SECTION LAN

LAN SYSTEM

CONTENTS

CAN GATEWAY

HOW TO USE THIS MANUAL

HOW TO USE THIS SECTION

Information

INFOID:0000000008139529

- “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”.

PRECAUTION

PRECAUTIONS

Precautions for Trouble Diagnosis

INFOID:0000000008139530

CAUTION:

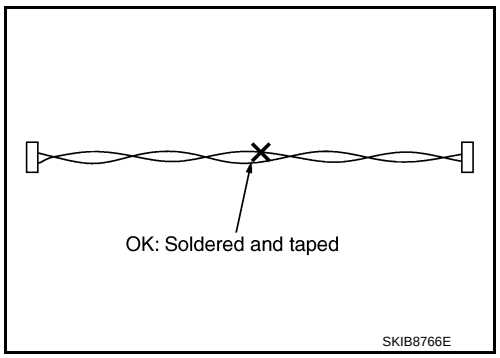
Follow the instructions listed below. Failure to do this may cause damage to parts:

- **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.**

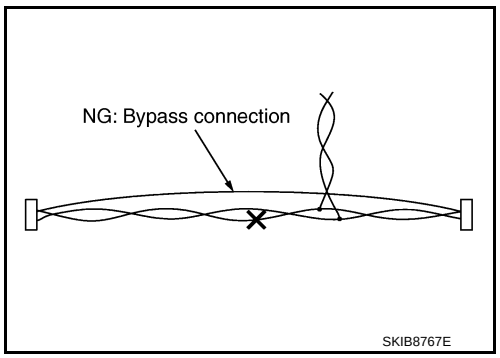
Precautions for Harness Repair

INFOID:0000000008139531

- 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.

SYSTEM DESCRIPTION

SYSTEM

CAN COMMUNICATION SYSTEM

CAN COMMUNICATION SYSTEM : System Description

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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

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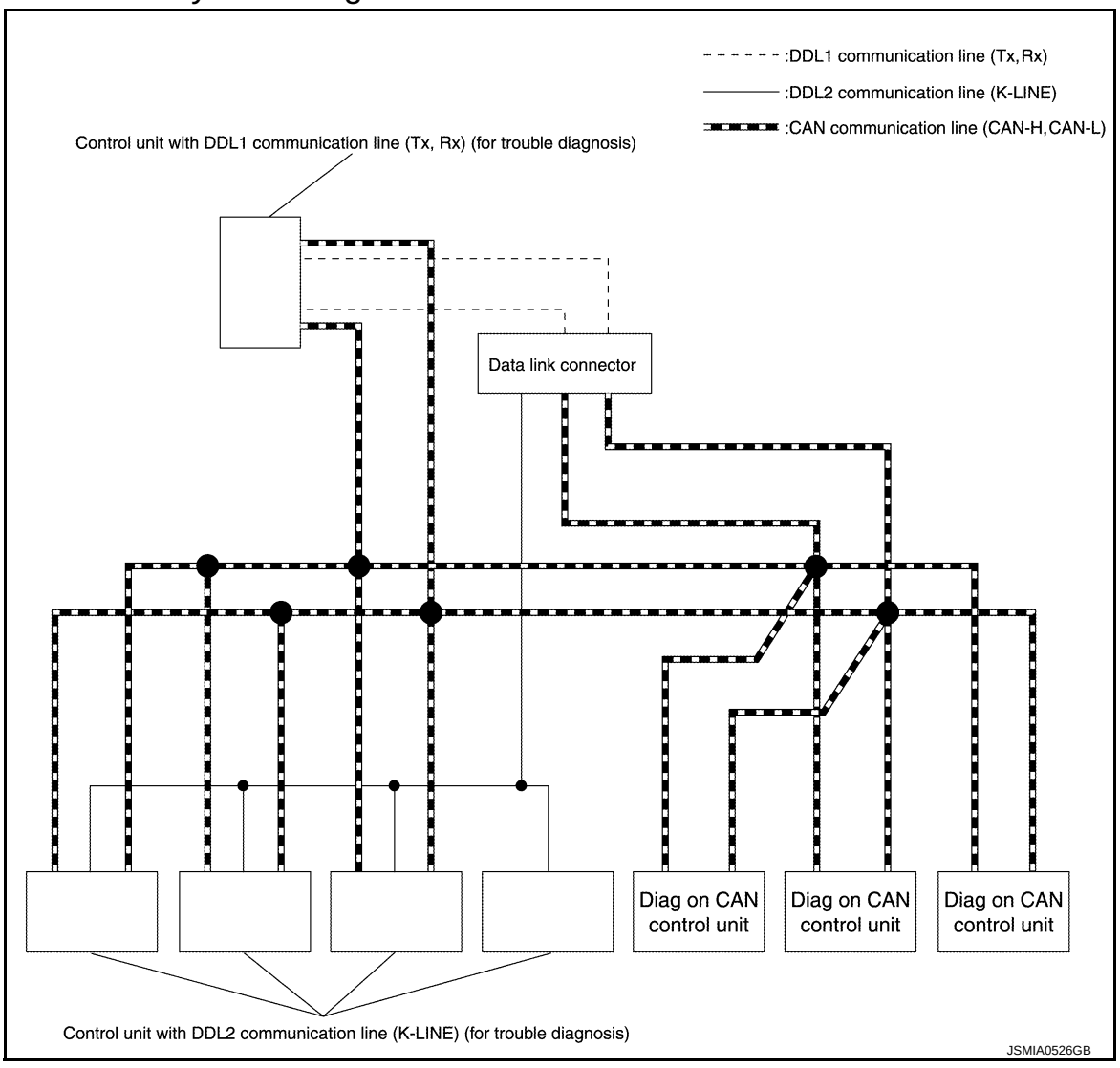

Name	Harness	Description
DDL1	Tx Rx	For communications with the diagnostic tool. (CAN-H and CAN-L are used for controlling)
DDL2	K-LINE	For communications with the diagnostic tool. (CAN-H and CAN-L are used for controlling)
Diag on CAN	CAN-H CAN-L	For communications with the diagnostic tool. (CAN-H and CAN-L are also used for control and diagnoses.)

TROUBLE DIAGNOSIS

System Diagram

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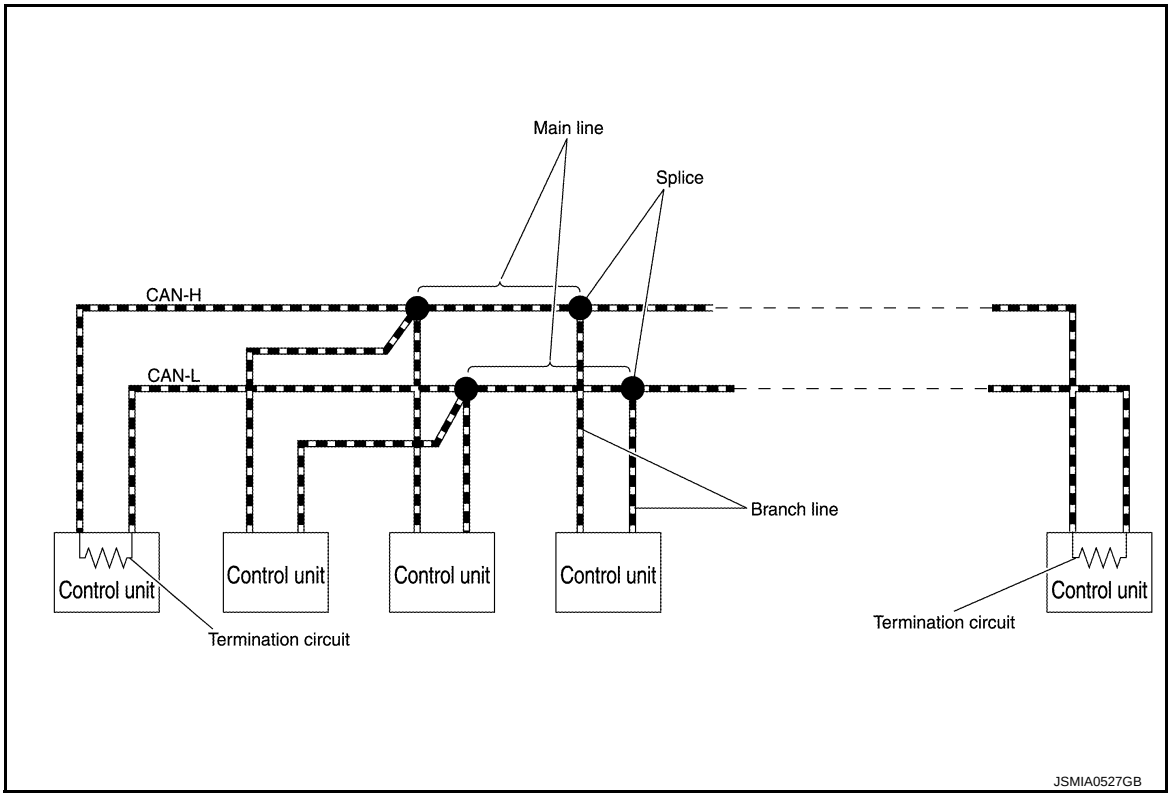


Component	Description
Main line	CAN communication line between splices
Branch line	CAN communication line between splice and a control unit
Splice	A point connecting a branch line with a main line
Termination circuit	Circuit connected across the CAN communication system. (Resistor)

Condition of Error Detection

INFOID:0000000008139536

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.

Symptom When Error Occurs in CAN Communication System

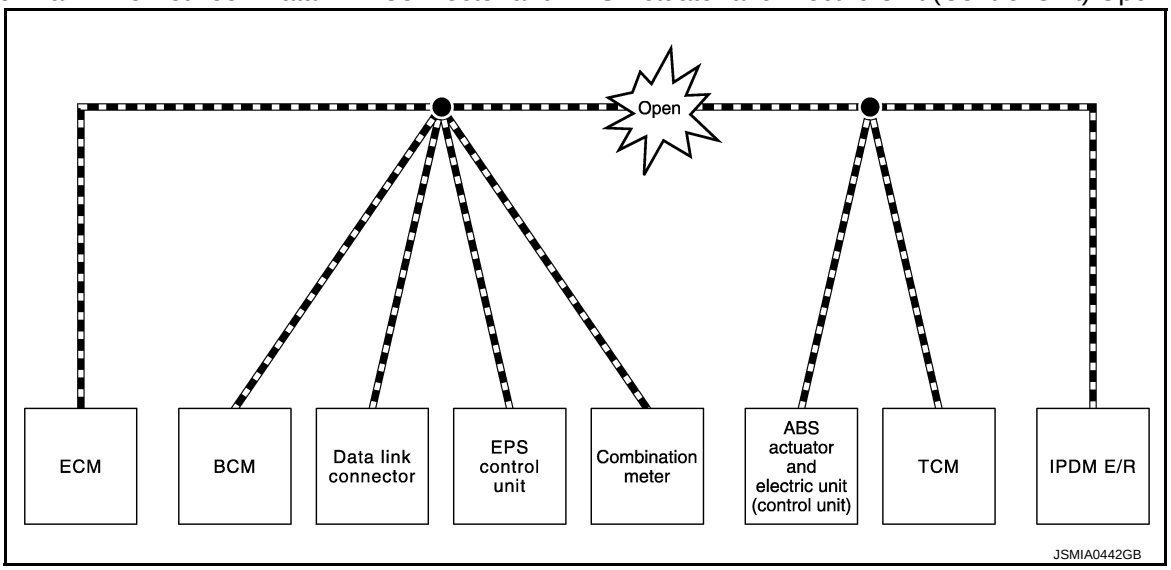
INFOID:0000000008139537

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

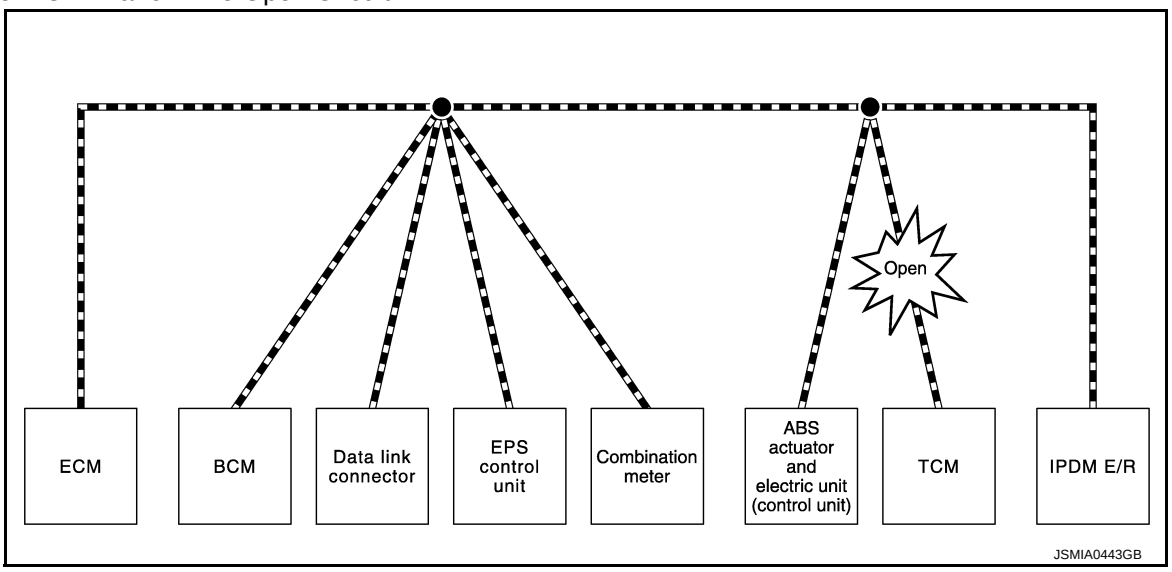
NOTE:
Each vehicle differs in symptom of each unit under fail-safe mode and CAN communication line wiring.

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	• Reverse warning chime does not sound. • The front wiper moves under continuous operation mode even though the front wiper switch being in the intermittent position.
EPS control unit	The steering effort increases.
Combination meter	• The shift position indicator and OD OFF indicator turn OFF. • The speedometer is inoperative. • The odo/trip meter stops.
ABS actuator and electric unit (control unit)	Normal operation.
TCM	No impact on operation.
IPDM E/R	When the ignition switch is ON, • The headlamps (Lo) turn ON. • The cooling fan continues to rotate.

Example: TCM Branch Line Open Circuit

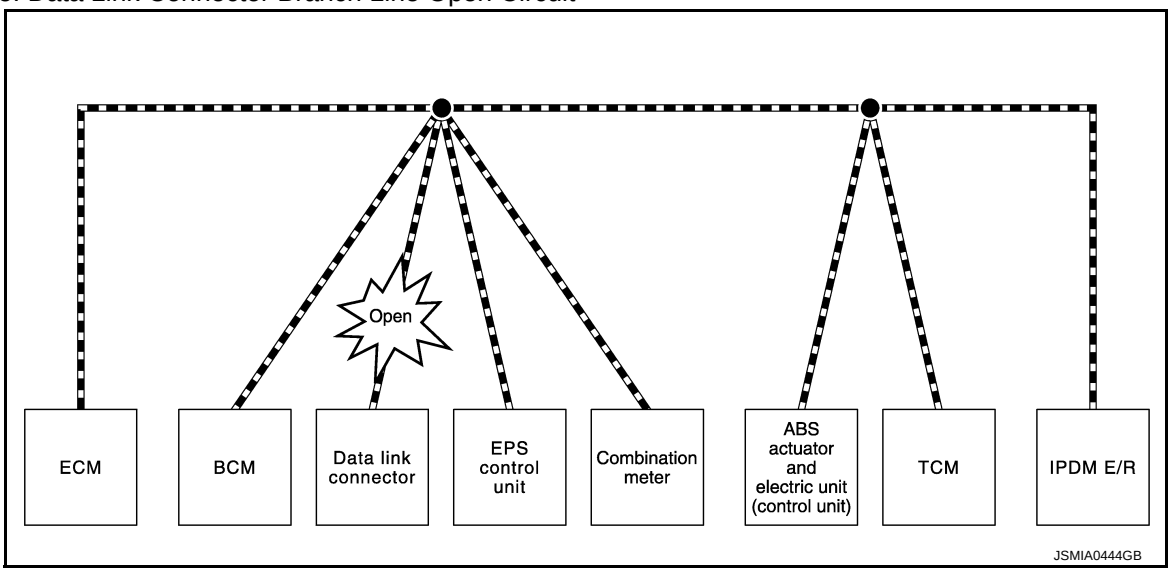


Unit name	Major symptom
ECM	Engine torque limiting is affected, and shift harshness increases.
BCM	Reverse warning chime does not sound.
EPS control unit	Normal operation.
Combination meter	• Shift position indicator and O/D OFF indicator turn OFF. • Warning lamps turn ON.
ABS actuator and electric unit (control unit)	Normal operation.
TCM	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.

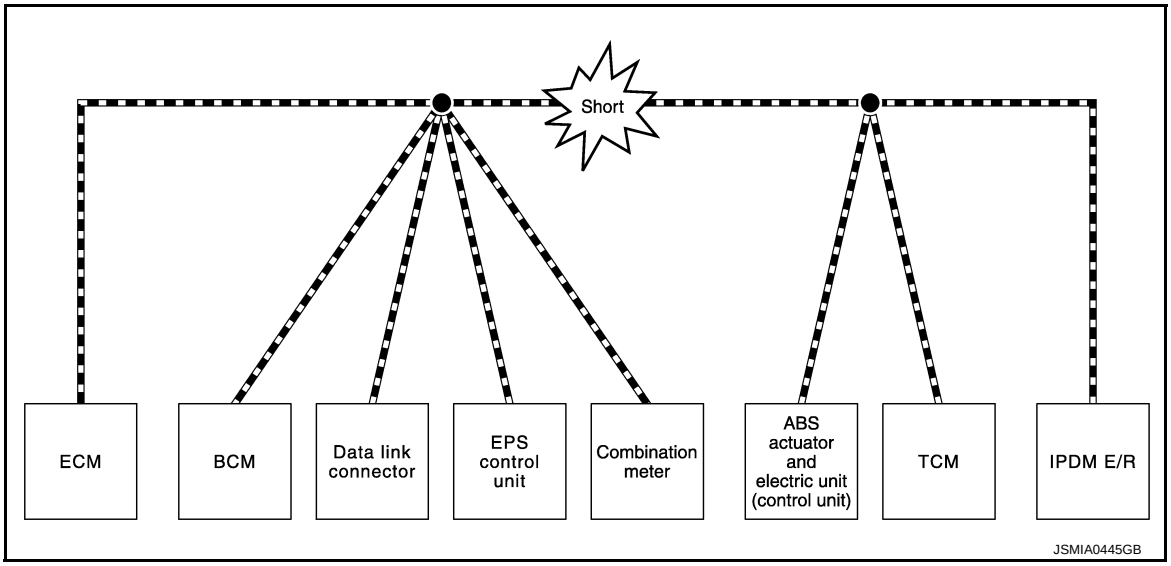
Example: Data Link Connector Branch Line Open Circuit



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

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

CAN Diagnosis with CONSULT

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

- 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
U1000	CAN COMM CIRCUIT	ECM	When ECM is not transmitting or receiving CAN communication signal of OBD (emission-related diagnosis) for 2 seconds or more.	Start the inspection. Refer to the applicable section of the indicated control unit.
		Except for ECM	When a control unit (except for ECM) is not transmitting or receiving CAN communication signal for 2 seconds or more.	
U1001	CAN COMM CIRCUIT	When ECM is not transmitting or receiving CAN communication signal other than OBD (emission-related diagnosis) for 2 seconds or more.		
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

Without PAST

BCM		
MONITOR ITEM	PRESENT	PAST
INITIAL DIAG	OK	-
TRANSMIT DIAG	OK	-
ECM	OK	-
METER/M&A	OK	-
TCM	OK	-
IPDM E/R	OK	-
I-KEY	OK	-

With PAST

ENGINE		
MONITOR ITEM	PRESENT	PAST
TRANSMIT DIAG	OK	OK
VDC/TCS/ABS	OK	5
METER/M&A	Not diagnosed	-
BCM/SEC	OK	OK
ICC	Not diagnosed	-
HVAC	Not diagnosed	-
TCM	OK	OK
EPS	OK	OK
IPDM E/R	OK	5
e4WD	Not diagnosed	-
AWD/4WD	Not diagnosed	-

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Without PAST

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

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

With PAST

Item	PRESENT	PAST	Description
Transmission diagnosis	OK	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)	OK	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.)
	UNKWN	0	Unable to receive signals for 2 seconds or more at present.
	Not diagnosed	–	Diagnosis not performed.
			No control unit for receiving signals. (No applicable optional parts)

How to Use CAN Communication Signal Chart

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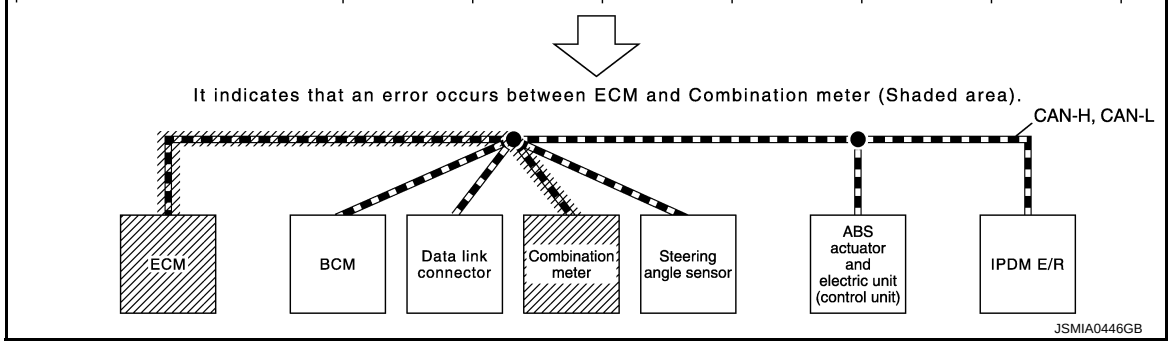
The CAN communication signal chart lists the signals transmitted/received among control units. It is useful for detecting the root cause by finding a signal related to the symptom, and by checking transmission and reception unit.

