR UNIT Check the air bag diagnosis sensor unit. Refer to SRC-24, "Work Flow". Is the inspection result normal? Н YES >> Replace the main harness and/or the PCB harness. NO >> Replace parts whose air bag system has a malfunction.

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# AV BRANCH LINE CIRCUIT

## Diagnosis Procedure

INFOID:000000008491293

## 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
- AV control unit
- Harness connector M25 and PCB harness side connector

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect the connector of AV control unit.
- 2. Check the resistance between the AV control unit harness connector terminals.
- Models with navigation system

	Posistanco (O)		
Connector No.	Termi		
M210	90 74		Approx. 54 – 66

Models without navigation system

	Posistanco (O)		
Connector No.	Terminal No.		
M84	81 80		Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> GO TO 4.

#### 3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the AV control unit. Refer to the following.

- Base audio without navigation system: <u>AV-73, "AV CONTROL UNIT : Diagnosis Procedure"</u>
- BOSE audio with navigation system: AV-237, "AV CONTROL UNIT : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the AV control unit. Refer to the following.

- Base audio without navigation system: AV-104, "Removal and Installation"
- BOSE audio with navigation system: <u>AV-264, "Removal and Installation"</u>
- YES (Past error)>>Error was detected in the AV control unit branch line.
- NO >> Repair the power supply and the ground circuit.

#### **4.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Disconnect the harness connector M25.
- 2. Check the continuity between the AV control unit harness connector and the harness connector.
- Models with navigation system

AV control unit h	arness connector	Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
M210	90	M25	201	Existed
IVIZ TO	74		221	Existed

Models without navigation system

# **AV BRANCH LINE CIRCUIT**

#### < DTC/CIRCUIT DIAGNOSIS >

## [CAN SYSTEM (TYPE 1)]

AV control unit h	narness connector	Harness	connector	Continuity	
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity	
M94	81	MOE	201	Existed	
1004	80	WIZ5	221	Existed	
ES >> Replace the section result O (With navigation the harnes O (Without navigati	he PCB harness. system)>>Repair the l ss connector M25. on system)>>Repair t	harness between the he harness between	AV control unit harnes the AV control unit h	s connector M210 and arness connector M84	
and the ha	arness connector M25	i.			

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# M&A BRANCH LINE CIRCUIT

## Diagnosis Procedure

INFOID:000000008491294

[CAN SYSTEM (TYPE 1)]

## 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
- Combination meter
- Harness connector M24 and PCB harness side connector

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect the connector of combination meter.
- 2. Check the resistance between the combination meter harness connector terminals.

Combination meter harness connector			Posistanco (O)
Connector No.	Terminal No.		
M53	14 15		Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> GO TO 4.

 $\mathbf{3}$ . Check power supply and ground circuit

Check the power supply and the ground circuit of the combination meter Refer to <u>MWI-64</u>, <u>"COMBINATION</u> <u>METER : Diagnosis Procedure"</u>.

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to MWI-81, "Removal and Installation".

- YES (Past error)>>Error was detected in the combination meter branch line.
- NO >> Repair the power supply and the ground circuit.

**4.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M24.

2. Check the continuity between the combination meter harness connector and the harness connector.

Combination meter	r harness connector	Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
M53	14	M24	176	Existed
1000	15	1/124	177	Existed

#### Is the inspection result normal?

YES >> Replace the PCB harness.

NO >> Repair the harness between the combination meter harness connector M53 and the harness connector M24.

#### **DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)** [CAN SYSTEM (TYPE 1)]

#### < DTC/CIRCUIT DIAGNOSIS >

# DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

## Diagnosis Procedure

А

<ol> <li>Turn the ignition so</li> <li>Disconnect the 12</li> <li>Check the followin nector side).</li> <li>Data link connector Harness connector</li> <li>Harness connector</li> <li>Harness connector</li> </ol>	witch OFF. V battery cable from g terminals and conr or r M181 r M105 r M23 and PCB harn	the negative terminal. lectors for damage, be ess side connector	nd and loose conne	ection (unit side and con-
s the inspection result	normal?			
NO >> Repair the	terminal and connec	ctor.		
CHECK HARNESS	FOR OPEN CIRCUI	Т		
heck the resistance b	petween the data link	connector terminals.		
	Data link co	nnector		Desistance (O)
Connector No.		Terminal No.		
M182 the measurement va YES (Present error)> YES (Past error)>>Er side). Refe	6 alue within the specifi >Check CAN system fror was detected in er to <u>LAN-31, "CAN C</u>	<u>cation?</u> type decision again. the data link connecto COMMUNICATION SY	14 r branch line (CAN STEM : System Dia	Approx. 54 – 66 communication circuit 1 gram".
M182 the measurement variable YES (Present error)>>Er Side). Refe NO >> GO TO 3. CHECK HARNESS Disconnect the ha Check the continu	6 alue within the specifi Check CAN system ror was detected in er to LAN-31, "CAN C CONTINUITY (OPE rness connector M23 ity between the data	<u>cation?</u> type decision again. the data link connecto COMMUNICATION SYS N CIRCUIT)	14 r branch line (CAN <u>STEM : System Dia</u> harness connector.	Approx. 54 – 66 communication circuit 1 gram".
M182 S the measurement var YES (Present error)> YES (Past error)>>Er side). Refe NO >> GO TO 3. CHECK HARNESS Disconnect the ha Check the continu Data link	6 alue within the specifi >Check CAN system ror was detected in er to <u>LAN-31, "CAN C</u> CONTINUITY (OPE rness connector M23 ity between the data	cation? type decision again. the data link connecto COMMUNICATION SY N CIRCUIT)	14 r branch line (CAN <u>STEM : System Dia</u> harness connector.	Approx. 54 – 66 communication circuit 1 gram".
M182 S the measurement variable YES (Present error)> YES (Past error)>>Er side). Refe NO >> GO TO 3. CHECK HARNESS . Disconnect the ha . Check the continu Data link Connector No.	6 alue within the specifi >Check CAN system for was detected in er to <u>LAN-31. "CAN C</u> CONTINUITY (OPE rness connector M23 ity between the data connector Terminal No.	cation? type decision again. the data link connecto COMMUNICATION SYS N CIRCUIT) link connector and the Harness Connector No.	14 r branch line (CAN <u>STEM : System Dia</u> harness connector. connector Terminal No.	Approx. 54 – 66 communication circuit 1 gram". Continuity
M182 S the measurement variable YES (Present error)> YES (Past error)>>Er side). Refer NO >> GO TO 3. CHECK HARNESS Disconnect the ha Check the continu Data link Connector No. M182	6 alue within the specifi >Check CAN system for was detected in er to LAN-31. "CAN C CONTINUITY (OPE rness connector M23 ity between the data connector Terminal No. 6	cation? type decision again. the data link connecto COMMUNICATION SY: N CIRCUIT) link connector and the Harness Connector No.	14 r branch line (CAN <u>STEM : System Dia</u> harness connector. connector Terminal No. 151	Approx. 54 – 66  communication circuit 1 gram".  Continuity Existed
M182 S the measurement vary YES (Present error)> YES (Past error)>>Er side). Refe NO >> GO TO 3. CHECK HARNESS Disconnect the ha Check the continu Data link Connector No. M182	alue within the specifi         >Check CAN system         ror was detected in         er to LAN-31. "CAN C         CONTINUITY (OPE         rness connector M23         ity between the data         connector         Terminal No.         6         14         pormal?	cation? type decision again. the data link connecto COMMUNICATION SYS N CIRCUIT) link connector and the Harness Connector No.	14 r branch line (CAN STEM : System Dia harness connector. connector Terminal No. 151 150	Approx. 54 – 66  communication circuit 1 gram".  Continuity Existed Existed Existed

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## **DLC BRANCH LINE CIRCUIT (HEV SYSTEM CAN CIRCUIT)**

#### < DTC/CIRCUIT DIAGNOSIS >

# DLC BRANCH LINE CIRCUIT (HEV SYSTEM CAN CIRCUIT)

## Diagnosis Procedure

INFOID:000000008491296

[CAN SYSTEM (TYPE 1)]

## 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
- Data link connector
- Harness connector M181
- Harness connector M105
- Harness connector M23 and PCB harness side connector

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

	Posistance (O)		
Connector No.	Termi		
M182	13	12	Approx. 54 – 66

#### Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.

YES (Past error)>>Error was detected in the data link connector branch line circuit (HEV system CAN circuit side). Refer to LAN-31. "CAN COMMUNICATION SYSTEM : System Diagram".

NO >> GO TO 3.

**3.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M23.

2. Check the continuity between the data link connector and the harness connector.

Data link	connector	Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
M190	13	MOO	140	Existed
IVI 102	12	IVIZ5	139	Existed

Is the inspection result normal?

YES >> Replace the PCB harness.

NO >> Repair the harness between the data link connector M182 and the harness connector M23.

## **BCM BRANCH LINE CIRCUIT**

BCM BRANCH	LINE CIRCUIT				Λ
Diagnosis Proced	lure			INFOID:00000008491297	A
1. CHECK CONNECT	OR				В
<ol> <li>Turn the ignition s</li> <li>Disconnect the 12</li> <li>Check the followin nector side).</li> <li>BCM</li> <li>Harness connector</li> </ol>	witch OFF. V battery cable from the second s	he negative termina ectors for damage, t	I. bend and loose conne	ection (unit side and con-	С
Is the inspection result	normal?				D
YES >> GO TO 2. NO >> Repair the	e terminal and connect	or.			E
2.CHECK HARNESS	FOR OPEN CIRCUIT	-			
<ol> <li>Disconnect the co</li> <li>Check the resistar</li> </ol>	nnector of BCM. nce between the BCM	harness connector	terminals.		F
	BCM harness of	onnector		Posistanco (O)	
Connector No.		Terminal No.			G
M120	39		40	Approx. 54 – 66	
Is the measurement vaYES>> GO TO 3.NO>> GO TO 4.CHECK POWER S		ation?			H
Check the power supp	ly and the ground aire		or to PCS 72 "Diago	acia Dragoduro"	
Is the inspection result YES (Present error)> YES (Past error)>>E NO >> Repair the	<ul> <li>inormal?</li> <li>Replace the BCM. R</li> <li>rror was detected in the power supply and the</li> </ul>	efer to <u>BCS-80, "Re</u> e BCM branch line. e ground circuit.	emoval and Installatic	<u>n"</u> .	J
4.CHECK HARNESS	CONTINUITY (OPEN	I CIRCUIT)			K
<ol> <li>Disconnect the ha</li> <li>Check the continu</li> </ol>	rness connector M22. ity between the BCM	harness connector a	and the harness conr	lector.	L
BCM harne	ss connector	Harnes	s connector	Continuity	
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity	LA
M120	39	M22	101	Existed	
	40		102	Existed	

Is the inspection result normal?

< DTC/CIRCUIT DIAGNOSIS >

YES >> Replace the PCB harness.

NO >> Repair the harness between the BCM harness connector M120 and the harness connector M22.

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#### **EV/HEV BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)** [CAN SYSTEM (TYPE 1)]

#### < DTC/CIRCUIT DIAGNOSIS >

# EV/HEV BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

## **Diagnosis** Procedure

INFOID:00000008491298

## 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- Disconnect the 12V battery cable from the negative terminal. 2.
- Check the terminals and connectors of the HPCM for damage, bend and loose connection (unit side and 3. connector side).

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

#### 2.CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect the connector of HPCM.
- Check the resistance between the HPCM harness connector terminals. 2.

	Posistanaa (O)	
Connector No.	Termi	
B159	43	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Replace the body harness.

 ${
m 3.}$  Check power supply and ground circuit

Check the power supply and the ground circuit of the HPCM. Refer to HBC-93, "HPCM : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the HPCM. Refer to HBC-339, "Removal and Installation".

- YES (Past error)>>Error was detected in the HPCM branch line (CAN communication circuit 1 side). Refer to LAN-31, "CAN COMMUNICATION SYSTEM : System Diagram".
- NO >> Repair the power supply and the ground circuit.

# EV/HEV BRANCH LINE CIRCUIT (HEV SYSTEM CAN CIRCUIT) < DTC/CIRCUIT DIAGNOSIS > EV/HEV BRANCH LINE CIRCUIT (HEV SYSTEM CAN CIRCUIT) Diagnosis Procedure

<b>1.</b> CHECK CONNECTOR			
<ol> <li>Turn the ignition switch C</li> <li>Disconnect the 12V batte</li> <li>Check the terminals and connector side).</li> </ol>	DFF. Bry cable from the negative connectors of the HPCM f	e terminal. for damage, bend and loos	e connection (unit side and
Is the inspection result norma	al?		
YES >> GO TO 2. NO >> Repair the termin	nal and connector.		
2.CHECK HARNESS FOR	OPEN CIRCUIT		
<ol> <li>Disconnect the connector</li> <li>Check the resistance bet</li> </ol>	r of HPCM. ween the HPCM harness o	connector terminals.	
	HPCM harness connector		Posistance (O)
Connector No.	Termin	al No.	Resistance (sz)
B159	42	54	Approx. 54 – 66
Is the measurement value wi YES >> GO TO 3. NO >> Replace the bod <b>3.</b> CHECK POWER SUPPLY	t <u>hin the specification?</u> y harness. ′ AND GROUND CIRCUIT		
Check the power supply and <u>dure"</u> .	I the ground circuit of the	HPCM. Refer to <u>HBC-93,</u>	"HPCM : Diagnosis Proce-
YES (Present error)>>Repla	ace the HPCM. Refer to HE	3C-339, "Removal and Inst	allation".
YES (Past error)>>Error wa LAN-31. "CAN C	as detected in the HPCM	branch line (HEV system <u>M : System Diagram</u> ".	CAN circuit side). Refer to
NO >> Repair the powe	r augaly and the around air	ouit	

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## BRAKE BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

#### < DTC/CIRCUIT DIAGNOSIS >

# BRAKE BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

## Diagnosis Procedure

INFOID:000000008491300

[CAN SYSTEM (TYPE 1)]

## 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the terminals and connectors of the electrically-driven intelligent brake unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

## 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect the connector of electrically-driven intelligent brake unit.
- 2. Check the resistance between the electrically-driven intelligent brake unit harness connector terminals.

Electrically-	Posistance (O)		
Connector No.	Termi		
E87	43 42		Approx. 54 – 66

Is the measurement value within the specification?

#### YES >> GO TO 3.

## **3.**CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the electrically-driven intelligent brake unit. Refer to <u>BR-251</u>, <u>"Diagnosis Procedure"</u>.

#### Is the inspection result normal?

YES (Present error)>>Replace the electrically-driven intelligent brake unit. Refer to <u>BR-288, "Removal and</u> <u>installation"</u>.

- YES (Past error)>>Error was detected in the electrically-driven intelligent brake unit branch line (CAN communication circuit 1 side).
- NO >> Repair the power supply and the ground circuit.

NO >> Repair the electrically-driven intelligent brake unit branch line (CAN communication circuit 1 side). Refer to <u>LAN-31, "CAN COMMUNICATION SYSTEM : System Diagram"</u>.

#### **BRAKE BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 2)** [CAN SYSTEM (TYPE 1)]

< DTC/CIRCUIT DIAGNOSIS >

# BRAKE BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 2)

## **Diagnosis Procedure**

INFOID:000000008491301

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5			
1.CHECK CONNECTOR			
<ol> <li>Turn the ignition switch</li> <li>Disconnect the 12V batt</li> <li>Check the terminals and loose connection (unit s</li> </ol>	OFF. ery cable from the negative d connectors of the electric ide and connector side).	e terminal. cally-driven intelligent brake	unit for damage, bend and
Is the inspection result norm	al?		
YES >> GO TO 2.	nal and connector		
2 CHECK HARNESS FOR			
1 Disconnect the connect	or of electrically driven into	lligant braka unit	
2. Check the resistance be	tween the electrically-drive	en intelligent brake unit harr	ness connector terminals.
Electrically	trivon intolligent brake unit barne	ss connector	
Connector No.		nal No.	Resistance ( $\Omega$ )
E87	41	40	Approx. 54 – 66
Is the measurement value w	ithin the specification?		
YES >> GO TO 3. NO >> Repair the elect Refer to LAN-31	rically-driven intelligent bra	ke unit branch line (CAN co NSYSTEM : System Diagra	mmunication circuit 2 side). m <sup>"</sup> .
3.CHECK POWER SUPPL	Y AND GROUND CIRCUIT	Г	
Check the power supply and "Diagnosis Procedure".	the ground circuit of the el	lectrically-driven intelligent k	brake unit. Refer to <u>BR-251,</u>
Is the inspection result norm	<u>al?</u>		
YES (Present error)>>Repl installation".	ace the electrically-driven	intelligent brake unit. Refe	r to <u>BR-288, "Removal and</u>
YES (Past error)>>Error wa munication circu	as detected in the electrica it 2 side).	ally-driven intelligent brake	unit branch line (CAN com-
NO >> Repair the powe	r supply and the ground ci	rcuit.	

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## **EPS BRANCH LINE CIRCUIT**

#### < DTC/CIRCUIT DIAGNOSIS >

# **EPS BRANCH LINE CIRCUIT**

## Diagnosis Procedure

1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the terminals and connectors of the power steering control module for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

## 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect the connector of power steering control module.
- 2. Check the resistance between the power steering control module harness connector terminals.

Powers	Posistanco (O)	
Connector No.	Termi	
E97	5	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the power steering control module branch line.

#### $\mathbf{3}$ . Check power supply and ground circuit

Check the power supply and the ground circuit of the power steering control module. Refer to <u>STC-27, "Diag-nosis Procedure"</u>.

Is the inspection result normal?

YES (Present error)>>Replace the power steering oil pump assembly. Refer to the following.

- With heated steering wheel: ST-42, "Removal and Installation"
- Without heated steering wheel: ST-69. "Removal and Installation"
- YES (Past error)>>Error was detected in the power steering control module branch line.

NO >> Repair the power supply and the ground circuit.

INFOID:000000008491302

## **IPDM-E BRANCH LINE CIRCUIT**

# [CAN SYSTEM (TYPE 1)]

PDM-F BRANCH I			
	INE CIRCUIT		
Diagnosis Procedure			INFOID:00000008491303
.CHECK CONNECTOR			
<ul> <li>Turn the ignition switch</li> <li>Disconnect the 12V bat</li> <li>Check the terminals ar and connector side).</li> </ul>	OFF. ttery cable from the negative ad connectors of the IPDM	e terminal. E/R for damage, bend ar	nd loose connection (unit side
the inspection result norn YES >> GO TO 2.	nal?		
CHECK HARNESS FOR	OPEN CIRCUIT		
<ul><li>Disconnect the connect</li><li>Check the resistance b</li></ul>	tor of IPDM E/R. etween the IPDM E/R harn	ess connector terminals.	
	IPDM E/R harness connector		Resistance (Ω)
Connector No.	Termiı	al No.	
NO >> Repair the IPDI	M E/R branch line.		
NO >> Repair the IPDi CHECK POWER SUPPI heck the power supply and the inspection result norn	M E/R branch line. _Y AND GROUND CIRCUIT d the ground circuit of the IF nal?	PDM E/R. Refer to <u>PCS-</u> 2	28, "Diagnosis Procedure".
NO >> Repair the IPDI CHECK POWER SUPPI CHECK POWER SUPPI Check the power supply an the inspection result norn YES (Present error)>>Rep YES (Past error)>>Error w NO >> Repair the pow	M E/R branch line. _Y AND GROUND CIRCUIT d the ground circuit of the IF <u>nal?</u> blace the IPDM E/R. Refer /as detected in the IPDM E/ er supply and the ground ci	PDM E/R. Refer to <u>PCS-2</u> o <u>PCS-29. "Removal and</u> R branch line. rcuit.	28, "Diagnosis Procedure". I Installation".
NO >> Repair the IPDI CHECK POWER SUPPI Check the power supply an the inspection result norn YES (Present error)>>Rep YES (Past error)>>Error w NO >> Repair the pow	M E/R branch line. <u>Y AND GROUND CIRCUIT</u> d the ground circuit of the IF <u>nal?</u> blace the IPDM E/R. Refer to vas detected in the IPDM E/ er supply and the ground ci	DM E/R. Refer to <u>PCS-2</u> O <u>PCS-29. "Removal and</u> R branch line. rcuit.	28, "Diagnosis Procedure". I Installation".
NO >> Repair the IPDI CHECK POWER SUPPI theck the power supply an the inspection result norn YES (Present error)>>Rep YES (Past error)>>Error w NO >> Repair the pow	M E/R branch line. _Y AND GROUND CIRCUIT d the ground circuit of the IF <u>nal?</u> blace the IPDM E/R. Refer to vas detected in the IPDM E, er supply and the ground ci	PDM E/R. Refer to <u>PCS-2</u> o <u>PCS-29, "Removal and</u> R branch line. rcuit.	28, "Diagnosis Procedure".
NO >> Repair the IPDI CHECK POWER SUPPI Check the power supply an the inspection result norn YES (Present error)>>Rep YES (Past error)>>Error w NO >> Repair the pow	M E/R branch line. <u>Y AND GROUND CIRCUIT</u> d the ground circuit of the IF <u>nal?</u> blace the IPDM E/R. Refer to vas detected in the IPDM E/ er supply and the ground ci	PDM E/R. Refer to <u>PCS-2</u> o <u>PCS-29. "Removal and</u> R branch line. rcuit.	28, "Diagnosis Procedure".

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# STRG BRANCH LINE CIRCUIT

## Diagnosis Procedure

INFOID:000000008491304

[CAN SYSTEM (TYPE 1)]

#### 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
- Steering angle sensor
- Harness connector M23 and PCB harness side connector
- CAN gateway

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

**2.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Disconnect the connector of CAN gateway.
- 2. Check the continuity between the CAN gateway harness connector terminals.

	CAN gateway harness connector			
Connector No.	Termi	Continuity		
M125	4	6	Existed	
101123	10	12	Existed	

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Check the harness and repair or replace (if shield line is open) the root cause (CAN communication circuit 2 side). Refer to <u>LAN-31, "CAN COMMUNICATION SYSTEM : System Diagram"</u>.

## ${f 3.}$ CHECK HARNESS FOR OPEN CIRCUIT

- 1. Connect the connector of CAN gateway.
- 2. Disconnect the connector of steering angle sensor.
- 3. Check the resistance between the steering angle sensor harness connector terminals.

Ste	Posistanaa (O)		
Connector No.	Termi		
M37	1 2		Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.

NO >> GO TO 5.

**4.**CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to <u>BRC-59, "Wiring Dia-gram"</u>.

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-166, "Removal and Installation".

- YES (Past error)>>Error was detected in the steering angle sensor branch line.
- NO >> Repair the power supply and the ground circuit.

#### **5.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M23.

2. Check the continuity between the steering angle sensor harness connector and the harness connector.

# STRG BRANCH LINE CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

## [CAN SYSTEM (TYPE 1)]

Steering angle sen	sor harness connector	Harnes	s connector	Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
M37	1	M23	134	Existed
	2		136	Existed
YES >> Replace to resurve the inspection resurve to result of the result	<u>It normal?</u> the PCB harness. e harness between the r M23.	e steering angle ser	sor harness connector	M37 and the harnes

# **ABS BRANCH LINE CIRCUIT**

## Diagnosis Procedure

INFOID:000000008491305

[CAN SYSTEM (TYPE 1)]

#### **1.**CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
- ABS actuator and electric unit (control unit)
- CAN gateway

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

**2.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Disconnect the connector of CAN gateway.
- 2. Check the continuity between the CAN gateway harness connector terminals.

	CAN gateway harness connector	r	Continuity
Connector No.	Termi	nal No.	
M125	4 6		Existed
11/125	10	12	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Check the harness and repair or replace (if shield line is open) the root cause (CAN communication circuit 2 side). Refer to <u>LAN-31, "CAN COMMUNICATION SYSTEM : System Diagram"</u>.

# **3.**CHECK HARNESS FOR OPEN CIRCUIT

- 1. Connect the connector of CAN gateway.
- 2. Disconnect the connector of ABS actuator and electric unit (control unit).
- Check the resistance between the ABS actuator and electric unit (control unit) harness connector terminals.

ABS actuator	Posistanoo (O)		
Connector No.	Termi	nal No.	Resistance (12)
E89	22	9	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.

NO >> Repair the ABS actuator and electric unit (control unit) branch line.

#### 4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to <u>BRC-138, "Diagnosis Procedure"</u>.

#### Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to <u>BRC-163, "Removal</u> and Installation".
- YES (Past error)>>Error was detected in the ABS actuator and electric unit (control unit) branch line.
- NO >> Repair the power supply and the ground circuit.

ADP BRANCH LINE	ECIRCUIT		
Diagnosis Procedure			H INFOID:000000008491307
1. CHECK CONNECTOR			В
<ol> <li>Turn the ignition switch</li> <li>Disconnect the 12V bat</li> <li>Check the following terr nector side).</li> <li>Driver seat control unit</li> <li>Harness connector B50</li> <li>Harness connector B11</li> <li>CAN gateway</li> <li>Is the inspection result norm</li> <li>YES &gt;&gt; GO TO 2.</li> <li>NO &gt;&gt; Repair the term</li> <li>CHECK HARNESS CON</li> </ol>	OFF. tery cable from the negative ninals and connectors for d 1 <u>nal?</u> inal and connector. TINUITY (OPEN CIRCUIT)	e terminal. amage, bend and loose con	nection (unit side and con-
<ol> <li>Disconnect the connect</li> <li>Check the continuity be</li> </ol>	or of CAN gateway. tween the CAN gateway ha	arness connector terminals.	6
	CAN gateway harness connector		Continuity
Connector No.	Termir	nal No.	
M125	4	6	Existed
le the increation requilt norm	10	12	EXISTED
YES >> GO TO 3. NO >> Check the harm tion circuit 2 sid <b>3.</b> CHECK HARNESS FOR 1. Connect the connector	ess and repair or replace (i e). Refer to <u>LAN-31, "CAN</u> OPEN CIRCUIT of CAN gateway.	f shield line is open) the roo COMMUNICATION SYSTE	I t cause (CAN communica- <u>M : System Diagram"</u> . J
<ol> <li>Disconnect the connect</li> <li>Check the resistance be</li> </ol>	or of driver seat control unit etween the driver seat control	rol unit harness connector te	erminals.
Driv	er seat control unit harness conne	ector	Resistance ( $\Omega$ )
Connector No.	Termir 23	21	Approx 54 - 66
Is the measurement value w	vithin the specification?	27	
YES >> GO TO 4. NO >> Repair the drive	r seat control unit branch li Y AND GROUND CIRCUIT	ne.	N
Check the power supply and CONTROL UNIT : Diagnosis	I the ground circuit of the dr <u>s_Procedure"</u> . aal?	iver seat control unit. Refer t	ID ADP-63, "DRIVER SEAT C
YES (Present error)>>Rep YES (Past error)>>Error w NO >> Repair the powe	lace the driver seat control as detected in the driver se er supply and the ground ci	unit. Refer to <u>ADP-136, "Re</u> at control unit branch line. rcuit.	moval and Installation". P

< DTC/CIRCUIT DIAGNOSIS >

#### < DTC/CIRCUIT DIAGNOSIS >

# INV/MC BRANCH LINE CIRCUIT

## Diagnosis Procedure

INFOID:000000008491315

[CAN SYSTEM (TYPE 1)]

## 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the terminals and connectors of the traction motor inverter for damage, bend and loose connection (unit side and connector side).

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

## 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect the connector of traction motor inverter.
- 2. Check the resistance between the traction motor inverter harness connector terminals.

Trac	ction motor inverter harness conn	Posistanaa (O)	
Connector No.	Termi	nal No.	Resistance (22)
E78	9 28		Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the traction motor inverter branch line.