Example: Tachometer does not move even though the engine rotates.

T: Transmit R: Receive

Signal name/Connecting unit	ECM	BCM	M&A	STRG	ABS	IPDM-E
A/C compressor feedback signal	T		R			
A/C compressor request signal	T					R
Accelerator pedal position signal	T				R	
Cooling fan motor operation signal	T					R
Engine coolant temperature signal	T		R			
Engine speed signal	T		R		R	
Fuel consumption monitor signal	T		R			
Malfunction indicator lamp signal	T		R			
A/C switch signal	R	T				
Ignition switch signal		T				R
Sleep/wake up signal		T	R			R

No communication between ECM and M&A (Combination meter).



BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Trouble Diagnosis Flow Chart

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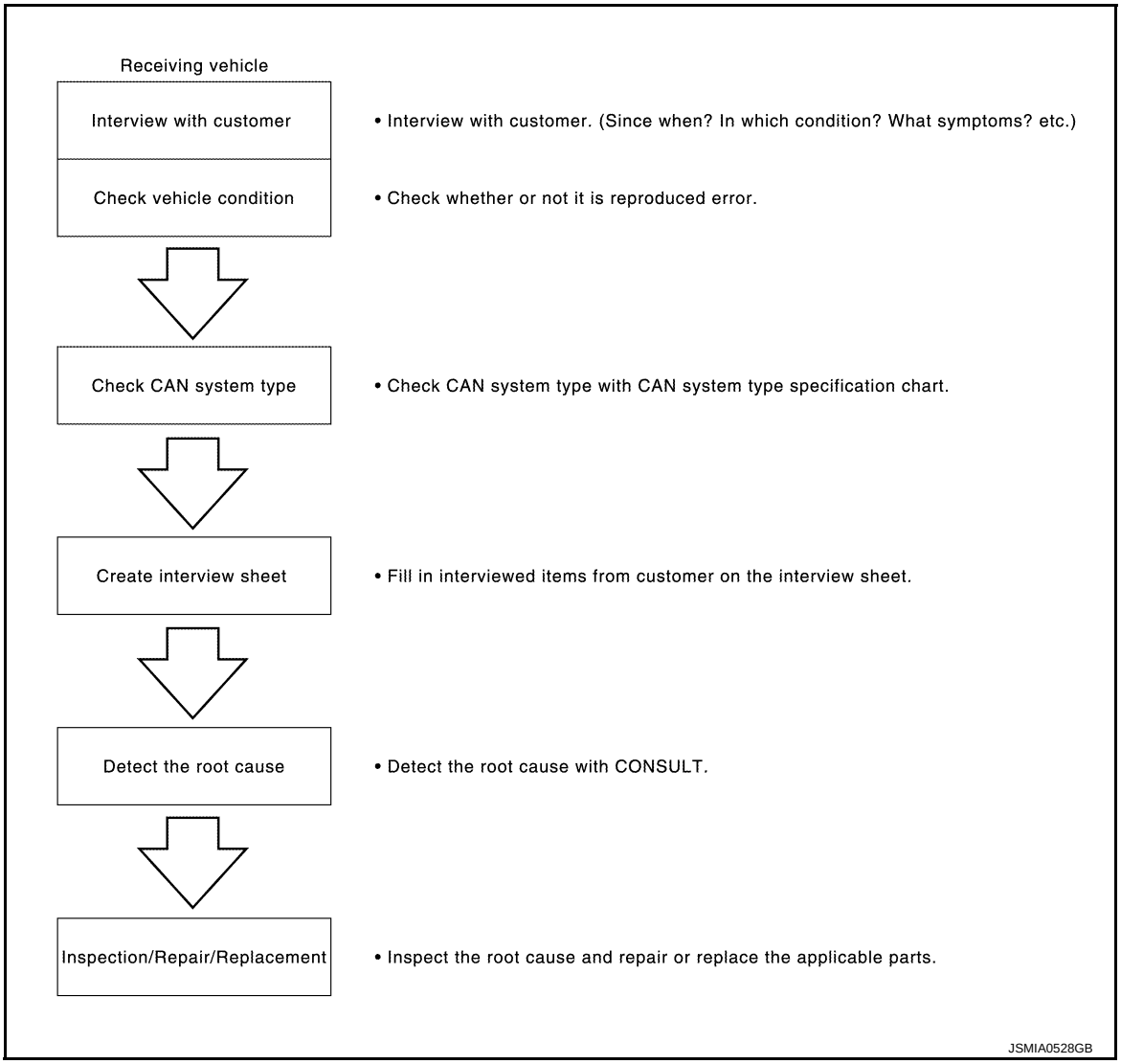

Trouble Diagnosis Procedure

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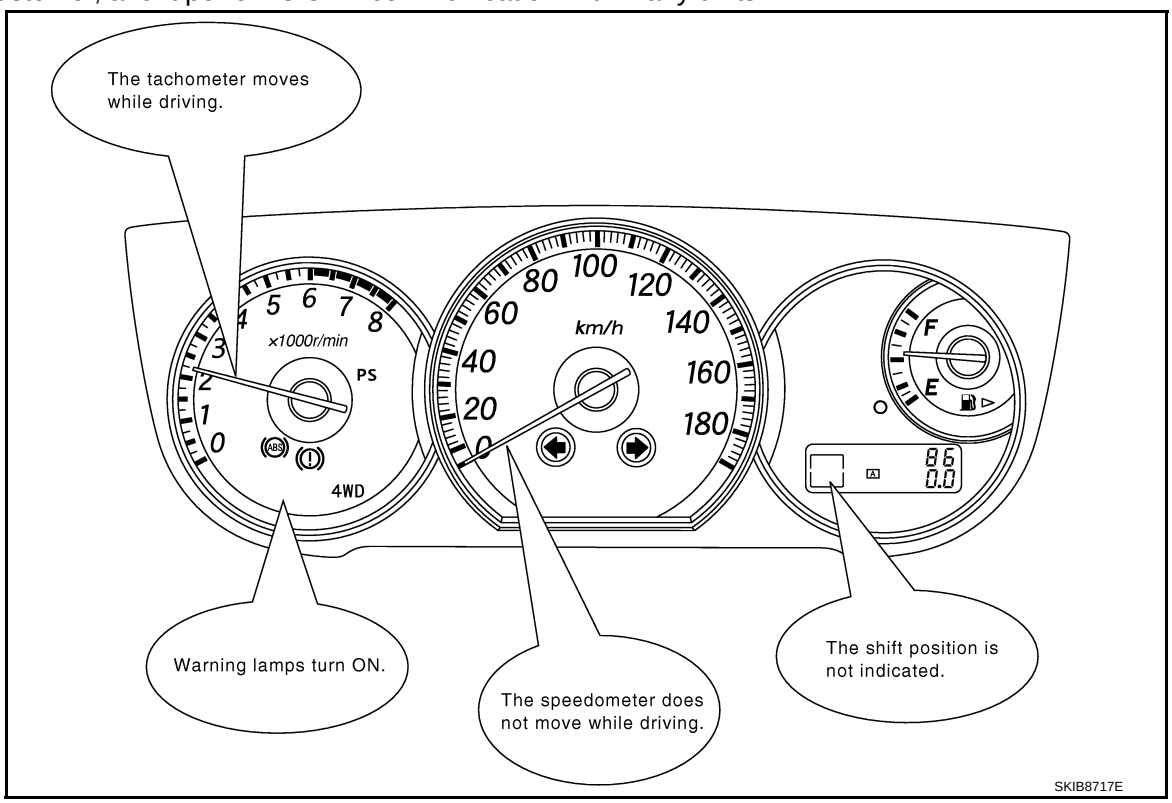
INTERVIEW WITH CUSTOMER

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 fail-safe mode.

- 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:

CAN system type is easily checked with the vehicle equipment identification information shown in the chart.

Example:
Vehicle is equipped as follows: Wagon, AWD, VQ35DE, CVT, VDC, and Intelligent Key system. (◯ shows an example of CAN system type.)

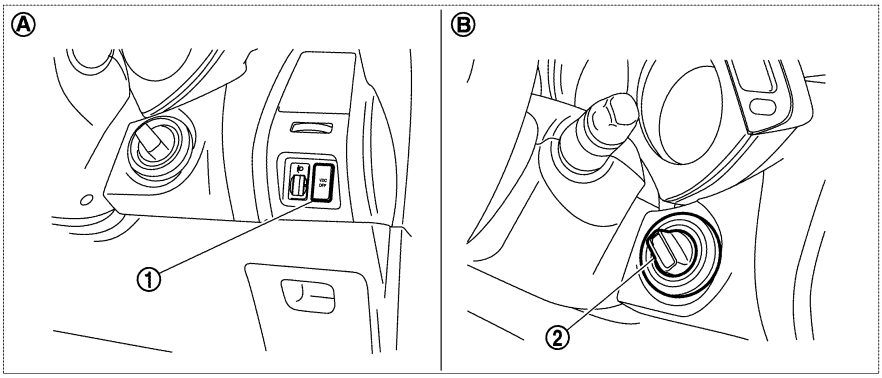
CAN System Specification Chart
Determine CAN system type from the following specification chart.

Body type	Wagon					
Axle	2WD				AWD	
Engine	QR25DE		VQ35DE			
Transmission	A/T		CVT			
Brake control	ABS				VDC	
Intelligent Key system		×		×		×
CAN system type	1	2	3	4	5	6
CAN communication control unit						
ECM	×	×	×	×	×	×
AWD control unit					×	×
Air bag diagnosis sensor unit	×	×	×	×	×	×
BCM	×	×	×	×	×	×
Intelligent Key unit		×		×		×
Steering angle sensor					×	×
EPS control unit	×	×	×	×	×	×
Combination meter	×	×	×	×	×	×
ABS actuator and electric unit (control unit)	×	×	×	×	×	×
TCM	×	×	×	×	×	×
IPDM E/R	×	×	×	×	×	×

Check the vehicle equipment with the vehicle identification number plate.
Check the vehicle equipment.
The number indicates the CAN system type of the vehicle.

×: Applicable

VEHICLE EQUIPMENT IDENTIFICATION INFORMATION
NOTE:
Check CAN system type from the vehicle shape and equipment.



In the above example,
- Checking VDC OFF switch leads to judge whether or not VDC is equipped.
- Checking the ignition knob leads to judge whether or not Intelligent Key system is equipped.

1. VDC OFF switch
2. Ignition knob
A. With VDC
B. With Intelligent Key system

For the above case, CAN system type is "6".

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CAN System Type Specification Chart (Style B)
NOTE:

CAN system type is easily checked with the vehicle equipment identification information shown in the chart.

Example:
Vehicle is equipped as follows: Sedan, 2WD, MR20DE, CVT, ABS, Active AFS, Intelligent Key system, Navigation system and Automatic drive positioner. ( ) shows an example of CAN system type.)

CAN System Specification Chart

Refer to the specification as shown in the chart.

Body type	Sedan		
Axle	2WD		AWD
Engine	HR15DE	MR20DE	HR15DE
Transmission	A/T	CVT	A/T
Brake control	ABS		
Specification chart	XX.XX. SPECIFICATION CHART A	XX.XX. SPECIFICATION CHART B	XX.XX. SPECIFICATION CHART C

Check the vehicle equipment with the vehicle identification number plate.
Check the vehicle equipment.
Select the applicable vehicle equipment. Refer to the specification chart.

×: Applicable

SPECIFICATION CHART B

Determine CAN system type from the following specification chart.

Body type	Sedan										
Axle	2WD										
Engine	MR20DE										
Transmission	CVT										
Brake control	ABS										
Active AFS		×			×	×			×	×		×
Intelligent Key system			×		×		×	×	×	×	×	×
Navigation system				×		×	×		×		×	×
Automatic drive positioner								×		×	×	×
CAN system type	9	10	11	12	13	14	15	16	17	18	19	20
CAN communication control unit												
ECM	×	×	×	×	×	×	×	×	×	×	×	×
AFS control unit		×			×	×			×	×		×
BCM	×	×	×	×	×	×	×	×	×	×	×	×
IPDM E/R	×	×	×	×	×	×	×	×	×	×	×	×

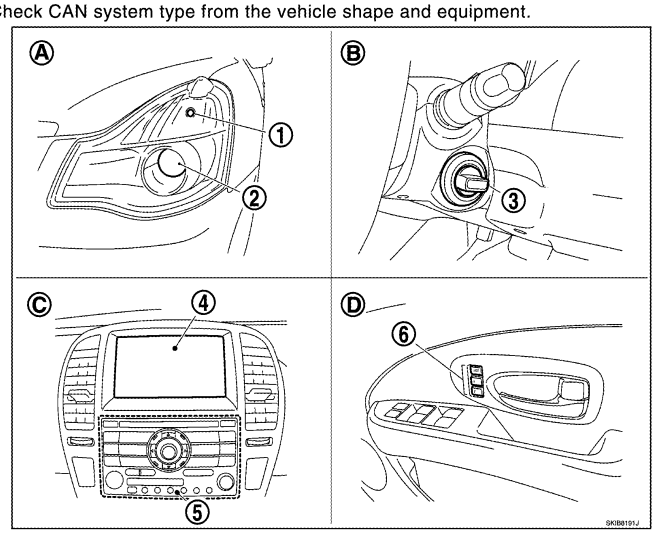
Check the vehicle equipment.
The number indicates the CAN system type of the vehicle.

×: Applicable

VEHICLE EQUIPMENT IDENTIFICATION INFORMATION

NOTE:

Check CAN system type from the vehicle shape and equipment.



In the above example,
- Checking Xenon bulb and bending lamp lead to judge whether or not Active AFS is equipped.
- Checking the ignition knob leads to judge whether or not Intelligent Key system is equipped.
- Checking display and multifunction switch lead to judge whether or not Navigation system is equipped.
- Checking seat memory switch leads to judge whether or not Automatic drive positioner is equipped.

1.Bending lamp 2.Xenon bulb 3.Ignition knob
4.Display 5.Multifunction switch 6.Seat memory switch
A. With active AFS B. With Intelligent Key system C. With navigation system
D.With automatic drive positioner

For the above case, CAN system type is "20".

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CREATE INTERVIEW SHEET

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

Interview Sheet (Example)

CAN Communication System Diagnosis Interview Sheet

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 vehicle.
- The engine does not restart after stopping the vehicle and turning the ignition switch OFF.
- The cooling fan continues rotating while turning 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 fan continues rotating.
- The interior lamp does not turn ON.

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DETECT THE ROOT CAUSE

CAN diagnosis function of CONSULT detects the root cause.

HOW TO USE THIS MANUAL

HOW TO USE THIS SECTION

Information

INFOID:0000000008139544

- “CAN” of LAN Section describes information peculiar to a vehicle and inspection procedures.
- For trouble diagnosis procedure, refer to LAN-19, "Trouble Diagnosis Flow Chart" of “CAN FUNDAMENTAL”.

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	HPCM
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
TCM	TCM
TCU	TCU
TPMS	Low tire pressure warning control unit

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 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:

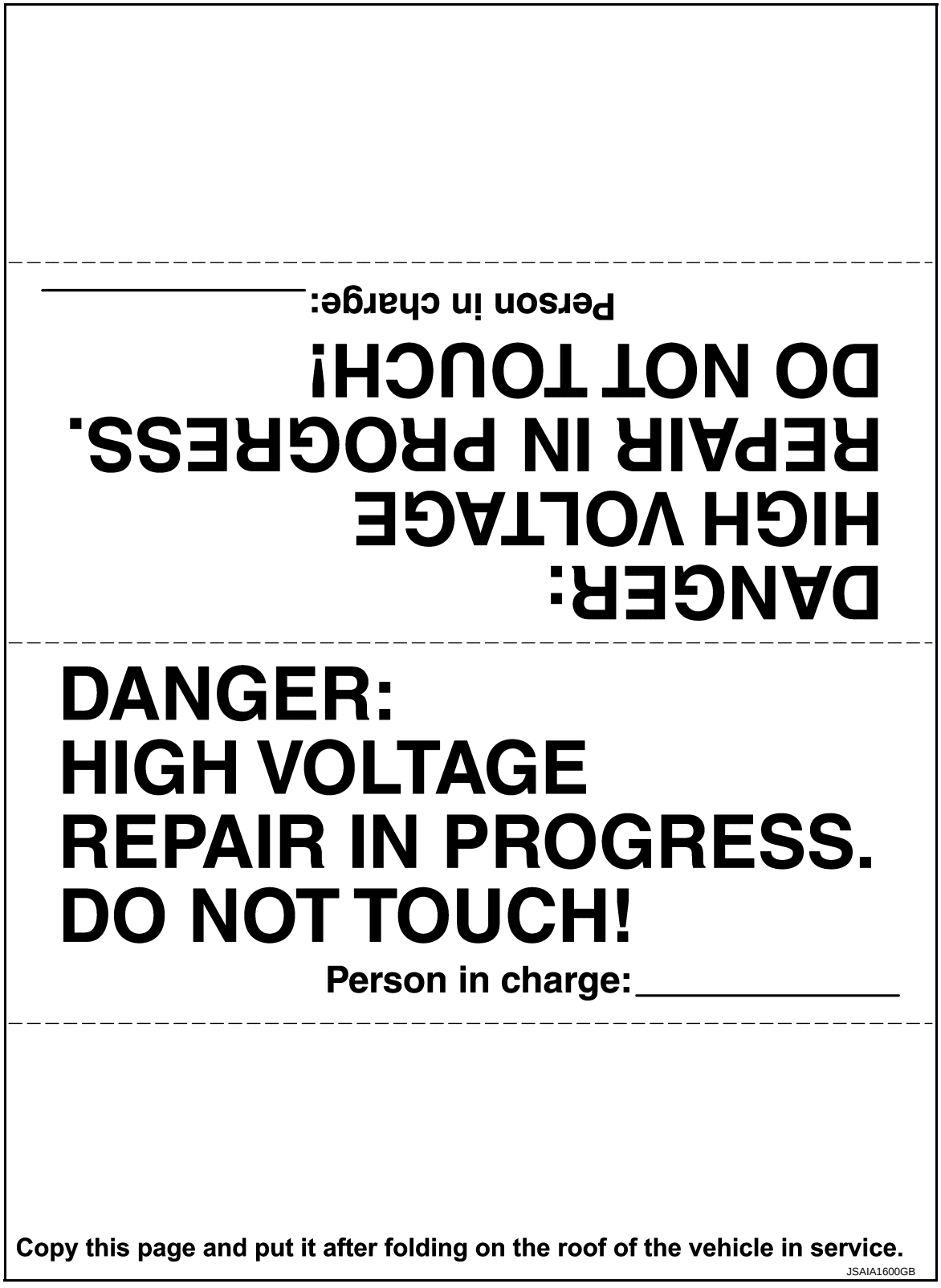
The vehicle contains parts that contain powerful magnets. If a person who is wearing a heart pacemaker or other medical device is close to these parts, the medical device may be affected by the magnets. Such persons must not perform work on the vehicle.

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”

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"

INFOID:0000000008139547

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.**

Precautions for Trouble Diagnosis

INFOID:0000000008139548

CAUTION:

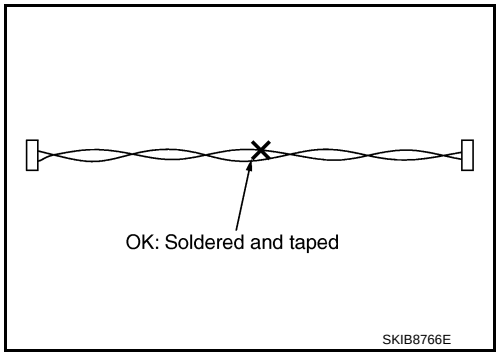
Follow the instructions listed below. Failure to do this may cause damage to parts:

- **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.**

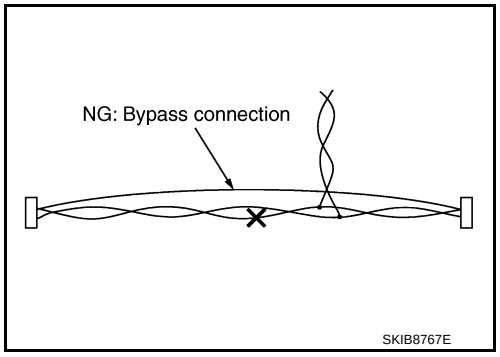
Precautions for Harness Repair

INFOID:0000000008139549

- 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.



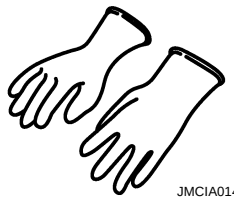
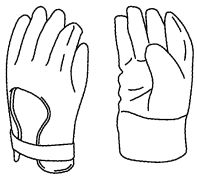
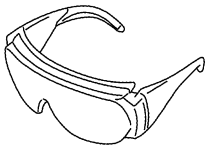
- Replace the applicable harness as an assembly if error is detected on the shield lines of CAN communication line.

PREPARATION

PREPARATION

Commercial Service Tools

INFOID:0000000008139550

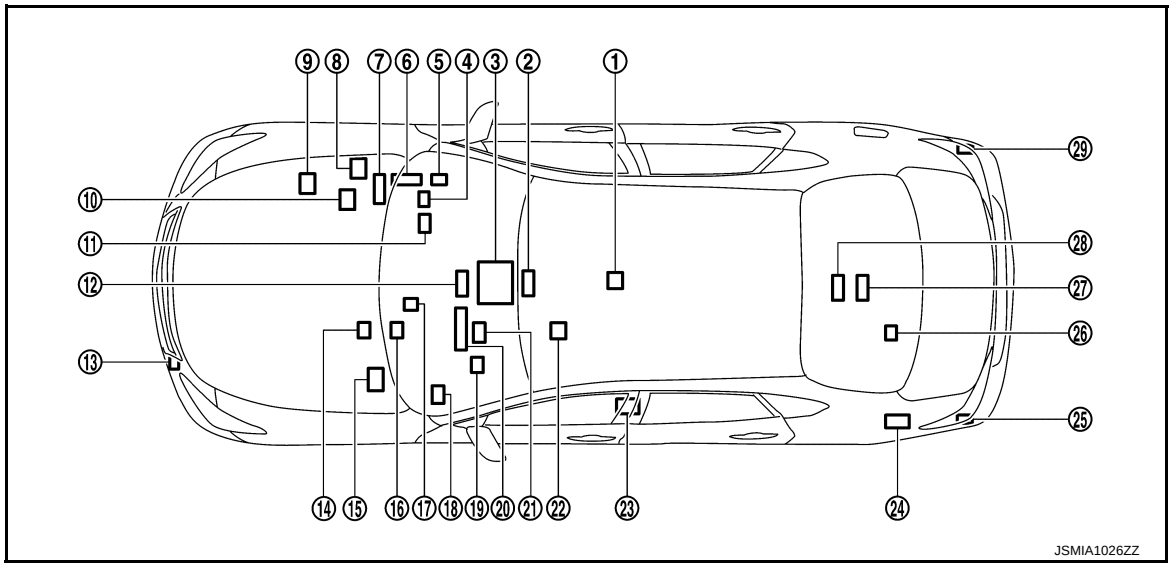
Tool name		Description
Insulated gloves [Guaranteed insulation performance for 1000V/300A]	 JMCIA0149ZZ	Removing and installing high voltage components
Leather gloves [Use leather gloves that can fasten the wrist tight]	 JPCIA0066ZZ	• Removing and installing high voltage components • Protect insulated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

SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

INFOID:0000000008139551



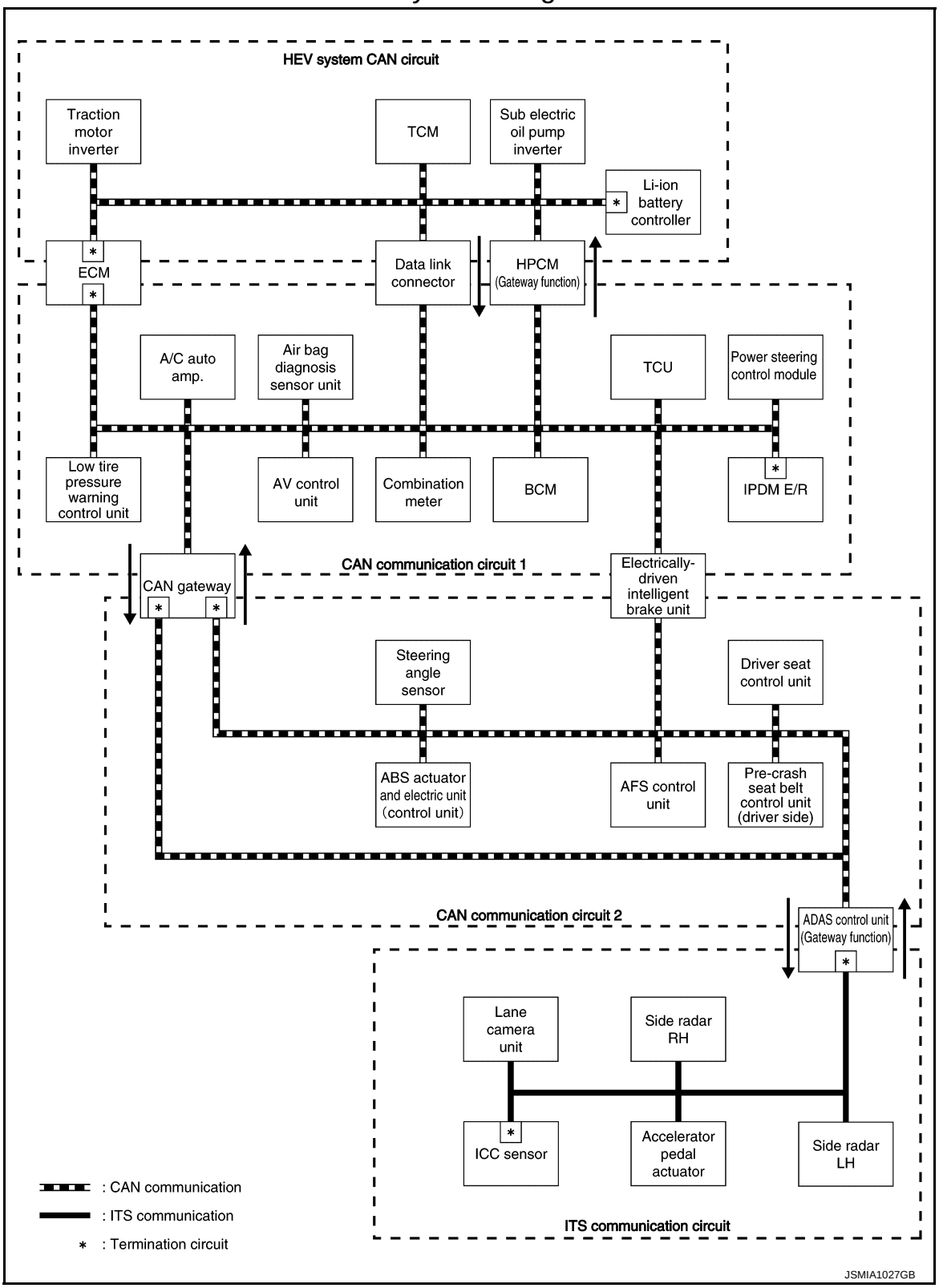
1. Air bag diagnosis sensor unit
2. Lane camera unit
3. A/T assembly
4. CAN gateway
5. Low tire pressure warning control unit
6. A/C auto amp.
7. ECM
8. IPDM E/R
9. Power steering control module
10. Traction motor inverter
11. TCU
12. AV control unit
13. ICC sensor
14. Electrically-driven intelligent brake unit
15. ABS actuator and electric unit (control unit)
16. BCM
17. Accelerator pedal actuator
18. AFS control unit
19. Data link connector
20. Combination meter
21. Steering angle sensor
22. Driver seat control unit
23. Pre-crash seat belt control unit (driver side)
24. Sub electric oil pump inverter
25. Side radar LH
26. Li-ion battery
27. ADAS control unit
28. HPCM
29. Side radar RH

SYSTEM

CAN COMMUNICATION SYSTEM

CAN COMMUNICATION SYSTEM : System Diagram

INFOID:0000000008139552



CAN COMMUNICATION SYSTEM : System Description

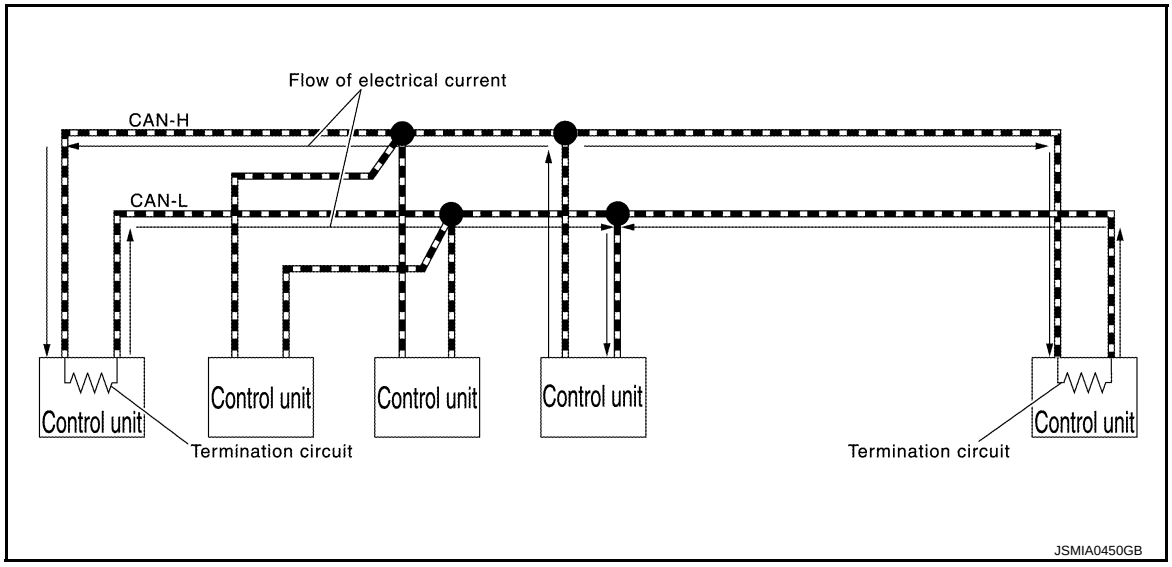
INFOID:0000000008139553

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.

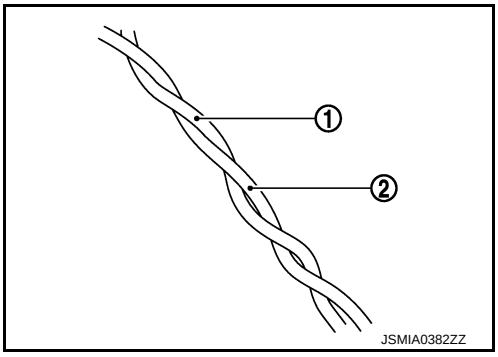
CAN communication circuit	Gateway control unit	Reference
CAN communication circuit 1 ⇔ CAN communication circuit 2	CAN gateway	LAN-119, "System Description"
CAN communication circuit 1 ⇔ HEV system CAN circuit	HPCM	HBC-38, "CAN COMMUNICATION : System Description"
CAN communication circuit 2 ⇔ ITS communication 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.



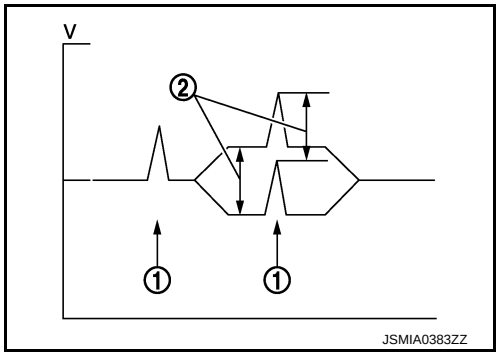
CAN Communication Line

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.

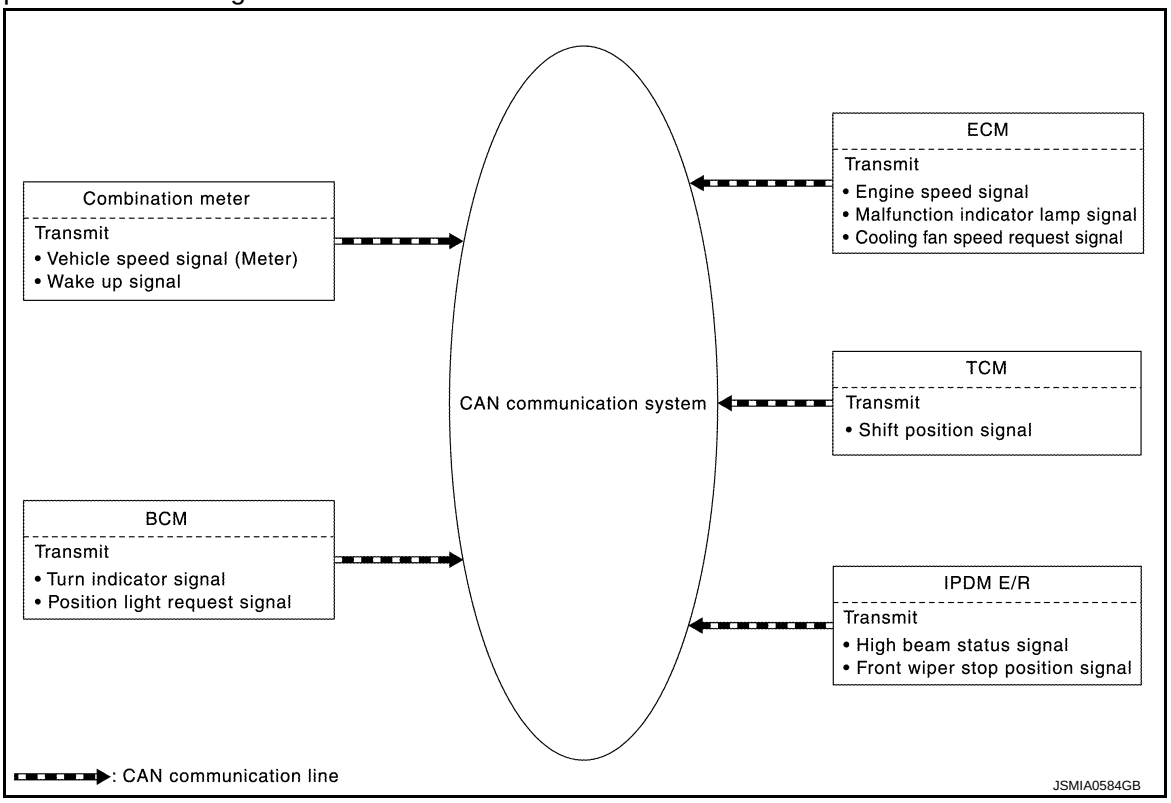
Since the CAN-H line and the CAN-L line are always adjacent to each other, the same degree of noise occurs, respectively, when a noise (1) occurs. Although the noise changes the voltage, the potential difference (2) between the CAN-H line and the CAN-L line is insensitive to noise. Therefore, noise-resistant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



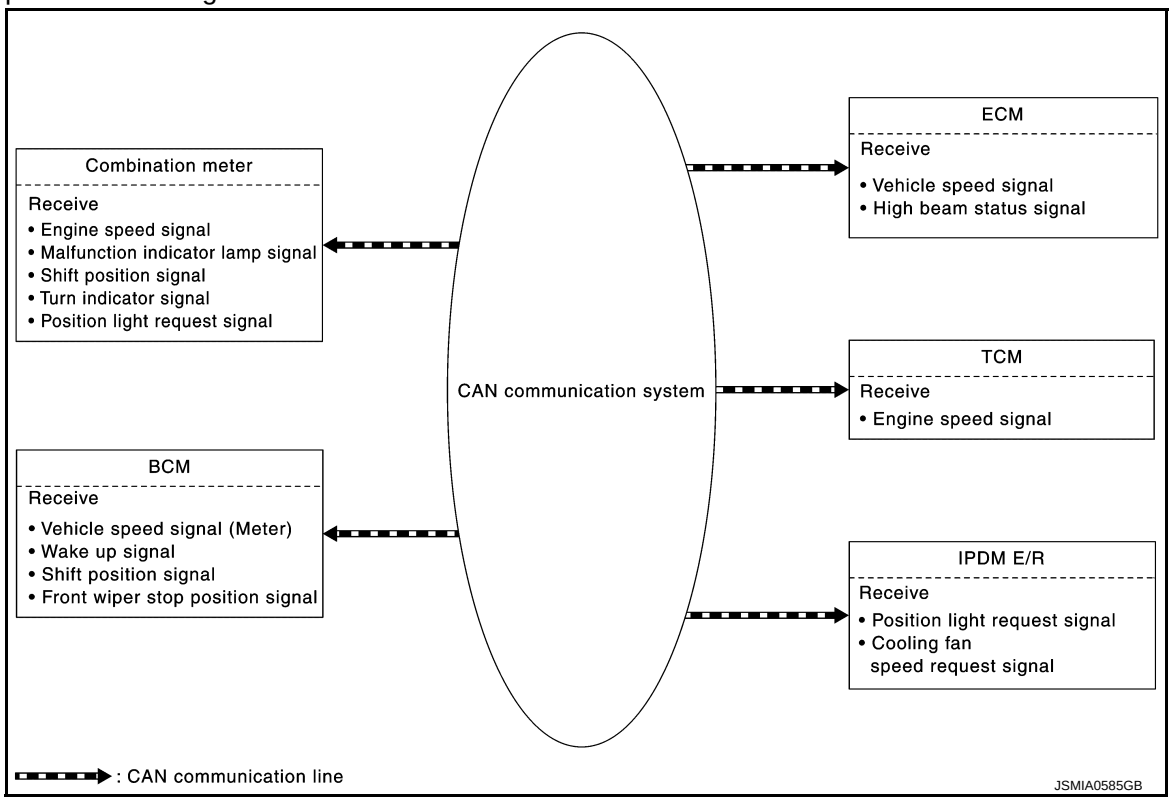
CAN Signal Communications

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



• Example: Received signals

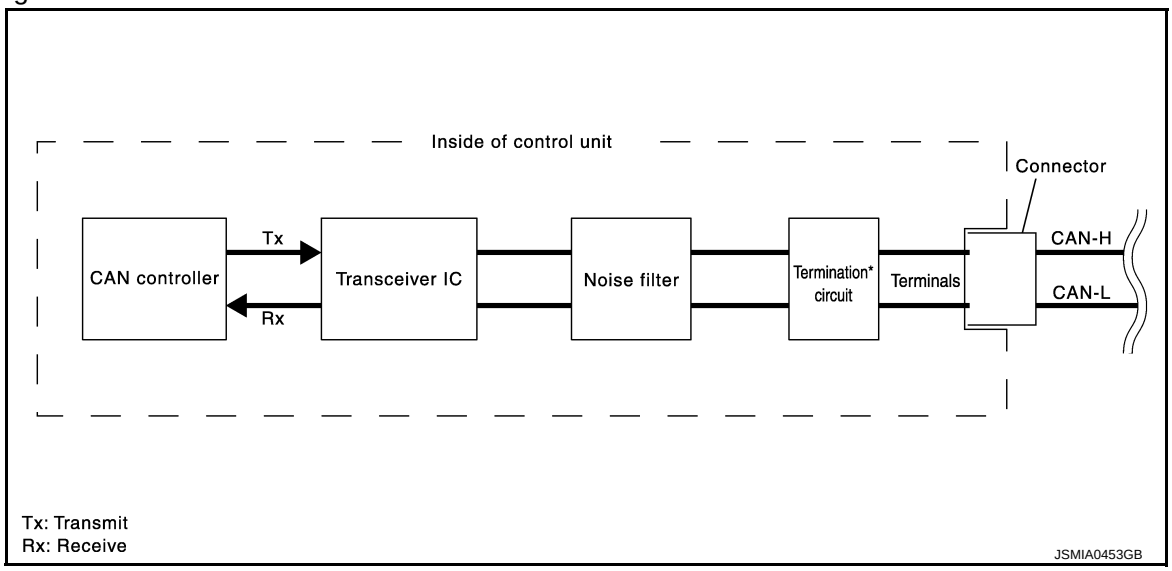


NOTE:
The above signal names and signal communications are provided for reference purposes. For CAN communications signals of this vehicle, refer to LAN-36, "CAN COMMUNICATION SYSTEM : CAN Communication Signal Chart".