## **3.**CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the traction motor inverter. Refer to <u>TMS-53, "Diagnosis Pro-</u> cedure".

Is the inspection result normal?

YES (Present error)>>Replace the traction motor inverter. Refer to TMS-121, "Removal and Installation".

YES (Past error)>>Error was detected in the traction motor inverter branch line.

NO >> Repair the power supply and the ground circuit.

TCM BRANCH L	INE CIRCUIT				
Diagnosis Procedu	ıre			INFOID:00000008491316	
1. CHECK CONNECTOR	OR				
<ol> <li>Turn the ignition sw</li> <li>Disconnect the 12\</li> <li>Check the following nector side).</li> <li>A/T assembly</li> <li>Harness connector</li> <li>Harness connector</li> </ol>	vitch OFF. / battery cable from th terminals and conne F103 M116	ne negative terminal. ectors for damage, be	nd and loose conn	ection (unit side and con-	
- Harness connector	M28 and PCB harne	ss side connector			
YES >> GO TO 2. NO >> Repair the	terminal and connect	or.			
1 Disconnect the con	POR OPEN CIRCUI				
2. Check the resistant	ce between the A/T as	ssembly harness con	nector terminals.		
	A/T assembly harne	ess connector		Resistance (Ω)	
Connector No.		Terminal No.			
F61	3		8	Approx. 54 – 66	
YES >> GO TO 3. NO >> GO TO 4. <b>3.</b> CHECK POWER SL	IPPLY AND GROUN				
Check the power supply	y and the ground circ	uit of the TCM. Refer	to <u>TM-158, "Diagn</u>	osis Procedure".	
Is the inspection result YES (Present error)>> <u>nent Parts</u> list.) YES (Past error)>>Err NO >> Repair the	normal? Replace the control v Location". (Replace A or was detected in th power supply and the	valve &TCM. Refer to A/T assembly if contro e TCM branch line. e ground circuit.	<u>TM-13, "A/T CON</u> I valve &TCM is no	TROL SYSTEM : Compo- ot listed in the latest parts	
<b>4.</b> CHECK HARNESS	CONTINUITY (OPEN	I CIRCUIT)			
<ol> <li>Disconnect the har</li> <li>Check the continuit</li> </ol>	ness connector M28. y between the A/T as	sembly harness conn	ector and the harr	ness connector.	
A/T assembly ha	rness connector	Harness of	connector		
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity	
F61	3	M28	341	Existed	
101	8	W20	342	Existed	
F61 Is the inspection result YES >> Replace the NO >> Repair the	Terminal No. 3 8 normal? e PCB harness. harness between the	A/T assembly barnes	Terminal No. 341 342 s connector F61 a	Existed Existed	

NO >> Repair the harness between the A/T assembly harness connector F61 and the harness connector M28.

< DTC/CIRCUIT DIAGNOSIS >

#### < DTC/CIRCUIT DIAGNOSIS >

# E-OP BRANCH LINE CIRCUIT

## Diagnosis Procedure

INFOID:000000008491317

[CAN SYSTEM (TYPE 1)]

## 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the terminals and connectors of the sub electric oil pump inverter for damage, bend and loose connection (unit side and connector side).

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

## 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect the connector of sub electric oil pump inverter.
- 2. Check the resistance between the sub electric oil pump inverter harness connector terminals.

Sub ele	ectric oil pump inverter harness co	Posistance (O)	
Connector No.	Termi	nal No.	Resistance (22)
B151	4	8	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the sub electric oil pump inverter branch line.

## $\mathbf{3}$ . Check power supply and ground circuit

Check the power supply and the ground circuit of the sub electric oil pump inverter. Refer to <u>TM-160, "Diagno-</u> sis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the sub electric oil pump inverter. Refer to <u>TM-188</u>, <u>"Removal and Installa-</u> <u>tion"</u>.

YES (Past error)>>Error was detected in the sub electric oil pump inverter branch line.

NO >> Repair the power supply and the ground circuit.

< DTC/CIRCUIT DIAGNOSIS >

# **HV BAT BRANCH LINE CIRCUIT**

#### Diagnosis Procedure

#### WARNING:

- Because hybrid vehicles and electric vehicles contain a high voltage battery, there is the risk of electric shock, electric leakage, or similar accidents if the high voltage component and vehicle are handled incorrectly. Be sure to follow the correct work procedures when performing inspection and maintenance.
- Be sure to remove the service plug in order to shut off the high voltage circuits before performing inspection or maintenance of high voltage system harnesses and parts.
- Be sure to put the removed service plug in your pocket and carry it with you so that another person D does not accidentally connect it while work is in progress.
- Be sure to wear insulating protective equipment consisting of glove, shoes and glasses before beginning work on the high voltage system.
- Clearly identify the persons responsible for high voltage work and ensure that other persons do not touch the vehicle. When not working, cover high voltage parts with an insulating cover sheet or similar item to prevent other persons from contacting them.
- Refer to <u>LAN-25, "High Voltage Precautions"</u>.

#### CAUTION:

There is the possibility of a malfunction occurring if the vehicle is changed to READY status while the service plug is removed. Therefore do not change the vehicle to READY status unless instructed to do so in the Service Manual.

1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the terminals and connectors of the Li-ion battery for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

- YES >> GO TO 2.
- NO >> Repair the terminal and connector.

#### 2.CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect the connector of Li-ion battery.
- 2. Check the resistance between the Li-ion battery harness connector terminals.

	Li-ion battery harness connector		Papiatanan (O)	-
Connector No.	Term	inal No.	Resistance (12)	L
B160	3	15	Approx. 108 – 132	-

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Replace the body harness.

3. PRECONDITIONING

#### WARNING:

Shut off high voltage circuit. Refer to GI-30, "How to Cut Off High Voltage".

Check voltage in high voltage circuit. (Check that condenser are discharged.)

1. Remove trunk finisher front. Refer to INT-51, "Exploded View".

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## **HV BAT BRANCH LINE CIRCUIT**

#### < DTC/CIRCUIT DIAGNOSIS >

- 2. Remove harness cover (1).
  - DANGER:

Touching high voltage components without using the appropriate protective equipment will cause electrocution.



# [CAN SYSTEM (TYPE 1)]



3. Measure voltage between high voltage harness terminals.

Standard

: 5 V or less

## DANGER:

Touching high voltage components without using the appropriate protective equipment will cause electrocution.



**CAUTION:** For voltage measurements, use a tester which can measure to 500 V or higher.

>> GO TO 4.

4. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Li-ion battery controller. Refer to <u>HBB-184</u>, "LI-ION BAT-<u>TERY CONTROLLER : Diagnosis Procedure"</u>.

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair the power supply and the ground circuit.

5.CHECK HARNESS FOR OPEN CIRCUIT

- 1. Remove Li-ion battery controller. Refer to <u>HBB-200</u>, "LI-ION BATTERY CONTROLLER : Disassembly and <u>Assembly</u>".
- Check the continuity between vehicle communication harness (harness between Li-ion battery harness connector side and Li-ion battery controller side) connector terminals. Refer to <u>HBB-23. "Circuit Diagram"</u>.

Vehicle commu	nication harness	
Li-ion battery harness connector side	Li-ion battery controller side	Continuity
Terminal No.	Terminal No.	
3	1	Existed
15	13	Existed

Is the measurement value within the specification?

YES (Present error)>>Replace the Li-ion battery controller. Refer to <u>HBB-200, "LI-ION BATTERY CON-</u> <u>TROLLER : Disassembly and Assembly"</u>.

YES (Past error)>>Error was detected in the Li-ion battery controller branch line.

NO >> Repair the vehicle communication harness.



## **CAN COMMUNICATION CIRCUIT 1**

[CAN SYSTEM (TYPE 1)]

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#### < DTC/CIRCUIT DIAGNOSIS > **CAN COMMUNICATION CIRCUIT 1 Diagnosis** Procedure INFOID:000000008491319 **1.**CONNECTOR INSPECTION 1. Turn the ignition switch OFF. Disconnect the 12V battery cable from the negative terminal. 2. 3. Disconnect all the unit connectors on CAN communication circuit 1. NOTE:

For identification of CAN communication circuit 1, CAN communication circuit 2, ITS communication circuit, and HEV system CAN circuit, refer to LAN-31, "CAN COMMUNICATION SYSTEM : System Diagram".

4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2. CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

	Data link connector		Continuity	0
Connector No.	Termi	nal No.		
M182	6	14	Not existed	
· · · · ·			1	• –

Is the inspection result normal?

YES >> GO TO 3.

>> Check the harness and repair or replace (if shield line or PCB harness is short) the root cause. NO

# **3.**CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link	connector		Continuity	Continuity	
Connector No.	Terminal No.	Cround			
M192	6	Ground	Not existed	K	
IVI TO2	14		Not existed	_	

Is the inspection result normal?

YES >> GO TO 4.

NO >> Check the harness and repair or replace (if shield line or PCB harness is short) the root cause.

4.CHECK ECM AND IPDM E/R TERMINATION CIRCUIT

Remove the ECM and the IPDM E/R. 1

2. Check the resistance between the ECM terminals.

Besistance (0)	CM	E
	Terminal No.	
Approx. 108 – 132	113	114

Check the resistance between the IPDM E/R terminals. 3

IPDM E/R		Resistance (Ω)	
Terminal No.			
40	39	Approx. 108 – 132	

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

#### < DTC/CIRCUIT DIAGNOSIS >

## 5. CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the "Symptom (Results from interview with customer)" are reproduced.

#### Inspection result

Reproduced>>GO TO 6.

Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

#### **6.**CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Disconnect one of the unit connectors of CAN communication circuit 1. **NOTE:**

ECM and IPDM E/R have a termination circuit. Check other units first.

Connect the 12V battery cable to the negative terminal. Check if the symptoms described in the "Symptom (Results from interview with customer)" are reproduced.

#### NOTE:

Although unit-related error symptoms occur, do not confuse them with other symptoms.

#### Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.

Non-reproduced>>Replace the unit whose connector was disconnected.

< DTC/CIRCUIT DIAG	NOSIS >		[CA	N SYSTEM (TYPE 1)]
	CATION CIRC	UIT 2		
Diagnosis Procedu	re			INFOID:0000000849132
<b>1.</b> CHECK CAN DIAGN	OSIS			
Check the CAN diagnos function.	sis results from CON	NSULT to see that the	e CAN communicati	on circuit 1 has no mal
NOTE: For identification of CAI and HEV system CAN c	N communication ci	rcuit 1, CAN commu 31, "CAN COMMUNI	nication circuit 2, ITS CATION SYSTEM : S	S communication circuit
s the CAN communicati	on circuit 1 normal?	<u>.</u>		
YES >> GO TO 2.	_			
NO >> Check and I	repair CAN commun	ication circuit 1.		
<b>Z</b> .CONNECTOR INSPE	ECTION			
1. Turn the ignition swi	itch OFF.			
<ol> <li>Disconnect the 12V</li> <li>Check the following</li> </ol>	terminals and conn	ectors for damage. b	end and loose conne	ction (unit side and con
nector side).				
· CAN gateway	M23 and PCP haras	es side connector		
- namess connector	w∠ə anu rub name ormal?	ss side connector		
YFS >> GO TO 3				
NO >> Repair the t	erminal and connec	tor.		
<b>3.</b> CHECK HARNESS (		N CIRCUIT)		
<ol> <li>Disconnect the conr</li> <li>Check the continuity</li> </ol>	between the CAN	vay. gateway harness cor	nnector terminals.	
O anno atan Na	CAN gateway harn	ess connector		Continuity
	1	Terminal No.	6	Evistod
M125	4		12	Existed
Le the increation result r	ormal?		12	Existed
YES >> GO TO 5	<u>IOITTIAL ?</u>			
NO >> GO TO 4.				
4. CHECK HARNESS (	CONTINUITY (SHOP	RT CIRCUIT)		
1. Disconnect the harr	ess connector M23	,		
2. Check the continuity	/ between the CAN	gateway harness cor	nector and the harne	ess connector.
CAN gateway har		Harnes		
Connector No.	Ierminal No.	Connector No.	Ierminal No.	
M125	4	M23	133	Existed
	10		135	Existed
Is the inspection result r YES >> Replace the NO >> Repair the r tor M23.	ormal? PCB harness. harness between the	e CAN gateway harne	ess connector M125 a	and the harness connec
5. CHECK HARNESS C	CONTINUITY (SHOP	RT CIRCUIT)		
1. Disconnect all the u	nit connectors on C	AN communication c	ircuit 2.	
	-			

2. Check the continuity between the CAN gateway harness connector terminals.

# LAN-173

# **CAN COMMUNICATION CIRCUIT 2**

#### < DTC/CIRCUIT DIAGNOSIS >

#### [CAN SYSTEM (TYPE 1)]

	CAN gateway harness connector	r	Continuity
Connector No.	Terminal No.		Continuity
M125	4	10	Not existed

Is the measurement value within the specification?

YES >> GO TO 6.

NO >> Check the harness and repair or replace the root cause.

**6.**CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the CAN gateway harness connector and the ground.

CAN gateway h	CAN gateway harness connector		Continuity
Connector No.	Terminal No.	Ground	Continuity
M125	4	Ground	Not existed
WI125	10		Not existed

Is the inspection result normal?

YES >> GO TO 7.

NO >> Check the harness and repair or replace the root cause.

#### 7. CHECK CAN GATEWAY TERMINATION CIRCUIT

#### 1. Remove the CAN gateway.

2. Check the resistance between the CAN gateway terminals.

CAN gateway		Posietance (O)	
Termiı	nal No.		
4	10	Approx. 108 – 132	
6	12	Approx. 108 – 132	

Is the measurement value within the specification?

YES >> GO TO 8.

NO >> Replace the CAN gateway.

#### 8.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the "Symptom (Results from interview with customer)" are reproduced.

#### Inspection result

Reproduced>>GO TO 9.

Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

#### 9.CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Disconnect one of the unit connectors of CAN communication circuit 2.
- NOTE:

CAN gateway has two termination circuits. Check other units first.

 Connect the 12V battery cable to the negative terminal. Check if the symptoms described in the "Symptom (Results from interview with customer)" are reproduced. NOTE:

Although unit-related error symptoms occur, do not confuse them with other symptoms.

#### Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.

Non-reproduced>>Replace the unit whose connector was disconnected.

#### LAN-174

#### < DTC/CIRCUIT DIAGNOSIS >

# HEV SYSTEM CAN CIRCUIT

# Diagnosis Procedure

#### WARNING:

- Because hybrid vehicles and electric vehicles contain a high voltage battery, there is the risk of electric shock, electric leakage, or similar accidents if the high voltage component and vehicle are handled incorrectly. Be sure to follow the correct work procedures when performing inspection and maintenance.
- Be sure to remove the service plug in order to shut off the high voltage circuits before performing inspection or maintenance of high voltage system harnesses and parts.
- Be sure to put the removed service plug in your pocket and carry it with you so that another person D does not accidentally connect it while work is in progress.
- Be sure to wear insulating protective equipment consisting of glove, shoes and glasses before beginning work on the high voltage system.
- Clearly identify the persons responsible for high voltage work and ensure that other persons do not touch the vehicle. When not working, cover high voltage parts with an insulating cover sheet or similar item to prevent other persons from contacting them.
- Refer to LAN-25, "High Voltage Precautions".

#### CAUTION:

There is the possibility of a malfunction occurring if the vehicle is changed to READY status while the service plug is removed. Therefore do not change the vehicle to READY status unless instructed to do so in the Service Manual.

**1.**PRECONDITIONING

#### WARNING:

Shut off high voltage circuit. Refer to GI-30, "How to Cut Off High Voltage".

- Check voltage in high voltage circuit. (Check that condenser are discharged.)
- 1. Remove trunk finisher front. Refer to INT-51, "Exploded View".
- 2. Remove harness cover (1).

#### DANGER:

Touching high voltage components without using the appropriate protective equipment will cause electrocution.





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3. Measure voltage between high voltage harness terminals.

#### Standard

: 5 V or less

#### DANGER:

Touching high voltage components without using the appropriate protective equipment will cause electrocution.

#### CAUTION:

For voltage measurements, use a tester which can measure to 500 V or higher.

#### >> GO TO 2.

**2.**CONNECTOR INSPECTION

1. Turn the ignition switch OFF.

INFOID:000000008491322

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# **HEV SYSTEM CAN CIRCUIT**

< DTC/CIRCUIT DIAGNOSIS >

- 2. Disconnect the 12V battery cable from the negative terminal.
- Disconnect all the control unit connectors on HEV system CAN circuit. For the removal of Li-ion battery controller, refer to <u>HBB-200</u>, "LI-ION BATTERY CONTROLLER : Disassembly and Assembly". NOTE:

For identification of CAN communication circuit 1, CAN communication circuit 2, ITS communication circuit, and HEV system CAN circuit, refer to <u>LAN-31</u>, <u>"CAN COMMUNICATION SYSTEM : System Diagram"</u>.

4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the terminal and connector.

**3.**CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

	Data link connector		Continuity
Connector No.	Terminal No.		Continuity
M182	13	12	Not existed

Is the inspection result normal?

YES >> GO TO 4.

NO >> Check the harness and repair or replace (if shield line or PCB harness is short) the root cause.

**4.**CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector			Continuity
Connector No.	Terminal No.	Ground	Continuity
M182	13	Gibuna	Not existed
WITOZ	12		Not existed

Is the inspection result normal?

YES >> GO TO 5.

NO >> Check the harness and repair or replace (if shield line or PCB harness is short) the root cause.

5.CHECK ECM AND LI-ION BATTERY CONTROLLER TERMINATION CIRCUIT

1. Remove the ECM.

2. Check the resistance between the ECM terminals.

ECM		Resistance (Ω)	
Terminal No.		- Resistance (Ω)	
55	54	Approx. 108 – 132	

 Remove the Li-ion battery controller. Refer to <u>HBB-200</u>, "LI-ION BATTERY CONTROLLER : <u>Disassembly</u> and <u>Assembly</u>".

4. Check the resistance between the Li-ion battery controller terminals.

Li-ion battery controller Terminal No.		- Resistance (Ω)	

Is the measurement value within the specification?

YES >> GO TO 6.

NO >> Replace the ECM and/or the Li-ion battery controller.

6.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the "Symptom (Results from interview with customer)" are reproduced.

## LAN-176

# **HEV SYSTEM CAN CIRCUIT**

# [CAN SYSTEM (TYPE 1)]

< DTC/CIRCUIT DIAGNOSIS >	[CAN SYSTEM (TYPE 1)]
Inspection result	
Reproduced>>GO TO 7. Non-reproduced>>Start the diagnosis again. Follow the trouble diagnost detected.	sis procedure when past error is
<b>I</b> .CHECK CONTROL UNIT REPRODUCTION	
Perform the reproduction test as per the following procedure for each control. Turn the ignition switch OFF.	ol unit.
<ol> <li>Disconnect the 12V battery cable from the negative terminal.</li> <li>Disconnect one of the control unit connectors of HEV system CAN circu NOTE:</li> </ol>	uit.
<ul> <li>ECM and Li-ion battery controller have a termination circuit. Check other</li> <li>Connect the 12V battery cable to the negative terminal. Check if the s tom (Results from interview with customer)" are reproduced.</li> </ul>	er control units first. ymptoms described in the "Symp-
Although control unit-related error symptoms occur, do not confuse ther	n with other symptoms.
Reproduced>>Connect the connector. Check other control units as per the Non-reproduced>>Replace the control unit whose connector was disconnector.	e above procedure. ected.

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#### MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 2)]

# DTC/CIRCUIT DIAGNOSIS MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT

#### **Diagnosis Procedure**

INFOID:000000008491331

# **1.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Disconnect the following harness connectors.
- ECM
- Low tire pressure warning control unit
- A/C auto amp.
- 4. Check the continuity between the low tire pressure warning control unit harness connector and the A/C auto amp. harness connector.

Low tire pressure wharness	re warning control unit ss connector A/C auto amp. h		arness connector	Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M42	2	Mee	12	Existed
10145	1	- M66	11	Existed

#### Is the inspection result normal?

- YES (Present error)>>Check CAN system type decision again.
- YES (Past error)>>Error was detected in the main line between the low tire pressure warning control unit and the A/C auto amp.
- NO >> Replace the PCB harness.

	NOSIS >	[CAN SYSTEM (TYPE 2)]		
IAIN LINE BET	WEEN HVAC	AND A-BAG CI	RCUIT	
iagnosis Proced	ure			INFOID:00000008491332
.CHECK HARNESS	CONTINUITY (OPEN	N CIRCUIT)		
Turn the ignition sv Disconnect the 12 Disconnect the foll ECM A/C auto amp. AV control unit Check the continui nector. Models with naviga	vitch OFF. / battery cable from t owing harness conne ty between the A/C a ation system	he negative terminal. ectors. uto amp. harness con	nector and the AV co	ontrol unit harness con-
A/C auto amp. ha	arness connector	AV control unit ha	arness connector	
Connector No.	Terminal No.	Connector No.	Terminal No.	
Mcc	12	M210	90	Existed
Ινιοο	11	IVIZ TO	74	Existed
Models without nav	igation system	·		<u>.</u>
A/C auto amp. ha	arness connector	AV control unit ha	arness connector	
A/C auto amp. ha Connector No.	arness connector Terminal No.	AV control unit ha	arness connector Terminal No.	Continuity
A/C auto amp. ha	arness connector Terminal No. 12	AV control unit ha	Terminal No.	- Continuity Existed

MAIN LINE BETWEEN HVAC AND A-BAG CIRCUIT

sensor unit. NO >> Replace the PCB harness.

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## MAIN LINE BETWEEN A-BAG AND AV CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

# MAIN LINE BETWEEN A-BAG AND AV CIRCUIT

#### **Diagnosis** Procedure

INFOID:000000008491333

[CAN SYSTEM (TYPE 2)]

# 1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Disconnect the following harness connectors.
- ECM
- A/C auto amp.
- AV control unit
- Check the continuity between the A/C auto amp. harness connector and the AV control unit harness connector.
- Models with navigation system

A/C auto amp. harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
M66	12	M210	90	Existed
	11		74	Existed

#### Models without navigation system

A/C auto amp. harness connector		AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
M66	12	M84	81	Existed
	11		80	Existed

#### Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.

YES (Past error)>>Error was detected in the main line between the air bag diagnosis sensor unit and the AV control unit.

NO >> Replace the PCB harness.
	MAIN LINE BE	TWEEN AV AND	M&A CIRCUIT	
DTC/CIRCUIT DIA	GNOSIS >		[CAN	N SYSTEM (TYPE 2)]
MAIN LINE BET	WEEN AV AN	D M&A CIRCUI	Т	
Diagnosis Proced	ure			INFOID:00000008491334
1.CHECK HARNESS	CONTINUITY (OPE)	N CIRCUIT)		
<ol> <li>Turn the ignition s</li> <li>Disconnect the 12</li> <li>Disconnect the fol ECM AV control unit Combination meter</li> <li>Check the continuc connector. Models with navig</li> </ol>	witch OFF. V battery cable from t lowing harness conne er ity between the AV co ation system	he negative terminal. ectors. ontrol unit harness co	nnector and the com	bination meter harness
AV control unit h	arness connector	Combination meter	harness connector	Orationity
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
M210	90	ME2	14	Existed
WZ TO	74	1000	15	Existed
Models without na	vigation system			
AV control unit h	arness connector	Combination meter	harness connector	Orationity
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
M84	81	ME2	14	Existed
10104	80	0000	15	Existed
s the inspection result YES (Present error)> YES (Past error)>>En meter. NO >> Replace th	<u>normal?</u> >Check CAN system fror was detected in he PCB harness.	type decision again. the main line betwee	n the AV control uni	t and the combination

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#### < DTC/CIRCUIT DIAGNOSIS >

# MAIN LINE BETWEEN M&A AND DLC CIRCUIT

#### Diagnosis Procedure

INFOID:000000008491335

[CAN SYSTEM (TYPE 2)]

# 1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Disconnect the following harness connectors.
- ECM
- Combination meter
- Harness connectors M105 and M181
- 4. Check the continuity between the combination meter harness connector and the harness connector.

Combination mete	r harness connector	Harness connector		Continuity
Connector No.	Terminal No.	Connector No. Terminal No.		Continuity
M53	14	M105	7	Existed
M53	15	WI105	8	Existed

#### Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.

- YES (Past error)>>Error was detected in the main line between the combination meter and the data link connector.
- NO >> Replace the PCB harness.

MAIN LINE BETWEEN DLC AND BCM CIRCUIT							
< DTC/CIRCUIT DIAG	SNOSIS >		[CAI	N SYSTEM (TYPE 2)]			
MAIN LINE BET	WEEN DLC A	ND BCM CIRC	UIT				
Diagnosis Proced	ure			INFOID:00000008491336	A		
1.CHECK HARNESS	CONTINUITY (OPE	N CIRCUIT)			В		
<ol> <li>Turn the ignition sv</li> <li>Disconnect the 12<sup>v</sup></li> <li>Disconnect the foll</li> <li>ECM</li> <li>Harness connector</li> <li>BCM</li> <li>Check the continuit</li> </ol>	witch OFF. V battery cable from owing harness conner rs M181 and M105 ty between the harne	the negative terminal. ectors. ess connector and the	BCM harness conne	ctor.	C		
Harness	connector	BCM harnes	ss connector		_		
Connector No.	Terminal No.	Connector No.	Terminal No.	- Continuity	E		
M105	7	M120	39	Existed			
101105	8	101120	40	Existed	F		

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.

YES (Past error)>>Error was detected in the main line between the data link connector and the BCM.

NO >> Replace the PCB harness.

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## MAIN LINE BETWEEN BCM AND EV/HEV CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

# MAIN LINE BETWEEN BCM AND EV/HEV CIRCUIT

#### Diagnosis Procedure

INFOID:000000008491337

[CAN SYSTEM (TYPE 2)]

## 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector M20 and PCB harness side connector
- Harness connector M7
- Harness connector B1

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

# 2. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- BCM

- Harness connector M20
- 2. Check the continuity between the BCM harness connector and the PCB harness connector.

BCM harne	ess connector	connector PCB harness connector		
Connector No.	Terminal No.	Terminal No.	Continuity	
M120	39	35	Existed	
W120	40	36	Existed	

Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace the PCB harness.

**3.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Disconnect the harness connectors M7 and B1.
- 2. Check the continuity between the harness connectors.

Harness	connector	Harness connector           No.         Connector No.		Continuity
Connector No.	Terminal No.			Continuity
M20	35	MZ	72	Existed
MZO	36		71	Existed

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair the main line between the harness connectors M20 and M7.

#### **4.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector terminals.

Connector No.	Termi	Continuity	
D1	72	82	Existed
ום	71	81	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.

YES (Past error)>>Error was detected in the main line between the BCM and the HPCM.

NO >> Replace the body harness.