CAN COMMUNICATION SYSTEM : CAN Communication Control Circuit

INFOID:0000000008139554

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.

Component	System description
Noise filter	It eliminates noise of CAN communication signal.
Termination circuit* (Resistance of approx. 120 Ω)	Generates a potential difference between CAN-H and CAN-L.

*: These are the only control units wired with both ends of CAN communication system.

CAN COMMUNICATION SYSTEM : CAN System Specification Chart

INFOID:0000000008139555

Determine CAN system type from the following specification chart.

NOTE:

Refer to LAN-19, "Trouble Diagnosis Procedure" for how to use CAN system specification chart.

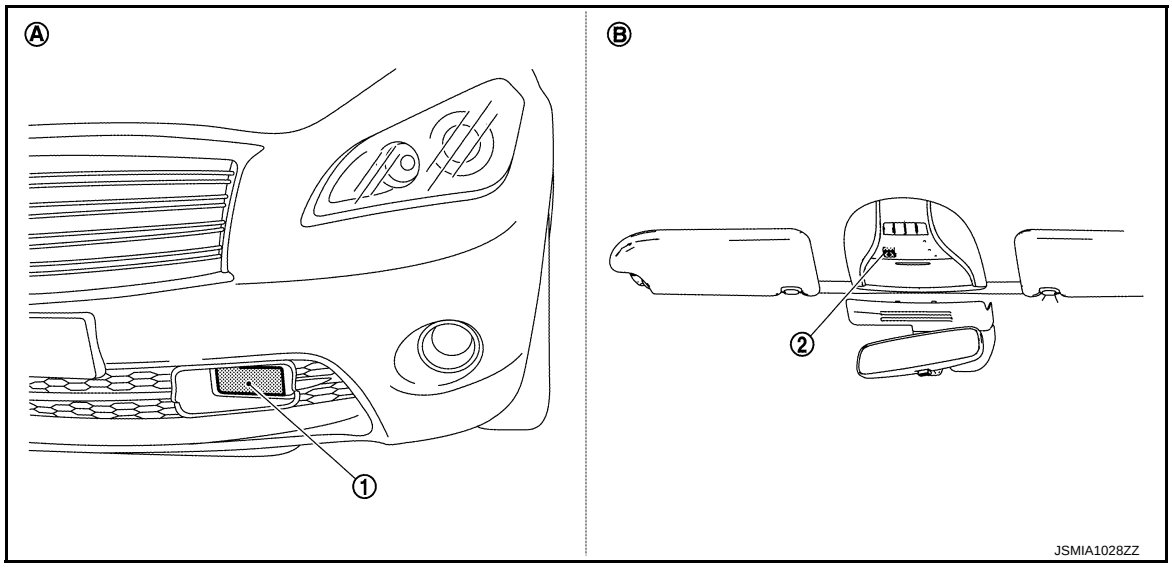
Body type	Sedan		
Axle	2WD		
Engine	VQ35HR-HM34		
Transmission	A/T		
Brake control	VDC		
Telematics system		×	×
ICC system			×
CAN system type	1	2	3
CAN communication control unit			
ECM	×	×	×
Low tire pressure warning control unit	×	×	×
CAN gateway	×	×	×
A/C auto amp.	×	×	×
Air bag diagnosis sensor unit	×	×	×
TCU		×	×
AV control unit	×	×	×
Combination meter	×	×	×
Data link connector	×	×	×
BCM	×	×	×
HPCM	×	×	×
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 unit (driver side)			×
ITS communication control unit			
ADAS control unit			×
Side radar LH			×
Side radar RH			×
Accelerator pedal actuator			×
Lane camera unit			×
ICC sensor			×

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	×	×	×
TCM	×	×	×
Data link connector	×	×	×
Sub electric oil pump inverter	×	×	×
HPCM	×	×	×
Li-ion battery controller	×	×	×

×: 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

INFOID:0000000008139556

Refer to LAN-18, "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

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
A/C cut request signal	T									R													
				R						T													
ASCD OD cancel request signal	T																				R		
Cooling fan speed request signal	R									T			R										
	T									R													
										R										T			
Engine and A/T integrated control signal	T																				R		
	R																				T		
Engine coolant temperature signal	T									R													
				R				R		T													
Engine no load request 1 signal	T									R													
Engine no load request 2 signal	T									R													
Engine speed signal	T									R					R					R	R		
								R		T								R					
Engine status signal	T					R	R																
Engine stop permit signal	R									T													
	T									R													
Engine stop request signal	T									R													
Engine torque limit signal	T									R													
Engine torque signal	T									R										R			
										T											R		
Fuel consumption monitor signal	T						R																
								R		T													
Fuel cut inhibit signal	T									R													
Fuel filler cap warning display signal	T									R													
								R		T													
Idling stop inhibit signal	T									R													
Intake air temperature signal	T									R													
Malfunctioning indicator lamp signal										R										T	T		T
	R																				T		
	R									T													
	T									R													
						R		R		T													
Oil pressure warning lamp signal	T					R				R													
								R		T													
Self-diagnosis signal	T									R										T	T		T
Target idling speed signal	T									R													

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 signal	T									R													
										R	T												
Buzzer request signal		T							R														
								R	T														
Hazard request signal		T							R														
Low tire pressure warning lamp signal								R	T														
		T					R		R														
Tire pressure data signal		T					R																
A/C display signal				T			R																
A/C evaporator temperature signal				T						R													
	R									T													
A/C ON signal				T						R													
	R									T													
Ambient sensor signal				T				R															
Blower fan ON signal				T						R													
	R									T													
ECO mode signal				T				R										R			R		
										R											T		
Engine ON request signal				T						R													
	R									T													
SNOW mode signal				T				R										R			R		
										R											T		
SPORT mode signal				T				R										R			R		
										R											T		
STANDARD mode signal				T				R										R			R		
										R											T		
Target A/C evaporator temperature signal				T						R													
	R									T													
Car crash information signal					T	R				R													
Door lock/unlock request signal						T			R														
Sleep-ready signal						T			R														
								T	R														
									R				T										
Wake up signal						T			R														
								T	R														
A/C switch operation signal				R			T																
ECO pedal reaction force setting signal							T			R													

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
Engine start request signal							T			R													
Rear window defogger switch signal							T		R														
System selection signal							T											R					
System setting signal							T										R						
							R		T								R						
							R										T						
Vehicle speed signal							T														R		
	R			R			R	T	R	R		R	R			R	R		R		R		
		R						R	R		R	R			T						R		
Voice recognition signal				R			T																
Brake fluid level switch signal								T							R								
Distance to empty signal							R	T															
Fuel filler cap warning reset signal	R									T													
								T		R													
Fuel level low warning signal							R	T															
Fuel level signal								T		R													
	R									T													
Manual mode shift down signal								T													R		
Manual mode shift up signal								T													R		
Manual mode signal								T													R		
Non-manual mode signal								T													R		
Odometer signal							R	T	R			R											
Parking brake switch signal								T										R					
Seat belt buckle switch signal (driver side)								T	R														
Buzzer output signal								R	T														
								R										T					
Daytime running light request signal									T				R										
Dimmer signal								R	T									R					
Door lock status signal						R			T														
Door switch signal							R	R	T	R	R		R				R		R				
Door unlock signal									T								R						
Front fog light request signal								R	T				R										

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									T				R					R					
High beam request signal								R	T				R										
Horn reminder signal									T				R										
Ignition switch ON signal									T		R		R				R		R				
									R				T										
Intelligent Key system warning display signal								R	T														
Key ID signal				R					T								R						
Low beam request signal									T				R										
Meter display signal								R	T														
								R										T					
Meter ring illumination request signal								R	T														
Position light request signal								R	T				R										
READY signal									T								R						
Rear window defogger control signal	R						R						T										
									T				R										
Sleep wake up signal	R		R			R		R	T		R		R				R		R				
Stop lamp switch signal										T								R					
									T												R		
											R				T			R					
Theft warning horn request signal									T				R										
Trunk switch signal							R	R	T														
Turn indicator signal								R	T									R					
12-volt battery charge warning lamp signal								R		T													
A/C blower motor speed signal										T													R
A/C intake door status signal										T													R
Accel start assist operation request signal										T	R												
Acceleration guide signal								R		T													
Accelerator pedal position signal	R									T					R			R			R		
Air outlet request signal										R													T
				R						T													
ASCD status signal								R		T													
Assist charge signal								R		T													
Brake switch signal										T								R					

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
Closed throttle position signal										T								R			R		
Clutch 1 operation signal										T											R		
Clutch 2 control command signal										T											R		
DC/DC converter cooling mode signal										R													T
				R						T													
Drive command signal										T										R			
Drive mode select signal										R								R			T		
	R									T													
Driving mode signal										T											R		
ECO drive indicator control signal								R		T													
ECO pedal reaction force setting signal							R			T													
Energy monitor signal							R	R		T													
Engine idle request signal	R									T													
Engine stop command signal	R									T													
Engine stop notice signal	R									T													
Engine torque request signal	R									T													
Engine no load signal	R									T													
EV indicator lamp signal								R		T													
High voltage harness connector detection signal										T													R
High voltage power supply status signal										T										R			
HPCM control signal										T	R				R								
HPCM status signal									R	T													
Hybrid system over heat warning signal								R		T													
Hybrid system warning lamp signal								R		T													
ICC operation signal										R								T					
										T											R		
ICC prohibition signal										T								R					
ICC steering switch signal										T								R					
Input torque signal										T											R		
In-vehicle temperature signal										T													R

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
Li-ion battery state of charge signal							R	R		T													
Motor charge preparation request signal										T										R			
Motor discharge request signal										T										R			
Motor speed control signal										T										R			
Motor speed signal										R										T			R
										T											R		
Power steering start activation request signal										T		R											
Power switch OFF permission signal									R	T													
READY condition signal									R	T								R					
READY to drive indicator lamp signal								R		T													
Shift P warning signal								R		T													
Snow mode switch signal										T								R					
Sub electric oil pump start up request signal										T											R		
System cut off signal										T										R			
Target cooperative generative torque signal										T	R												
Target engine torque signal	R									T													
Total power signal										T													R
Vibration control switching signal										T										R			
Wide open throttle position signal										T											R		
Accel start assist operation signal										R	T												
Brake assist request signal											T				R								
Brake fluid pressure request signal											T				R								
Brake pedal stroke sensor diagnosis signal											T								R				
Brake pedal stroke sensor voltage signal											T								R				
Brake power supply backup unit operation signal											T				R								
Braking force signal										R	T												

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
Cooperative generative practicable torque signal										R	T												
Cooperative generative torque signal										R	T												
Driver brake operation detection signal											T							R					
Electrically-driven intelligent brake unit control signal											T				R								
Power steering warning lamp signal								R				T											
A/C compressor feedback signal	R			R									T										
A/T shift selector (detention switch) signal									R				T				R						
Front wiper position signal									R				T										
High beam status signal	R												T										
Hood switch signal									R				T										
Low beam status signal	R												T			R							
Push-button ignition switch status signal									R				T										
Steering angle sensor malfunction signal												R		T				R	R				
Steering angle sensor signal							R				R	R		T	R	R		R	R				
Steering angle speed signal														T				R	R				
Steering calibration signal														T					R				
A/T shift schedule change demand signal															T						R		
ABS actuator and electric unit (control unit) control signal											R				T								
ABS malfunction signal															T			R					
ABS operation signal															T			R	R		R		
ABS warning lamp signal						R		R							T			R					
Brake warning lamp signal								R							T								
						R		T															
Decel G sensor signal										R	R				T						R		
Front LH wheel speed signal										R	R				T			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	ICC	PSB	INV/MC	TCM	E-OP	HV BAT
Front RH wheel speed signal										R	R				T			R			R		
Pressure sensor signal															T						R		
Rear LH wheel speed signal											R				T			R			R		
Rear RH wheel speed signal											R				T			R			R		
Side G sensor signal											R				T			R			R		
Stop lamp off relay signal											R				T								
Target throttle position signal	R														T								
TCS gear keep request signal															T						R		
TCS malfunction signal															T			R					
TCS operation signal															T			R					
VDC OFF indicator lamp signal								R							T								
VDC OFF switch signal															T			R					
VDC operation signal															T			R					
VDC malfunction signal															T			R					
VDC warning lamp signal						R		R							T								
Yaw rate signal											R				T			R					
AFS OFF indicator lamp signal								R								T							
Active trace control signal											R							T					
Brake fluid pressure control signal											R							T					
BSI ON indicator lamp signal								R										T					
BSW/BSI warning lamp signal								R										T					
IBA OFF indicator lamp signal								R										T					
IBA operation signal																		T	R				
ICC warning lamp signal								R										T					
Lane departure warning lamp signal								R										T					
LDP ON indicator lamp signal								R										T					
Motor torque limit signal										R										T			

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
Motor output torque signal										R										T			R
Traction motor inverter status signal										R										T			
Traction motor inverter temperature signal										R										T			
Traction motor inverter voltage signal										R										T			
A/T CHECK indicator lamp signal								R													T		
ATF temperature signal										R											T		
Clutch 2 temperature signal										R											T		
Current gear position signal										R	R				R			R			T		
Input speed signal										R								R			T		
Manual mode shift refusal signal								R													T		
Motor speed control request signal										R											T		
Output shaft revolution signal	R									R								R			T		R
Shift position signal								R					R		R	R	R	R			T		
Shift schedule signal										R											T		
Sub electric oil pump oil pressure command signal																					T	R	
Target gear position signal										R											T		
Target sub electric oil pump torque signal																					T	R	
TCM malfunction signal											R										T		
Sub electric oil pump error signal																					R	T	
Sub electric oil pump inverter preparation signal																					R	T	
Sub electric oil pump speed signal																					R	T	
Sub electric oil pump torque signal																					R	T	
Charge control electricity signal										R													T
Discharge control electricity signal										R													T
Li-ion battery current signal										R													T
Li-ion battery state of charge signal										R													T

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
Li-ion battery temperature signal										R													T
Li-ion battery voltage signal										R													T

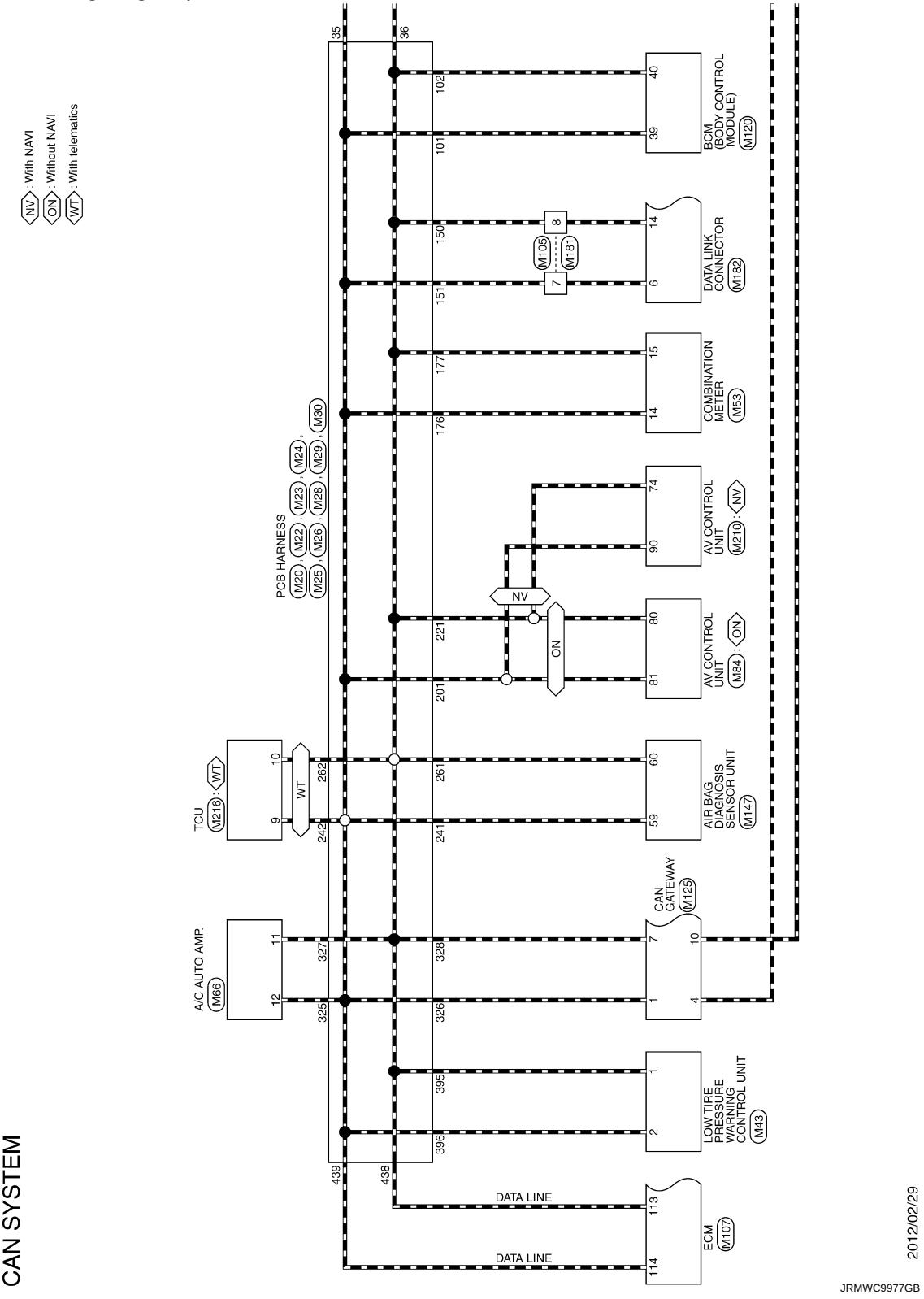
WIRING DIAGRAM

CAN SYSTEM

Wiring Diagram

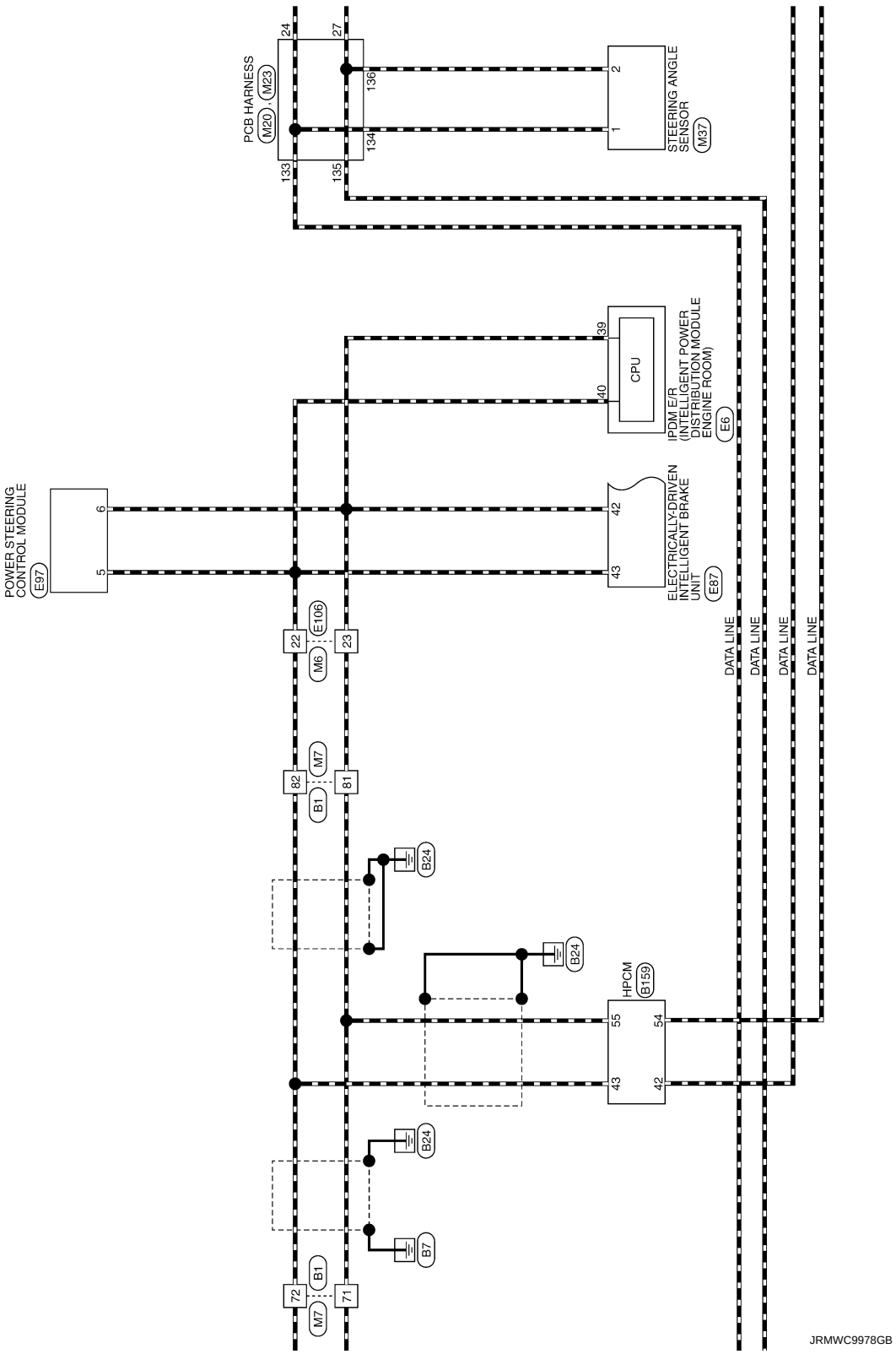
INFOID:0000000008139557

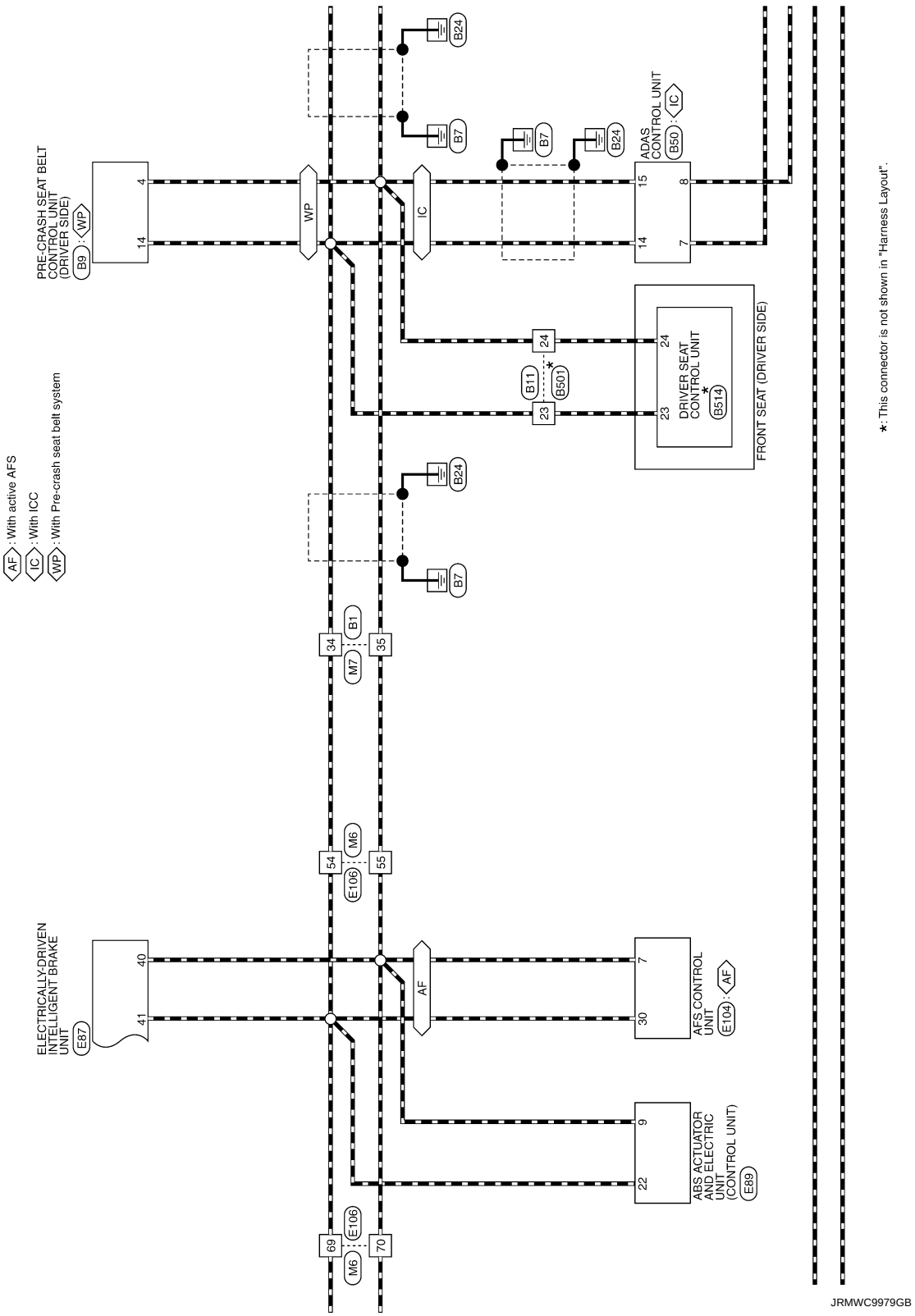
For connector terminal arrangements, harness layouts, and alphabets in a ⬡ (option abbreviation; if not described in wiring diagram), refer to GI-13, "Connector Information".

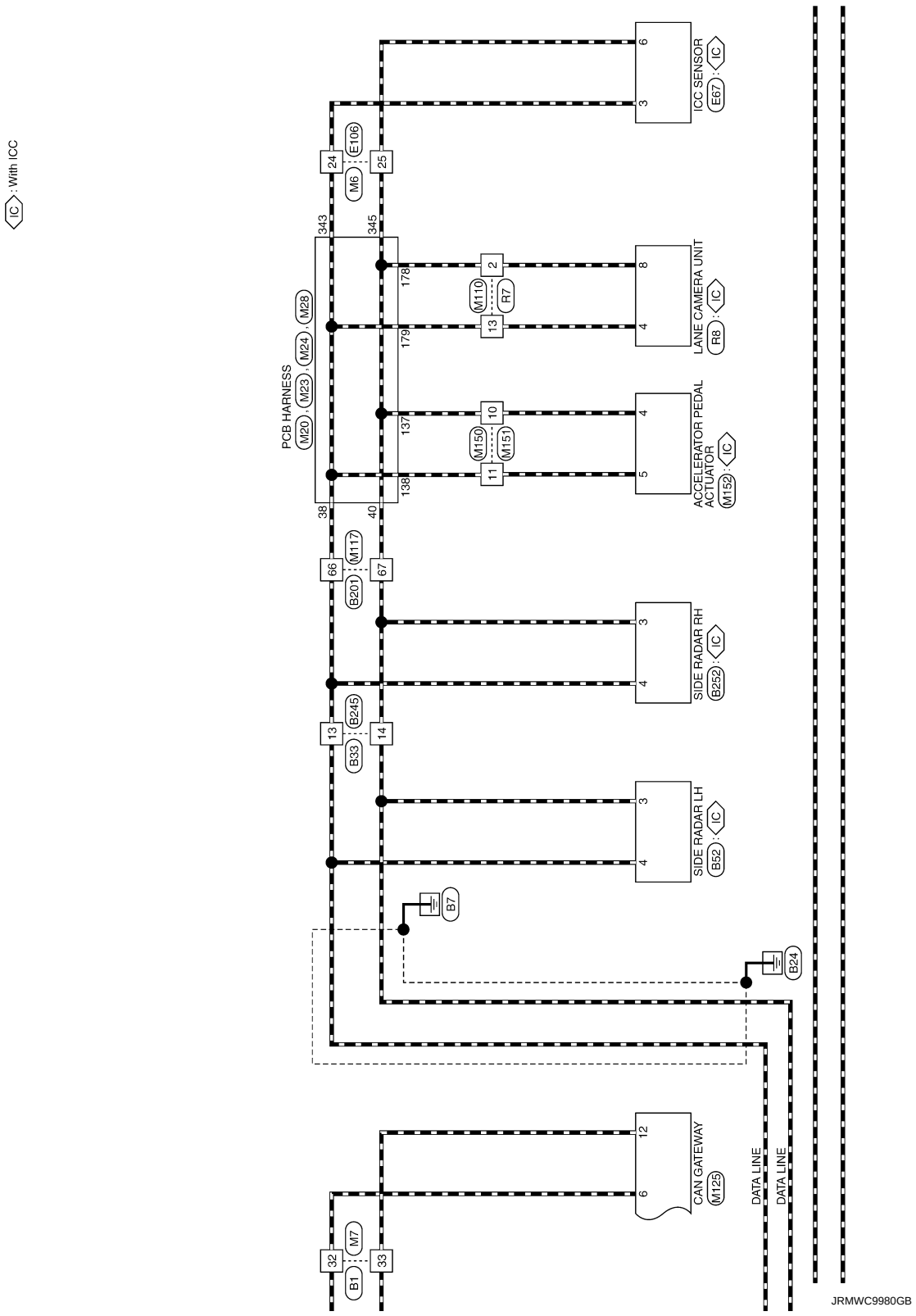


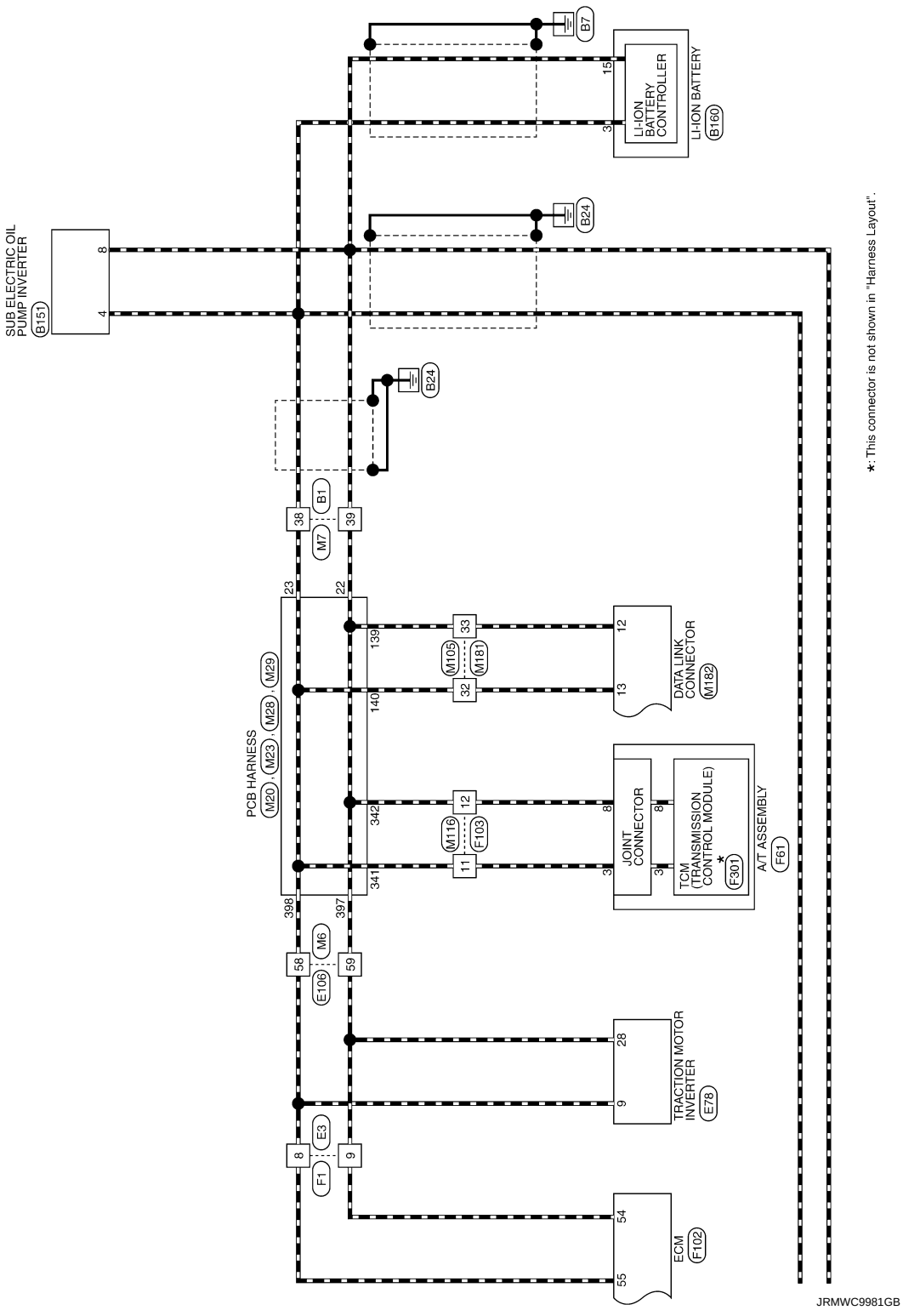
CAN SYSTEM

2012/02/29


PCB HARNESS
M20, M23
24
27
136
134
133
135
STEERING ANGLE SENSOR
M37
2
1
IPDM E/R
(INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
E6
CPU
39
40
POWER STEERING CONTROL MODULE
E97
6
5
ELECTRICALLY-DRIVEN INTELLIGENT BRAKE UNIT
E87
42
43
DATA LINE
DATA LINE
DATA LINE
DATA LINE
E106
M6
22
23
M7
B1
82
81
B24
B24
HPCM
B159
55
54
43
42
B24
B7
B1
M7
72
71
JRMWC9978GB


PRE-CRASH SEAT BELT CONTROL UNIT (DRIVER SIDE)
B9 : WP
ADAS CONTROL UNIT
B50 : IC
DRIVER SEAT CONTROL UNIT *
B514
FRONT SEAT (DRIVER SIDE)
B501
B11
B24
B7
WP
IC
AF : With active AFS
IC : With ICC
WP : With Pre-crash seat belt system
*: This connector is not shown in "Harness Layout".
ELECTRICALLY-DRIVEN INTELLIGENT BRAKE UNIT
E87
AFS CONTROL UNIT
E104 : AF
ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)
E89
M7 : B1
M6 : E106
JRMWC9979GB


IC : With ICC
ICC SENSOR
E67 : IC
LANE CAMERA UNIT
R8 : IC
ACCELERATOR PEDAL ACTUATOR
M152 : IC
SIDE RADAR RH
B252 : IC
SIDE RADAR LH
B52 : IC
CAN GATEWAY
M125
PCB HARNESS
M20 M23 M24 M28
E106
M6
M110
R7
M150
M151
M117
B201
B245
B33
B1
M7
B7
B24
DATA LINE
DATA LINE
JRMWC9980GB


B7
LI-ION BATTERY CONTROLLER
LI-ION BATTERY
B160
15
3
B24
SUB ELECTRIC OIL PUMP INVERTER
B151
8
4
B24
B1
M7
38
39
23
22
PCB HARNESS
M20
M23
M28
M29
139
140
M105
M181
33
32
12
13
DATA LINK CONNECTOR
M182
342
341
M116
F103
12
11
JOINT CONNECTOR
8
3
TCM (TRANSMISSION CONTROL MODULE)
*
F301
8
3
A/T ASSEMBLY
F61
398
397
M6
E106
58
59
28
9
TRACTION MOTOR INVERTER
E78
E3
F1
8
9
54
55
ECM
F102
*: This connector is not shown in "Harness Layout".
JRMWC9981GB

BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Interview Sheet

INFOID:0000000008139558

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

CAN Communication System Diagnosis Interview Sheet

Date received:

Type: VIN No.:

Model:

First registration: Mileage:

CAN system type:

Symptom (Results from interview with customer)

Condition at inspection

Error symptom : Present / Past

SKIB8898E

DTC/CIRCUIT DIAGNOSIS

MALFUNCTION AREA CHART

CAN Communication Circuit

INFOID:0000000008139559

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"
Main line between data link connector and BCM	LAN-60, "Diagnosis Procedure"
Main line between BCM and HPCM	LAN-61, "Diagnosis Procedure"
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

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

ITS Communication Circuit

INFOID:0000000008139560

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

INFOID:0000000008139561

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"

MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT

Diagnosis Procedure

INFOID:0000000008139562

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 warning control unit harness connector		A/C auto amp. harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M43	2	M66	12	Existed
	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.

MAIN LINE BETWEEN HVAC AND A-BAG CIRCUIT

Diagnosis Procedure

INFOID:0000000008139563

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

4. 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.	
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.	
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 A/C auto amp. and the air bag diagnosis sensor unit.
NO >> Replace the PCB harness.

MAIN LINE BETWEEN A-BAG AND AV CIRCUIT

Diagnosis Procedure

INFOID:0000000008139564

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

4. 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.	
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.	
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 BETWEEN AV AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000008139565

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

- Models without navigation system

AV control unit harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M84	81	M53	14	Existed
	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 BETWEEN M&A AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000008139566

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.	
M53	14	M105	7	Existed
	15		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

Diagnosis Procedure

INFOID:0000000008139567

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.	
M105	7	M120	39	Existed
	8		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.