COTC/CIRCUIT DIA	C/CIRCUIT DIAGNOSIS > [CA					
MAIN LINE BE	TWEEN EV/HE	V AND EPS C	IRCUIT			
iagnosis Procec	lure			INFOID:0000000849133		
CHECK CONNECT	ſOR					
<ul> <li>Turn the ignition s</li> <li>Disconnect the 12</li> <li>Check the followi and harness side) Harness connector Harness connector Harness connector Harness connector</li> </ul>	witch OFF. V battery cable from t ng terminals and con or B1 or M7 or M6 or E106	he negative termina nectors for damage	l. , bend and loose	connection (connector side		
s the inspection resul YES >> GO TO 2. NO >> Repair the	<u>t normal?</u>	tor				
2. CHECK HARNESS		N CIRCUIT)				
Disconnect the ha	irness connectors B1 ity between the harne	and M7. ss connector termir	als.			
Connector No.		Terminal No. Continuity				
	B1 72	72 82				
	71		81	Existed		
YES >> GO TO 3. NO >> Replace the CHECK HARNESS Disconnect the hat Check the continue Harness	ne body harness. CONTINUITY (OPEN Irness connectors M6 lity between the harne	N CIRCUIT) and E106. ess connectors. Harnee	ss connector	Continuity		
Connector No.	Terminal No.	Connector No.	Terminal No.			
M7	82	M6	22	Existed		
s the inspection result YES >> GO TO 4. NO >> Repair the CHECK HARNESS Disconnect the co Check the continu- nector.	<ul> <li>main line between th</li> <li>CONTINUITY (OPE)</li> <li>nnector of power stee</li> <li>hity between the harne</li> </ul>	e harness connector N CIRCUIT) pring control module ss connector and th	rs M7 and M6. e power steering c	control module harness con-		
Harness	connector	Power steering control	module harness conn	nector		
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity		
	22	_	5	Existed		
E106		E97		<b></b>		

MAIN LINE BETWEEN EV/HEV AND EPS CIRCUIT

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.

23

YES (Past error)>>Error was detected in the main line between the HPCM and the power steering control module.

6

NO >> Repair the main line between the harness connector E106 and the power steering control module.

#### LAN-185

Existed

## MAIN LINE BETWEEN STRG AND ABS CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

# MAIN LINE BETWEEN STRG AND ABS CIRCUIT

#### Diagnosis Procedure

INFOID:000000008491339

[CAN SYSTEM (TYPE 2)]

#### **1.**CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector M20 and PCB harness side connector
- Harness connector M6
- Harness connector E106

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

# **2.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Disconnect the following harness connectors.
- Steering angle sensor
- Harness connector M20
- Check the continuity between the steering angle sensor harness connector and the PCB harness connector.

Steering angle sens	or harness connector	PCB harness connector	Continuity	
Connector No.	Terminal No.	Terminal No.	Continuity	
M27	1	24	Existed	
10137	2	27	Existed	

Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace the PCB harness.

**3.** CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Disconnect the harness connectors M6 and E106.
- 2. Check the continuity between the harness connectors.

Harness	connector	Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
M20	24	Мб	69	Existed
	27	INIO	70	Existed

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair the main line between the harness connectors M20 and M6.

**4.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector terminals.

Connector No.	Termir	Continuity	
E106	69	54	Existed
L 100	70	55	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.

YES (Past error)>>Error was detected in the main line between the steering angle sensor and the ABS actuator and electric unit (control unit).

NO >> Repair the main line between the harness connector E106 and the ABS actuator and electric unit (control unit).

COTC/CIRCUIT DIA	GNOSIS >			Γ	CAN SYSTEM (TYPE 2)]	
AIN LINE BET	WEEN ABS AN	ND ADF	P CIRCI	JIT		
agnosis Proced	ure				INFOID:00000008491340	
CHECK CONNECT	OR					
Turn the ignition s Disconnect the 12 Check the followin and harness side) Harness connector Harness connector Harness connector the inspection result (ES >> GO TO 2. IO >> Repair the	witch OFF. V battery cable from the ng terminals and conr r E106 r M6 r M7 r B1 <u>c normal?</u> e terminal and connect	he negative nectors for	e terminal. damage, l	pend and loose	connection (connector side	
CHECK HARNESS	CONTINUITY (OPEN		)			
Disconnect the ha	ity between the harne	is and M6. ss connect	or terminal	S.		
Connector No.		Terminal No. Continuity				
E106	69			54	Existed	
2100	70			55	Existed	
CHECK HARNESS Disconnect the ha Check the continu	CONTINUITY (OPEN rness connectors M7 ity between the harne	I CIRCUIT) and B1. ss connect	) ors.			
Harness	connector		Harness	connector		
Connector No.	Terminal No.	Connec	ctor No.	Terminal No.	Continuity	
M6	54	N	17	34	Existed	
	55	IV		35	Existed	
the inspection result ES >> GO TO 4. O >> Repair the CHECK HARNESS heck the continuity b	<u>normal?</u> main line between the CONTINUITY (OPEN etween the harness co	e harness I CIRCUIT	connectors ) erminals.	M6 and M7.		
Connector No.		Termir	nal No.		Continuity	
	34		-	32	Existed	
B1	35			33	Existed	
the inspection result	normal?					
(Present error) (ES (Past error)>>E (ES (Past error)>>E unit) and t	>Check CAN system rror was detected in the driver seat control	type decisi he main lin unit.	on again. ie betweer	the ABS actuat	or and electric unit (control	

MAIN LINE BETWEEN ABS AND ADP CIRCUIT

NO >> Replace the body harness.

#### MAIN LINE BETWEEN INV/MC AND TCM CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

# MAIN LINE BETWEEN INV/MC AND TCM CIRCUIT

#### Diagnosis Procedure

INFOID:000000008491344

[CAN SYSTEM (TYPE 2)]

#### **1.**CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector E106
- Harness connector M6
- Harness connector M29 and PCB harness side connector
- Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Disconnect the following harness connectors.
- Traction motor inverter
- Harness connectors E106 and M6
- 2. Check the continuity between the traction motor inverter harness connector and the harness connector.

Traction motor inver	ter harness connector	Harness	Continuity	
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
E70	9	E106	58	Existed
E78	28	EIUO	59	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the main line between the traction motor inverter and the harness connector E106.

**3.** CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Disconnect the harness connector M29.
- 2. Check the continuity between the harness connectors.

Harness	connector	Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
M6	58	M29	398	Existed
WO	59		397	Existed

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair the main line between the harness connectors M6 and M29.

#### **4.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors M116 and F103.

2. Check the continuity between the PCB harness connector and the harness connector.

PCB harness connector	Harness connector		Continuity
Terminal No.	Connector No.	Terminal No.	Continuity
398	M116	11	Existed
397		12	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.

YES (Past error)>>Error was detected in the main line between the traction motor inverter and the TCM. NO >> Replace the PCB harness.

	MAIN LINE BET	WEEN TCM ANI	D DLC CIRCUIT		
< DTC/CIRCUIT DIA	GNOSIS >		[CAN	N SYSTEM (TYPE 2)]	
MAIN LINE BET	<b>FWEEN TCM A</b>	ND DLC CIRCU	JIT		٨
Diagnosis Proced	lure			INFOID:000000008491345	A
1.CHECK HARNESS		N CIRCUIT)			В
<ol> <li>Turn the ignition s</li> <li>Disconnect the 12</li> <li>Disconnect the fol</li> <li>ECM</li> <li>Harness connector</li> <li>Harness connector</li> <li>Check the continue</li> </ol>	witch OFF. V battery cable from t llowing harness conne ors F103 and M116 ors M105 and M181 hity between the harne	the negative terminal. actors. ess connectors.			C
Harness connector Harness connector			connector	Continuity	_
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity	
M116	11	M105	32	Existed	
INITIO		NI I UU			

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.

12

YES (Past error)>>Error was detected in the main line between the TCM and the data link connector.

33

Existed

F

G

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NO >> Replace the PCB harness.

## MAIN LINE BETWEEN DLC AND EV/HEV CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

# MAIN LINE BETWEEN DLC AND EV/HEV CIRCUIT

#### Diagnosis Procedure

INFOID:000000008491346

[CAN SYSTEM (TYPE 2)]

## 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector M20 and PCB harness side connector
- Harness connector M7
- Harness connector B1

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

# **2.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Disconnect the following harness connectors.
- Harness connectors M181 and M105
- Harness connector M20
- 2. Check the continuity between the harness connector and the PCB harness connector.

Harness	connector	PCB harness connector	Continuity	
Connector No.	Terminal No.	Terminal No.	Continuity	
M105	32	23	Existed	
101105	M105 33	22	Existed	

Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace the PCB harness.

**3.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Disconnect the harness connectors M7 and B1.
- 2. Check the continuity between the harness connectors.

Harness	connector Harness connector		Harness connector	
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
M20	23	M7	38	Existed
WZO	22		39	Existed

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair the main line between the harness connectors M20 and M7.

**4.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of HPCM.

2. Check the continuity between the harness connector and the HPCM harness connector.

Harness	connector HPCM harness connector		HPCM harness connector	
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
D1	38	<b>B</b> 150	42	Existed
Ы	B1 B159	54	Existed	

#### Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.

YES (Past error)>>Error was detected in the main line between the data link connector and the HPCM. NO >> Replace the body harness.

#### LAN-190

#### ECM BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1) [CAN SYSTEM (TYPE 2)]

< DTC/CIRCUIT DIAGNOSIS >

# ECM BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

#### А Diagnosis Procedure INFOID:000000008491347 1.CHECK CONNECTOR В 1. Turn the ignition switch OFF. Disconnect the 12V battery cable from the negative terminal. 2. Check the following terminals and connectors for damage, bend and loose connection (unit side and con-3. С nector side). ECM Harness connector M30 and PCB harness side connector D Is the inspection result normal? YES >> GO TO 2. NO >> Repair the terminal and connector. Е 2.CHECK HARNESS FOR OPEN CIRCUIT 1. Disconnect the connector of ECM. F Check the resistance between the ECM harness connector terminals. 2. ECM harness connector Resistance $(\Omega)$ Connector No. Terminal No. M107 114 113 Approx. 108 - 132 Is the measurement value within the specification? Н YES >> GO TO 3. NO >> GO TO 4. 3.CHECK POWER SUPPLY AND GROUND CIRCUIT Check the power supply and the ground circuit of the ECM. Refer to EC-137, "Diagnosis Procedure". Is the inspection result normal? YES (Present error)>>Replace the ECM. Refer to EC-444, "Removal and Installation". YES (Past error)>>Error was detected in the ECM branch line (CAN communication circuit 1 side). Refer to LAN-31, "CAN COMMUNICATION SYSTEM : System Diagram". NO >> Repair the power supply and the ground circuit. Κ **4.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT) 1. Disconnect the harness connector M30. L Check the continuity between the ECM harness connector and the harness connector. 2. ECM harness connector Harness connector Continuity LAN Connector No. Terminal No. Connector No. Terminal No.

	113
Is the inspection result	normal?

M107

114

YES >> Replace the PCB harness.

>> Repair the harness between the ECM harness connector M107 and the harness connector M30. NO

M30

439

438

Ρ

Ν

Existed

Existed

# ECM BRANCH LINE CIRCUIT (HEV SYSTEM CAN CIRCUIT)

#### < DTC/CIRCUIT DIAGNOSIS >

# ECM BRANCH LINE CIRCUIT (HEV SYSTEM CAN CIRCUIT)

## Diagnosis Procedure

INFOID:000000008491348

[CAN SYSTEM (TYPE 2)]

## 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
- ECM
- Harness connector F1
- Harness connector E3

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

# 2.check harness for open circuit

- 1. Disconnect the connector of ECM.
- 2. Check the resistance between the ECM harness connector terminals.

ECM harness connector			Posistanco (O)
Connector No.	Terminal No.		
F102	55	54	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the ECM branch line (HEV system CAN circuit side). Refer to <u>LAN-31, "CAN COMMUNI-</u> <u>CATION SYSTEM : System Diagram"</u>.

# **3.**CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to <u>EC-137</u>, "Diagnosis Procedure". Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to EC-444, "Removal and Installation".

YES (Past error)>>Error was detected in the ECM branch line (HEV system CAN circuit side).

NO >> Repair the power supply and the ground circuit.

Diagnosis Procedure 1. CHECK CONNECTOR 1. Turn the ignition switch OFF. 2. Disconnect the 12V battery cable from 3. Check the following terminals and connector side). - Low tire pressure warning control uni	n the negative term nnectors for damag t rness side connecto	nal. e, bend and loose co	INFOID:00000008491349	
<ol> <li>CHECK CONNECTOR</li> <li>Turn the ignition switch OFF.</li> <li>Disconnect the 12V battery cable from</li> <li>Check the following terminals and connector side).</li> <li>Low tire pressure warning control unitial</li> </ol>	m the negative terminnectors for damage t rness side connector	nal. e, bend and loose co	nnection (unit side and con-	
<ol> <li>Turn the ignition switch OFF.</li> <li>Disconnect the 12V battery cable from</li> <li>Check the following terminals and connector side).</li> <li>Low tire pressure warning control unities</li> </ol>	n the negative term nnectors for damage t rness side connecto	nal. e, bend and loose co	nnection (unit side and con-	
- Low the pressure warning control un	rness side connecto			
<ul> <li>Harness connector M29 and PCB ha</li> <li>Is the inspection result normal?</li> <li>YES &gt;&gt; GO TO 2.</li> </ul>		r		
NO >> Repair the terminal and conn 2 CHECK HARNESS FOR OPEN CIRC	ector.			
<ol> <li>Disconnect the connector of low tire p</li> <li>Check the resistance between the low</li> </ol>	oressure warning co w tire pressure warn	ntrol unit. ing control unit harne	ess connector terminals.	
Low tire pressure warning connector No	ontrol unit harness conne	ector	Resistance (Ω)	
M43	2 1 Approx 54 – 66			
YES       >> GO TO 3.         NO       >> GO TO 4.         3.CHECK POWER SUPPLY AND GROUT         Check the power supply and the ground         "Diagnosis Procedure".         Is the inspection result normal?         YES (Present error)>>Replace the low         Installation".         YES (Past error)>>Error was detected in         NO       >> Repair the power supply and         4.CHECK HARNESS CONTINUITY (OF         1. Disconnect the harness connector M	JND CIRCUIT circuit of the low tire tire pressure warni the low tire pressu the ground circuit. PEN CIRCUIT) 29.	e pressure warning c ng control unit. Refe re warning control un	ontrol unit. Refer to <u>WT-45.</u> r to <u>WT-60. "Removal and</u> it branch line.	
2. Check the continuity between the low ness connector.	w tire pressure warr	ning control unit harn	ess connector and the har-	
Connector No. Terminal No.	Connector No.	Terminal No.	Continuity	
2	M20	396	Existed	
1	10123	395	Existed	

#### Is the inspection result normal?

< DTC/CIRCUIT DIAGNOSIS >

YES >> Replace the PCB harness.

NO >> Repair the harness between the low tire pressure warning control unit harness connector M43 and the harness connector M29.

## CGW BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

#### < DTC/CIRCUIT DIAGNOSIS >

# CGW BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

#### Diagnosis Procedure

INFOID:000000008491350

[CAN SYSTEM (TYPE 2)]

1	CHECK DTC
---	-----------

Check DTC of the CAN gateway with CONSULT.

Is U1010 or B2600 indicated?

YES >> Perform a diagnosis of the indicated DTC.

NO >> GO TO 2.

# 2. CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
- CAN gateway
- Harness connector M28 and PCB harness side connector

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the terminal and connector.

#### ${ m 3.}$ CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect the connector of CAN gateway.
- 2. Check the resistance between the CAN gateway harness connector terminals.

CAN gateway harness connector			Posistanco (O)
Connector No.	Terminal No.		Resistance (12)
M125	1	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.

NO >> GO TO 5.

**4.**CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the CAN gateway. Refer to <u>LAN-129, "Diagnosis Proce-</u> dure".

Is the inspection result normal?

YES (Present error)>>Replace the CAN gateway. Refer to LAN-130, "Removal and Installation".

YES (Past error)>>Error was detected in the CAN gateway branch line (CAN communication circuit 1 side). Refer to LAN-31, "CAN COMMUNICATION SYSTEM : System Diagram".

NO >> Repair the power supply and the ground circuit.

**5.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Disconnect the harness connector M28.
- 2. Check the continuity between the CAN gateway harness connector and the harness connector.

CAN gateway h	arness connector	Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
M125	1	1 M28	326	Existed
WI125	7		328	Existed

Is the inspection result normal?

YES >> Replace the PCB harness.

NO >> Repair the harness between the CAN gateway harness connector M125 and the harness connector M28.

## **HVAC BRANCH LINE CIRCUIT**

HVAC BRANCH	LINE CIRCUI	Г			Δ
Diagnosis Proced	ure			INFOID:00000008491351	A
1.CHECK CONNECT	OR				В
<ol> <li>Turn the ignition sv</li> <li>Disconnect the 12V</li> <li>Check the following nector side).</li> <li>A/C auto amp.</li> </ol>	vitch OFF. / battery cable from t g terminals and conne	he negative terminal. ectors for damage, be	end and loose conne	ction (unit side and con-	С
<ul> <li>Harness connector</li> <li>Is the inspection result</li> </ul>	• M28 and PCB harne	ess side connector			D
YES >> GO TO 2.	<u>noma:</u>				
NO >> Repair the	terminal and connect	or.			Е
2.CHECK HARNESS	FOR OPEN CIRCUIT	Г			
<ol> <li>Disconnect the cor</li> <li>Check the resistan</li> </ol>	nnector of A/C auto an ce between the A/C a	mp. auto amp. harness co	nnector terminals.		F
	A/C auto amp. harne	ess connector		Popistanaa (0)	
Connector No.		Terminal No.		Resistance (12)	G
M66	12		11	Approx. 54 – 66	
Is the measurement vaYES>> GO TO 3.NO>> GO TO 4. <b>3.</b> CHECK POWER SU	lue within the specific JPPLY AND GROUN	ation? D CIRCUIT			H
Check the power supp Diagnosis Procedure".	ly and the ground cir	cuit of the A/C auto a	amp. Refer to <u>HAC-</u>	153, "A/C AUTO AMP. :	
Is the inspection result	normal?				J
YES (Present error)>> YES (Past error)>>Err NO >> Repair the 4 CHECK HARNESS	Replace the A/C aut ror was detected in the power supply and the CONTINUITY (OPEN)	o amp. Refer to <u>HAC</u> le A/C auto amp. brar e ground circuit.	- <u>183, "Removal and</u> nch line.	Installation".	K
1 Disconnect the bor	mass connector M29				
2. Check the continui	ty between the A/C a	uto amp. harness cor	nnector and the harn	ess connector.	L
A/C auto amp. ha	arness connector	Harness	connector	Continuity	
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity	
M66	12	M28	325	Existed	
	11	-	327	Existed	Ν
is the inspection result	normal?				

YES >> Replace the PCB harness.

< DTC/CIRCUIT DIAGNOSIS >

NO >> Repair the harness between the A/C auto amp. harness connector M66 and the harness connec- O tor M28.

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# **A-BAG BRANCH LINE CIRCUIT**

Diagnosis Procedure

WARNING:

Always observe the following items for preventing accidental activation.

- Before servicing, turn ignition switch OFF, disconnect 12V battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.)
- Never use unspecified tester or other measuring device.

**1.**CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
- Air bag diagnosis sensor unit
- Harness connector M26 and PCB harness side connector

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace the main harness and/or the PCB harness.

2.CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to SRC-24, "Work Flow".

Is the inspection result normal?

- YES >> Replace the main harness and/or the PCB harness.
- NO >> Replace parts whose air bag system has a malfunction.

INFOID:00000008491352

# **TCU BRANCH LINE CIRCUIT**

# [CAN SYSTEM (TYPE 2)]

TCU BRANCH	LINE CIRCUIT			
Diagnosis Procee	dure			/ INFOID:00000008491353
1. CHECK CONNECT	TOR			E
<ol> <li>Turn the ignition s</li> <li>Disconnect the base</li> <li>Check the followin nector side).</li> <li>TCU</li> <li>Harness connected is the inspection result YES &gt;&gt; GO TO 2</li> </ol>	switch OFF. attery cable from the nang terminals and conn or M26 and PCB harne It normal?	egative terminal. ectors for damagess side connect	ge, bend and loose c or	onnection (unit side and con-
NO >> Repair th	e terminal and connec	tor.		I
2.CHECK HARNES	S FOR OPEN CIRCUI	Г		
<ol> <li>Disconnect the co</li> <li>Check the resista</li> </ol>	onnector of TCU. nce between the TCU	harness connec	tor terminals.	
	TCU harness of	connector		Resistance (O)
Connector No.		Terminal No.		(
M216	9		10	Approx. 54 – 66
Is the measurement v YES >> GO TO 3 NO >> GO TO 4 3.CHECK POWER S	ralue within the specific SUPPLY AND GROUN	cation? D CIRCUIT		ł
Check the power sup	olv and the ground circ	uit of the TCU.	Refer to AV-333. "TC	U : Diagnosis Procedure".
Is the inspection result YES (Present error): YES (Past error)>>E NO >> Repair the	I <u>t normal?</u> >>Replace the TCU. R Fror was detected in the power supply and the	efer to <u>AV-342, '</u> ne TCU branch li e ground circuit.	'Removal and Installa ne.	ation".
<b>4.</b> CHECK HARNESS	S CONTINUITY (OPEN	N CIRCUIT)		ł
<ol> <li>Disconnect the has</li> <li>Check the continue</li> </ol>	arness connector M26. uity between the TCU I	harness connect	or and the harness o	connector.
TCU harne	ess connector	Ha	arness connector	Continuity
Connector No.	Terminal No.	Connector No	o. Terminal No	D.
M216	9	M26	242	Existed
	10		262	Existed

Is the inspection result normal?

< DTC/CIRCUIT DIAGNOSIS >

YES >> Replace the PCB harness.

NO >> Repair the harness between the TCU harness connector M216 and the harness connector M26.

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# AV BRANCH LINE CIRCUIT

## Diagnosis Procedure

INFOID:000000008491354

#### 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
- AV control unit
- Harness connector M25 and PCB harness side connector

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect the connector of AV control unit.
- 2. Check the resistance between the AV control unit harness connector terminals.
- Models with navigation system

	Posistanco (O)		
Connector No.	Termi	nal No.	
M210	90	74	Approx. 54 – 66

Models without navigation system

	AV control unit harness connector			
Connector No.	Termi	nal No.		
M84	81	80	Approx. 54 – 66	

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> GO TO 4.

#### $\mathbf{3.}$ CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the AV control unit. Refer to the following.

- Base audio without navigation system: <u>AV-73, "AV CONTROL UNIT : Diagnosis Procedure"</u>
- BOSE audio with navigation system: AV-237, "AV CONTROL UNIT : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the AV control unit. Refer to the following.

- Base audio without navigation system: AV-104, "Removal and Installation"
- BOSE audio with navigation system: <u>AV-264, "Removal and Installation"</u>
- YES (Past error)>>Error was detected in the AV control unit branch line.
- NO >> Repair the power supply and the ground circuit.

#### **4.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Disconnect the harness connector M25.
- 2. Check the continuity between the AV control unit harness connector and the harness connector.
- Models with navigation system

AV control unit h	arness connector	Harness	connector	Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
M210	90	M25	201	Existed
101210	74	ivi20	221	Existed

Models without navigation system

# **AV BRANCH LINE CIRCUIT**

#### < DTC/CIRCUIT DIAGNOSIS >

## [CAN SYSTEM (TYPE 2)]

AV control unit ha	AV control unit harness connector		Harness connector	
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
M9.4	81	Mae	201	Existed
1004	M84 80	10125	221	Existed
ES >> Replace th O (With navigation s the harnes O (Without navigatio and the ha	e PCB harness. system)>>Repair the h s connector M25. n system)>>Repair th rness connector M25.	arness between the A ne harness between t	W control unit harnes	s connector M210 and arness connector M84

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# M&A BRANCH LINE CIRCUIT

## Diagnosis Procedure

INFOID:000000008491355

[CAN SYSTEM (TYPE 2)]

## 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
- Combination meter
- Harness connector M24 and PCB harness side connector

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect the connector of combination meter.
- 2. Check the resistance between the combination meter harness connector terminals.

Co	Posistance (O)		
Connector No.	Termir	nal No.	
M53	14	15	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> GO TO 4.

 $\mathbf{3}$ . Check power supply and ground circuit

Check the power supply and the ground circuit of the combination meter Refer to <u>MWI-64</u>, <u>"COMBINATION</u> <u>METER : Diagnosis Procedure"</u>.

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to MWI-81, "Removal and Installation".

- YES (Past error)>>Error was detected in the combination meter branch line.
- NO >> Repair the power supply and the ground circuit.

**4.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M24.

2. Check the continuity between the combination meter harness connector and the harness connector.

Combination meter	Combination meter harness connector		Harness connector	
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
M53	14	M24	176	Existed
1000	15	1/124	177	Existed

#### Is the inspection result normal?

YES >> Replace the PCB harness.

NO >> Repair the harness between the combination meter harness connector M53 and the harness connector M24.

#### **DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)** [CAN SYSTEM (TYPE 2)]

#### < DTC/CIRCUIT DIAGNOSIS >

# DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

## Diagnosis Procedure

А

<ol> <li>Disconnect the 12</li> <li>Check the followin nector side).</li> <li>Data link connector Harness connector Harness connector sthe inspection result</li> <li>YES &gt;&gt; GO TO 2.</li> </ol>	V battery cable from t or terminals and conn or M181 or M105 or M23 and PCB harne t normal?	he negative terminal. ectors for damage, be ess side connector	nd and loose con	nection (unit side and con-
2.CHECK HARNESS	FOR OPEN CIRCUI	T		
Check the resistance b	petween the data link	connector terminals.		
	Data link cor	nnector		Resistance (O)
Connector No.		Terminal No.		
M182	6		14	Approx. 54 – 66
<u>s the measurement va</u> YES (Present error)> YES (Past error)>>E side). Refe	Scheck CAN system rror was detected in t or to LAN-31, "CAN C	<u>cation?</u> type decision again. he data link connecto OMMUNICATION SYS	r branch line (CA STEM : System D	N communication circuit 1
<ul> <li><u>s the measurement va</u></li> <li>YES (Present error)&gt;</li> <li>YES (Past error)&gt;&gt;Error)&gt;&gt;Error)&gt;&gt;Error)&gt;&gt;Error)&gt;&gt;GO</li> <li>NO &gt;&gt; GO TO 3.</li> <li>CHECK HARNESS</li> <li>Disconnect the ha</li> <li>Check the continu</li> </ul>	Check CAN system rror was detected in t er to <u>LAN-31. "CAN C</u> CONTINUITY (OPEN rness connector M23 ity between the data I	type decision again. he data link connecto OMMUNICATION SYS N CIRCUIT) ink connector and the	r branch line (CA STEM : System D harness connecte	N communication circuit 1 <u>iagram</u> ". or.
s the measurement va YES (Present error)> YES (Past error)>>Er side). Refe NO >> GO TO 3. CHECK HARNESS Disconnect the ha Check the continu	CONTINUITY (OPEN CONTINUITY (OPEN CONTINUITY (OPEN CONTINUITY between the data I	type decision again. he data link connecto OMMUNICATION SY: N CIRCUIT) ink connector and the Harness of	r branch line (CA STEM : System D harness connector	N communication circuit 1 liagram". or.
<ul> <li><u>s the measurement va</u></li> <li>YES (Present error)&gt;</li> <li>YES (Past error)&gt;&gt;El</li> <li>side). Refe</li> <li>NO &gt;&gt; GO TO 3.</li> <li>CHECK HARNESS</li> <li>Disconnect the ha</li> <li>Check the continu</li> <li>Data link</li> <li>Connector No.</li> </ul>	Check CAN system rror was detected in t er to <u>LAN-31, "CAN C</u> CONTINUITY (OPEN rness connector M23 ity between the data I connector Terminal No.	type decision again. he data link connecto OMMUNICATION SYS N CIRCUIT) ink connector and the Harness of Connector No.	r branch line (CA STEM : System D harness connector connector Terminal No.	N communication circuit 1 <u>viagram"</u> . or. Continuity
s the measurement va YES (Present error)>>Er side). Refe NO >> GO TO 3. CHECK HARNESS Disconnect the ha Check the continu Data link Connector No.	Check CAN system rror was detected in t er to LAN-31. "CAN C CONTINUITY (OPEN rness connector M23 ity between the data I connector Terminal No. 6	type decision again. he data link connecto OMMUNICATION SYS N CIRCUIT) ink connector and the Harness of Connector No.	r branch line (CA STEM : System D harness connecte connector Terminal No. 151	N communication circuit 1 hagram".
s the measurement va YES (Present error)> YES (Past error)>>Er side). Refe NO >> GO TO 3. CHECK HARNESS Disconnect the ha Check the continu Data link Connector No. M182	Scheck CAN system rror was detected in t er to LAN-31. "CAN C CONTINUITY (OPEN rness connector M23 ity between the data I connector Connector 6 14 t normal?	type decision again. he data link connecto OMMUNICATION SYS N CIRCUIT) ink connector and the Harness of Connector No.	r branch line (CA STEM : System D harness connecte connector Terminal No. 151 150	N communication circuit 1 hagram".