MAIN LINE BETWEEN BCM AND EV/HEV CIRCUIT

Diagnosis Procedure

INFOID:0000000008139568

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 harness connector		PCB harness connector	Continuity
Connector No.	Terminal No.	Terminal No.	
M120	39	35	Existed
	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		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M20	35	M7	72	Existed
	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.	Terminal No.		Continuity
B1	72	82	Existed
	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

Diagnosis Procedure

INFOID:0000000008139569

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
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.	
M7	82	M6	22	Existed
	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.	
E106	22	E97	5	Existed
	23		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.

MAIN LINE BETWEEN STRG AND ABS CIRCUIT

Diagnosis Procedure

INFOID:0000000008139570

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

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

Steering angle sensor harness connector		PCB harness connector	Continuity
Connector No.	Terminal No.	Terminal No.	
M37	1	24	Existed
	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.	
M20	24	M6	69	Existed
	27		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.	Terminal No.		Continuity
E106	69	54	Existed
	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

Diagnosis Procedure

INFOID:0000000008139571

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.	Terminal No.		Continuity
E106	69	54	Existed
	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.	
M6	54	M7	34	Existed
	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.	Terminal No.		Continuity
B1	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.

MAIN LINE BETWEEN RDR-L AND RDR-R CIRCUIT

Diagnosis Procedure

INFOID:0000000008139572

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 harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B52	4	B33	13	Existed
	3		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.

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 connector		Side radar RH harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B245	13	B252	4	Existed
	14		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.

MAIN LINE BETWEEN RDR-R AND APA CIRCUIT

Diagnosis Procedure

INFOID:0000000008139573

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 harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B252	4	B201	66	Existed
	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.	
M117	66	M20	38	Existed
	67		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.	
38	M150	11	Existed
40		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.

MAIN LINE BETWEEN APA AND LANE CIRCUIT

Diagnosis Procedure

INFOID:0000000008139574

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.	
M150	11	M110	13	Existed
	10		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.

MAIN LINE BETWEEN INV/MC AND TCM CIRCUIT

Diagnosis Procedure

INFOID:0000000008139575

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 inverter harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E78	9	E106	58	Existed
	28		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.	
M6	58	M29	398	Existed
	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.	
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 BETWEEN TCM AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000008139576

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.	
M116	11	M105	32	Existed
	12		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.

MAIN LINE BETWEEN DLC AND EV/HEV CIRCUIT

Diagnosis Procedure

INFOID:0000000008139577

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.	
M105	32	23	Existed
	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		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M20	23	M7	38	Existed
	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		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
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)

Diagnosis Procedure

INFOID:0000000008139578

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			Resistance (Ω)
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.
2. Check the continuity between the ECM harness connector and the harness connector.

ECM harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M107	114	M30	439	Existed
	113		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)

Diagnosis Procedure

INFOID:0000000008139579

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 (Ω)
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 LAN-31, "CAN COMMUNICATION SYSTEM : System Diagram".

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 (HEV system CAN circuit side).
NO >> Repair the power supply and the ground circuit.

TPMS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000008139580

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 pressure warning control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M43	2	1	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 low tire pressure warning control unit. Refer to WT-45, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the low tire pressure warning control unit. Refer to WT-60, "Removal and Installation".
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.
2. Check the continuity between the low tire pressure warning control unit harness connector and the harness connector.

Low tire pressure warning control unit harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M43	2	M29	396	Existed
	1		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)

Diagnosis Procedure

INFOID:0000000008139581

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.

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			Resistance (Ω)
Connector No.	Terminal 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 LAN-129, "Diagnosis Procedure".

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 harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M125	1	M28	326	Existed
	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

Diagnosis Procedure

INFOID:0000000008139582

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 connector			Resistance (Ω)
Connector No.	Terminal No.		
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".

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. harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M66	12	M28	325	Existed
	11		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

Diagnosis Procedure

INFOID:0000000008139583

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.

TCU BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000008491094

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.

TCU harness connector			Resistance (Ω)
Connector No.	Terminal No.		
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 AV-333, "TCU : Diagnosis Procedure".

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 harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M216	9	M26	242	Existed
	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.

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000008139584

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

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M210	90	74	Approx. 54 – 66

- Models without navigation system

AV control unit harness connector			Resistance (Ω)
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: AV-73, "AV CONTROL UNIT : Diagnosis Procedure"
- 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: AV-264, "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 connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M210	90	M25	201	Existed
	74		221	Existed

- Models without navigation system

AV control unit harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M84	81	M25	201	Existed
	80		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

Diagnosis Procedure

INFOID:0000000008139585

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			Resistance (Ω)
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.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

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

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 connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M53	14	M24	176	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 connector M24.

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

Diagnosis Procedure

INFOID:0000000008139586

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.

Data link connector			Resistance (Ω)
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.	
M182	6	M23	151	Existed
	14		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 BRANCH LINE CIRCUIT (HEV SYSTEM CAN CIRCUIT)

Diagnosis Procedure

INFOID:0000000008139587

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.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
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.	
M182	13	M23	140	Existed
	12		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

Diagnosis Procedure

INFOID:0000000008139588

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.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M120	39	40	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 BCM. Refer to BCS-73, "Diagnosis Procedure".

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 harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M120	39	M22	101	Existed
	40		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 (CAN COMMUNICATION CIRCUIT 1)

Diagnosis Procedure

INFOID:0000000008139589

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			Resistance (Ω)
Connector No.	Terminal No.		
B159	43	55	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 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)

Diagnosis Procedure

INFOID:0000000008139590

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			Resistance (Ω)
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 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 (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)

Diagnosis Procedure

INFOID:0000000008139591

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-driven intelligent brake unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E87	43	42	Approx. 54 – 66

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). 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 BR-251, "Diagnosis Procedure".

Is the inspection result normal?

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

BRAKE BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 2)

Diagnosis Procedure

INFOID:0000000008139592

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-driven intelligent brake unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E87	41	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the electrically-driven intelligent brake unit branch line (CAN communication circuit 2 side). 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 BR-251, "Diagnosis Procedure".

Is the inspection result normal?

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

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000008139593

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.

Power steering control module harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E97	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the power steering control module branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the power steering control module. Refer to STC-27, "Diagnosis Procedure".

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

Diagnosis Procedure

INFOID:0000000008139594

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.

IPDM E/R harness connector			Resistance (Ω)
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 PCS-28, "Diagnosis Procedure".

Is the inspection result normal?

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.

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000008139595

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			Continuity
Connector No.	Terminal No.		
M125	4	6	Existed
	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 steering angle sensor.
3. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
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 BRC-59, "Wiring Diagram".

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.

Steering angle sensor harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M37	1	M23	134	Existed
	2		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

Diagnosis Procedure

INFOID:0000000008139596

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			Continuity
Connector No.	Terminal No.		
M125	4	6	Existed
	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 ABS actuator and electric unit (control unit).
3. Check the resistance between the ABS actuator and electric unit (control unit) harness connector terminals.

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal 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 BRC-138, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-163, "Removal 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 CIRCUIT

Diagnosis Procedure

INFOID:0000000008139597

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			Continuity
Connector No.	Terminal No.		
M125	4	6	Existed
	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 AFS control unit.
3. Check the resistance between the AFS control unit harness connector terminals.

AFS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
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

Diagnosis Procedure

INFOID:0000000008139598

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.	Terminal No.		
M125	4	6	Existed
	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 driver seat control unit.
3. Check the resistance between the driver seat control unit harness connector terminals.

Driver seat control unit harness connector			Resistance (Ω)
Connector No.	Terminal 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 ADP-63, "DRIVER SEAT CONTROL UNIT : Diagnosis Procedure".

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

Diagnosis Procedure

INFOID:0000000008139599

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.		
M125	4	6	Existed
	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 ADAS control unit.
3. Check the resistance between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
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 DAS-55, "Diagnosis Procedure".

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

Diagnosis Procedure

INFOID:0000000008139600

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.		
M125	4	6	Existed
	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 (Ω)
Connector No.	Terminal No.		
B9	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 SBC-40, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the seat belt pre-tensioner retractor (driver side). Refer to SB-7, "SEAT BELT RETRACTOR : Removal and Installation".
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

Diagnosis Procedure

INFOID:0000000008139601

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.

Side radar LH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
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 DAS-524, "SIDE RADAR LH : Diagnosis Procedure".

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.

RDR-R BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000008139602

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 DAS-527, "Diagnosis Procedure".

Is the inspection result normal?

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.

Side radar RH harness connector			Resistance (Ω)
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 DAS-525, "SIDE RADAR RH : Diagnosis Procedure".

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

Diagnosis Procedure

INFOID:0000000008139603

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.

Accelerator pedal actuator harness connector			Resistance (Ω)
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.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the accelerator pedal actuator. Refer to DAS-183, "ACCELERATOR PEDAL ACTUATOR : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the accelerator pedal assembly. Refer to ACC-4, "MODELS WITH DISTANCE CONTROL ASSIST SYSTEM : Removal and Installation".
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 actuator harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M152	5	M23	138	Existed
	4		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

Diagnosis Procedure

INFOID:0000000008139604

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.

Lane camera unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
R8	4	8	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 lane camera unit. Refer to DAS-365, "LANE CAMERA UNIT : Diagnosis Procedure".

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.	
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.

LASER BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000008139605

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 (Ω)
Connector No.	Terminal No.		
E67	3	6	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 ICC sensor. Refer to CCS-150, "ICC SENSOR : Diagnosis 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 harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E67	3	M28	343	Existed
	6		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

Diagnosis Procedure

INFOID:0000000008139606

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.

Traction motor inverter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
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 TMS-53, "Diagnosis Procedure".

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 LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000008139607

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.

A/T assembly harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F61	3	8	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 TCM. Refer to TM-158, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the control valve &TCM. Refer to TM-13, "A/T CONTROL SYSTEM : Component Parts Location". (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 harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
F61	3	M28	341	Existed
	8		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

Diagnosis Procedure

INFOID:0000000008139608

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 electric oil pump inverter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
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 TM-160, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the sub electric oil pump inverter. Refer to TM-188, "Removal and Installation".
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

INFOID:0000000008139609

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 (Ω)
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".

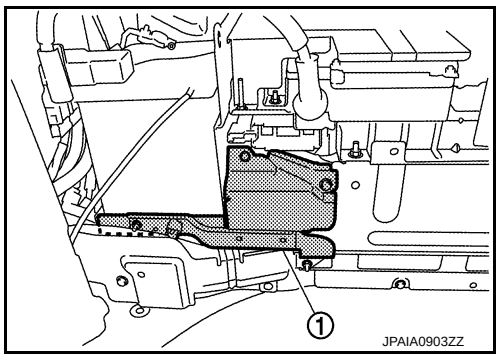
Check voltage in high voltage circuit. (Check that condenser are discharged.)

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

2. Remove harness cover (1).

DANGER:

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



3. Measure voltage between high voltage harness terminals.

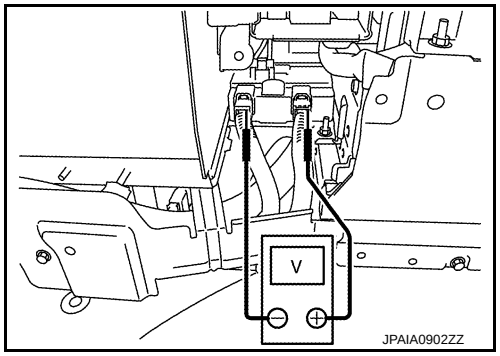
Standard : 5 V or less

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 HBB-184, "LI-ION BATTERY 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 HBB-200, "LI-ION BATTERY CONTROLLER : Disassembly and Assembly".
2. 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 HBB-23, "Circuit Diagram".

Vehicle communication harness		Continuity
Li-ion battery harness connector side	Li-ion battery controller side	
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 HBB-200, "LI-ION BATTERY CONTROLLER : Disassembly and Assembly".
YES (Past error)>>Error was detected in the Li-ion battery controller branch line.
NO >> Repair the vehicle communication harness.

CAN COMMUNICATION CIRCUIT 1

Diagnosis Procedure

INFOID:0000000008139610

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 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
Connector No.	Terminal No.		
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		Ground	Continuity
Connector No.	Terminal No.		
M182	6		Not existed
	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.

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

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

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.

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.
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.

CAN COMMUNICATION CIRCUIT 2

Diagnosis Procedure

INFOID:0000000008139611

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 LAN-31, "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			Continuity
Connector No.	Terminal No.		
M125	4	6	Existed
	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 harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M125	4	M23	133	Existed
	10		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 gateway harness connector			Continuity
Connector No.	Terminal No.		
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		Ground	Continuity
Connector No.	Terminal No.		
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		Resistance (Ω)
Terminal 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.
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.

ITS COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000008139612

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
2. Check the continuity between the ADAS control unit harness connector and the ICC sensor harness connector.

ADAS control unit harness connector		ICC sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B50	7	E67	3	Existed
	8		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.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
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.

5.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

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

ADAS control unit harness connector		Ground	Continuity
Connector No.	Terminal No.		
B50	7		Not existed
	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

INFOID:0000000008139613

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:

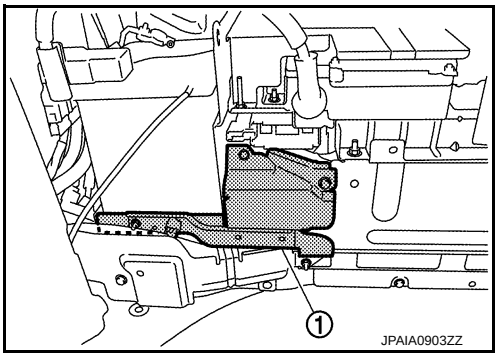
Shut off high voltage circuit. Refer to GI-30, "How to Cut Off High Voltage".

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.



3. Measure voltage between high voltage harness terminals.

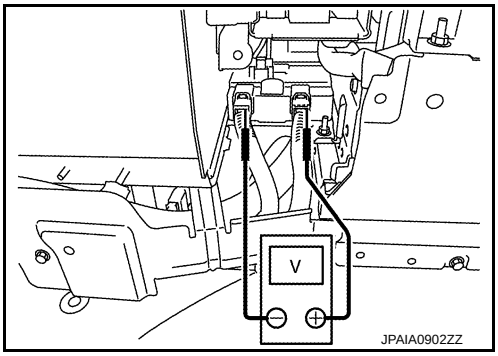
Standard : 5 V or less

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.

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 HBB-200, "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 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 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.		
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		Ground	Continuity
Connector No.	Terminal No.		
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.

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

3. Remove the Li-ion battery controller. Refer to HBB-200, "LI-ION BATTERY CONTROLLER : Disassembly and Assembly".
4. Check the resistance between the Li-ion battery controller terminals.

Li-ion battery controller		Resistance (Ω)
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.

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.
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 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.

PRECAUTION

PRECAUTIONS

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

INFOID:0000000008139614

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.

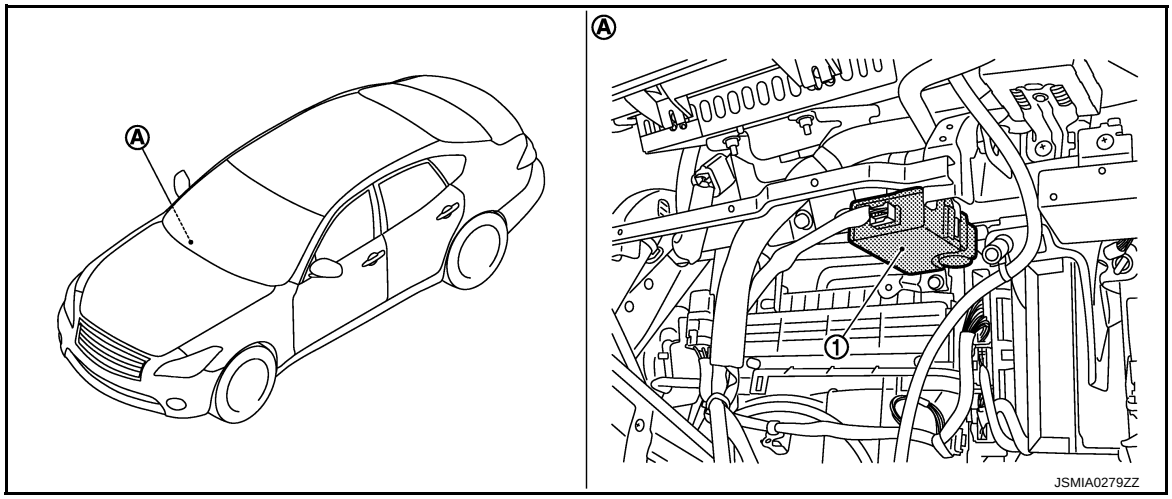
- **When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the ignition ON or engine running, never use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious 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.**

SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

INFOID:0000000008139615

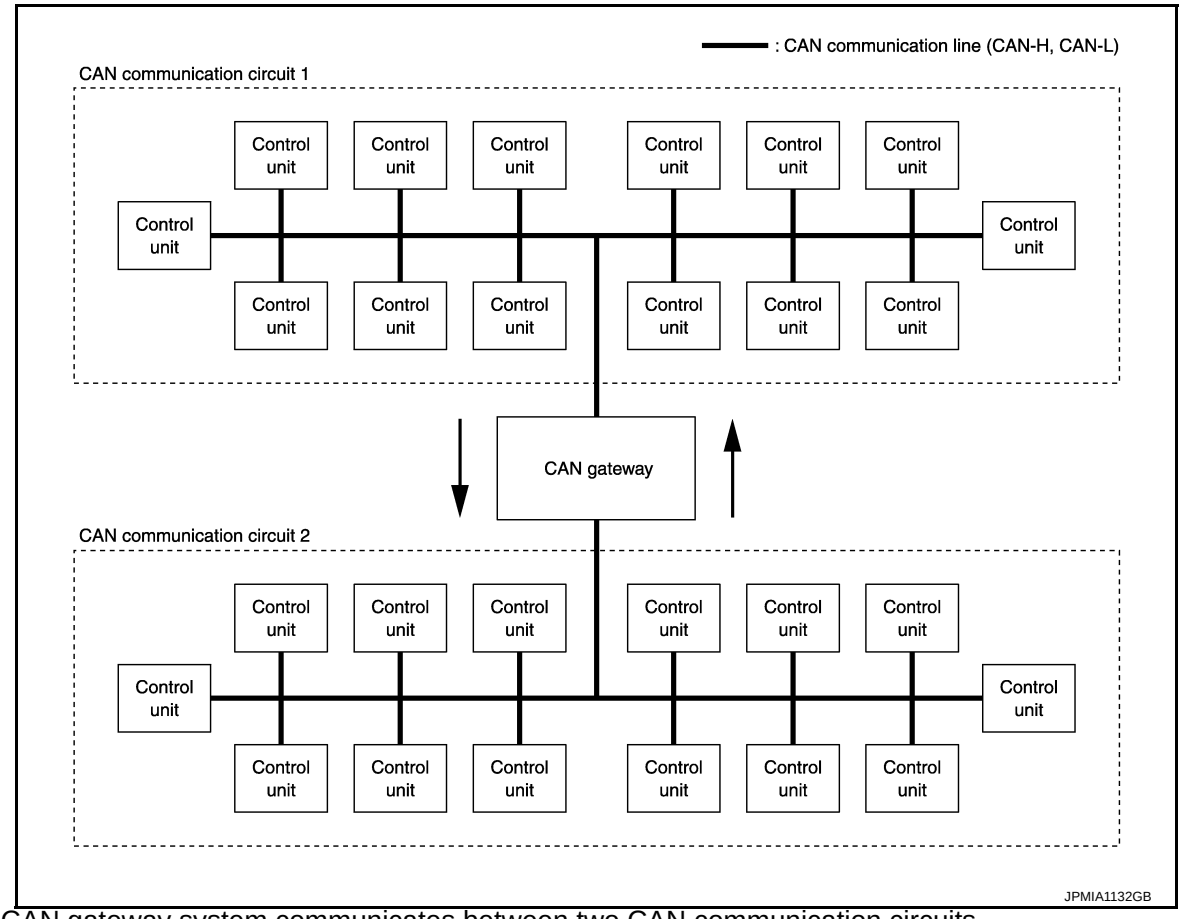


1. CAN gateway
A. Over the glove box

SYSTEM

System Description

INFOID:0000000008139616



- The CAN gateway system communicates between two CAN communication circuits.
- This system selects and transmits only necessary information.