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# **DLC BRANCH LINE CIRCUIT (HEV SYSTEM CAN CIRCUIT)**

#### < DTC/CIRCUIT DIAGNOSIS >

# DLC BRANCH LINE CIRCUIT (HEV SYSTEM CAN CIRCUIT)

## Diagnosis Procedure

INFOID:000000008491357

[CAN SYSTEM (TYPE 2)]

## 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
- Data link connector
- Harness connector M181
- Harness connector M105
- Harness connector M23 and PCB harness side connector

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

	Posistanaa (O)		
Connector No.	Termi	nal No.	Resistance $(\Omega)$
M182	13	12	Approx. 54 – 66

#### Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.

YES (Past error)>>Error was detected in the data link connector branch line circuit (HEV system CAN circuit side). Refer to LAN-31. "CAN COMMUNICATION SYSTEM : System Diagram".

NO >> GO TO 3.

**3.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M23.

2. Check the continuity between the data link connector and the harness connector.

Data link	connector	Harness	connector	Continuity	
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity	
M190	13	MOO	140	Existed	
IVI 102	12	IVIZ5	139	Existed	

Is the inspection result normal?

YES >> Replace the PCB harness.

NO >> Repair the harness between the data link connector M182 and the harness connector M23.

## **BCM BRANCH LINE CIRCUIT**

BCM BRANCH	LINE CIRCUIT				Λ
Diagnosis Proced	lure			INFOID:00000008491358	A
1.CHECK CONNECT	OR				В
<ol> <li>Turn the ignition s</li> <li>Disconnect the 12</li> <li>Check the followin nector side).</li> <li>BCM</li> <li>Harness connector</li> </ol>	witch OFF. V battery cable from the second s	he negative termina ectors for damage, t	l. bend and loose conne	ection (unit side and con-	С
Is the inspection result	t normal?				D
YES >> GO TO 2. NO >> Repair the	e terminal and connect	or.			E
2.CHECK HARNESS	FOR OPEN CIRCUIT	Г			
<ol> <li>Disconnect the co</li> <li>Check the resistar</li> </ol>	nnector of BCM. nce between the BCM	harness connector	terminals.		F
	BCM harness of	connector		Posistanco (O)	
Connector No.		Terminal No.			G
M120	39		40	Approx. 54 – 66	
Is the measurement vaYES>> GO TO 3.NO>> GO TO 4.CHECK POWERS					Н
	by and the ground aire		or to PCS 72 "Diago	ogia Dragodura"	I
Is the inspection result YES (Present error)> YES (Past error)>>E NO >> Repair the	t normal? >Replace the BCM. R rror was detected in the power supply and the	efer to <u>BCS-80, "Re</u> be BCM branch line. e ground circuit.	moval and Installatic	o <u>n"</u> .	J
4.CHECK HARNESS	CONTINUITY (OPEN	I CIRCUIT)			K
<ol> <li>Disconnect the ha</li> <li>Check the continu</li> </ol>	rness connector M22. ity between the BCM	harness connector a	and the harness conr	nector.	L
BCM harne	ss connector	Harnes	s connector	Continuity	
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity	LA
M120	39	M22	101	Existed	
	40		102	Existed	

Is the inspection result normal?

< DTC/CIRCUIT DIAGNOSIS >

YES >> Replace the PCB harness.

NO >> Repair the harness between the BCM harness connector M120 and the harness connector M22.

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#### **EV/HEV BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)** [CAN SYSTEM (TYPE 2)]

#### < DTC/CIRCUIT DIAGNOSIS >

# EV/HEV BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

## **Diagnosis** Procedure

INFOID:000000008491359

## 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- Disconnect the 12V battery cable from the negative terminal. 2.
- Check the terminals and connectors of the HPCM for damage, bend and loose connection (unit side and 3. connector side).

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

#### 2.CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect the connector of HPCM.
- Check the resistance between the HPCM harness connector terminals. 2.

	Posistanco (O)		
Connector No.	Termi		
B159	43 55		Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Replace the body harness.

 ${
m 3.}$  Check power supply and ground circuit

Check the power supply and the ground circuit of the HPCM. Refer to HBC-93, "HPCM : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the HPCM. Refer to HBC-339, "Removal and Installation".

- YES (Past error)>>Error was detected in the HPCM branch line (CAN communication circuit 1 side). Refer to LAN-31, "CAN COMMUNICATION SYSTEM : System Diagram".
- NO >> Repair the power supply and the ground circuit.

# EV/HEV BRANCH LINE CIRCUIT (HEV SYSTEM CAN CIRCUIT) < DTC/CIRCUIT DIAGNOSIS > EV/HEV BRANCH LINE CIRCUIT (HEV SYSTEM CAN CIRCUIT) Diagnosis Procedure

# 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the terminals and connectors of the HPCM for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

#### 2.CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect the connector of HPCM.
- 2. Check the resistance between the HPCM harness connector terminals.

HPCM harness connector			Begistange (O)	
Connector No.	Terminal No.			
B159	42 54		Approx. 54 – 66	_

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Replace the body harness.

#### $\mathbf{3}$ . Check power supply and ground circuit

Check the power supply and the ground circuit of the HPCM. Refer to <u>HBC-93, "HPCM : Diagnosis Proce-</u><u>dure"</u>.

Is the inspection result normal?

YES (Present error)>>Replace the HPCM. Refer to <u>HBC-339</u>, "Removal and Installation".

- YES (Past error)>>Error was detected in the HPCM branch line (HEV system CAN circuit side). Refer to LAN-31, "CAN COMMUNICATION SYSTEM : System Diagram".
- NO >> Repair the power supply and the ground circuit.

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# BRAKE BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

#### < DTC/CIRCUIT DIAGNOSIS >

# BRAKE BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

## Diagnosis Procedure

INFOID:000000008491361

[CAN SYSTEM (TYPE 2)]

#### 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the terminals and connectors of the electrically-driven intelligent brake unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

## 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect the connector of electrically-driven intelligent brake unit.
- 2. Check the resistance between the electrically-driven intelligent brake unit harness connector terminals.

Electrically-	Posistanco (O)		
Connector No.	Termi		
E87	43 42		Approx. 54 – 66

Is the measurement value within the specification?

#### YES >> GO TO 3.

## **3.**CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the electrically-driven intelligent brake unit. Refer to <u>BR-251</u>, <u>"Diagnosis Procedure"</u>.

#### Is the inspection result normal?

YES (Present error)>>Replace the electrically-driven intelligent brake unit. Refer to <u>BR-288</u>, "Removal and <u>installation"</u>.

- YES (Past error)>>Error was detected in the electrically-driven intelligent brake unit branch line (CAN communication circuit 1 side).
- NO >> Repair the power supply and the ground circuit.

NO >> Repair the electrically-driven intelligent brake unit branch line (CAN communication circuit 1 side). Refer to <u>LAN-31, "CAN COMMUNICATION SYSTEM : System Diagram"</u>.

#### **BRAKE BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 2)** [CAN SYSTEM (TYPE 2)]

< DTC/CIRCUIT DIAGNOSIS >

# BRAKE BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 2)

#### **Diagnosis** Procedure

INFOID:000000008491362

А

5			
1.CHECK CONNECTOR			
<ol> <li>Turn the ignition switch (</li> <li>Disconnect the 12V batt</li> <li>Check the terminals and loose connection (unit si</li> </ol>	OFF. ery cable from the negative I connectors of the electric de and connector side).	e terminal. ally-driven intelligent brake	unit for damage, bend and
Is the inspection result norm	al?		
YES >> GO TO 2.	nal and assume that		
2 CUECK LADNESS FOR			
<ol> <li>Disconnect the connect</li> <li>Check the resistance be</li> </ol>	tween the electrically-driven inter-	nigent brake unit. en intelligent brake unit harn	less connector terminals.
Electrically-d	riven intelligent brake unit harnes	ss connector	Posistanco (O)
Connector No.	Termir	nal No.	
E87	41	40	Approx. 54 – 66
YES >> GO TO 3. NO >> Repair the electr Refer to <u>LAN-31</u> <b>3.</b> CHECK POWER SUPPL	ically-driven intelligent bra <u>CAN COMMUNICATION</u> AND GROUND CIRCUIT	ke unit branch line (CAN co <u>I SYSTEM : System Diagra</u> -	mmunication circuit 2 side). m <sup>"</sup> .
Check the power supply and "Diagnosis Procedure".	the ground circuit of the el	ectrically-driven intelligent t	prake unit. Refer to <u>BR-251,</u>
YES (Present error)>>Repl	al? ace the electrically-driven	intelligent brake unit. Refe	r to <u>BR-288, "Removal and</u>
YES (Past error)>>Error wa	as detected in the electrics	ully-driven intelligent brake	unit branch line (CAN com-
NO >> Repair the powe	it 2 side). r supply and the ground ci	rcuit.	

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# **EPS BRANCH LINE CIRCUIT**

#### < DTC/CIRCUIT DIAGNOSIS >

# **EPS BRANCH LINE CIRCUIT**

# Diagnosis Procedure

INFOID:000000008491363

[CAN SYSTEM (TYPE 2)]

#### 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the terminals and connectors of the power steering control module for damage, bend and loose connection (unit side and connector side).

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

## 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect the connector of power steering control module.
- 2. Check the resistance between the power steering control module harness connector terminals.

Powers	Resistance (O)	
Connector No.	Termi	
E97	5	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the power steering control module branch line.

#### $\mathbf{3.}$ CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the power steering control module. Refer to <u>STC-27, "Diag-nosis Procedure"</u>.

Is the inspection result normal?

YES (Present error)>>Replace the power steering oil pump assembly. Refer to the following.

- With heated steering wheel: ST-42, "Removal and Installation"
- Without heated steering wheel: ST-69, "Removal and Installation"
- YES (Past error)>>Error was detected in the power steering control module branch line.

NO >> Repair the power supply and the ground circuit.

## **IPDM-E BRANCH LINE CIRCUIT**

## **[CAN SYSTEM (TYPE 2)]**

< DTC/CIRCUIT DIAGNOS	IS >		[CAN SYSTEM (TYPE 2)]
PDM-E BRANCH L	INE CIRCUIT		
Diagnosis Procedure			INFOID:00000008491364
1.CHECK CONNECTOR			
<ol> <li>Turn the ignition switch (2. Disconnect the 12V batt)</li> <li>Check the terminals and and connector side).</li> </ol>	DFF. ery cable from the negative I connectors of the IPDM	e terminal. E/R for damage, bend and	loose connection (unit side
s the inspection result norm	al?		
YES >> GO TO 2.	nal and connector		
2. CHECK HARNESS FOR	OPEN CIRCUIT		
Disconnect the connect	or of IPDM_E/R		
Check the resistance be	tween the IPDM E/R harn	ess connector terminals.	
	IPDM E/R harness connector		Resistance (0)
Connector No.	Termi	nal No.	
E6	40	39	Approx. 108 – 132
NO >> Repair the IPDN CHECK POWER SUPPL	1 E/R branch line. Y AND GROUND CIRCUI <sup>-</sup>	г	
Check the power supply and	the ground circuit of the II	PDM E/R. Refer to PCS-28	, "Diagnosis Procedure".
YES (Present error)>>Repl	<u>ar:</u> ace the IPDM_F/R_Refer∵	to PCS-29 "Removal and I	nstallation"
YES (Past error)>>Error wa NO >> Repair the powe	as detected in the IPDM E r supply and the ground ci	/R branch line. rcuit.	

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# STRG BRANCH LINE CIRCUIT

#### Diagnosis Procedure

INFOID:000000008491365

[CAN SYSTEM (TYPE 2)]

#### **1.**CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
- Steering angle sensor
- Harness connector M23 and PCB harness side connector
- CAN gateway

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

**2.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Disconnect the connector of CAN gateway.
- 2. Check the continuity between the CAN gateway harness connector terminals.

	CAN gateway harness connector			
Connector No.	Termi	Continuity		
M125	4	6	Existed	
WIIZO	10	12	Existed	

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Check the harness and repair or replace (if shield line is open) the root cause (CAN communication circuit 2 side). Refer to <u>LAN-31, "CAN COMMUNICATION SYSTEM : System Diagram"</u>.

## $\mathbf{3.}$ CHECK HARNESS FOR OPEN CIRCUIT

- 1. Connect the connector of CAN gateway.
- 2. Disconnect the connector of steering angle sensor.
- 3. Check the resistance between the steering angle sensor harness connector terminals.

Ste	Steering angle sensor harness connector			
Connector No.	Termi			
M37	1 2		Approx. 54 – 66	

Is the measurement value within the specification?

YES >> GO TO 4.

NO >> GO TO 5.

**4.**CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to <u>BRC-59, "Wiring Dia-gram"</u>.

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-166, "Removal and Installation".

- YES (Past error)>>Error was detected in the steering angle sensor branch line.
- NO >> Repair the power supply and the ground circuit.

#### **5.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M23.

2. Check the continuity between the steering angle sensor harness connector and the harness connector.

# STRG BRANCH LINE CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

## [CAN SYSTEM (TYPE 2)]

Steering angle sens	or harness connector Harness connector		Continuity	
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
M37	1	M23	134	Existed
Mor	2	M20	136	Existed
YES >> Replace the NO >> Repair the connector	ne PCB harness. → harness between the M23.	e steering angle sens	sor harness connector	M37 and the harne

# **ABS BRANCH LINE CIRCUIT**

## Diagnosis Procedure

INFOID:000000008491366

[CAN SYSTEM (TYPE 2)]

#### **1.**CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
- ABS actuator and electric unit (control unit)
- CAN gateway

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

**2.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Disconnect the connector of CAN gateway.
- 2. Check the continuity between the CAN gateway harness connector terminals.

	CAN gateway harness connector			
Connector No.	Termi	Continuity		
M125	4	6	Existed	
11/125	10	12	Existed	

Is the inspection result normal?

YES >> GO TO 3.

NO >> Check the harness and repair or replace (if shield line is open) the root cause (CAN communication circuit 2 side). Refer to <u>LAN-31, "CAN COMMUNICATION SYSTEM : System Diagram"</u>.

# **3.**CHECK HARNESS FOR OPEN CIRCUIT

- 1. Connect the connector of CAN gateway.
- 2. Disconnect the connector of ABS actuator and electric unit (control unit).
- Check the resistance between the ABS actuator and electric unit (control unit) harness connector terminals.

ABS actuator	Posistanco (O)	
Connector No.	Termi	
E89	22	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.

NO >> Repair the ABS actuator and electric unit (control unit) branch line.

#### 4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to <u>BRC-138, "Diagnosis Procedure"</u>.

#### Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to <u>BRC-163, "Removal</u> and Installation".
- YES (Past error)>>Error was detected in the ABS actuator and electric unit (control unit) branch line.
- NO >> Repair the power supply and the ground circuit.

ADP BRANCH LINE	ECIRCUIT		
Diagnosis Procedure			H INFOID:000000008491368
1. CHECK CONNECTOR			B
<ol> <li>Turn the ignition switch</li> <li>Disconnect the 12V bat</li> <li>Check the following terr nector side).</li> <li>Driver seat control unit</li> <li>Harness connector B50</li> <li>Harness connector B11</li> <li>CAN gateway</li> <li>Is the inspection result norm</li> <li>YES &gt;&gt; GO TO 2.</li> <li>NO &gt;&gt; Repair the term</li> <li>CHECK HARNESS CON</li> </ol>	OFF. tery cable from the negative ninals and connectors for d 1 <u>nal?</u> inal and connector. TINUITY (OPEN CIRCUIT	e terminal. amage, bend and loose cor	nection (unit side and con-
<ol> <li>Disconnect the connect</li> <li>Check the continuity be</li> </ol>	or of CAN gateway. tween the CAN gateway ha	arness connector terminals.	G
	CAN gateway harness connector		Continuity
Connector No.	Termir	nal No.	·
M125	4	6	Existed F
Is the inspection result norm	al?		
YES >> GO TO 3. NO >> Check the harn tion circuit 2 sid 3.CHECK HARNESS FOR	ess and repair or replace (i e). Refer to <u>LAN-31, "CAN</u> OPEN CIRCUIT	f shield line is open) the roc COMMUNICATION SYSTE	ot cause (CAN communica- <u>M : System Diagram"</u> . J
<ol> <li>Disconnect the connect</li> <li>Disconnect the resistance be</li> </ol>	or of driver seat control unitetween the driver seat control	t. rol unit harness connector te	erminals.
Driv	er seat control unit harness conne	ector	Resistance (Q)
Connector No.	Termir	nal No.	
B514	23	24	Approx. 54 – 66
Is the measurement value wYES>> GO TO 4.NO>> Repair the drive <b>4.</b> CHECK POWER SUPPL	<u>vithin the specification?</u> r seat control unit branch li Y AND GROUND CIRCUIT	ne.	LA
Check the power supply and CONTROL UNIT : Diagnosis	I the ground circuit of the dr s Procedure". al?	iver seat control unit. Refer	to <u>ADP-63, "DRIVER SEAT</u> C
YES (Present error)>>Rep YES (Past error)>>Error w NO >> Repair the powe	lace the driver seat control as detected in the driver se er supply and the ground ci	unit. Refer to <u>ADP-136, "Re</u> at control unit branch line. rcuit.	e <mark>moval and Installation"</mark> . P

< DTC/CIRCUIT DIAGNOSIS >

#### < DTC/CIRCUIT DIAGNOSIS >

# INV/MC BRANCH LINE CIRCUIT

## Diagnosis Procedure

INFOID:000000008491376

[CAN SYSTEM (TYPE 2)]

# 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the terminals and connectors of the traction motor inverter for damage, bend and loose connection (unit side and connector side).

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

## 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect the connector of traction motor inverter.
- 2. Check the resistance between the traction motor inverter harness connector terminals.

Trac	Posistanco (O)		
Connector No.	Termi		
E78	9	28	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the traction motor inverter branch line.

# **3.**CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the traction motor inverter. Refer to <u>TMS-53, "Diagnosis Pro-</u> cedure".

Is the inspection result normal?

YES (Present error)>>Replace the traction motor inverter. Refer to TMS-121, "Removal and Installation".

YES (Past error)>>Error was detected in the traction motor inverter branch line.

NO >> Repair the power supply and the ground circuit.

Diagnosis Procedu	INFOID:00000008491377				
1. СНЕСК СОЛЛЕСТС					
<ol> <li>Turn the ignition sw</li> <li>Disconnect the 12V</li> <li>Check the following nector side).</li> <li>A/T assembly</li> </ol>	itch OFF. battery cable from t terminals and conne	he negative terminal. ectors for damage, be	nd and loose conne	ction (unit side and con-	
<ul> <li>Harness connector F103</li> <li>Harness connector M116</li> </ul>					
- Harness connector Is the inspection result r YES >> GO TO 2. NO >> Repair the t	M28 and PCB harne <u>lormal?</u> erminal and connect	ess side connector tor.			
CHECK HARNESS F     Disconnect the content of	OR OPEN CIRCUI	[ bly			
2. Check the resistance	e between the A/T a	assembly harness con	nector terminals.		
	A/T assembly harness connector			Resistance (Ω)	
Connector No.		Terminal No.			
F61	3		8	Approx. 54 – 66	
YES >> GO TO 3. NO >> GO TO 4. <b>3.</b> CHECK POWER SU	PPLY AND GROUN	D CIRCUIT			
Check the power supply	and the ground circ	uit of the TCM. Refer	to TM-158, "Diagno	sis Procedure".	
Is the inspection result r YES (Present error)>> <u>nent Parts I</u> list.) YES (Past error)>>Erro NO >> Repair the p 4 CHECK HARNESS (	<u>normal?</u> Replace the control <u>operation</u> . (Replace <i>p</i> <u>ocation</u> . (Replace <i>p</i> or was detected in the power supply and the CONTINUITY (OPEN)	valve &TCM. Refer to A/T assembly if contro ne TCM branch line. e ground circuit.	TM-13, "A/T CONT of valve &TCM is not	ROL SYSTEM : Compo-	
<ol> <li>Disconnect the harr</li> <li>Check the continuity</li> </ol>	ness connector M28. y between the A/T as	ssembly harness conr	nector and the harne	ess connector.	
A/T assembly harness connector Harness connector					
	Terminal No.	Connector No.	Terminal No.	Continuity	
Connector No.		M28	1		
F61	3	M28	341	Existed	

NO >> Repair the harness between the A/T assembly harness connector F61 and the harness connector M28.

< DTC/CIRCUIT DIAGNOSIS >

#### < DTC/CIRCUIT DIAGNOSIS >

# E-OP BRANCH LINE CIRCUIT

## Diagnosis Procedure

INFOID:000000008491378

[CAN SYSTEM (TYPE 2)]

## 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the terminals and connectors of the sub electric oil pump inverter for damage, bend and loose connection (unit side and connector side).

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

## 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect the connector of sub electric oil pump inverter.
- 2. Check the resistance between the sub electric oil pump inverter harness connector terminals.

Sub ele	Posistanco (O)		
Connector No.	Termi		
B151	4	8	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the sub electric oil pump inverter branch line.

## **3.**CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the sub electric oil pump inverter. Refer to <u>TM-160, "Diagno-</u> sis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the sub electric oil pump inverter. Refer to <u>TM-188, "Removal and Installa-</u> tion".

YES (Past error)>>Error was detected in the sub electric oil pump inverter branch line.

NO >> Repair the power supply and the ground circuit.
< DTC/CIRCUIT DIAGNOSIS >

# **HV BAT BRANCH LINE CIRCUIT**

## Diagnosis Procedure

#### WARNING:

- Because hybrid vehicles and electric vehicles contain a high voltage battery, there is the risk of electric shock, electric leakage, or similar accidents if the high voltage component and vehicle are handled incorrectly. Be sure to follow the correct work procedures when performing inspection and maintenance.
- Be sure to remove the service plug in order to shut off the high voltage circuits before performing inspection or maintenance of high voltage system harnesses and parts.
- Be sure to put the removed service plug in your pocket and carry it with you so that another person D does not accidentally connect it while work is in progress.
- Be sure to wear insulating protective equipment consisting of glove, shoes and glasses before beginning work on the high voltage system.
- Clearly identify the persons responsible for high voltage work and ensure that other persons do not touch the vehicle. When not working, cover high voltage parts with an insulating cover sheet or similar item to prevent other persons from contacting them.
- Refer to <u>LAN-25, "High Voltage Precautions"</u>.

#### CAUTION:

There is the possibility of a malfunction occurring if the vehicle is changed to READY status while the service plug is removed. Therefore do not change the vehicle to READY status unless instructed to do so in the Service Manual.

1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the terminals and connectors of the Li-ion battery for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

- YES >> GO TO 2.
- NO >> Repair the terminal and connector.

## 2.CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect the connector of Li-ion battery.
- 2. Check the resistance between the Li-ion battery harness connector terminals.

	Posistanco (O)			
Connector No.	Termi	Resistance (32)		
B160	3	15	Approx. 108 – 132	_

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Replace the body harness.

3. PRECONDITIONING

#### WARNING:

Shut off high voltage circuit. Refer to GI-30, "How to Cut Off High Voltage".

Check voltage in high voltage circuit. (Check that condenser are discharged.)

1. Remove trunk finisher front. Refer to INT-51, "Exploded View".

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# **HV BAT BRANCH LINE CIRCUIT**

#### < DTC/CIRCUIT DIAGNOSIS >

- 2. Remove harness cover (1).
  - DANGER:

Touching high voltage components without using the appropriate protective equipment will cause electrocution.



# [CAN SYSTEM (TYPE 2)]



3. Measure voltage between high voltage harness terminals.

Standard

: 5 V or less

## DANGER:

Touching high voltage components without using the appropriate protective equipment will cause electrocution.



**CAUTION:** For voltage measurements, use a tester which can measure to 500 V or higher.

>> GO TO 4.

4. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Li-ion battery controller. Refer to <u>HBB-184</u>, "LI-ION BAT-<u>TERY CONTROLLER : Diagnosis Procedure"</u>.

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair the power supply and the ground circuit.

5.CHECK HARNESS FOR OPEN CIRCUIT

- 1. Remove Li-ion battery controller. Refer to <u>HBB-200</u>, "LI-ION BATTERY CONTROLLER : Disassembly and <u>Assembly</u>".
- Check the continuity between vehicle communication harness (harness between Li-ion battery harness connector side and Li-ion battery controller side) connector terminals. Refer to <u>HBB-23. "Circuit Diagram"</u>.

Vehicle commu		
Li-ion battery harness connector side	Continuity	
Terminal No.	Terminal No.	
3	1	Existed
15	13	Existed

Is the measurement value within the specification?

YES (Present error)>>Replace the Li-ion battery controller. Refer to <u>HBB-200, "LI-ION BATTERY CON-</u> <u>TROLLER : Disassembly and Assembly"</u>.

YES (Past error)>>Error was detected in the Li-ion battery controller branch line.

NO >> Repair the vehicle communication harness.



## **CAN COMMUNICATION CIRCUIT 1**

[CAN SYSTEM (TYPE 2)]

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# <u>CAN SYS</u> < DTC/CIRCUIT DIAGNOSIS > [CAN SYS] CAN COMMUNICATION CIRCUIT 1 Diagnosis Procedure

# **1.**CONNECTOR INSPECTION

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Disconnect all the unit connectors on CAN communication circuit 1.
  - NOTE:

For identification of CAN communication circuit 1, CAN communication circuit 2, ITS communication circuit, and HEV system CAN circuit, refer to <u>LAN-31</u>, <u>"CAN COMMUNICATION SYSTEM : System Dia-gram"</u>.

4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2. CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			(
Terminal No.		Continuity	
6	14	Not existed	_
	Data link connector Termi 6	Data link connector Terminal No. 6 14	Data link connector     Continuity       Terminal No.     6     14     Not existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Check the harness and repair or replace (if shield line or PCB harness is short) the root cause.

# **3.**CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector			Continuity	_	
Connector No.	Terminal No.	Ground	Cround	Continuity	
M400	6		Not existed	K	
IVI TO2	14		Not existed	_	

Is the inspection result normal?

YES >> GO TO 4.

NO >> Check the harness and repair or replace (if shield line or PCB harness is short) the root cause.

4.CHECK ECM AND IPDM E/R TERMINATION CIRCUIT

1. Remove the ECM and the IPDM E/R.

2. Check the resistance between the ECM terminals.

	Posietance (O)	ECM	
		Terminal No.	
0	Approx. 108 – 132	114 113	

3. Check the resistance between the IPDM E/R terminals.

IPDM E/R		Resistance (O)	
Terminal No.			
40 39		Approx. 108 – 132	

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

#### < DTC/CIRCUIT DIAGNOSIS >

# 5. CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the "Symptom (Results from interview with customer)" are reproduced.

#### Inspection result

Reproduced>>GO TO 6.

Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

## **6.**CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Disconnect one of the unit connectors of CAN communication circuit 1. **NOTE:**

ECM and IPDM E/R have a termination circuit. Check other units first.

Connect the 12V battery cable to the negative terminal. Check if the symptoms described in the "Symptom (Results from interview with customer)" are reproduced.

#### NOTE:

Although unit-related error symptoms occur, do not confuse them with other symptoms.

#### Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.

Non-reproduced>>Replace the unit whose connector was disconnected.

< DTC/CIRCUIT DIAGNOSIS >		[CA	N SYSTEM (TYPE 2)
CAN COMMUNICATION CIRCUIT	2		
Diagnosis Procedure			INFOID:000000084913
1.CHECK CAN DIAGNOSIS			
Check the CAN diagnosis results from CONSUL function.	T to see that th	e CAN communicati	on circuit 1 has no mal
For identification of CAN communication circuit and HEV system CAN circuit, refer to <u>LAN-31, "C</u>	1, CAN commun	nication circuit 2, ITS CATION SYSTEM : S	S communication circuit
Is the CAN communication circuit 1 normal?			
YES >> GO TO 2.	on circuit 1		
2.CONNECTOR INSPECTION			
1. Turn the ignition switch OFF.			
2. Disconnect the 12V battery cable from the ne	egative terminal.		tion (multiple and and
<ol> <li>Check the following terminals and connector nector side).</li> </ol>	s for damage, be	end and loose conne	ction (unit side and con
- CAN gateway			
<ul> <li>Harness connector M23 and PCB harness sills the inspection result normal?</li> </ul>	ae connector		
YES >> GO TO 3.			
NO >> Repair the terminal and connector.			
${f 3.}$ CHECK HARNESS CONTINUITY (OPEN CIF	(TIUO)		
<ol> <li>Disconnect the connector of CAN gateway.</li> <li>Check the continuity between the CAN gateway.</li> </ol>	vay harness con	nector terminals.	
CAN gateway harness co	nnector		
Connector No.	Terminal No.		Continuity
M125 4		6	Existed
10		12	Existed
Is the inspection result normal?			
YES >> GO TO 5.			
$4_{\rm CHECK}$ harness continuity (short c	IRCUIT)		
1 Disconnect the barness connector M23			
<ol> <li>Check the continuity between the CAN gate.</li> </ol>	way harness con	nector and the harne	ess connector.
	Hornooo	connector	
Can gateway namess connector			- Continuity
		133	Existed
M125 10	M23	135	Existed
Is the inspection result normal?			
YES >> Replace the PCB harness. NO >> Repair the harness between the CAN tor M23.	N gateway harne	ss connector M125 a	and the harness connec
5. CHECK HARNESS CONTINUITY (SHORT C	IRCUIT)		
1. Disconnect all the unit connectors on CAN c	ommunication ci	rcuit 2.	

2. Check the continuity between the CAN gateway harness connector terminals.

# LAN-221

# **CAN COMMUNICATION CIRCUIT 2**

#### < DTC/CIRCUIT DIAGNOSIS >

#### [CAN SYSTEM (TYPE 2)]

	Continuity		
Connector No.	Termi	Continuity	
M125	4	10	Not existed

Is the measurement value within the specification?

YES >> GO TO 6.

NO >> Check the harness and repair or replace the root cause.

**6.**CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the CAN gateway harness connector and the ground.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.	- Ground	Continuity
M125	4		Not existed
	10		Not existed

Is the inspection result normal?

YES >> GO TO 7.

NO >> Check the harness and repair or replace the root cause.

#### 7. CHECK CAN GATEWAY TERMINATION CIRCUIT

#### 1. Remove the CAN gateway.

2. Check the resistance between the CAN gateway terminals.

CAN gateway Terminal No.		- Resistance (Ω)	
6 12		Approx. 108 – 132	

Is the measurement value within the specification?

YES >> GO TO 8.

NO >> Replace the CAN gateway.

#### 8.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the "Symptom (Results from interview with customer)" are reproduced.

#### Inspection result

Reproduced>>GO TO 9.

Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

#### 9.CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Disconnect one of the unit connectors of CAN communication circuit 2.
- NOTE:

CAN gateway has two termination circuits. Check other units first.

 Connect the 12V battery cable to the negative terminal. Check if the symptoms described in the "Symptom (Results from interview with customer)" are reproduced. NOTE:

Although unit-related error symptoms occur, do not confuse them with other symptoms.

#### Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.

Non-reproduced>>Replace the unit whose connector was disconnected.

## LAN-222

#### < DTC/CIRCUIT DIAGNOSIS >

# HEV SYSTEM CAN CIRCUIT

# Diagnosis Procedure

## WARNING:

- Because hybrid vehicles and electric vehicles contain a high voltage battery, there is the risk of electric shock, electric leakage, or similar accidents if the high voltage component and vehicle are handled incorrectly. Be sure to follow the correct work procedures when performing inspection and maintenance.
- Be sure to remove the service plug in order to shut off the high voltage circuits before performing inspection or maintenance of high voltage system harnesses and parts.
- Be sure to put the removed service plug in your pocket and carry it with you so that another person D does not accidentally connect it while work is in progress.
- Be sure to wear insulating protective equipment consisting of glove, shoes and glasses before beginning work on the high voltage system.
- Clearly identify the persons responsible for high voltage work and ensure that other persons do not touch the vehicle. When not working, cover high voltage parts with an insulating cover sheet or similar item to prevent other persons from contacting them.
- Refer to LAN-25, "High Voltage Precautions".

#### CAUTION:

There is the possibility of a malfunction occurring if the vehicle is changed to READY status while the service plug is removed. Therefore do not change the vehicle to READY status unless instructed to do so in the Service Manual.

**1.**PRECONDITIONING

#### WARNING:

Shut off high voltage circuit. Refer to GI-30, "How to Cut Off High Voltage".

- Check voltage in high voltage circuit. (Check that condenser are discharged.)
- 1. Remove trunk finisher front. Refer to INT-51, "Exploded View".
- 2. Remove harness cover (1).

#### DANGER:

Touching high voltage components without using the appropriate protective equipment will cause electrocution.





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3. Measure voltage between high voltage harness terminals.

#### Standard

: 5 V or less

#### DANGER:

Touching high voltage components without using the appropriate protective equipment will cause electrocution.

#### CAUTION:

For voltage measurements, use a tester which can measure to 500 V or higher.

#### >> GO TO 2.

**2.**CONNECTOR INSPECTION

1. Turn the ignition switch OFF.

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# **HEV SYSTEM CAN CIRCUIT**

< DTC/CIRCUIT DIAGNOSIS >

- 2. Disconnect the 12V battery cable from the negative terminal.
- Disconnect all the control unit connectors on HEV system CAN circuit. For the removal of Li-ion battery controller, refer to <u>HBB-200</u>, "LI-ION BATTERY CONTROLLER : Disassembly and Assembly". NOTE:

For identification of CAN communication circuit 1, CAN communication circuit 2, ITS communication circuit, and HEV system CAN circuit, refer to <u>LAN-31</u>, <u>"CAN COMMUNICATION SYSTEM : System Diagram"</u>.

4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the terminal and connector.

**3.**CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

	Continuity		
Connector No.	Termi	Continuity	
M182	13	12	Not existed

Is the inspection result normal?

YES >> GO TO 4.

NO >> Check the harness and repair or replace (if shield line or PCB harness is short) the root cause.

**4.**CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector			Continuity
Connector No.	Terminal No.	Ground Not exis	Continuity
M182	13		Not existed
	12		Not existed

Is the inspection result normal?

YES >> GO TO 5.

NO >> Check the harness and repair or replace (if shield line or PCB harness is short) the root cause.

5.CHECK ECM AND LI-ION BATTERY CONTROLLER TERMINATION CIRCUIT

1. Remove the ECM.

2. Check the resistance between the ECM terminals.

E	Resistance (Q)	
Terminal No.		
55	54	Approx. 108 – 132

 Remove the Li-ion battery controller. Refer to <u>HBB-200</u>, "LI-ION BATTERY CONTROLLER : <u>Disassembly</u> and <u>Assembly</u>".

4. Check the resistance between the Li-ion battery controller terminals.

Li-ion batte	ery controller	Resistance (O)	
Terminal No.			
1 13		Approx. 108 – 132	

Is the measurement value within the specification?

YES >> GO TO 6.

NO >> Replace the ECM and/or the Li-ion battery controller.

6.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the "Symptom (Results from interview with customer)" are reproduced.

#### LAN-224

# **HEV SYSTEM CAN CIRCUIT**

# [CAN SYSTEM (TYPE 2)]

< DTC/CIRCUIT DIAGNOSIS >	[CAN SYSTEM (TYPE 2)]
Inspection result	
Reproduced>>GO TO 7. Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosidetected.	is procedure when past error is
7. CHECK CONTROL UNIT REPRODUCTION	
Perform the reproduction test as per the following procedure for each control	l unit.
<ol> <li>Disconnect the 12V battery cable from the negative terminal.</li> <li>Disconnect one of the control unit connectors of HEV system CAN circuit NOTE:</li> </ol>	it.
<ul> <li>ECM and Li-ion battery controller have a termination circuit. Check other</li> <li>4. Connect the 12V battery cable to the negative terminal. Check if the sy tom (Results from interview with customer)" are reproduced.</li> </ul>	r control units first. mptoms described in the "Symp-
Although control unit-related error symptoms occur, do not confuse them	n with other symptoms.
Inspection result	
Reproduced>>Connect the connector. Check other control units as per the Non-reproduced>>Replace the control unit whose connector was disconnector	above procedure. cted.

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Revision: 2013 March

#### MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 3)]

# DTC/CIRCUIT DIAGNOSIS MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT

## **Diagnosis Procedure**

INFOID:000000008491387

# **1.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Disconnect the following harness connectors.
- ECM
- Low tire pressure warning control unit
- A/C auto amp.
- 4. Check the continuity between the low tire pressure warning control unit harness connector and the A/C auto amp. harness connector.

Low tire pressure wharness	Low tire pressure warning control unit harness connector		A/C auto amp. harness connector	
Connector No.	Terminal No.	Connector No. Terminal No.		
M42	2	Mee	12	Existed
10145	1		11	Existed

#### Is the inspection result normal?

- YES (Present error)>>Check CAN system type decision again.
- YES (Past error)>>Error was detected in the main line between the low tire pressure warning control unit and the A/C auto amp.
- NO >> Replace the PCB harness.

M	AIN LINE BETW	EEN HVAC AND		II I OVOTEM (TVDE 2)1
COTC/CIRCUIT DIAG	NOSIS >			N STSTEIN (TTPE 3)]
MAIN LINE BET	WEEN HVAC	AND A-BAG CI	RCUIT	
Diagnosis Proced	ure			INFOID:00000000849138
CHECK HARNESS				
<ul> <li>Turn the ignition sv</li> <li>Disconnect the 12V</li> <li>Disconnect the foll</li> <li>ECM</li> </ul>	vitch OFF. / battery cable from t owing harness conne	he negative terminal. ectors.		
AVC auto amp. AV control unit Check the continui nector. Models with naviga	ty between the A/C a ation system	uuto amp. harness con	nector and the AV co	ntrol unit harness con-
AVC auto amp. AV control unit I. Check the continui nector. Models with naviga	ty between the A/C a ation system	auto amp. harness con AV control unit ha	nector and the AV co	ontrol unit harness con-
AVC auto amp. AV control unit Check the continui nector. Models with naviga A/C auto amp. ha Connector No.	ty between the A/C a ation system arness connector Terminal No.	auto amp. harness con AV control unit ha Connector No.	nector and the AV co arness connector Terminal No.	ontrol unit harness con-
AVC auto amp. AV control unit Check the continui nector. Models with naviga A/C auto amp. ha Connector No.	ty between the A/C a ation system arness connector Terminal No. 12	AV control unit have connector No.	nector and the AV co arness connector Terminal No. 90	ontrol unit harness con- Continuity Existed
AVC auto amp. AV control unit . Check the continui nector. Models with naviga A/C auto amp. ha Connector No.	ty between the A/C a ation system arness connector Terminal No. 12 11	AV control unit ha Connector No. M210	arness connector Terminal No. 90 74	Continuity Existed Existed
AVC auto amp. AV control unit Check the continui nector. Models with naviga A/C auto amp. ha Connector No. M66 Models without nav	ty between the A/C a ation system arness connector Terminal No. 12 11 vigation system	AV control unit ha Connector No. M210	arness connector Terminal No. 90 74	Continuity Existed Existed
AVC auto amp. AV control unit Check the continuinector. Models with naviga A/C auto amp. ha Connector No. M66 Models without nav	ty between the A/C a ation system arness connector Terminal No. 12 11 vigation system arness connector	AV control unit have a con	arness connector Terminal No. 90 74 arness connector	Continuity Existed Existed
A/C auto amp. AV control unit Check the continui nector. Models with naviga A/C auto amp. ha Connector No. M66 Models without nav A/C auto amp. ha Connector No.	ty between the A/C a ation system arness connector Terminal No. 12 11 Vigation system arness connector Terminal No.	AV control unit have a connector No.	arness connector Terminal No. 90 74 arness connector Terminal No.	Continuity Existed Existed Continuity
A/C auto amp. AV control unit AV control unit Nector. Models with naviga A/C auto amp. ha Connector No. M66 Models without nav A/C auto amp. ha Connector No.	ty between the A/C a ation system arness connector Terminal No. 12 11 vigation system arness connector Terminal No. 12	AV control unit have a connector No.	arness connector Terminal No. 90 74 arness connector Terminal No. 81	Continuity Existed Existed Continuity Existed

YES (Past error)>>Error was detected in the main line between the A/C auto amp. and the air bag diagnosis sensor unit.

NO >> Replace the PCB harness.

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# MAIN LINE BETWEEN A-BAG AND AV CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

# MAIN LINE BETWEEN A-BAG AND AV CIRCUIT

## **Diagnosis** Procedure

INFOID:000000008491389

[CAN SYSTEM (TYPE 3)]

# 1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Disconnect the following harness connectors.
- ECM
- A/C auto amp.
- AV control unit
- Check the continuity between the A/C auto amp. harness connector and the AV control unit harness connector.
- Models with navigation system

A/C auto amp. h	arness connector	AV control unit harness connector		Continuity	
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity	
Mee	12	M210	90	Existed	
1000	11		74	Existed	

#### Models without navigation system

A/C auto amp. h	arness connector	AV control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
Mee	12	M84	81	Existed
WOO	11	1104	80	Existed

#### Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.

YES (Past error)>>Error was detected in the main line between the air bag diagnosis sensor unit and the AV control unit.

NO >> Replace the PCB harness.

	MAIN LINE BE	TWEEN AV AND	M&A CIRCUIT	
DTC/CIRCUIT DIAC	GNOSIS >		[CAN	SYSTEM (TYPE 3)]
MAIN LINE BET	WEEN AV AN	D M&A CIRCUI	Т	
Diagnosis Proced	ure			INFOID:00000008491390
.CHECK HARNESS	CONTINUITY (OPE	N CIRCUIT)		
<ol> <li>Turn the ignition state</li> <li>Disconnect the 12</li> <li>Disconnect the foll ECM</li> <li>AV control unit</li> <li>Combination mete</li> <li>Check the continu connector.</li> <li>Models with navigation</li> </ol>	witch OFF. V battery cable from t lowing harness conne r ity between the AV co ation system	the negative terminal. actors. ontrol unit harness col	nnector and the comb	pination meter harness
AV control unit h	arness connector	Combination meter	harness connector	Orationity
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
M210	90	M53	14	Existed
IVIZ TO	74	10100	15	Existed
Models without na	vigation system			
AV control unit h	arness connector	Combination meter	harness connector	Orationity
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
MQ 4	81	ME2	14	Existed
IVIO4	80	- IVIDD	15	Existed
s the inspection result YES (Present error)> YES (Past error)>>Er meter. NO >> Replace th	normal? >Check CAN system ror was detected in ne PCB harness.	type decision again. the main line betwee	n the AV control uni	t and the combination

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#### < DTC/CIRCUIT DIAGNOSIS >

# MAIN LINE BETWEEN M&A AND DLC CIRCUIT

## **Diagnosis Procedure**

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[CAN SYSTEM (TYPE 3)]

# 1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Disconnect the following harness connectors.
- ECM
- Combination meter
- Harness connectors M105 and M181
- 4. Check the continuity between the combination meter harness connector and the harness connector.

Combination meter harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
M53	14	M105	7	Existed
IWIJJ	15	WI105	8	Existed

#### Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.

- YES (Past error)>>Error was detected in the main line between the combination meter and the data link connector.
- NO >> Replace the PCB harness.

	MAIN LINE BET	WEEN DLC AND	D BCM CIRCUIT	•	
< DTC/CIRCUIT DIAG	SNOSIS >		[CAI	N SYSTEM (TYPE 3)]	
MAIN LINE BET	WEEN DLC A	ND BCM CIRC	UIT		
Diagnosis Proced	ure			INFOID:00000008491392	A
1. CHECK HARNESS	CONTINUITY (OPE	N CIRCUIT)			В
<ol> <li>Turn the ignition sv</li> <li>Disconnect the 12<sup>N</sup></li> <li>Disconnect the foll</li> <li>ECM</li> <li>Harness connector</li> <li>BCM</li> <li>Check the continuit</li> </ol>	vitch OFF. V battery cable from owing harness conne rs M181 and M105 ty between the harne	the negative terminal. ectors. ess connector and the	BCM harness conne	ctor.	C
Harness	connector	BCM harnes	ss connector		_
Connector No.	Terminal No.	Connector No.	Terminal No.	- Continuity	E
M105	7	M120	39	Existed	
10105	8	- ivi 120	40	Existed	F

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.

YES (Past error)>>Error was detected in the main line between the data link connector and the BCM.

NO >> Replace the PCB harness.

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# MAIN LINE BETWEEN BCM AND EV/HEV CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

# MAIN LINE BETWEEN BCM AND EV/HEV CIRCUIT

## Diagnosis Procedure

INFOID:000000008491393

[CAN SYSTEM (TYPE 3)]

## 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector M20 and PCB harness side connector
- Harness connector M7
- Harness connector B1

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

# 2. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- BCM

- Harness connector M20
- 2. Check the continuity between the BCM harness connector and the PCB harness connector.

BCM harne	ss connector	PCB harness connector	Continuity
Connector No.	Terminal No.	Terminal No.	Continuity
M120	39	35	Existed
INT20	40	36	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace the PCB harness.

**3.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Disconnect the harness connectors M7 and B1.
- 2. Check the continuity between the harness connectors.

Harness	Harness connector		connector		Harness connector	
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity		
M20	35	N/7	72	Existed		
WZO	36	1017	71	Existed		

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair the main line between the harness connectors M20 and M7.

#### **4.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector terminals.

Connector No.	Termi	Continuity	
P1	72	82	Existed
ום	71	81	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.

YES (Past error)>>Error was detected in the main line between the BCM and the HPCM.

NO >> Replace the body harness.

COTC/CIRCUIT DIAC	GNOSIS >		[C.	AN SYSTEM (TYPE 3)]
MAIN LINE BET	WEEN EV/HE	V AND EPS	CIRCUIT	
Diagnosis Proced	lure			INFOID:00000008491394
.CHECK CONNECT	OR			
Turn the ignition s Disconnect the 12 Check the followin and harness side) Harness connecto Harness connecto Harness connecto Harness connecto Sthe inspection result	witch OFF. V battery cable from t ng terminals and con r B1 r M7 r M6 r E106 t normal?	he negative termir nectors for damag	al. e, bend and loose co	nnection (connector side
NO >> Repair the	e terminal and connec	tor.		
CHECK HARNESS		N CIRCUIT)		
Disconnect the ha Check the continu	rness connectors B1 ity between the harne	and M7. ss connector term	inals.	
Connector No.		Terminal No.		Continuity
B1	72	72 82		Existed
	71		81	Existed
YES >> GO TO 3. NO >> Replace the CHECK HARNESS Disconnect the ha Check the continu	ne body harness. CONTINUITY (OPE) rness connectors M6 ity between the harne	N CIRCUIT) and E106. ss connectors.		
Harness	connector	Harn	ess connector	Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	Éviete d
M7	81	M6	22	Existed
<ul> <li><u>s the inspection result</u></li> <li>YES &gt;&gt; GO TO 4.</li> <li>NO &gt;&gt; Repair the</li> <li><b>1.</b>CHECK HARNESS</li> <li>Disconnect the co</li> <li>Check the continu nector.</li> </ul>	main line between the CONTINUITY (OPE) nnector of power stee ity between the harne	e harness connec N CIRCUIT) ring control modul ss connector and	tors M7 and M6. e. the power steering con	trol module harness con-
Harness	connector	Power steering cont	ol module harness connect	or
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
	22		5	Existed
E106		E97		

MAIN LINE BETWEEN EV/HEV AND EPS CIRCUIT

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.

23

YES (Past error)>>Error was detected in the main line between the HPCM and the power steering control module.

6

NO >> Repair the main line between the harness connector E106 and the power steering control module.

## LAN-233

Existed

# MAIN LINE BETWEEN STRG AND ABS CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

# MAIN LINE BETWEEN STRG AND ABS CIRCUIT

## Diagnosis Procedure

INFOID:000000008491395

[CAN SYSTEM (TYPE 3)]

## 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector M20 and PCB harness side connector
- Harness connector M6
- Harness connector E106

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

# **2.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Disconnect the following harness connectors.
- Steering angle sensor
- Harness connector M20
- Check the continuity between the steering angle sensor harness connector and the PCB harness connector.

Steering angle sens	or harness connector	PCB harness connector	Continuity
Connector No.	Terminal No.	Terminal No.	Continuity
M27	1	24	Existed
10137	2	27	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace the PCB harness.

**3.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Disconnect the harness connectors M6 and E106.
- 2. Check the continuity between the harness connectors.

Harness	connector	Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
M20	24	Me	69	Existed
IWIZO	27	INIO	70	Existed

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair the main line between the harness connectors M20 and M6.

#### **4.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

Check the continuity between the harness connector terminals.

Connector No.	Termir	Continuity	
E106	69	54	Existed
	70	55	Existed

#### Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.

NO >> Repair the main line between the harness connector E106 and the ABS actuator and electric unit (control unit).

YES (Past error)>>Error was detected in the main line between the steering angle sensor and the ABS actuator and electric unit (control unit).

DTC/CIRCUIT DIA	GNOSIS >			[	CAN SYSTEM (TYPE 3)]
IAIN LINE BET	WEEN ABS AN	ND ADF	P CIRCI	JIT	
agnosis Proced	ure				INFOID:00000008491396
CHECK CONNECT	OR				
Turn the ignition s Disconnect the 12 Check the followir and harness side) Harness connecto Harness connecto Harness connecto Harness connecto	witch OFF. V battery cable from the ng terminals and conr r E106 r M6 r M7 r B1 <u>: normal?</u>	he negative nectors for	e terminal. damage, ∣	pend and loose o	connection (connector side
IO >> Repair the	e terminal and connect	or.			
CHECK HARNESS	CONTINUITY (OPEN		)		
Disconnect the ha	rness connectors E10	6 and M6.			
Check the continu	ity between the harne	ss connect	or terminal	S.	
Connector No.		Terminal No. Continuity		Continuity	
E106	69			54	Existed
2100	70			55	Existed
CHECK HARNESS Disconnect the ha Check the continu	CONTINUITY (OPEN rness connectors M7 ity between the harne	I CIRCUIT) and B1. ss connect	) ors.		
Harness	connector		Harness	connector	
Connector No.	Terminal No.	Connec	ctor No.	Terminal No.	Continuity
M6	54	N	17	34	Existed
inio	55			35	Existed
the inspection result ES >> GO TO 4. O >> Repair the CHECK HARNESS reck the continuity b	normal? main line between th CONTINUITY (OPEN etween the harness co	e harness ( I CIRCUIT)	connectors ) erminals.	M6 and M7.	
Connector No.		Termir	nal No.		Continuity
D4	34			32	Existed
В1	35			33	Existed
he inspection result	normal?				
'ES (Present error) 'ES (Past error)>>EI unit) and t	>Check CAN system fror was detected in the driver seat control	type decisi he main lin unit.	on again. ie betweer	the ABS actuate	or and electric unit (control

MAIN LINE BETWEEN ABS AND ADP CIRCUIT

NO >> Replace the body harness.

# MAIN LINE BETWEEN RDR-L AND RDR-R CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

# MAIN LINE BETWEEN RDR-L AND RDR-R CIRCUIT

## Diagnosis Procedure

INFOID:000000008491397

[CAN SYSTEM (TYPE 3)]

# 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector B33
- Harness connector B245

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Side radar LH
- Harness connectors B33 and B245
- 2. Check the continuity between the side radar LH harness connector and the harness connector.

Side radar LH h	arness connector	Harness	Continuity	
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
PE2	4	<b>B</b> 33	13	Existed
002	3	660	14	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the main line between the side radar LH and the harness connector B33.

# ${\it 3.}$ CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Disconnect the connector of side radar RH.
- 2. Check the continuity between the harness connector and the side radar RH harness connector.

Harness	Harness connector		Side radar RH harness connector	
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
P245	13	<b>B</b> 252	4	Existed
	14	- B202	3	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.

YES (Past error)>>Error was detected in the main line between the side radar LH and the side radar RH.

NO >> Repair the main line between the harness connector B245 and the side radar RH.