DIAGNOSIS SYSTEM (CAN GATEWAY)

CONSULT Function

INFOID:0000000008139617

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	• Read and save the vehicle specification. • Write the vehicle specification when replacing CAN gateway.

SELF DIAGNOSTIC RESULT

Refer to LAN-121, "DTC Index".

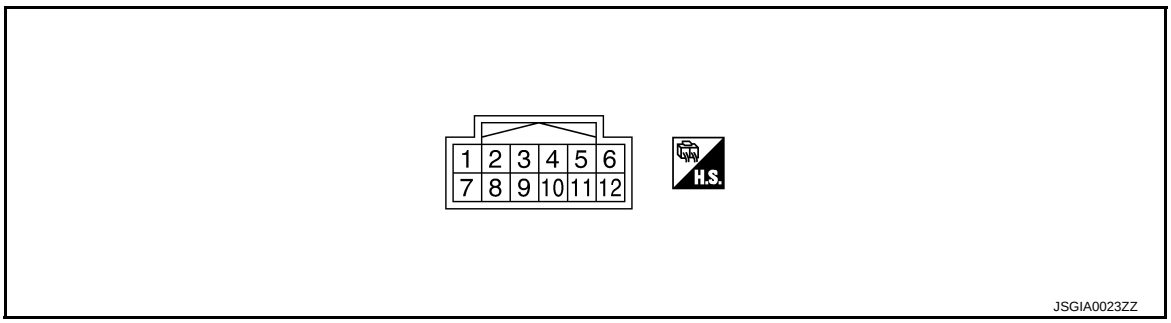
ECU DIAGNOSIS INFORMATION

CAN GATEWAY

Reference Value

INFOID:0000000008139618

TERMINAL LAYOUT



PHYSICAL VALUES

Terminal No. (Wire color)		Description		Condition	Standard	Reference value
+	–	Signal name	Input/ Output			
1 (L)	—	CAN-H (CAN communication 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 communication circuit 2)	Input/ Output	—	—	—
6 (L)	—	CAN-H (CAN communication circuit 2)	Input/ Output	—	—	—
7 (P)	—	CAN-L (CAN communication 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 communication circuit 2)	Input/ Output	—	—	—
12 (P)	—	CAN-L (CAN communication circuit 2)	Input/ Output	—	—	—

DTC Inspection Priority Chart

INFOID:0000000008139619

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

Priority	DTC
1	• B2600: CONFIG ERROR • U1010: CONTROL UNIT(CAN)
2	U1000: CAN COMM CIRCUIT

DTC Index

INFOID:0000000008139620

NOTE:
• The details of time display are as follows.

- 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 → 2 ··· 38 → 39 after returning to the normal condition whenever IGN OFF → 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 required.		—
U1000: CAN COMM CIRCUIT		LAN-126
U1010: CONTROL UNIT(CAN)		LAN-127
B2600: CONFIG ERROR	WRONG DATA	LAN-128
	NOT CONFIGURED	

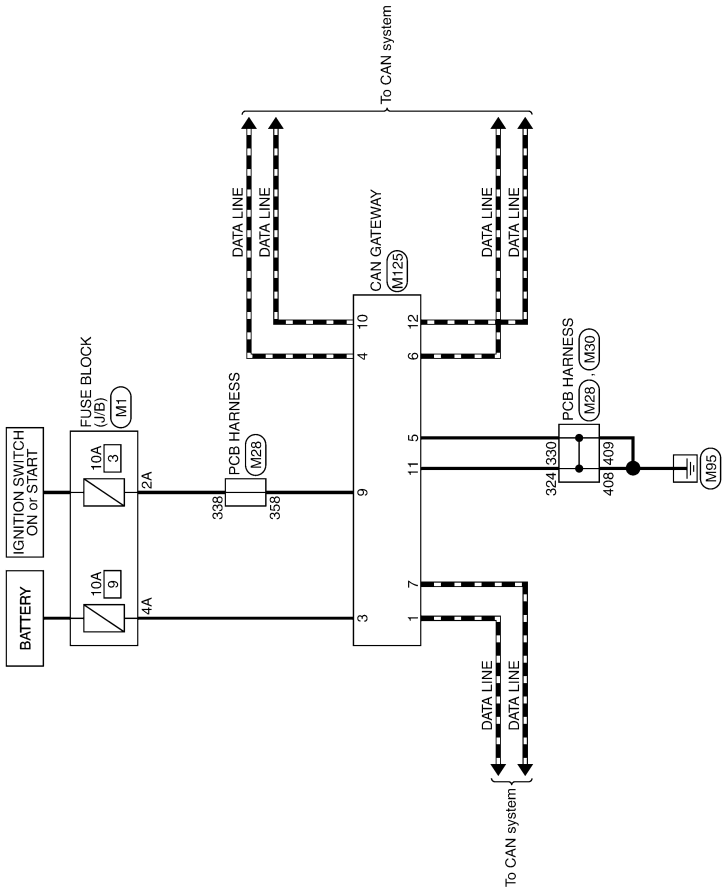
WIRING DIAGRAM

CAN GATEWAY SYSTEM

Wiring Diagram

INFOID:0000000008139621

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



CAN GATEWAY SYSTEM

2010/11/17

JCMWN0496GB

BASIC INSPECTION

ADDITIONAL SERVICE WHEN REPLACING CAN GATEWAY

Description

INFOID:0000000008139622

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:0000000008139623

1. SAVING VEHICLE SPECIFICATION

CONSULT Configuration

Perform “Before Replace ECU” of “Read / Write Configuration” to save or print current vehicle specification. Refer to LAN-125, "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 LAN-125, "Work Procedure".

>> WORK END

CONFIGURATION (CAN GATEWAY)

Description

INFOID:0000000008139624

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

Function		Description
Read / Write Configuration	Before Replace ECU	• Reads the vehicle configuration of current CAN gateway. • Saves the read vehicle configuration.
	After Replace ECU	Writes the vehicle configuration with saved data.
Manual Configuration		Writes the vehicle configuration with manual selection.

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:0000000008139625

1. WRITING MODE SELECTION

CONSULT Configuration

Select “Re/programming, Configuration” of CAN gateway.

When writing saved data>>GO TO 2.
When writing manually>>GO TO 3.

2. PERFORM “AFTER REPLACE ECU” OF “READ / WRITE CONFIGURATION”

CONSULT Configuration

Perform “After Replace ECU” of “Read / Write Configuration”.

>> GO TO 4.

3. PERFORM “MANUAL CONFIGURATION”

CONSULT Configuration

1. Select “Manual Configuration”.
2. Touch “Next”.
3. Touch “OK”.
4. Check that the configuration has been successfully written and touch “End”.

>> GO TO 4.

4. CHECK ALL ECU SELF-DIAGNOSIS RESULTS

1. Erase all ECU self-diagnosis results using CONSULT.
2. Turn the ignition switch OFF.
3. Turn the ignition switch ON and wait for 2 seconds or more.
4. Check that all ECU self-diagnosis results have no DTC (e.g. U1000 and U1001) of CAN communication.

>> WORK END

DTC/CIRCUIT DIAGNOSIS

U1000 CAN COMM CIRCUIT

Description

INFOID:0000000008139626

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 Signal Chart".

DTC Logic

INFOID:0000000008139627

DTC DETECTION LOGIC

DTC	CONSULT display description	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:0000000008139628

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 GI-49, "Intermittent Incident".

U1010 CONTROL UNIT (CAN)

Description

INFOID:0000000008139629

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 Signal Chart".

DTC Logic

INFOID:0000000008139630

DTC DETECTION LOGIC

DTC	CONSULT display description	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

INFOID:0000000008139631

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".

B2600 CONFIG ERROR

Description

INFOID:0000000008139632

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

DTC Logic

INFOID:0000000008139633

DTC DETECTION LOGIC

DTC	CONSULT display description	DTC Detection Condition	Probable cause
B2600	CONFIG ERROR WRONG DATA	When errors are detected in the configuration data stored in the CAN gateway.	CAN gateway
	CONFIG ERROR NOT CONFIGURED	When no data are stored in the CAN gateway.	

Diagnosis Procedure

INFOID:0000000008139634

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

Diagnosis Procedure

INFOID:0000000008139635

1.CHECK FUSE

Check that the following fuse are not blown.

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

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	Voltage (Standard)	Voltage (Reference value)
(+)		(–)			
CAN gateway		Ground	Ignition switch		
Connector	Terminal				
M125	3		OFF	6 – 16 V	Battery voltage
	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 gateway		Ground	Continuity
Connector	Terminal		
M125	5		Existed
	11		

Does continuity exist?

YES >> INSPECTION END
NO >> Repair harness or connector.

REMOVAL AND INSTALLATION

CAN GATEWAY

Removal and Installation

INFOID:0000000008139636

NOTE:
Before replacing CAN gateway, perform “Before Replace ECU” of “Read / Write Configuration” to save or print current vehicle specification. Refer to LAN-124, "Description".

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 LAN-124, "Description".

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT

Diagnosis Procedure

INFOID:0000000008491270

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 warning control unit harness connector		A/C auto amp. harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M43	2	M66	12	Existed
	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.

MAIN LINE BETWEEN HVAC AND A-BAG CIRCUIT

Diagnosis Procedure

INFOID:0000000008491271

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

4. 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.	
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.	
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 A/C auto amp. and the air bag diagnosis sensor unit.
NO >> Replace the PCB harness.

MAIN LINE BETWEEN A-BAG AND AV CIRCUIT

Diagnosis Procedure

INFOID:0000000008491272

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

4. 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.	
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.	
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 BETWEEN AV AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000008491273

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

- Models without navigation system

AV control unit harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M84	81	M53	14	Existed
	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 BETWEEN M&A AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000008491274

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.	
M53	14	M105	7	Existed
	15		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

Diagnosis Procedure

INFOID:0000000008491275

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.	
M105	7	M120	39	Existed
	8		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.

MAIN LINE BETWEEN BCM AND EV/HEV CIRCUIT

Diagnosis Procedure

INFOID:0000000008491276

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 harness connector		PCB harness connector	Continuity
Connector No.	Terminal No.	Terminal No.	
M120	39	35	Existed
	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		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M20	35	M7	72	Existed
	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.	Terminal No.		Continuity
B1	72	82	Existed
	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

Diagnosis Procedure

INFOID:0000000008491277

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
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.	
M7	82	M6	22	Existed
	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.	
E106	22	E97	5	Existed
	23		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.

MAIN LINE BETWEEN STRG AND ABS CIRCUIT

Diagnosis Procedure

INFOID:0000000008491278

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

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

Steering angle sensor harness connector		PCB harness connector	Continuity
Connector No.	Terminal No.	Terminal No.	
M37	1	24	Existed
	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.	
M20	24	M6	69	Existed
	27		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.	Terminal No.		Continuity
E106	69	54	Existed
	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

Diagnosis Procedure

INFOID:0000000008491279

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.	Terminal No.		Continuity
E106	69	54	Existed
	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.	
M6	54	M7	34	Existed
	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.	Terminal No.		Continuity
B1	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.

MAIN LINE BETWEEN INV/MC AND TCM CIRCUIT

Diagnosis Procedure

INFOID:0000000008491283

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 inverter harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E78	9	E106	58	Existed
	28		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.	
M6	58	M29	398	Existed
	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.	
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 BETWEEN TCM AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000008491284

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.	
M116	11	M105	32	Existed
	12		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.

MAIN LINE BETWEEN DLC AND EV/HEV CIRCUIT

Diagnosis Procedure

INFOID:0000000008491285

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.	
M105	32	23	Existed
	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		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M20	23	M7	38	Existed
	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		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
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)

Diagnosis Procedure

INFOID:0000000008491286

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			Resistance (Ω)
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.
2. Check the continuity between the ECM harness connector and the harness connector.

ECM harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M107	114	M30	439	Existed
	113		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)

Diagnosis Procedure

INFOID:0000000008491287

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 (Ω)
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 LAN-31, "CAN COMMUNICATION SYSTEM : System Diagram".

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 (HEV system CAN circuit side).
NO >> Repair the power supply and the ground circuit.

TPMS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000008491288

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 pressure warning control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M43	2	1	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 low tire pressure warning control unit. Refer to WT-45, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the low tire pressure warning control unit. Refer to WT-60, "Removal and Installation".
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.
2. Check the continuity between the low tire pressure warning control unit harness connector and the harness connector.

Low tire pressure warning control unit harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M43	2	M29	396	Existed
	1		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)

Diagnosis Procedure

INFOID:0000000008491289

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.

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			Resistance (Ω)
Connector No.	Terminal 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 LAN-129, "Diagnosis Procedure".

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 harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M125	1	M28	326	Existed
	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

Diagnosis Procedure

INFOID:0000000008491290

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 connector			Resistance (Ω)
Connector No.	Terminal No.		
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".

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. harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M66	12	M28	325	Existed
	11		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

Diagnosis Procedure

INFOID:0000000008491291

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.

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000008491293

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

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M210	90	74	Approx. 54 – 66

- Models without navigation system

AV control unit harness connector			Resistance (Ω)
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: AV-73, "AV CONTROL UNIT : Diagnosis Procedure"
- 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: AV-264, "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 connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M210	90	M25	201	Existed
	74		221	Existed

- Models without navigation system

AV control unit harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M84	81	M25	201	Existed
	80		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

Diagnosis Procedure

INFOID:0000000008491294

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			Resistance (Ω)
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.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

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

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 connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M53	14	M24	176	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 connector M24.

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

Diagnosis Procedure

INFOID:0000000008491295

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.

Data link connector			Resistance (Ω)
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.	
M182	6	M23	151	Existed
	14		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 BRANCH LINE CIRCUIT (HEV SYSTEM CAN CIRCUIT)

Diagnosis Procedure

INFOID:0000000008491296

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.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
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.	
M182	13	M23	140	Existed
	12		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

Diagnosis Procedure

INFOID:0000000008491297

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.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M120	39	40	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 BCM. Refer to BCS-73, "Diagnosis Procedure".

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 harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M120	39	M22	101	Existed
	40		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 (CAN COMMUNICATION CIRCUIT 1)

Diagnosis Procedure

INFOID:0000000008491298

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			Resistance (Ω)
Connector No.	Terminal No.		
B159	43	55	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 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)

Diagnosis Procedure

INFOID:0000000008491299

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			Resistance (Ω)
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 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 (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)

Diagnosis Procedure

INFOID:0000000008491300

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-driven intelligent brake unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E87	43	42	Approx. 54 – 66

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). 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 BR-251, "Diagnosis Procedure".

Is the inspection result normal?

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

BRAKE BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 2)

Diagnosis Procedure

INFOID:0000000008491301

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-driven intelligent brake unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E87	41	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the electrically-driven intelligent brake unit branch line (CAN communication circuit 2 side). 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 BR-251, "Diagnosis Procedure".

Is the inspection result normal?

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

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000008491302

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.

Power steering control module harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E97	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the power steering control module branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the power steering control module. Refer to STC-27, "Diagnosis Procedure".

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

Diagnosis Procedure

INFOID:0000000008491303

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.

IPDM E/R harness connector			Resistance (Ω)
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 PCS-28, "Diagnosis Procedure".

Is the inspection result normal?

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.

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000008491304

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			Continuity
Connector No.	Terminal No.		
M125	4	6	Existed
	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 steering angle sensor.
3. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
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 BRC-59, "Wiring Diagram".

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.

Steering angle sensor harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M37	1	M23	134	Existed
	2		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

Diagnosis Procedure

INFOID:0000000008491305

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			Continuity
Connector No.	Terminal No.		
M125	4	6	Existed
	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 ABS actuator and electric unit (control unit).
3. Check the resistance between the ABS actuator and electric unit (control unit) harness connector terminals.

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal 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 BRC-138, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-163, "Removal 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 CIRCUIT

Diagnosis Procedure

INFOID:0000000008491307

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.	Terminal No.		
M125	4	6	Existed
	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 driver seat control unit.
3. Check the resistance between the driver seat control unit harness connector terminals.

Driver seat control unit harness connector			Resistance (Ω)
Connector No.	Terminal 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 ADP-63, "DRIVER SEAT CONTROL UNIT : Diagnosis Procedure".

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.

INV/MC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000008491315

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.

Traction motor inverter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
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 TMS-53, "Diagnosis Procedure".

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 LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000008491316

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.

A/T assembly harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F61	3	8	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 TCM. Refer to TM-158, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the control valve &TCM. Refer to TM-13, "A/T CONTROL SYSTEM : Component Parts Location". (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 harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
F61	3	M28	341	Existed
	8		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

Diagnosis Procedure

INFOID:0000000008491317

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 electric oil pump inverter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
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 TM-160, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the sub electric oil pump inverter. Refer to TM-188, "Removal and Installation".
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

INFOID:0000000008491318

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 (Ω)
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".

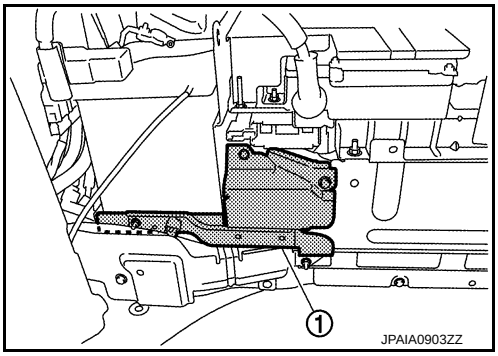
Check voltage in high voltage circuit. (Check that condenser are discharged.)

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

2. Remove harness cover (1).

DANGER:

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



3. Measure voltage between high voltage harness terminals.

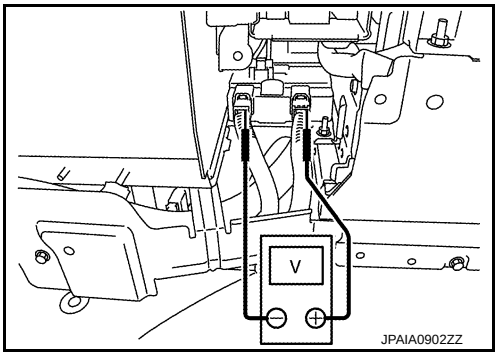
Standard : 5 V or less

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 HBB-184, "LI-ION BATTERY 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 HBB-200, "LI-ION BATTERY CONTROLLER : Disassembly and Assembly".
2. 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 HBB-23, "Circuit Diagram".

Vehicle communication harness		Continuity
Li-ion battery harness connector side	Li-ion battery controller side	
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 HBB-200, "LI-ION BATTERY CONTROLLER : Disassembly and Assembly".
YES (Past error)>>Error was detected in the Li-ion battery controller branch line.
NO >> Repair the vehicle communication harness.

CAN COMMUNICATION CIRCUIT 1

Diagnosis Procedure

INFOID:0000000008491319

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 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
Connector No.	Terminal No.		
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		Ground	Continuity
Connector No.	Terminal No.		
M182	6		Not existed
	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.

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

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

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.

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.
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.