				•
< DTC/CIRCUIT DIA	GNOSIS >		[CAN	N SYSTEM (TYPE 3)]
MAIN LINE BET	FWEEN RDR-R	AND APA CIR	CUIT	
Diagnosis Proced	lure			INFOID:00000008491398
1.CHECK CONNECT	TOR			
<ol> <li>Turn the ignition s</li> <li>Disconnect the 12</li> <li>Check the following and harness side)</li> <li>Harness connector</li> <li>Harness connector</li> <li>Harness connector</li> <li>Is the inspection result</li> <li>YES &gt;&gt; GO TO 2.</li> <li>NO &gt;&gt; Repair the</li> <li>CHECK HARNESS</li> <li>Disconnect the fol</li> <li>Side radar RH</li> </ol>	witch OFF. V battery cable from the ng terminals and conru- or B201 or M117 or M20 and PCB harned t normal? te terminal and connect CONTINUITY (OPEN lowing harness conne	he negative terminal. hectors for damage, l ess side connector or. I CIRCUIT) ctors.	bend and loose conn	ection (connector side
<ul> <li>Harness connector</li> <li>Check the continu</li> </ul>	ors B201 and M117 ity between the side ra	adar RH harness con	nector and the harnes	ss connector.
Side radar RH h	arness connector	Harness	connector	Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
<b>P</b> 252	4		66	Existed
DZJZ	3	B201	67	Existed
Is the inspection result	3 t normal?	B201	67	Existed
Is the inspection result YES >> GO TO 3. NO >> Repair the <b>3.</b> CHECK HARNESS 1. Disconnect the ha 2. Check the continu	3 <u>t normal?</u> e main line between the S CONTINUITY (OPEN urness connector M20. ity between the harne	B201 e side radar RH and t I CIRCUIT) ss connectors.	67	Existed F B201.
Is the inspection result         YES       >> GO TO 3.         NO       >> Repair the <b>3.</b> CHECK HARNESS         1. Disconnect the ha         2. Check the continu	3 t normal? e main line between th 5 CONTINUITY (OPEN irness connector M20. hity between the harne	B201 e side radar RH and t I CIRCUIT) ss connectors.	67 the harness connecto	Existed r B201.
Is the inspection result YES >> GO TO 3. NO >> Repair the <b>3.</b> CHECK HARNESS 1. Disconnect the ha 2. Check the continu Harness Connector No.	3 t normal? e main line between the cONTINUITY (OPEN inness connector M20. hity between the harne connector Terminal No.	B201 e side radar RH and t I CIRCUIT) ss connectors. Harness Connector No.	67 the harness connecto connector Terminal No.	r B201. Continuity
Is the inspection result YES >> GO TO 3. NO >> Repair the <b>3.</b> CHECK HARNESS 1. Disconnect the ha 2. Check the continu Harness Connector No.	3 t normal? e main line between th 5 CONTINUITY (OPEN trness connector M20. tity between the harne connector Terminal No. 66	B201 e side radar RH and t I CIRCUIT) ss connectors. Harness Connector No.	67 the harness connecto connector Terminal No. 38	Existed Existed r B201. Continuity Existed
Is the inspection result         YES       >> GO TO 3.         NO       >> Repair the <b>3.</b> CHECK HARNESS         1.       Disconnect the ha         2.       Check the continu         Harness         Connector No.         M117	3 t normal? e main line between th 5 CONTINUITY (OPEN trness connector M20. tity between the harne connector Terminal No. 66 67	B201 e side radar RH and t I CIRCUIT) ss connectors. Harness Connector No. M20	67 the harness connecto connector Terminal No. 38 40	Existed Existed r B201. Continuity Existed Existed
$\frac{ S }{ S } \frac{ S }{ S } \frac{ S }{ S } \frac{ S }{ S } >> GO TO 3.$ $NO \implies Repair the$ $3.CHECK HARNESS$ $1. Disconnect the ha 2. Check the continu \frac{ Harness }{ S } \frac{ S }{ S } \frac{ S }{ S } >> GO TO 4. NO \implies Repair the 4.CHECK HARNESS 1. Disconnect the ha 2. Check the continu$	3 t normal? e main line between the 5 CONTINUITY (OPEN inness connector M20. ity between the harne connector Terminal No. 66 67 t normal? e main line between the 5 CONTINUITY (OPEN inness connectors M15 ity between the PCB t	B201 e side radar RH and t I CIRCUIT) ss connectors. Harness Connector No. M20 e harness connectors I CIRCUIT) 50 and M151. harness connector an	67 the harness connecto connector Terminal No. 38 40 5 M117 and M20. d the harness connector	Existed r B201. Continuity Existed Existed
Is the inspection result         YES       >> GO TO 3.         NO       >> Repair the <b>3.</b> CHECK HARNESS         1.       Disconnect the ha         2.       Check the continu         Harness         Connector No.         M117         Is the inspection result         YES       >> GO TO 4.         NO       >> Repair the <b>4.</b> CHECK HARNESS         1.       Disconnect the ha         2.       Check the continu	3 t normal? e main line between the CONTINUITY (OPEN irness connector M20. ity between the harne connector Terminal No. 66 67 t normal? e main line between the CONTINUITY (OPEN irness connectors M15 ity between the PCB to a connector	B201 e side radar RH and t I CIRCUIT) ss connectors. Harness Connector No. M20 e harness connectors I CIRCUIT) 50 and M151. harness connector an	67 the harness connector connector Terminal No. 38 40 5 M117 and M20. d the harness connector	Existed Existed r B201. Continuity Existed Existed Existed
Is the inspection result         YES       >> GO TO 3.         NO       >> Repair the <b>3.</b> CHECK HARNESS         1. Disconnect the ha         2. Check the continu         Harness         Connector No.         M117         Is the inspection result         YES       >> GO TO 4.         NO       >> Repair the <b>4.</b> CHECK HARNESS         1. Disconnect the ha         2. Check the continu	3 t normal? e main line between the CONTINUITY (OPEN inness connector M20. ity between the harne connector Terminal No. 66 67 t normal? e main line between the CONTINUITY (OPEN inness connectors M15 ity between the PCB f ss connector nal No.	B201 e side radar RH and t I CIRCUIT) ss connectors. Harness Connector No. M20 e harness connectors I CIRCUIT) 50 and M151. harness connector an Harness	67 connector Terminal No. 38 40 s M117 and M20. d the harness connector connector	Existed r B201. Continuity Existed Existed Existed
$\frac{ S + be inspection result}{YES} >> GO TO 3.$ $NO >> Repair the$ $3.CHECK HARNESS$ 1. Disconnect the ha 2. Check the continu $\frac{ Harness }{Connector No.}$ $\frac{M117}{Is the inspection result}{YES} >> GO TO 4.$ $NO >> Repair the$ $4.CHECK HARNESS$ 1. Disconnect the ha 2. Check the continu $\frac{ PCB harnest }{Termi}$	3 t normal? e main line between the CONTINUITY (OPEN inness connector M20. ity between the harne connector Terminal No. 66 67 t normal? e main line between the CONTINUITY (OPEN inness connectors M15 ity between the PCB for ss connector nal No. 38	B201 e side radar RH and t I CIRCUIT) ss connectors. Harness Connector No. M20 e harness connectors I CIRCUIT) 50 and M151. harness connector an Harness Connector No.	67 the harness connector connector Terminal No. 38 40 5 M117 and M20. d the harness connector connector Terminal No. 11	Existed Existed r B201. Continuity Existed Existed Existed Existed

YES (Present error)>>Check CAN system type decision again. YES (Past error)>>Error was detected in the main line between the side radar RH and the accelerator pedal actuator.

# MAIN LINE BETWEEN RDR-R AND APA CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

NO >> Replace the PCB harness.

# MAIN LINE BETWEEN APA AND LANE CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

# MAIN LINE BETWEEN APA AND LANE CIRCUIT

#### Diagnosis Procedure

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Disconnect the following harness connectors.
- ADAS control unit
- Harness connectors M151 and M150
- Harness connectors M110 and R7
- 4. Check the continuity between the harness connectors.

Harness	connector	Harness connector		Continuity	
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity	l
M150	11	M110	13	Existed	
INT 50	10	WITTO	2	Existed	

#### Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.

YES (Past error)>>Error was detected in the main line between the accelerator pedal actuator and the lane G camera unit.

NO >> Replace the PCB harness.

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INFOID:000000008491399

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## MAIN LINE BETWEEN INV/MC AND TCM CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

# MAIN LINE BETWEEN INV/MC AND TCM CIRCUIT

## Diagnosis Procedure

INFOID:000000008491400

[CAN SYSTEM (TYPE 3)]

## **1.**CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector E106
- Harness connector M6
- Harness connector M29 and PCB harness side connector
- Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Disconnect the following harness connectors.
- Traction motor inverter
- Harness connectors E106 and M6
- 2. Check the continuity between the traction motor inverter harness connector and the harness connector.

Traction motor inver	Traction motor inverter harness connector		Harness connector	
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
E70	9	E106	58	Existed
E70	28	EIUO	59	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the main line between the traction motor inverter and the harness connector E106.

**3.** CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Disconnect the harness connector M29.
- 2. Check the continuity between the harness connectors.

Harness	connector	Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
Me	58	M20	398	Existed
IVIO	59	10129	397	Existed

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair the main line between the harness connectors M6 and M29.

#### **4.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors M116 and F103.

2. Check the continuity between the PCB harness connector and the harness connector.

PCB harness connector	Harness connector		Continuity
Terminal No.	Connector No.	Terminal No.	Continuity
398	M116	11	Existed
397		12	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.

YES (Past error)>>Error was detected in the main line between the traction motor inverter and the TCM. NO >> Replace the PCB harness.

	MAIN LINE BET	WEEN TCM ANI	D DLC CIRCUIT		
< DTC/CIRCUIT DIA	GNOSIS >		[CAN	I SYSTEM (TYPE 3)]	
MAIN LINE BET	FWEEN TCM A	ND DLC CIRCU	JIT		Λ
Diagnosis Proced	lure			INFOID:00000008491401	A
1.CHECK HARNESS		N CIRCUIT)			В
<ol> <li>Turn the ignition s</li> <li>Disconnect the 12</li> <li>Disconnect the fol</li> <li>ECM</li> <li>Harness connector</li> <li>Harness connector</li> <li>Check the continu</li> </ol>	witch OFF. 2V battery cable from t lowing harness conne ors F103 and M116 ors M105 and M181 ity between the harne	he negative terminal. octors. ss connectors.			C
Harness	connector	Harness	connector	Continuity	_
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity	
M116	11	M105	32	Existed	
141110	1	101100		1	

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.

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YES (Past error)>>Error was detected in the main line between the TCM and the data link connector.

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NO >> Replace the PCB harness.

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# MAIN LINE BETWEEN DLC AND EV/HEV CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

# MAIN LINE BETWEEN DLC AND EV/HEV CIRCUIT

## Diagnosis Procedure

INFOID:000000008491402

[CAN SYSTEM (TYPE 3)]

## 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector M20 and PCB harness side connector
- Harness connector M7
- Harness connector B1

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

# **2.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Disconnect the following harness connectors.
- Harness connectors M181 and M105
- Harness connector M20
- 2. Check the continuity between the harness connector and the PCB harness connector.

Harness	connector	PCB harness connector	Continuity
Connector No.	Terminal No.	Terminal No.	Continuity
M105	32	23	Existed
101105	33	22	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace the PCB harness.

**3.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Disconnect the harness connectors M7 and B1.
- 2. Check the continuity between the harness connectors.

Harness	Harness connector		Harness connector	
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
M20	23	MZ	38	Existed
WZO	22	1017	39	Existed

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair the main line between the harness connectors M20 and M7.

**4.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of HPCM.

2. Check the continuity between the harness connector and the HPCM harness connector.

Harness	Harness connector		HPCM harness connector	
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
D1	38	P150	42	Existed
Ы	39	BID9	54	Existed

#### Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.

YES (Past error)>>Error was detected in the main line between the data link connector and the HPCM. NO >> Replace the body harness.

#### ECM BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1) [CAN SYSTEM (TYPE 3)]

< DTC/CIRCUIT DIAGNOSIS >

# ECM BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

#### Diagnosis Procedure 1.CHECK CONNECTOR 1. Turn the ignition switch OFF. Disconnect the 12V battery cable from the negative terminal. 2. Check the following terminals and connectors for damage, bend and loose connection (unit side and con-3. nector side). ECM Harness connector M30 and PCB harness side connector Is the inspection result normal? YES >> GO TO 2. NO >> Repair the terminal and connector. 2.CHECK HARNESS FOR OPEN CIRCUIT 1. Disconnect the connector of ECM. Check the resistance between the ECM harness connector terminals. 2. ECM harness connector Connector No. Terminal No. M107 114 113 Approx. 108 - 132 Is the measurement value within the specification? YES >> GO TO 3. NO >> GO TO 4. 3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to EC-137, "Diagnosis Procedure". Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to EC-444, "Removal and Installation".

- YES (Past error)>>Error was detected in the ECM branch line (CAN communication circuit 1 side). Refer to LAN-31, "CAN COMMUNICATION SYSTEM : System Diagram".
- NO >> Repair the power supply and the ground circuit.

## **4.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M30.

Check the continuity between the ECM harness connector and the harness connector. 2.

ECM harne	ss connector	Harness connector		Continuity	
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity	LAN
M107	114	M20	439	Existed	-
IVI TO7	113	10130	438	Existed	N

#### Is the inspection result normal?

YES >> Replace the PCB harness.

>> Repair the harness between the ECM harness connector M107 and the harness connector M30. NO

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INFOID:000000008491403

Resistance  $(\Omega)$ 

# ECM BRANCH LINE CIRCUIT (HEV SYSTEM CAN CIRCUIT)

#### < DTC/CIRCUIT DIAGNOSIS >

# ECM BRANCH LINE CIRCUIT (HEV SYSTEM CAN CIRCUIT)

# Diagnosis Procedure

INFOID:000000008491404

[CAN SYSTEM (TYPE 3)]

# 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
- ECM
- Harness connector F1
- Harness connector E3

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

# 2.check harness for open circuit

- 1. Disconnect the connector of ECM.
- 2. Check the resistance between the ECM harness connector terminals.

	ECM harness connector	Resistance (O)	
Connector No.	Termi	nal No.	
F102	55	54	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the ECM branch line (HEV system CAN circuit side). Refer to <u>LAN-31, "CAN COMMUNI-</u> <u>CATION SYSTEM : System Diagram"</u>.

**3.**CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to <u>EC-137</u>, "<u>Diagnosis Procedure</u>". <u>Is the inspection result normal?</u>

YES (Present error)>>Replace the ECM. Refer to EC-444, "Removal and Installation".

YES (Past error)>>Error was detected in the ECM branch line (HEV system CAN circuit side).

NO >> Repair the power supply and the ground circuit.

<b>TPMS BRANCH</b>	I LINE CIRCUI	Т				Λ
Diagnosis Proced	ure				INFOID:00000008491405	A
1.CHECK CONNECT	OR					В
<ol> <li>Turn the ignition sy</li> <li>Disconnect the 12'</li> <li>Check the followin nector side).</li> </ol>	witch OFF. V battery cable from t g terminals and conne warning control unit	he negative ectors for da	terminal. amage, be	nd and loose con	nection (unit side and con-	С
- Harness connecto Is the inspection result YES >> GO TO 2.	r M29 and PCB harne	ess side con	nector			D
2.CHECK HARNESS	FOR OPEN CIRCUI	tor. F				E
<ol> <li>Disconnect the con</li> <li>Check the resistant</li> </ol>	nnector of low tire pre	ssure warnii re pressure	ng control warning c	unit. control unit harnes	s connector terminals.	F
Low	tire pressure warning conti	rol unit harness	connector		Resistance ( $\Omega$ )	0
Connector No.		Iermina	al No.	1		G
	2	ation 2		I	Αμριύχ. 54 – 66	
YES >> GO TO 3. NO >> GO TO 4. 3.CHECK POWER SI	UPPLY AND GROUN	D CIRCUIT				H
Check the power supp "Diagnosis Procedure"	ly and the ground cir	cuit of the lo	ow tire pre	ssure warning co	ntrol unit. Refer to <u>WT-45.</u>	
YES (Present error)>= Installation YES (Past error)>>Er NO >> Repair the 4.CHECK HARNESS	Replace the low tire <u>n</u> . For was detected in the power supply and the CONTINUITY (OPEN)	e pressure v ne low tire pr e ground cire N CIRCUIT)	warning c essure wa cuit.	ontrol unit. Refer arning control unit	to <u>WT-60, "Removal and</u> branch line.	K
<ol> <li>Disconnect the ha</li> <li>Check the continu ness connector.</li> </ol>	rness connector M29. ity between the low t	ire pressure	warning	control unit harne	ss connector and the har-	L
Low tire pressure wharness	warning control unit connector		Harness	connector	Continuity	
Connector No.	Terminal No.	Connect	tor No.	Terminal No.	Evitate d	Ν
M43	2	M2	9	396	Existed	
	1			393	EXISIEU	0

#### Is the inspection result normal?

< DTC/CIRCUIT DIAGNOSIS >

YES >> Replace the PCB harness.

NO >> Repair the harness between the low tire pressure warning control unit harness connector M43 and the harness connector M29.

# CGW BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

#### < DTC/CIRCUIT DIAGNOSIS >

# CGW BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

#### Diagnosis Procedure

INFOID:000000008491406

[CAN SYSTEM (TYPE 3)]

Check DTC of the CAN gateway with CONSULT.

Is U1010 or B2600 indicated?

YES >> Perform a diagnosis of the indicated DTC.

NO >> GO TO 2.

# 2. CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
- CAN gateway
- Harness connector M28 and PCB harness side connector

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the terminal and connector.

## ${ m 3.}$ CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect the connector of CAN gateway.
- 2. Check the resistance between the CAN gateway harness connector terminals.

	CAN gateway harness connecto	Posistance (O)	
Connector No.	Termi	nal No.	
M125	1	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.

NO >> GO TO 5.

**4.**CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the CAN gateway. Refer to <u>LAN-129, "Diagnosis Proce-</u> dure".

Is the inspection result normal?

YES (Present error)>>Replace the CAN gateway. Refer to LAN-130, "Removal and Installation".

YES (Past error)>>Error was detected in the CAN gateway branch line (CAN communication circuit 1 side). Refer to LAN-31, "CAN COMMUNICATION SYSTEM : System Diagram".

NO >> Repair the power supply and the ground circuit.

**5.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Disconnect the harness connector M28.
- 2. Check the continuity between the CAN gateway harness connector and the harness connector.

CAN gateway h	arness connector	Harness connector		Continuity	
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity	
M125	1	MOR	326	Existed	
WI125	7	- IVIZO	328	Existed	

Is the inspection result normal?

YES >> Replace the PCB harness.

NO >> Repair the harness between the CAN gateway harness connector M125 and the harness connector M28.

# **HVAC BRANCH LINE CIRCUIT**

Diagnosis Procedure       Image: Comparison of the second of
1. CHECK CONNECTOR       B         1. Turn the ignition switch OFF.       Disconnect the 12V battery cable from the negative terminal.         3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).       C         - A/C auto amp.       Harness connector M28 and PCB harness side connector       D         Is the inspection result normal?       YES >> GO TO 2.       D         NO       >> Repair the terminal and connector.       E         2.CHECK HARNESS FOR OPEN CIRCUIT       I. Disconnect the connector of A/C auto amp.       E
<ol> <li>Turn the ignition switch OFF.</li> <li>Disconnect the 12V battery cable from the negative terminal.</li> <li>Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).</li> <li>A/C auto amp.</li> <li>Harness connector M28 and PCB harness side connector</li> <li>Is the inspection result normal?</li> <li>YES &gt;&gt; GO TO 2.</li> <li>NO &gt;&gt; Repair the terminal and connector.</li> <li>2.CHECK HARNESS FOR OPEN CIRCUIT</li> <li>Disconnect the connector of A/C auto amp.</li> </ol>
- Harness connector M28 and PCB harness side connector Is the inspection result normal? YES >> GO TO 2. NO >> Repair the terminal and connector. 2.CHECK HARNESS FOR OPEN CIRCUIT 1. Disconnect the connector of A/C auto amp.
YES >> GO TO 2. NO >> Repair the terminal and connector. 2.CHECK HARNESS FOR OPEN CIRCUIT 1. Disconnect the connector of A/C auto amp.
NO       >> Repair the terminal and connector.         2.CHECK HARNESS FOR OPEN CIRCUIT         1. Disconnect the connector of A/C auto amp.
1. Disconnect the connector of A/C auto amp.
1. Disconnect the connector of A/C auto anp.
2. Check the resistance between the A/C auto amp. harness connector terminals.
A/C auto amp, harness connector
Connector No.     Terminal No.     Resistance (Ω)
M66 12 11 Approx. 54 – 66
Is the measurement value within the specification?
YES >> GO TO 3. NO >> GO TO 4
3. CHECK POWER SUPPLY AND GROUND CIRCUIT
Check the power supply and the ground circuit of the A/C auto amp. Refer to HAC-153, "A/C AUTO AMP. :
Diagnosis Procedure".
<u>Is the inspection result normal?</u> YES (Present error)>>Replace the A/C auto amp. Refer to HAC-183. "Removal and Installation"
YES (Past error)>>Error was detected in the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.
4. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)
<ol> <li>Disconnect the harness connector M28.</li> <li>Check the continuity between the A/C auto amp. harness connector and the harness connector.</li> </ol>
A/C auto amp. harness connector Harness connector
Connector No. Terminal No. Connector No. Terminal No. Continuity
M66 12 M28 325 Existed
11     327     Existed     N

YES >> Replace the PCB harness.

< DTC/CIRCUIT DIAGNOSIS >

NO >> Repair the harness between the A/C auto amp. harness connector M66 and the harness connec- O tor M28.

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# **A-BAG BRANCH LINE CIRCUIT**

Diagnosis Procedure

WARNING:

Always observe the following items for preventing accidental activation.

- Before servicing, turn ignition switch OFF, disconnect 12V battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.)
- Never use unspecified tester or other measuring device.

**1.**CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
- Air bag diagnosis sensor unit
- Harness connector M26 and PCB harness side connector

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace the main harness and/or the PCB harness.

2.CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to SRC-24, "Work Flow".

Is the inspection result normal?

- YES >> Replace the main harness and/or the PCB harness.
- NO >> Replace parts whose air bag system has a malfunction.

INFOID:00000008491408

# **TCU BRANCH LINE CIRCUIT**

# [CAN SYSTEM (TYPE 3)]

TCU BRANCH	LINE CIRCUIT				
Diagnosis Procee	dure				INFOID:00000008491409
1. CHECK CONNECT	TOR				
<ol> <li>Turn the ignition s</li> <li>Disconnect the base</li> <li>Check the followin nector side).</li> <li>TCU</li> <li>Harness connector</li> <li>Is the inspection resurve s</li> </ol>	switch OFF. attery cable from the ne ng terminals and conne or M26 and PCB harne It normal?	egative termina ectors for dama ess side connec	II. age, ber ctor	nd and loose cor	nnection (unit side and con-
NO >> Repair th	e terminal and connect	tor.			
2. CHECK HARNESS	S FOR OPEN CIRCUI	Г			
<ol> <li>Disconnect the co</li> <li>Check the resista</li> </ol>	onnector of TCU. nce between the TCU	harness conne	ector ter	minals.	_
	TCU harness connector				Resistance (O)
Connector No.		Terminal No.			
M216	9		10 Approx. 54 – 66		
Is the measurement v YES >> GO TO 3 NO >> GO TO 4 3.CHECK POWER S	alue within the specific SUPPLY AND GROUN	<u>cation?</u> D CIRCUIT			
Check the power sup	olv and the ground circ	uit of the TCU	Refer t	0 AV-333 "TCU	· Diagnosis Procedure"
Is the inspection result YES (Present error) YES (Past error) NO >> Repair the	It normal? >>Replace the TCU. R Fror was detected in the power supply and the	efer to <u>AV-342,</u> he TCU branch e ground circuit	<u>"Remo</u> line.	val and Installati	<u>on"</u> .
<b>4.</b> CHECK HARNESS	S CONTINUITY (OPEN	N CIRCUIT)			
<ol> <li>Disconnect the has</li> <li>Check the continue</li> </ol>	arness connector M26. uity between the TCU I	narness connec	ctor and	I the harness cor	nnector.
TCU harne	ess connector	F	larness c	connector	Continuity
Connector No.	Terminal No.	Connector N	۱o.	Terminal No.	Continuity
M216	9	M26		242	Existed
	10			262	Existed

Is the inspection result normal?

< DTC/CIRCUIT DIAGNOSIS >

YES >> Replace the PCB harness.

NO >> Repair the harness between the TCU harness connector M216 and the harness connector M26.

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# AV BRANCH LINE CIRCUIT

INFOID:000000008491410

# Diagnosis Procedure

1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
- AV control unit
- Harness connector M25 and PCB harness side connector

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect the connector of AV control unit.
- 2. Check the resistance between the AV control unit harness connector terminals.
- Models with navigation system

	Posistanco (O)	
Connector No.	Termi	
M210	90	Approx. 54 – 66

Models without navigation system

	Posistanco (O)		
Connector No.	Termi		
M84	81 80		Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> GO TO 4.

## $\mathbf{3.}$ CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the AV control unit. Refer to the following.

- Base audio without navigation system: AV-73, "AV CONTROL UNIT : Diagnosis Procedure"
- BOSE audio with navigation system: <u>AV-237, "AV CONTROL UNIT : Diagnosis Procedure"</u>

Is the inspection result normal?

YES (Present error)>>Replace the AV control unit. Refer to the following.

- Base audio without navigation system: AV-104, "Removal and Installation"
- BOSE audio with navigation system: <u>AV-264</u>, "Removal and Installation"
- YES (Past error)>>Error was detected in the AV control unit branch line.
- NO >> Repair the power supply and the ground circuit.

## **4.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Disconnect the harness connector M25.
- 2. Check the continuity between the AV control unit harness connector and the harness connector.
- Models with navigation system

AV control unit harness connector		Harness	Continuity	
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
M210	90	M25	201	Existed
M2T0	74	IVI25	221	Existed

Models without navigation system

# **AV BRANCH LINE CIRCUIT**

#### < DTC/CIRCUIT DIAGNOSIS >

## [CAN SYSTEM (TYPE 3)]

AV control unit h	arness connector	Harness of	Harness connector	
Connector No.	Terminal No.	Connector No. Terminal No.		Continuity
M84	81	M25	201	Existed
	80		221	Existed

NO (With navigation system)>>Repair the harness between the AV control unit harness connector M210 and the harness connector M25.

NO (Without navigation system)>>Repair the harness between the AV control unit harness connector M84 and the harness connector M25.

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# M&A BRANCH LINE CIRCUIT

# Diagnosis Procedure

INFOID:000000008491411

[CAN SYSTEM (TYPE 3)]

# 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
- Combination meter
- Harness connector M24 and PCB harness side connector

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect the connector of combination meter.
- 2. Check the resistance between the combination meter harness connector terminals.

Co	Posistanco (O)		
Connector No.	Termir		
M53	14	15	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> GO TO 4.

 $\mathbf{3}$ . Check power supply and ground circuit

Check the power supply and the ground circuit of the combination meter Refer to <u>MWI-64, "COMBINATION</u> <u>METER : Diagnosis Procedure"</u>.

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to MWI-81, "Removal and Installation".

- YES (Past error)>>Error was detected in the combination meter branch line.
- NO >> Repair the power supply and the ground circuit.

**4.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M24.

2. Check the continuity between the combination meter harness connector and the harness connector.

Combination meter harness connector		Harness	Continuity	
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
M52	14	M24	176	Existed
10100	15	IVIZ4	177	Existed

#### Is the inspection result normal?

YES >> Replace the PCB harness.

NO >> Repair the harness between the combination meter harness connector M53 and the harness connector M24.
### **DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)** [CAN SYSTEM (TYPE 3)]

### < DTC/CIRCUIT DIAGNOSIS >

# DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

# Diagnosis Procedure

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<ol> <li>Turn the ignition s</li> <li>Disconnect the 12</li> <li>Check the followin nector side).</li> <li>Data link connecto</li> <li>Harness connecto</li> <li>Harness connecto</li> </ol>	witch OFF. V battery cable from t g terminals and conne or r M181 r M105	he negative ectors for d	e terminal. amage, be	nd and loose con	nection (unit side and con-
- Harness connecto	r M23 and PCB harne	ess side cor	nnector		
YES >> GO TO 2.	<u>norman:</u>				
NO >> Repair the	terminal and connect	tor.			
Check the resistance k	FOR OPEN CIRCUI	l	orminals		
			erriinais.		
	Data link cor	nector			Resistance ( $\Omega$ )
Connector No.		Termir	nal No.		
M182	6			14	Approx. 54 – 66
YES (Present error)> YES (Past error)>>Er side). Refe NO >> GO TO 3. 3.CHECK HARNESS 1. Disconnect the ha	CONTINUITY (OPEN rors connector M23.	N CIRCUIT)	connecto ATION SY:	r branch line (CA STEM : System D	N communication circuit 1 iagram".
2. Check the continu	ity between the data i		or and the	namess connecto	).
Data link	connector		Harness	connector	Continuity
Connector No.	Terminal No.	Connec	ctor No.	Terminal No.	
	6	M	23	151	Existed
M182				150	Existed
M182	14		1		

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# **DLC BRANCH LINE CIRCUIT (HEV SYSTEM CAN CIRCUIT)**

### < DTC/CIRCUIT DIAGNOSIS >

# DLC BRANCH LINE CIRCUIT (HEV SYSTEM CAN CIRCUIT)

# Diagnosis Procedure

INFOID:000000008491413

[CAN SYSTEM (TYPE 3)]

# 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
- Data link connector
- Harness connector M181
- Harness connector M105
- Harness connector M23 and PCB harness side connector

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

	Posistanos (O)		
Connector No.	Termi		
M182	13	12	Approx. 54 – 66

### Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.

YES (Past error)>>Error was detected in the data link connector branch line circuit (HEV system CAN circuit side). Refer to LAN-31. "CAN COMMUNICATION SYSTEM : System Diagram".

NO >> GO TO 3.

**3.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M23.

2. Check the continuity between the data link connector and the harness connector.

Data link	connector	Harness connector		Continuity	
Connector No.	Terminal No.	Connector No. Terminal No.		Continuity	
M190	13	MOO	140	Existed	
IVI 102	12	IVIZ5	139	Existed	

Is the inspection result normal?

YES >> Replace the PCB harness.

NO >> Repair the harness between the data link connector M182 and the harness connector M23.

# **BCM BRANCH LINE CIRCUIT**

BCM BRANCH	LINE CIRCUIT				Δ
Diagnosis Proced	lure			INFOID:00000008491414	A
1.CHECK CONNECT	TOR				В
<ol> <li>Turn the ignition s</li> <li>Disconnect the 12</li> <li>Check the followinnector side).</li> <li>BCM</li> </ol>	witch OFF. V battery cable from the second se	he negative terr actors for damag	ninal. ge, bend and loose	connection (unit side and con-	С
- Harness connecto	or M22 and PCB harne	ss side connect	or		D
Is the inspection result	t normal?				
NO >> Repair the	e terminal and connect	or.			Е
2. CHECK HARNESS	FOR OPEN CIRCUIT	-			
<ol> <li>Disconnect the co</li> <li>Check the resistar</li> </ol>	nnector of BCM. nce between the BCM	harness conne	ctor terminals.		F
	BCM harness of	onnector		Resistance (0)	
Connector No.	Connector No. Terminal No. Resistance (22)				G
M120	39		40	Approx. 54 – 66	
Is the measurement valueYES>> GO TO 3.NO>> GO TO 4.	alue within the specific	ation?			Н
<b>3.</b> CHECK POWER S	UPPLY AND GROUN	D CIRCUIT			
Check the power supp Is the inspection result	bly and the ground circ t normal?	uit of the BCM.	Refer to <u>BCS-73, "</u>	Diagnosis Procedure".	I
YES (Present error)> YES (Past error)>>E NO >> Repair the	Replace the BCM. R rror was detected in th power supply and the	efer to <u>BCS-80,</u> e BCM branch l e ground circuit.	"Removal and Inst ine.	<u>allation"</u> .	0
4.CHECK HARNESS	CONTINUITY (OPEN	I CIRCUIT)			Κ
<ol> <li>Disconnect the ha</li> <li>Check the continu</li> </ol>	irness connector M22. ity between the BCM	harness connec	tor and the harness	s connector.	L
BCM harne	ss connector	Ha	arness connector	Continuity	
Connector No.	Terminal No.	Connector No	o. Terminal	No.	LAN
M120	39	M22	101	Existed	
-	40	_	102	Existed	

Is the inspection result normal?

< DTC/CIRCUIT DIAGNOSIS >

YES >> Replace the PCB harness.

NO >> Repair the harness between the BCM harness connector M120 and the harness connector M22.

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### **EV/HEV BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)** [CAN SYSTEM (TYPE 3)]

### < DTC/CIRCUIT DIAGNOSIS >

# EV/HEV BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

# **Diagnosis** Procedure

INFOID:000000008491415

# 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- Disconnect the 12V battery cable from the negative terminal. 2.
- Check the terminals and connectors of the HPCM for damage, bend and loose connection (unit side and 3. connector side).

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

### 2.CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect the connector of HPCM.
- Check the resistance between the HPCM harness connector terminals. 2.

	Posistanco (O)		
Connector No.	Termi		
B159	43	55	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Replace the body harness.

 ${
m 3.}$  Check power supply and ground circuit

Check the power supply and the ground circuit of the HPCM. Refer to HBC-93, "HPCM : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the HPCM. Refer to HBC-339, "Removal and Installation".

- YES (Past error)>>Error was detected in the HPCM branch line (CAN communication circuit 1 side). Refer to LAN-31, "CAN COMMUNICATION SYSTEM : System Diagram".
- NO >> Repair the power supply and the ground circuit.

# EV/HEV BRANCH LINE CIRCUIT (HEV SYSTEM CAN CIRCUIT) < DTC/CIRCUIT DIAGNOSIS > EV/HEV BRANCH LINE CIRCUIT (HEV SYSTEM CAN CIRCUIT) Diagnosis Procedure

<ol> <li>Turn the ignition switch (2. Disconnect the 12V batt</li> <li>Check the terminals and connector side).</li> </ol>	OFF. ery cable from the negative d connectors of the HPCM	e terminal. for damage, bend and loos	e connection (unit side and
Is the inspection result norm	<u>al?</u>		
YES >> GO TO 2.			
NO >> Repair the termi	nal and connector.		
<b>Z</b> .CHECK HARNESS FOR	OPEN CIRCUIT		
<ol> <li>Disconnect the connector</li> <li>Check the resistance be</li> </ol>	or of HPCM. tween the HPCM harness	connector terminals.	
	HPCM harness connector		Resistance (0)
	Taurai		110515tall06 (12)
Connector No.	Iermii	nal No.	
B159	42	nal No. 54	Approx. 54 – 66
B159 Is the measurement value w	42 ithin the specification?	nal No. 54	Approx. 54 – 66
B159 Is the measurement value w YES >> GO TO 3.	42 ithin the specification?	54	Approx. 54 – 66
Connector No.         B159         Is the measurement value w         YES       >> GO TO 3.         NO       >> Replace the boo	42 ithin the specification? dy harness.	54	Approx. 54 – 66
Connector No.         B159         Is the measurement value w         YES       >> GO TO 3.         NO       >> Replace the box         3.CHECK POWER SUPPLY	42 ithin the specification? dy harness. Y AND GROUND CIRCUIT	nal No. 54	Approx. 54 – 66
Connector No.         B159         Is the measurement value w         YES       >> GO TO 3.         NO       >> Replace the box <b>3.</b> CHECK POWER SUPPLY         Check the power supply and dure".	42 ithin the specification? dy harness. Y AND GROUND CIRCUIT d the ground circuit of the	THPCM. Refer to HBC-93,	Approx. 54 – 66 "HPCM : Diagnosis Proce-
Connector No.         B159         Is the measurement value w         YES       >> GO TO 3.         NO       >> Replace the box <b>3.</b> CHECK POWER SUPPL'         Check the power supply and dure".         Is the inspection result norm	42 ithin the specification? dy harness. Y AND GROUND CIRCUIT d the ground circuit of the al?	THPCM. Refer to <u>HBC-93,</u>	Approx. 54 – 66 "HPCM : Diagnosis Proce-
Connector No.         B159         Is the measurement value w         YES       >> GO TO 3.         NO       >> Replace the box <b>3.</b> CHECK POWER SUPPLY         Check the power supply and dure".         Is the inspection result norm         YES (Present error)>>Repl         YES (Past error)>>Error was         LAN-31. "CAN C	42 ithin the specification? dy harness. Y AND GROUND CIRCUIT d the ground circuit of the al? ace the HPCM. Refer to <u>H</u> as detected in the HPCM COMMUNICATION SYSTE	54         F         HPCM. Refer to <u>HBC-93,</u> BC-339, "Removal and Inst branch line (HEV system <u>M : System Diagram"</u> .	Approx. 54 – 66 "HPCM : Diagnosis Proce- allation". CAN circuit side). Refer to

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# BRAKE BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

### < DTC/CIRCUIT DIAGNOSIS >

# BRAKE BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

# Diagnosis Procedure

INFOID:000000008491417

[CAN SYSTEM (TYPE 3)]

# 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the terminals and connectors of the electrically-driven intelligent brake unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect the connector of electrically-driven intelligent brake unit.
- 2. Check the resistance between the electrically-driven intelligent brake unit harness connector terminals.

Electrically-	Resistance (O)	
Connector No.	Termi	
E87	43	Approx. 54 – 66

Is the measurement value within the specification?

### YES >> GO TO 3.

# **3.**CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the electrically-driven intelligent brake unit. Refer to <u>BR-251</u>, <u>"Diagnosis Procedure"</u>.

### Is the inspection result normal?

YES (Present error)>>Replace the electrically-driven intelligent brake unit. Refer to <u>BR-288</u>, "Removal and <u>installation"</u>.

- YES (Past error)>>Error was detected in the electrically-driven intelligent brake unit branch line (CAN communication circuit 1 side).
- NO >> Repair the power supply and the ground circuit.

NO >> Repair the electrically-driven intelligent brake unit branch line (CAN communication circuit 1 side). Refer to <u>LAN-31, "CAN COMMUNICATION SYSTEM : System Diagram"</u>.

### **BRAKE BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 2)** [CAN SYSTEM (TYPE 3)]

< DTC/CIRCUIT DIAGNOSIS >

# BRAKE BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 2)

# **Diagnosis Procedure**

INFOID:000000008491418

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1.CHECK CONNECTOR		
<ol> <li>Turn the ignition switch OFF.</li> <li>Disconnect the 12V battery cable from the negative of the terminals and connectors of the electron loose connection (unit side and connector side)</li> </ol>	ative terminal. ctrically-driven intelligent bra	ake unit for damage, bend and
Is the inspection result normal?		
YES >> GO TO 2.		
2. CHECK HARNESS FOR OPEN CIRCUIT		
<ol> <li>Disconnect the connector of electrically-driven i</li> <li>Check the resistance between the electrically-d</li> </ol>	intelligent brake unit. Iriven intelligent brake unit h	arness connector terminals.
Electrically-driven intelligent brake unit ha	arness connector	Resistance (0)
Connector No. Te	erminal No.	
E87 41	40	Approx. 54 – 66
NO >> Repair the electrically-driven intelligent Refer to <u>LAN-31, "CAN COMMUNICAT</u> <b>3.</b> CHECK POWER SUPPLY AND GROUND CIRC	brake unit branch line (CAN <u>ION SYSTEM : System Dia</u> UIT	communication circuit 2 side). gram".
Check the power supply and the ground circuit of the "Diagnosis Procedure".	e electrically-driven intellige	nt brake unit. Refer to <u>BR-251,</u>
Is the inspection result normal?		
YES (Present error)>>Replace the electrically-driv installation".	en intelligent brake unit. R	eter to <u>BR-288, "Removal and</u>
YES (Past error)>>Error was detected in the elect munication circuit 2 side). NO >> Repair the power supply and the ground	trically-driven intelligent bra d circuit.	ke unit branch line (CAN com-

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# **EPS BRANCH LINE CIRCUIT**

### < DTC/CIRCUIT DIAGNOSIS >

# **EPS BRANCH LINE CIRCUIT**

# Diagnosis Procedure

1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the terminals and connectors of the power steering control module for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect the connector of power steering control module.
- 2. Check the resistance between the power steering control module harness connector terminals.

Powers	Posistanco (O)			
Connector No.	Connector No. Terminal No.			
E97	E97 5 6			

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the power steering control module branch line.

# $\mathbf{3}$ . Check power supply and ground circuit

Check the power supply and the ground circuit of the power steering control module. Refer to <u>STC-27, "Diag-nosis Procedure"</u>.

Is the inspection result normal?

YES (Present error)>>Replace the power steering oil pump assembly. Refer to the following.

- With heated steering wheel: ST-42, "Removal and Installation"
- Without heated steering wheel: ST-69. "Removal and Installation"
- YES (Past error)>>Error was detected in the power steering control module branch line.

NO >> Repair the power supply and the ground circuit.

INFOID:000000008491419

# **IPDM-E BRANCH LINE CIRCUIT**

# **[CAN SYSTEM (TYPE 3)]**

< DTC/CIRCUIT DIAGNOS	SIS >	ĺ	CAN SYSTEM (TYPE 3)]
IPDM-E BRANCH L	INE CIRCUIT		
Diagnosis Procedure			INFOID:00000008491420
1.CHECK CONNECTOR			
<ol> <li>Turn the ignition switch</li> <li>Disconnect the 12V batt</li> <li>Check the terminals and and connector side).</li> </ol>	OFF. tery cable from the negative d connectors of the IPDM E	terminal. /R for damage, bend and	loose connection (unit side
Is the inspection result norm	al?		
YES >> GO TO 2. NO >> Repair the termi	inal and connector.		
2. CHECK HARNESS FOR	OPEN CIRCUIT		
1. Disconnect the connect	or of IPDM E/R.		
2. Check the resistance be	etween the IPDM E/R harne	ss connector terminals.	
	IPDM E/R harness connector		
Connector No.	Termina	al No.	
E6	40	39	Approx. 108 – 132
CHECK POWER SUPPL	Y AND GROUND CIRCUIT	DM E/R. Refer to <u>PCS-28</u>	, "Diagnosis Procedure".
<u>s the inspection result norm</u> YES (Present error)>>Rep	<u>al?</u> lace the IPDM_E/R. Refer to	PCS-29, "Removal and Ir	nstallation".
YES (Past error)>>Error wa NO >> Repair the powe	as detected in the IPDM E/F er supply and the ground cire	R branch line. cuit.	

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# STRG BRANCH LINE CIRCUIT

# Diagnosis Procedure

INFOID:000000008491421

[CAN SYSTEM (TYPE 3)]

### **1.**CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
- Steering angle sensor
- Harness connector M23 and PCB harness side connector
- CAN gateway

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

**2.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Disconnect the connector of CAN gateway.
- 2. Check the continuity between the CAN gateway harness connector terminals.

	CAN gateway harness connector			
Connector No.	Termi	Continuity		
M125	4	4 6		
101123	10	12	Existed	

### Is the inspection result normal?

YES >> GO TO 3.

NO >> Check the harness and repair or replace (if shield line is open) the root cause (CAN communication circuit 2 side). Refer to <u>LAN-31, "CAN COMMUNICATION SYSTEM : System Diagram"</u>.

# ${f 3.}$ CHECK HARNESS FOR OPEN CIRCUIT

- 1. Connect the connector of CAN gateway.
- 2. Disconnect the connector of steering angle sensor.
- 3. Check the resistance between the steering angle sensor harness connector terminals.

Ste	Posistanos (O)	
Connector No.	Termi	
M37	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.

NO >> GO TO 5.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to <u>BRC-59, "Wiring Dia-gram"</u>.

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-166, "Removal and Installation".

- YES (Past error)>>Error was detected in the steering angle sensor branch line.
- NO >> Repair the power supply and the ground circuit.

### **5.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M23.

2. Check the continuity between the steering angle sensor harness connector and the harness connector.

# STRG BRANCH LINE CIRCUIT

### < DTC/CIRCUIT DIAGNOSIS >

# [CAN SYSTEM (TYPE 3)]

Connector No.	Terminal No			• •• •• •• •• •• •• •• ••
	Terminar No.	Connector No.	Terminal No.	Continuity
M37	1 2	M23	134 136	Existed Existed
the inspection re ES >> Replac IO >> Repair connec	sult normal? e the PCB harness. the harness between th tor M23.	e steering angle ser	nsor harness connector	M37 and the harness

# **ABS BRANCH LINE CIRCUIT**

# Diagnosis Procedure

INFOID:000000008491422

[CAN SYSTEM (TYPE 3)]

### **1.**CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
- ABS actuator and electric unit (control unit)
- CAN gateway

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

**2.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Disconnect the connector of CAN gateway.
- 2. Check the continuity between the CAN gateway harness connector terminals.

	CAN gateway harness connector	r	Continuity
Connector No.	Termi	nal No.	Continuity
M125	4	6	Existed
IVI125	10	12	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Check the harness and repair or replace (if shield line is open) the root cause (CAN communication circuit 2 side). Refer to <u>LAN-31, "CAN COMMUNICATION SYSTEM : System Diagram"</u>.

# **3.**CHECK HARNESS FOR OPEN CIRCUIT

- 1. Connect the connector of CAN gateway.
- 2. Disconnect the connector of ABS actuator and electric unit (control unit).
- Check the resistance between the ABS actuator and electric unit (control unit) harness connector terminals.

ABS actuator	and electric unit (control unit) har	ness connector	Resistance (O)
Connector No.	Termi	nal No.	
E89	22	9	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.

NO >> Repair the ABS actuator and electric unit (control unit) branch line.

### 4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to <u>BRC-138, "Diagnosis Procedure"</u>.

### Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to <u>BRC-163, "Removal</u> and Installation".
- YES (Past error)>>Error was detected in the ABS actuator and electric unit (control unit) branch line.
- NO >> Repair the power supply and the ground circuit.

AFS BRANCH LINE	ECIRCUIT		
Diagnosis Procedure			INFOID:00000008491423
1.CHECK CONNECTOR			
<ol> <li>Turn the ignition switch</li> <li>Disconnect the 12V bat</li> <li>Check the following tern nector side).</li> <li>AFS control unit</li> <li>CAN gateway</li> </ol>	OFF. tery cable from the negative ninals and connectors for d	e terminal. lamage, bend and loose co	nnection (unit side and con-
Is the inspection result norm YES >> GO TO 2.	<u>hal?</u>		
2 CHECK HARNESS CON	ITINI IITV (OPEN CIRCI IIT)	)	
<ol> <li>Disconnect the connect</li> <li>Check the continuity be</li> </ol>	or of CAN gateway. tween the CAN gateway ha	, arness connector terminals.	
Connector No	CAN gateway harness connector	nal No	Continuity
	4	6	Existed
M125	10	12	Existed
<ul> <li>CHECK HARNESS FOR</li> <li>Connect the connector</li> <li>Disconnect the connect</li> <li>Check the resistance be</li> </ul>	OPEN CIRCUIT of CAN gateway. or of AFS control unit. etween the AFS control unit	t harness connector termina	als.
	AFS control unit harness connecto	n	
Connector No.	Termir	nal No.	Resistance (Ω)
E104	30	7	Approx. 54 – 66
Is the measurement value value value         YES       >> GO TO 4.         NO       >> Repair the AFS         4.CHECK POWER SUPPL         Check the power supply ar         UNIT : Diagnosis Procedure         Is the inspection result norm         YES (Present error)>>Rep         YES (Past error)>>Error was         NO       >> Repair the power	<u>uthin the specification?</u> control unit branch line. Y AND GROUND CIRCUIT d the ground circuit of the <u>"</u> . <u>hal?</u> blace the AFS control unit. F ras detected in the AFS con er supply and the ground ci	AFS control unit. Refer to Refer to <u>EXL-113. "Remova</u> trol unit branch line. rcuit.	EXL-70. "AFS CONTROL

# ADP BRANCH LINE CIRCUIT

# Diagnosis Procedure

INFOID:000000008491424

[CAN SYSTEM (TYPE 3)]

# **1.**CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
- Driver seat control unit
- Harness connector B501
- Harness connector B11
- CAN gateway

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Disconnect the connector of CAN gateway.
- 2. Check the continuity between the CAN gateway harness connector terminals.

	CAN gateway harness connector		Continuity
Connector No.	Termir	nal No.	Continuity
M125	4	6	Existed
WI125	10	12	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Check the harness and repair or replace (if shield line is open) the root cause (CAN communication circuit 2 side). Refer to <u>LAN-31</u>, "CAN COMMUNICATION SYSTEM : System Diagram".

# **3.**CHECK HARNESS FOR OPEN CIRCUIT

- 1. Connect the connector of CAN gateway.
- 2. Disconnect the connector of driver seat control unit.
- 3. Check the resistance between the driver seat control unit harness connector terminals.

Driv	er seat control unit harness conn	ector	Resistance (O)
Connector No.	Termi	nal No.	
B514	23	24	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.

NO >> Repair the driver seat control unit branch line.

**4.**CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the driver seat control unit. Refer to <u>ADP-63</u>, "<u>DRIVER SEAT</u> <u>CONTROL UNIT</u> : <u>Diagnosis</u> <u>Procedure</u>".

Is the inspection result normal?

YES (Present error)>>Replace the driver seat control unit. Refer to ADP-136, "Removal and Installation".

YES (Past error)>>Error was detected in the driver seat control unit branch line.

NO >> Repair the power supply and the ground circuit.

ICC BRANCH LINE	CIRCUIT		1
Diagnosis Procedure			-  INFOID:00000008491425
1. CHECK CONNECTOR			E
<ol> <li>Turn the ignition switch</li> <li>Disconnect the 12V bat</li> <li>Check the following terr nector side).</li> <li>ADAS control unit</li> <li>CAN gateway</li> <li>Is the inspection result norm</li> <li>YES &gt;&gt; GO TO 2.</li> <li>NO &gt;&gt; Repair the term</li> <li>2.CHECK HARNESS CON</li> </ol>	OFF. tery cable from the negative ninals and connectors for d <u>nal?</u> inal and connector. ITINUITY (OPEN CIRCUIT)	e terminal. amage, bend and loose co	nnection (unit side and con- C
<ol> <li>Disconnect the connect</li> <li>Check the continuity be</li> </ol>	or of CAN gateway. tween the CAN gateway ha	rness connector terminals.	F
	CAN gateway harness connector		Continuity
Connector No.	Termir	nal No.	
M125	4	6	Existed
	10	12	
<ul> <li>3.CHECK HARNESS FOR</li> <li>1. Connect the connector</li> <li>2. Disconnect the connect</li> <li>3. Check the resistance be</li> </ul>	OPEN CIRCUIT of CAN gateway. or of ADAS control unit. etween the ADAS control u	nit harness connector termi	nals.
Α	DAS control unit harness connect	or	ŀ
Connector No.	Termir	nal No.	Resistance ( $\Omega$ )
B50	14	15	Approx. 54 – 66
Is the measurement value w YES >> GO TO 4. NO >> Replace the box 4.CHECK POWER SUPPL Check the power supply and dure". Is the inspection result norm YES (Present error)>>Rep YES (Past error)>>Error w NO >> Repair the power	vithin the specification? dy harness. Y AND GROUND CIRCUIT d the ground circuit of the A <u>nal?</u> lace the ADAS control unit. as detected in the ADAS co er supply and the ground ci	ADAS control unit. Refer to Refer to <u>DAS-56, "Remova</u> ontrol unit branch line. rcuit.	DAS-55, "Diagnosis Proce-
			1

# **PSB BRANCH LINE CIRCUIT**

# Diagnosis Procedure

INFOID:000000008491426

[CAN SYSTEM (TYPE 3)]

### **1.**CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
- Pre-crash seat belt control unit (driver side)
- CAN gateway

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

**2.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

- 1. Disconnect the connector of CAN gateway.
- 2. Check the continuity between the CAN gateway harness connector terminals.

	CAN gateway harness connector	r	Continuity
Connector No.	Termi	nal No.	Continuity
M125	4	6	Existed
IVI125	10	12	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Check the harness and repair or replace (if shield line is open) the root cause (CAN communication circuit 2 side). Refer to <u>LAN-31, "CAN COMMUNICATION SYSTEM : System Diagram"</u>.

# **3.**CHECK HARNESS FOR OPEN CIRCUIT

- 1. Connect the connector of CAN gateway.
- 2. Disconnect the connector of pre-crash seat belt control unit (driver side).
- Check the resistance between the pre-crash seat belt control unit (driver side) harness connector terminals.

Pre-crash sea	t belt control unit (driver side) har	ness connector	Resistance (O)
Connector No.	Termi	nal No.	
В9	14	4	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.

NO >> Repair the pre-crash seat belt control unit (driver side) branch line.

### 4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the pre-crash seat belt control unit (driver side). Refer to <u>SBC-40, "Diagnosis Procedure"</u>.

Is the inspection result normal?

YES (Present error)>>Replace the seat belt pre-tensioner retractor (driver side). Refer to <u>SB-7, "SEAT BELT</u> <u>RETRACTOR : Removal and Installation"</u>.

YES (Past error)>>Error was detected in the pre-crash seat belt control unit (driver side) branch line.

NO >> Repair the power supply and the ground circuit.

# **RDR-L BRANCH LINE CIRCUIT**

# [CAN SYSTEM (TYPE 3)]

RDR-L BRANCH LI	NE CIRCUIT		
Diagnosis Procedure			INFOID:00000008491427
1.CHECK CONNECTOR			
<ol> <li>Turn the ignition switch</li> <li>Disconnect the 12V batt</li> <li>Check the terminals an side and connector side</li> </ol>	OFF. tery cable from the negative d connectors of the side ra ).	terminal. dar LH for damage, ben	d and loose connection (unit
s the inspection result norm YES >> GO TO 2. NO >> Repair the termi	inal and connector.		
Disconnect the connect	OPEN CIRCUIT		
2. Check the resistance be	etween the side radar LH ha	rness connector terminal	s.
	Side radar LH harness connector		Resistance ( $\Omega$ )
Connector No.	Termin	al No.	
NO >> Repair the side CHECK POWER SUPPL	radar LH branch line. Y AND GROUND CIRCUIT		
Check the power supply an Diagnosis Procedure".	d the ground circuit of the s	side radar LH. Refer to D	DAS-524, "SIDE RADAR LH :
YES (Present error)>>Rep YES (Past error)>>Error wa NO >> Repair the powe	lace the side radar LH. Refe as detected in the side rada er supply and the ground cir	r to <u>DAS-541, "Removal</u> r LH branch line. cuit.	and Installation".

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< DTC/CIRCUIT DIAGNOSIS >

# RDR-R BRANCH LINE CIRCUIT

# Diagnosis Procedure

INFOID:000000008491428

[CAN SYSTEM (TYPE 3)]

### 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the terminals and connectors of the side radar RH for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

**2.**CHECK RIGHT/LEFT SWITCHING SIGNAL CIRCUIT

Check the right/left switching signal circuit of the side radar RH. Refer to <u>DAS-527</u>, "<u>Diagnosis Procedure</u>". <u>Is the inspection result normal?</u>

YES >> GO TO 3.

NO >> Repair the root cause.

### 3.CHECK HARNESS FOR OPEN CIRCUIT

### 1. Disconnect the connector of side radar RH.

2. Check the resistance between the side radar RH harness connector terminals.

Connector No. Terminal No.		
B252 4	3	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.

NO >> Repair the side radar RH branch line.

**4.**CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar RH. Refer to <u>DAS-525. "SIDE RADAR RH :</u> <u>Diagnosis Procedure"</u>.

### Is the inspection result normal?

YES (Present error)>>Replace the side radar RH. Refer to DAS-541, "Removal and Installation".

YES (Past error)>>Error was detected in the side radar RH branch line.

NO >> Repair the power supply and the ground circuit.

# **APA BRANCH LINE CIRCUIT**

# [CAN SYSTEM (TYPE 3)]

ection (unit side and con- • terminals. Resistance (Ω) Approx. 54 – 66
ection (unit side and con- • terminals. Resistance (Ω) Approx. 54 – 66
ection (unit side and con· <sup>·</sup> terminals. Resistance (Ω) Approx. 54 – 66
<sup>•</sup> terminals. Resistance (Ω) Approx. 54 – 66
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r terminals. Resistance (Ω) Approx. 54 – 66
r terminals. Resistance (Ω) Approx. 54 – 66
Resistance (Ω) Approx. 54 – 66
Approx. 54 – 66
Approx. 54 – 66
fer to <u>DAS-183, "ACCEL</u> -
I. "MODELS WITH DIS-
and the harness connec-
Continuity
Existed
Existed

< DTC/CIRCUIT DIAGNOSIS >

# LANE BRANCH LINE CIRCUIT

# Diagnosis Procedure

INFOID:000000008491430

[CAN SYSTEM (TYPE 3)]

# 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
- Lane camera unit
- Harness connector R7
- Harness connector M110
- Harness connector M24 and PCB harness side connector

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

**2.**CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect the connector of lane camera unit.
- 2. Check the resistance between the lane camera unit harness connector terminals.

L	$Resistance\left(\Omega\right)$		
Connector No.	Termi		
R8	4	8	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> GO TO 4.

 $\mathbf{3.}$  CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the lane camera unit. Refer to <u>DAS-365, "LANE CAMERA</u> <u>UNIT : Diagnosis Procedure"</u>.

Is the inspection result normal?

YES (Present error)>>Replace the lane camera unit. Refer to DAS-381, "Removal and Installation".

YES (Past error)>>Error was detected in the lane camera unit branch line.

NO >> Repair the power supply and the ground circuit.

### **4.**CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connector M24.

2. Check the continuity between the lane camera unit harness connector and the harness connector.

Lane camera unit	harness connector	Harness	connector	Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
DQ	4	M24	179	Existed
Kö	8	M24	178	Existed

Is the inspection result normal?

YES >> Replace the PCB harness.

NO >> Repair the harness between the lane camera unit harness connector R8 and the harness connector M24.

Diagnosis Procedure				
				INFOID:00000008491431
1.CHECK CONNECTOR				
<ol> <li>Turn the ignition switch</li> <li>Disconnect the 12V ba</li> <li>Check the following tennector side).</li> <li>ICC sensor</li> </ol>	OFF. ttery cable from the minals and conner	he negative termina ectors for damage, t	l. bend and loose co	nnection (unit side and con-
<ul> <li>Harness connector E10</li> <li>Harness connector M6</li> <li>Harness connector M2</li> </ul>	06 8 and PCB harne	ss side connector		
Is the inspection result normYES>> GO TO 2.NO>> Repair the term	nal?	or.		
2.CHECK HARNESS FOR	R OPEN CIRCUIT	-		
<ol> <li>Disconnect the connect</li> <li>Check the resistance b</li> </ol>	tor of ICC sensor etween the ICC s	sensor harness conr	nector terminals.	
	ICC sensor harnes	s connector		Resistance ( $\Omega$ )
Connector No.		Terminal No.		
E67	3		6	Approx. 108 – 132
YES >> GO TO 3. NO >> GO TO 4. <b>3.</b> CHECK POWER SUPP	LY AND GROUN	D CIRCUIT		
Check the power supply an sis Procedure".	d the ground circ	uit of the ICC senso	r. Refer to <u>CCS-15</u>	50, "ICC SENSOR : Diagno-
YES (Present error)>>Rep YES (Past error)>>Error v NO >> Repair the pow 4.CHECK HARNESS CO	Diace the ICC ser vas detected in th ver supply and the NTINUITY (OPEN	sor. Refer to <u>CCS-1</u> e ICC sensor branc ground circuit. I CIRCUIT)	168, "Removal and h line.	Installation".
<ol> <li>Disconnect the harnes</li> <li>Check the continuity be</li> </ol>	s connector M28. etween the ICC se	ensor harness conn	ector and the harr	ness connector.
ICC sensor harness	connector	Harnes	s connector	<b>O</b> ctober 1
Connector No.	Terminal No.	Connector No.	Terminal No.	Continuity
E67	3	M28	343	Existed
	6	0	345	Existed

NO >> Repair the harness between the ICC sensor harness connector E67 and the harness connector M28.

< DTC/CIRCUIT DIAGNOSIS >

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# INV/MC BRANCH LINE CIRCUIT

# Diagnosis Procedure

INFOID:000000008491432

[CAN SYSTEM (TYPE 3)]

# 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the terminals and connectors of the traction motor inverter for damage, bend and loose connection (unit side and connector side).

### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect the connector of traction motor inverter.
- 2. Check the resistance between the traction motor inverter harness connector terminals.

Trac	Resistance (O)		
Connector No.	Termi		
E78	9	28	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the traction motor inverter branch line.

# **3.**CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the traction motor inverter. Refer to <u>TMS-53, "Diagnosis Pro-</u> cedure".

Is the inspection result normal?

YES (Present error)>>Replace the traction motor inverter. Refer to TMS-121, "Removal and Installation".

YES (Past error)>>Error was detected in the traction motor inverter branch line.

NO >> Repair the power supply and the ground circuit.

Diagnosis Procedu				
	lie			INFOID:00000008491433
1. СНЕСК СОЛЛЕСТС	)R			
<ol> <li>Turn the ignition sw</li> <li>Disconnect the 12V</li> <li>Check the following nector side).</li> <li>A/T assembly</li> </ol>	itch OFF. battery cable from the terminals and conne	ne negative terminal. ectors for damage, be	nd and loose conne	ction (unit side and con-
<ul> <li>Harness connector</li> <li>Harness connector</li> </ul>	F103 M116			
- Harness connector <u>Is the inspection result r</u> YES >> GO TO 2. NO >> Repair the t	M28 and PCB harne normal? erminal and connect	ss side connector or.		
Z.CHECK HARNESS F		-		
<ol> <li>Disconnect the configuration</li> <li>Check the resistance</li> </ol>	e between the A/T assemble	ssembly harness con	nector terminals.	
	A/T assembly harne	ess connector		Resistance ( $\Omega$ )
Connector No.		Terminal No.		
F61	3		8	Approx. 54 – 66
YES >> GO TO 3. NO >> GO TO 4. <b>3.</b> CHECK POWER SU	PPLY AND GROUN	D CIRCUIT		
Check the power supply	and the ground circ	uit of the TCM. Refer	to TM-158, "Diagnos	sis Procedure".
Is the inspection result r YES (Present error)>> <u>nent Parts L</u> list.) YES (Past error)>>Erro NO >> Repair the p 4.CHECK HARNESS (	normal? Replace the control v <u>ocation"</u> . (Replace A pr was detected in the power supply and the CONTINUITY (OPEN	valve &TCM. Refer to A/T assembly if contro e TCM branch line. e ground circuit. I CIRCUIT)	TM-13, "A/T CONTF I valve &TCM is not	ROL SYSTEM : Compo- listed in the latest parts
<ol> <li>Disconnect the harr</li> <li>Check the continuity</li> </ol>	ness connector M28. y between the A/T as	sembly harness conn	ector and the harne	ss connector.
A/T assembly har	ness connector	Harness of	connector	
Connector No.	Terminal No.	Connector No.	Terminal No.	- Continuity
F61 -	3	M28	341	Existed
Is the inspection result r	normal?			

NO >> Repair the harness between the A/T assembly harness connector F61 and the harness connector M28.

< DTC/CIRCUIT DIAGNOSIS >

# E-OP BRANCH LINE CIRCUIT

# Diagnosis Procedure

INFOID:000000008491434

[CAN SYSTEM (TYPE 3)]

# 1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the terminals and connectors of the sub electric oil pump inverter for damage, bend and loose connection (unit side and connector side).

### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect the connector of sub electric oil pump inverter.
- 2. Check the resistance between the sub electric oil pump inverter harness connector terminals.

Sub ele	Resistance (O)		
Connector No.	Termi		
B151	4	8	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the sub electric oil pump inverter branch line.

# $\mathbf{3.}$ CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the sub electric oil pump inverter. Refer to <u>TM-160, "Diagno-</u> sis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the sub electric oil pump inverter. Refer to <u>TM-188, "Removal and Installa-</u> tion".

YES (Past error)>>Error was detected in the sub electric oil pump inverter branch line.

NO >> Repair the power supply and the ground circuit.

# **HV BAT BRANCH LINE CIRCUIT**

# Diagnosis Procedure

### WARNING:

- Because hybrid vehicles and electric vehicles contain a high voltage battery, there is the risk of electric shock, electric leakage, or similar accidents if the high voltage component and vehicle are handled incorrectly. Be sure to follow the correct work procedures when performing inspection and maintenance.
- Be sure to remove the service plug in order to shut off the high voltage circuits before performing inspection or maintenance of high voltage system harnesses and parts.
- Be sure to put the removed service plug in your pocket and carry it with you so that another person D does not accidentally connect it while work is in progress.
- Be sure to wear insulating protective equipment consisting of glove, shoes and glasses before beginning work on the high voltage system.
- Clearly identify the persons responsible for high voltage work and ensure that other persons do not touch the vehicle. When not working, cover high voltage parts with an insulating cover sheet or similar item to prevent other persons from contacting them.
- Refer to <u>LAN-25, "High Voltage Precautions"</u>.

### CAUTION:

There is the possibility of a malfunction occurring if the vehicle is changed to READY status while the service plug is removed. Therefore do not change the vehicle to READY status unless instructed to do so in the Service Manual.

1.CHECK CONNECTOR

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Check the terminals and connectors of the Li-ion battery for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

- YES >> GO TO 2.
- NO >> Repair the terminal and connector.

### 2.CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect the connector of Li-ion battery.
- 2. Check the resistance between the Li-ion battery harness connector terminals.

l	i-ion battery harness connector	Posistance (O)	_	
Connector No.	Terminal No.		Resistance (32)	
B160	3	15	Approx. 108 – 132	-

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Replace the body harness.

3. PRECONDITIONING

### WARNING:

Shut off high voltage circuit. Refer to GI-30, "How to Cut Off High Voltage".

Check voltage in high voltage circuit. (Check that condenser are discharged.)

1. Remove trunk finisher front. Refer to <u>INT-51, "Exploded View"</u>.

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# **HV BAT BRANCH LINE CIRCUIT**

### < DTC/CIRCUIT DIAGNOSIS >

- 2. Remove harness cover (1).
  - DANGER:

Touching high voltage components without using the appropriate protective equipment will cause electrocution.



# [CAN SYSTEM (TYPE 3)]



3. Measure voltage between high voltage harness terminals.

Standard

: 5 V or less

# DANGER:

Touching high voltage components without using the appropriate protective equipment will cause electrocution.



CAUTION: For voltage measurements, use a tester which can measure to 500 V or higher.

>> GO TO 4.

4. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Li-ion battery controller. Refer to <u>HBB-184</u>, "LI-ION BAT-<u>TERY CONTROLLER</u> : <u>Diagnosis Procedure</u>".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair the power supply and the ground circuit.

5.CHECK HARNESS FOR OPEN CIRCUIT

- 1. Remove Li-ion battery controller. Refer to <u>HBB-200</u>, "LI-ION BATTERY CONTROLLER : Disassembly and <u>Assembly</u>".
- Check the continuity between vehicle communication harness (harness between Li-ion battery harness connector side and Li-ion battery controller side) connector terminals. Refer to <u>HBB-23. "Circuit Diagram"</u>.

Vehicle commu		
Li-ion battery harness connector side	Li-ion battery controller side	Continuity
Terminal No.	Terminal No.	
3	1	Existed
15	13	Existed

Is the measurement value within the specification?

YES (Present error)>>Replace the Li-ion battery controller. Refer to <u>HBB-200, "LI-ION BATTERY CON-</u> <u>TROLLER : Disassembly and Assembly"</u>.

YES (Past error)>>Error was detected in the Li-ion battery controller branch line.

NO >> Repair the vehicle communication harness.



# **CAN COMMUNICATION CIRCUIT 1**

[CAN SYSTEM (TYPE 3)]

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# <u>CAN SYS</u> CAN COMMUNICATION CIRCUIT 1 Diagnosis Procedure

# 1.CONNECTOR INSPECTION

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Disconnect all the unit connectors on CAN communication circuit 1.
  - NOTE:

For identification of CAN communication circuit 1, CAN communication circuit 2, ITS communication circuit, and HEV system CAN circuit, refer to <u>LAN-31</u>, <u>"CAN COMMUNICATION SYSTEM : System Dia-</u> gram".

4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2. CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector	Continuity	(	
Terminal No.		Continuity	
6	14	Not existed	_
	Data link connector Termi 6	Data link connector Terminal No. 6 14	Data link connector     Continuity       Terminal No.     6     14     Not existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Check the harness and repair or replace (if shield line or PCB harness is short) the root cause.

# **3.**CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link	connector		Continuity	
Connector No.	Terminal No.	Cround	Conuntury	
M192	6	Giouna	Not existed	K
IVI TO2	14		Not existed	

Is the inspection result normal?

YES >> GO TO 4.

NO >> Check the harness and repair or replace (if shield line or PCB harness is short) the root cause.

4.CHECK ECM AND IPDM E/R TERMINATION CIRCUIT

1. Remove the ECM and the IPDM E/R.

2. Check the resistance between the ECM terminals.

	Posistanco (O)	ECM	
$\bigcirc$		nal No.	Termi
0	Approx. 108 – 132	113	114

3. Check the resistance between the IPDM E/R terminals.

IPDM E/R		Resistance (0)	
Terminal No.			
40	39	Approx. 108 – 132	

Is the measurement value within the specification?

YES >> GO TO 5.

NO >> Replace the ECM and/or the IPDM E/R.

# 5. CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the "Symptom (Results from interview with customer)" are reproduced.

### Inspection result

Reproduced>>GO TO 6.

Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

# 6. CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Disconnect one of the unit connectors of CAN communication circuit 1. **NOTE:**

ECM and IPDM E/R have a termination circuit. Check other units first.

Connect the 12V battery cable to the negative terminal. Check if the symptoms described in the "Symptom (Results from interview with customer)" are reproduced.

### NOTE:

Although unit-related error symptoms occur, do not confuse them with other symptoms.

### Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.

Non-reproduced>>Replace the unit whose connector was disconnected.

< DTC/CIRCUIT DIAG	NOSIS >		[CA	N SYSTEM (TYPE 3)
CAN COMMUNI	CATION CIRC	UIT 2		
Diagnosis Procedu	ire			INFOID:000000084914
1.CHECK CAN DIAGN	IOSIS			
Check the CAN diagnos	sis results from COI	NSULT to see that the	ne CAN communication	on circuit 1 has no ma
NOTE:				
For identification of CA	N communication ci	rcuit 1, CAN commu 81, "CAN COMMUNI	nication circuit 2, ITS CATION SYSTEM : S	3 communication circuit system Diagram".
Is the CAN communicat	ion circuit 1 normal?			
YES >> GO TO 2.	_			
NO >> Check and	repair CAN commur	ication circuit 1.		
<b>Z</b> .CONNECTOR INSPI	ECTION			
1. Turn the ignition sw	itch OFF.			
<ol> <li>Disconnect the 12V</li> <li>Check the following</li> </ol>	battery cable from t	ne negative terminal	end and loose conne	ction (unit side and con
nector side).		colors for damage, L		
- CAN gateway				
- Harness connector	M23 and PCB harne	ess side connector		
IS the inspection result r	normal?			
1 = 3 >> GU   U 3. NO >> Repair the t	erminal and connec	tor.		
<ol> <li>Disconnect the coni</li> <li>Check the continuity</li> </ol>	nector of CAN gatew	/ay. nateway harness coi	nector terminals	
	,	galena) nameee ee		
	CAN gateway harn	ess connector		Continuity
Connector No.		Terminal No.		Continuity
M125	4		6	Existed
10125	10		12	Existed
Is the inspection result r	normal?			
YES >> GO TO 5.				
NO >> GO TO 4.				
<b>4.</b> CHECK HARNESS (	CONTINUITY (SHO	RT CIRCUIT)		
1. Disconnect the harr	ness connector M23			
2. Check the continuity	y between the CAN	gateway harness col	nnector and the harne	ess connector.
CAN gateway har	ness connector	Harnes	s connector	
Connector No	Terminal No	Connector No	Terminal No	- Continuity
	4		133	Fxisted
M125	10	M23	135	Existed
1 4 1 4 1	10		100	LVISICO
YES >> Replace the NO >> Repair the h tor M23.	e PCB harness. PCB barness. Parness between the	CAN gateway harne	ess connector M125 a	and the harness connec
5.CHECK HARNESS				
1. Disconnect all the u	Init connectors on C	AN communication c	ircuit 2.	

2. Check the continuity between the CAN gateway harness connector terminals.

# **CAN COMMUNICATION CIRCUIT 2**

### < DTC/CIRCUIT DIAGNOSIS >

### [CAN SYSTEM (TYPE 3)]

	Continuity		
Connector No.	Terminal No.		Continuity
M125	4	10	Not existed

Is the measurement value within the specification?

YES >> GO TO 6.

NO >> Check the harness and repair or replace the root cause.

**6.**CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the CAN gateway harness connector and the ground.

CAN gateway harness connector			Continuity
Connector No.	Terminal No.	Ground	Continuity
M125	4	Ground	Not existed
WI125	10		Not existed

Is the inspection result normal?

YES >> GO TO 7.

NO >> Check the harness and repair or replace the root cause.

### 7. CHECK CAN GATEWAY TERMINATION CIRCUIT

### 1. Remove the CAN gateway.

2. Check the resistance between the CAN gateway terminals.

CAN gateway Terminal No.		- Resistance (Ω)	
6	12	Approx. 108 – 132	

Is the measurement value within the specification?

YES >> GO TO 8.

NO >> Replace the CAN gateway.

### 8.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the "Symptom (Results from interview with customer)" are reproduced.

### Inspection result

Reproduced>>GO TO 9.

Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

### 9.CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Disconnect one of the unit connectors of CAN communication circuit 2.
- NOTE:

CAN gateway has two termination circuits. Check other units first.

 Connect the 12V battery cable to the negative terminal. Check if the symptoms described in the "Symptom (Results from interview with customer)" are reproduced. NOTE:

Although unit-related error symptoms occur, do not confuse them with other symptoms.

### Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure.

Non-reproduced>>Replace the unit whose connector was disconnected.

# **ITS COMMUNICATION CIRCUIT**

DIC/CIRCUIT DIAG	NOSIS >		ĮCAN	
TS COMMUNIC	ATION CIRCU	IT		
Diagnosis Proced	ure			INFOID:00000008491438
CHECK CAN DIAGI	NOSIS			
Check the CAN diagno	sis results from CONS	SULT to see that the (	CAN communication of	circuit 1 and CAN com-
nunication circuit 2 hav	/e no malfunction.			
or identification of CA	N communication cir circuit. refer to LAN-3	cuit 1, CAN commun 1. "CAN COMMUNIC	ication circuit 2, ITS	communication circuit, stem Diagram".
are the CAN communic	cation 1 and CAN con	munication 2 circuits	normal?	<u></u> .
YES >> GO TO 2.			0.000 · · · ·	
	repair CAN communi	cation circuit 1 and/o	r CAN communication	n circuit 2.
<ol> <li>Disconnect the 12\</li> <li>Check the termina (unit side and conr</li> </ol>	Iten OFF. / battery cable from th ls and connectors of nector side).	ne negative terminal. the ADAS control ur	nit for damage, bend	and loose connection
s the inspection result	normal?			
YES >> GO TO 3.	terminal and connect	or		
Check the continui nector.	ty between the ADAS	control unit harness	connector and the IC	C sensor harness con-
ADAS control unit	narness connector			
O	Tanatantat	ICC sensor har	mess connector	Continuity
Connector No.	Terminal No.	ICC sensor har Connector No.	rness connector Terminal No.	Continuity
Connector No. B50	Terminal No. 7 8	ICC sensor har Connector No. E67	rness connector Terminal No. 3 6	Continuity Existed Existed
Connector No. B50 S the inspection result YES >> GO TO 4. NO >> Replace th CHECK HARNESS	Terminal No. 7 8 normal? e body harness. CONTINUITY (SHOR	ICC sensor har Connector No. E67	rness connector Terminal No. 3 6	Continuity Existed Existed
Connector No. B50 S the inspection result YES >> GO TO 4. NO >> Replace th CHECK HARNESS Disconnect the following Side radar LH Side radar RH Accelerator pedal a Lane camera unit Check the continuit	Terminal No. 7 8 normal? e body harness. CONTINUITY (SHOR owing harness connect actuator ty between the ADAS	ICC sensor har Connector No. E67 T CIRCUIT) ctors.	rness connector Terminal No. 3 6 6	Continuity Existed Existed
Connector No. B50 S the inspection result YES >> GO TO 4. NO >> Replace th CHECK HARNESS Disconnect the following Side radar LH Side radar LH Side radar RH Accelerator pedal a Lane camera unit Check the continuit	Terminal No. 7 8 normal? e body harness. CONTINUITY (SHOR owing harness connect actuator ty between the ADAS ADAS control unit har	ICC sensor har Connector No. E67 CT CIRCUIT) ctors.	rness connector Terminal No. 3 6 connector terminals.	Continuity Existed Existed
Connector No. B50 S the inspection result YES >> GO TO 4. NO >> Replace th CHECK HARNESS Disconnect the following Side radar LH Side radar LH Side radar RH Accelerator pedal a Lane camera unit Check the continuit Connector No.	Terminal No. 7 8 normal? e body harness. CONTINUITY (SHOR owing harness connect actuator ty between the ADAS ADAS control unit har	ICC sensor har Connector No. E67 T CIRCUIT) ctors. control unit harness ness connector Terminal No.	rness connector Terminal No. 3 6 connector terminals.	Continuity Existed Existed Continuity

Is the inspection result normal?

YES >> GO TO 5.

NO >> Check the harness and repair or replace (if shield line or PCB harness is short) the root cause.

5. CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the ADAS control unit harness connector and the ground.

# **ITS COMMUNICATION CIRCUIT**

### < DTC/CIRCUIT DIAGNOSIS >

### [CAN SYSTEM (TYPE 3)]

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.	Ground	Continuity
B50	7	Ground	Not existed
830	8		Not existed

Is the inspection result normal?

YES >> GO TO 6.

NO >> Check the harness and repair or replace (if shield line or PCB harness is short) the root cause.

### **6.**CHECK TERMINATION CIRCUIT

1. Remove the ADAS control unit and the ICC sensor.

2. Check the resistance between the ADAS control unit terminals.

ADAS control unit		- Resistance (Ω)
Terminal No.		
7	8	Approx. 108 – 132

3. Check the resistance between the ICC sensor terminals.

ICC sensor		Resistance (Ω)
Terminal No.		
3	6	Approx. 108 – 132

Is the inspection result normal?

YES >> GO TO 7.

NO >> Replace the ADAS control unit and/or the ICC sensor.

### **7.**CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the "Symptom (Results from interview with customer)" are reproduced.

### Inspection result

Reproduced>>GO TO 8.

Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

# 8. CHECK UNIT REPRODUCTION

Perform the reproduction test as per the following procedure for each unit.

- 1. Turn the ignition switch OFF.
- 2. Disconnect the 12V battery cable from the negative terminal.
- 3. Disconnect one of the unit connectors of ITS communication circuit. **NOTE:**

ADAS control unit and ICC sensor have a termination circuit. Check other units first.

- 4. Connect the 12V battery cable to the negative terminal. Check if the symptoms described in the "Symptom (Results from interview with customer)" are reproduced.
  - NOTE:

Although unit-related error symptoms occur, do not confuse them with other symptoms.

### Inspection result

Reproduced>>Connect the connector. Check other units as per the above procedure. Non-reproduced>>Replace the unit whose connector was disconnected.

# HEV SYSTEM CAN CIRCUIT

# Diagnosis Procedure

### WARNING:

- Because hybrid vehicles and electric vehicles contain a high voltage battery, there is the risk of electric shock, electric leakage, or similar accidents if the high voltage component and vehicle are handled incorrectly. Be sure to follow the correct work procedures when performing inspection and maintenance.
- Be sure to remove the service plug in order to shut off the high voltage circuits before performing inspection or maintenance of high voltage system harnesses and parts.
- Be sure to put the removed service plug in your pocket and carry it with you so that another person D does not accidentally connect it while work is in progress.
- Be sure to wear insulating protective equipment consisting of glove, shoes and glasses before beginning work on the high voltage system.
- Clearly identify the persons responsible for high voltage work and ensure that other persons do not touch the vehicle. When not working, cover high voltage parts with an insulating cover sheet or similar item to prevent other persons from contacting them.
- Refer to LAN-25, "High Voltage Precautions".

### CAUTION:

There is the possibility of a malfunction occurring if the vehicle is changed to READY status while the service plug is removed. Therefore do not change the vehicle to READY status unless instructed to do so in the Service Manual.

**1.**PRECONDITIONING

### WARNING:

Shut off high voltage circuit. Refer to GI-30, "How to Cut Off High Voltage".

- Check voltage in high voltage circuit. (Check that condenser are discharged.)
- 1. Remove trunk finisher front. Refer to INT-51, "Exploded View".
- 2. Remove harness cover (1).

### DANGER:

Touching high voltage components without using the appropriate protective equipment will cause electrocution.





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3. Measure voltage between high voltage harness terminals.

### Standard

: 5 V or less

### DANGER:

Touching high voltage components without using the appropriate protective equipment will cause electrocution.

### CAUTION:

For voltage measurements, use a tester which can measure to 500 V or higher.

### >> GO TO 2.

**2.**CONNECTOR INSPECTION

1. Turn the ignition switch OFF.

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# **HEV SYSTEM CAN CIRCUIT**

< DTC/CIRCUIT DIAGNOSIS >

- 2. Disconnect the 12V battery cable from the negative terminal.
- Disconnect all the control unit connectors on HEV system CAN circuit. For the removal of Li-ion battery controller, refer to <u>HBB-200</u>, "LI-ION BATTERY CONTROLLER : Disassembly and Assembly". NOTE:

For identification of CAN communication circuit 1, CAN communication circuit 2, ITS communication circuit, and HEV system CAN circuit, refer to <u>LAN-31</u>, <u>"CAN COMMUNICATION SYSTEM : System Diagram"</u>.

4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the terminal and connector.

**3.**CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

	Continuity		
Connector No.	Terminal No.		Continuity
M182	13	12	Not existed

Is the inspection result normal?

YES >> GO TO 4.

NO >> Check the harness and repair or replace (if shield line or PCB harness is short) the root cause.

**4.**CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector and the ground.

Data link connector			Continuity
Connector No.	Terminal No.	Ground	Continuity
M182	13	- Ground	Not existed
WITOZ	12		Not existed

Is the inspection result normal?

YES >> GO TO 5.

NO >> Check the harness and repair or replace (if shield line or PCB harness is short) the root cause.

5.CHECK ECM AND LI-ION BATTERY CONTROLLER TERMINATION CIRCUIT

1. Remove the ECM.

2. Check the resistance between the ECM terminals.

ECM		Resistance (O)	
Terminal No.			
55	54	Approx. 108 – 132	

 Remove the Li-ion battery controller. Refer to <u>HBB-200</u>, "LI-ION BATTERY CONTROLLER : <u>Disassembly</u> and <u>Assembly</u>".

4. Check the resistance between the Li-ion battery controller terminals.

Li-ion battery controller Terminal No.		– Resistance (Ω)	

Is the measurement value within the specification?

YES >> GO TO 6.

NO >> Replace the ECM and/or the Li-ion battery controller.

6.CHECK SYMPTOM

Connect all the connectors. Check if the symptoms described in the "Symptom (Results from interview with customer)" are reproduced.

# **HEV SYSTEM CAN CIRCUIT**

# [CAN SYSTEM (TYPE 3)]

< DTC/CIRCUIT DIAGNOSIS >	[CAN SYSTEM (TYPE 3)]
Inspection result	
Reproduced>>GO TO 7. Non-reproduced>>Start the diagnosis again. Follow the trouble diagnos detected.	is procedure when past error is
7. CHECK CONTROL UNIT REPRODUCTION	
Perform the reproduction test as per the following procedure for each control 1. Turn the ignition switch OFF.	l unit.
<ol> <li>Disconnect the 12V battery cable from the negative terminal.</li> <li>Disconnect one of the control unit connectors of HEV system CAN circu NOTE:</li> </ol>	it.
<ul> <li>ECM and Li-ion battery controller have a termination circuit. Check othe</li> <li>Connect the 12V battery cable to the negative terminal. Check if the sy tom (Results from interview with customer)" are reproduced.</li> </ul>	control units first. mptoms described in the "Symp-
Although control unit-related error symptoms occur, do not confuse ther	n with other symptoms.
Inspection result	
Reproduced>>Connect the connector. Check other control units as per the Non-reproduced>>Replace the control unit whose connector was disconnector was disconnec	above procedure. cted.

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