CAN COMMUNICATION CIRCUIT 2

Diagnosis Procedure

INFOID:0000000008491320

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 LAN-31, "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			Continuity
Connector No.	Terminal No.		
M125	4	6	Existed
	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 harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M125	4	M23	133	Existed
	10		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 gateway harness connector			Continuity
Connector No.	Terminal No.		
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		Ground	Continuity
Connector No.	Terminal No.		
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		Resistance (Ω)
Terminal 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.
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

INFOID:0000000008491322

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:

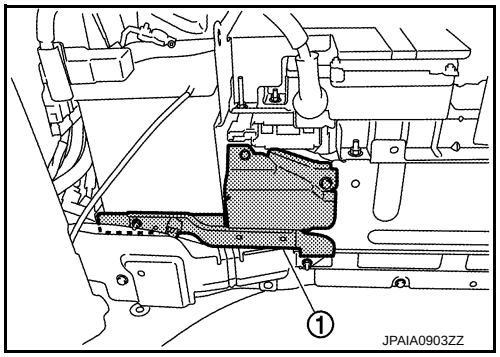
Shut off high voltage circuit. Refer to GI-30, "How to Cut Off High Voltage".

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.



3. Measure voltage between high voltage harness terminals.

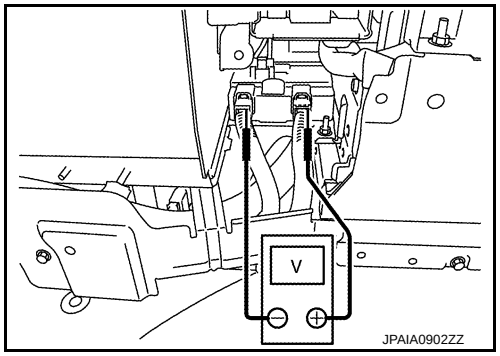
Standard : 5 V or less

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.

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 HBB-200, "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 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 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.		
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		Ground	Continuity
Connector No.	Terminal No.		
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.

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

3. Remove the Li-ion battery controller. Refer to HBB-200, "LI-ION BATTERY CONTROLLER : Disassembly and Assembly".
4. Check the resistance between the Li-ion battery controller terminals.

Li-ion battery controller		Resistance (Ω)
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.

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.
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 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.

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT

Diagnosis Procedure

INFOID:0000000008491331

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 warning control unit harness connector		A/C auto amp. harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M43	2	M66	12	Existed
	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.

MAIN LINE BETWEEN HVAC AND A-BAG CIRCUIT

Diagnosis Procedure

INFOID:0000000008491332

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

4. 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.	
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.	
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 A/C auto amp. and the air bag diagnosis sensor unit.
NO >> Replace the PCB harness.

MAIN LINE BETWEEN A-BAG AND AV CIRCUIT

Diagnosis Procedure

INFOID:0000000008491333

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

4. 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.	
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.	
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 BETWEEN AV AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000008491334

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

- Models without navigation system

AV control unit harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M84	81	M53	14	Existed
	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 BETWEEN M&A AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000008491335

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.	
M53	14	M105	7	Existed
	15		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

Diagnosis Procedure

INFOID:0000000008491336

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.	
M105	7	M120	39	Existed
	8		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.

MAIN LINE BETWEEN BCM AND EV/HEV CIRCUIT

Diagnosis Procedure

INFOID:0000000008491337

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 harness connector		PCB harness connector	Continuity
Connector No.	Terminal No.	Terminal No.	
M120	39	35	Existed
	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		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M20	35	M7	72	Existed
	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.	Terminal No.		Continuity
B1	72	82	Existed
	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

Diagnosis Procedure

INFOID:0000000008491338

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
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.	
M7	82	M6	22	Existed
	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.	
E106	22	E97	5	Existed
	23		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.

MAIN LINE BETWEEN STRG AND ABS CIRCUIT

Diagnosis Procedure

INFOID:0000000008491339

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

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

Steering angle sensor harness connector		PCB harness connector	Continuity
Connector No.	Terminal No.	Terminal No.	
M37	1	24	Existed
	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.	
M20	24	M6	69	Existed
	27		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.	Terminal No.		Continuity
E106	69	54	Existed
	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

Diagnosis Procedure

INFOID:0000000008491340

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.	Terminal No.		Continuity
E106	69	54	Existed
	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.	
M6	54	M7	34	Existed
	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.	Terminal No.		Continuity
B1	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.

MAIN LINE BETWEEN INV/MC AND TCM CIRCUIT

Diagnosis Procedure

INFOID:0000000008491344

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 inverter harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E78	9	E106	58	Existed
	28		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.	
M6	58	M29	398	Existed
	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.	
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 BETWEEN TCM AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000008491345

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.	
M116	11	M105	32	Existed
	12		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.

MAIN LINE BETWEEN DLC AND EV/HEV CIRCUIT

Diagnosis Procedure

INFOID:0000000008491346

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.	
M105	32	23	Existed
	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		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M20	23	M7	38	Existed
	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		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
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)

Diagnosis Procedure

INFOID:0000000008491347

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			Resistance (Ω)
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.
2. Check the continuity between the ECM harness connector and the harness connector.

ECM harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M107	114	M30	439	Existed
	113		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)

Diagnosis Procedure

INFOID:0000000008491348

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 (Ω)
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 LAN-31, "CAN COMMUNICATION SYSTEM : System Diagram".

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 (HEV system CAN circuit side).
NO >> Repair the power supply and the ground circuit.

TPMS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000008491349

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 pressure warning control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M43	2	1	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 low tire pressure warning control unit. Refer to WT-45, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the low tire pressure warning control unit. Refer to WT-60, "Removal and Installation".
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.
2. Check the continuity between the low tire pressure warning control unit harness connector and the harness connector.

Low tire pressure warning control unit harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M43	2	M29	396	Existed
	1		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)

Diagnosis Procedure

INFOID:0000000008491350

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.

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			Resistance (Ω)
Connector No.	Terminal 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 LAN-129, "Diagnosis Procedure".

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 harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M125	1	M28	326	Existed
	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

Diagnosis Procedure

INFOID:0000000008491351

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 connector			Resistance (Ω)
Connector No.	Terminal No.		
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".

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. harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M66	12	M28	325	Existed
	11		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

Diagnosis Procedure

INFOID:0000000008491352

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.

TCU BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000008491353

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.

TCU harness connector			Resistance (Ω)
Connector No.	Terminal No.		
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 AV-333, "TCU : Diagnosis Procedure".

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 harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M216	9	M26	242	Existed
	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.

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000008491354

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

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M210	90	74	Approx. 54 – 66

- Models without navigation system

AV control unit harness connector			Resistance (Ω)
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: AV-73, "AV CONTROL UNIT : Diagnosis Procedure"
- 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: AV-264, "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 connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M210	90	M25	201	Existed
	74		221	Existed

- Models without navigation system

AV control unit harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M84	81	M25	201	Existed
	80		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

Diagnosis Procedure

INFOID:0000000008491355

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			Resistance (Ω)
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.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

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

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 connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M53	14	M24	176	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 connector M24.

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

Diagnosis Procedure

INFOID:0000000008491356

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.

Data link connector			Resistance (Ω)
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.	
M182	6	M23	151	Existed
	14		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 BRANCH LINE CIRCUIT (HEV SYSTEM CAN CIRCUIT)

Diagnosis Procedure

INFOID:0000000008491357

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.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
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.	
M182	13	M23	140	Existed
	12		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

Diagnosis Procedure

INFOID:0000000008491358

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.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M120	39	40	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 BCM. Refer to BCS-73, "Diagnosis Procedure".

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 harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M120	39	M22	101	Existed
	40		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 (CAN COMMUNICATION CIRCUIT 1)

Diagnosis Procedure

INFOID:0000000008491359

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			Resistance (Ω)
Connector No.	Terminal No.		
B159	43	55	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 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)

Diagnosis Procedure

INFOID:0000000008491360

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			Resistance (Ω)
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 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 (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)

Diagnosis Procedure

INFOID:0000000008491361

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-driven intelligent brake unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E87	43	42	Approx. 54 – 66

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). 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 BR-251, "Diagnosis Procedure".

Is the inspection result normal?

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

BRAKE BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 2)

Diagnosis Procedure

INFOID:0000000008491362

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-driven intelligent brake unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E87	41	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the electrically-driven intelligent brake unit branch line (CAN communication circuit 2 side). 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 BR-251, "Diagnosis Procedure".

Is the inspection result normal?

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

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000008491363

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.

Power steering control module harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E97	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the power steering control module branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the power steering control module. Refer to STC-27, "Diagnosis Procedure".

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

Diagnosis Procedure

INFOID:0000000008491364

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.

IPDM E/R harness connector			Resistance (Ω)
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 PCS-28, "Diagnosis Procedure".

Is the inspection result normal?

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.

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000008491365

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			Continuity
Connector No.	Terminal No.		
M125	4	6	Existed
	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 steering angle sensor.
3. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
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 BRC-59, "Wiring Diagram".

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.

Steering angle sensor harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M37	1	M23	134	Existed
	2		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

Diagnosis Procedure

INFOID:0000000008491366

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			Continuity
Connector No.	Terminal No.		
M125	4	6	Existed
	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 ABS actuator and electric unit (control unit).
3. Check the resistance between the ABS actuator and electric unit (control unit) harness connector terminals.

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal 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 BRC-138, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-163, "Removal 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 CIRCUIT

Diagnosis Procedure

INFOID:0000000008491368

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.	Terminal No.		
M125	4	6	Existed
	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 driver seat control unit.
3. Check the resistance between the driver seat control unit harness connector terminals.

Driver seat control unit harness connector			Resistance (Ω)
Connector No.	Terminal 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 ADP-63, "DRIVER SEAT CONTROL UNIT : Diagnosis Procedure".

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.

INV/MC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000008491376

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.

Traction motor inverter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
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 TMS-53, "Diagnosis Procedure".

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 LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000008491377

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.

A/T assembly harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F61	3	8	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 TCM. Refer to TM-158, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the control valve &TCM. Refer to TM-13, "A/T CONTROL SYSTEM : Component Parts Location". (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 harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
F61	3	M28	341	Existed
	8		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

Diagnosis Procedure

INFOID:0000000008491378

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 electric oil pump inverter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
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 TM-160, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the sub electric oil pump inverter. Refer to TM-188, "Removal and Installation".
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

INFOID:0000000008491379

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 (Ω)
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".

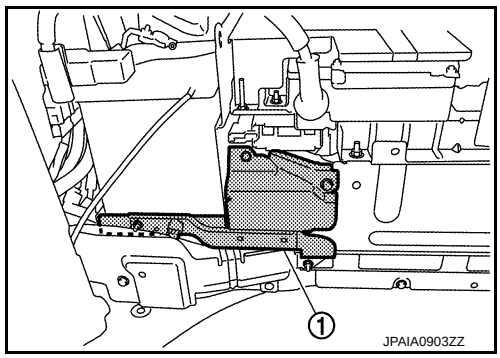
Check voltage in high voltage circuit. (Check that condenser are discharged.)

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

2. Remove harness cover (1).

DANGER:

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



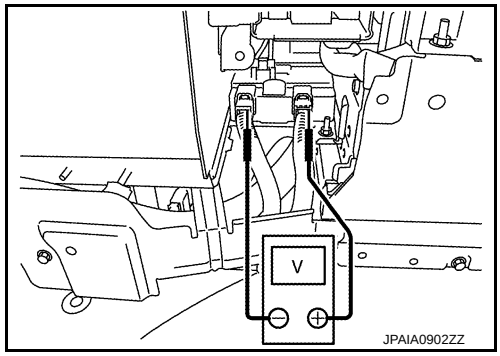
3. Measure voltage between high voltage harness terminals.

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 HBB-184, "LI-ION BATTERY 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 HBB-200, "LI-ION BATTERY CONTROLLER : Disassembly and Assembly".
2. 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 HBB-23, "Circuit Diagram".

Vehicle communication harness		Continuity
Li-ion battery harness connector side	Li-ion battery controller side	
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 HBB-200, "LI-ION BATTERY CONTROLLER : Disassembly and Assembly".
YES (Past error)>>Error was detected in the Li-ion battery controller branch line.
NO >> Repair the vehicle communication harness.

CAN COMMUNICATION CIRCUIT 1

Diagnosis Procedure

INFOID:0000000008491380

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 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
Connector No.	Terminal No.		
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		Ground	Continuity
Connector No.	Terminal No.		
M182	6		Not existed
	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.

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

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

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.

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.
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.

CAN COMMUNICATION CIRCUIT 2

Diagnosis Procedure

INFOID:0000000008491381

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 LAN-31, "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			Continuity
Connector No.	Terminal No.		
M125	4	6	Existed
	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 harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M125	4	M23	133	Existed
	10		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 gateway harness connector			Continuity
Connector No.	Terminal No.		
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		Ground	Continuity
Connector No.	Terminal No.		
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		Resistance (Ω)
Terminal 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.
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

INFOID:0000000008491383

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:

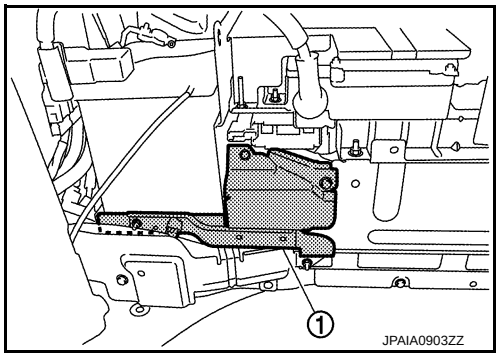
Shut off high voltage circuit. Refer to GI-30, "How to Cut Off High Voltage".

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.



3. Measure voltage between high voltage harness terminals.

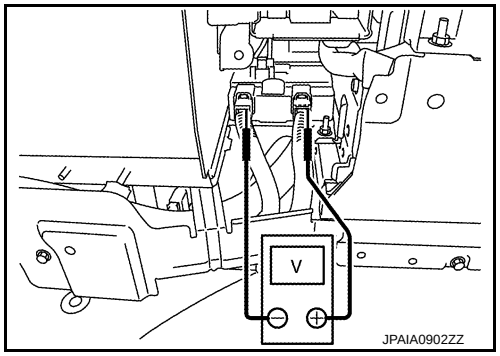
Standard : 5 V or less

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.

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 HBB-200, "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 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 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.		
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		Ground	Continuity
Connector No.	Terminal No.		
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.

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

3. Remove the Li-ion battery controller. Refer to HBB-200, "LI-ION BATTERY CONTROLLER : Disassembly and Assembly".
4. Check the resistance between the Li-ion battery controller terminals.

Li-ion battery controller		Resistance (Ω)
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.

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.
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 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.

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN TPMS AND HVAC CIRCUIT

Diagnosis Procedure

INFOID:0000000008491387

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 warning control unit harness connector		A/C auto amp. harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M43	2	M66	12	Existed
	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.

MAIN LINE BETWEEN HVAC AND A-BAG CIRCUIT

Diagnosis Procedure

INFOID:0000000008491388

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

4. 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.	
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.	
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 A/C auto amp. and the air bag diagnosis sensor unit.
NO >> Replace the PCB harness.

MAIN LINE BETWEEN A-BAG AND AV CIRCUIT

Diagnosis Procedure

INFOID:0000000008491389

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

4. 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.	
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.	
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 BETWEEN AV AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000008491390

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

- Models without navigation system

AV control unit harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M84	81	M53	14	Existed
	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 BETWEEN M&A AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000008491391

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.	
M53	14	M105	7	Existed
	15		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

Diagnosis Procedure

INFOID:0000000008491392

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.	
M105	7	M120	39	Existed
	8		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.

MAIN LINE BETWEEN BCM AND EV/HEV CIRCUIT

Diagnosis Procedure

INFOID:0000000008491393

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 harness connector		PCB harness connector	Continuity
Connector No.	Terminal No.	Terminal No.	
M120	39	35	Existed
	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		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M20	35	M7	72	Existed
	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.	Terminal No.		Continuity
B1	72	82	Existed
	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

Diagnosis Procedure

INFOID:0000000008491394

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
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.	
M7	82	M6	22	Existed
	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.	
E106	22	E97	5	Existed
	23		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.

MAIN LINE BETWEEN STRG AND ABS CIRCUIT

Diagnosis Procedure

INFOID:0000000008491395

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

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

Steering angle sensor harness connector		PCB harness connector	Continuity
Connector No.	Terminal No.	Terminal No.	
M37	1	24	Existed
	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.	
M20	24	M6	69	Existed
	27		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.	Terminal No.		Continuity
E106	69	54	Existed
	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

Diagnosis Procedure

INFOID:0000000008491396

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.	Terminal No.		Continuity
E106	69	54	Existed
	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.	
M6	54	M7	34	Existed
	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.	Terminal No.		Continuity
B1	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.

MAIN LINE BETWEEN RDR-L AND RDR-R CIRCUIT

Diagnosis Procedure

INFOID:0000000008491397

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 harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B52	4	B33	13	Existed
	3		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.

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 connector		Side radar RH harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B245	13	B252	4	Existed
	14		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.

MAIN LINE BETWEEN RDR-R AND APA CIRCUIT

Diagnosis Procedure

INFOID:0000000008491398

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 harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B252	4	B201	66	Existed
	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.	
M117	66	M20	38	Existed
	67		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.	
38	M150	11	Existed
40		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.

MAIN LINE BETWEEN APA AND LANE CIRCUIT

Diagnosis Procedure

INFOID:0000000008491399

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.	
M150	11	M110	13	Existed
	10		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.

MAIN LINE BETWEEN INV/MC AND TCM CIRCUIT

Diagnosis Procedure

INFOID:0000000008491400

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 inverter harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E78	9	E106	58	Existed
	28		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.	
M6	58	M29	398	Existed
	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.	
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 BETWEEN TCM AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000008491401

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.	
M116	11	M105	32	Existed
	12		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.

MAIN LINE BETWEEN DLC AND EV/HEV CIRCUIT

Diagnosis Procedure

INFOID:0000000008491402

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.	
M105	32	23	Existed
	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		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M20	23	M7	38	Existed
	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		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
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)

Diagnosis Procedure

INFOID:0000000008491403

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			Resistance (Ω)
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.
2. Check the continuity between the ECM harness connector and the harness connector.

ECM harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M107	114	M30	439	Existed
	113		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)

Diagnosis Procedure

INFOID:0000000008491404

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 (Ω)
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 LAN-31, "CAN COMMUNICATION SYSTEM : System Diagram".

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 (HEV system CAN circuit side).
NO >> Repair the power supply and the ground circuit.

TPMS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000008491405

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 pressure warning control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M43	2	1	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 low tire pressure warning control unit. Refer to WT-45, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the low tire pressure warning control unit. Refer to WT-60, "Removal and Installation".
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.
2. Check the continuity between the low tire pressure warning control unit harness connector and the harness connector.

Low tire pressure warning control unit harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M43	2	M29	396	Existed
	1		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)

Diagnosis Procedure

INFOID:0000000008491406

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.

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			Resistance (Ω)
Connector No.	Terminal 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 LAN-129, "Diagnosis Procedure".

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 harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M125	1	M28	326	Existed
	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

Diagnosis Procedure

INFOID:0000000008491407

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 connector			Resistance (Ω)
Connector No.	Terminal No.		
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".

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. harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M66	12	M28	325	Existed
	11		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

Diagnosis Procedure

INFOID:0000000008491408

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.

TCU BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000008491409

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.

TCU harness connector			Resistance (Ω)
Connector No.	Terminal No.		
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 AV-333, "TCU : Diagnosis Procedure".

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 harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M216	9	M26	242	Existed
	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.

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000008491410

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

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M210	90	74	Approx. 54 – 66

- Models without navigation system

AV control unit harness connector			Resistance (Ω)
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: AV-73, "AV CONTROL UNIT : Diagnosis Procedure"
- 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: AV-264, "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 connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M210	90	M25	201	Existed
	74		221	Existed

- Models without navigation system

AV control unit harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M84	81	M25	201	Existed
	80		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

Diagnosis Procedure

INFOID:0000000008491411

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			Resistance (Ω)
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.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

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

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 connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M53	14	M24	176	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 connector M24.

DLC BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 1)

Diagnosis Procedure

INFOID:0000000008491412

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.

Data link connector			Resistance (Ω)
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.	
M182	6	M23	151	Existed
	14		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 BRANCH LINE CIRCUIT (HEV SYSTEM CAN CIRCUIT)

Diagnosis Procedure

INFOID:0000000008491413

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.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
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.	
M182	13	M23	140	Existed
	12		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

Diagnosis Procedure

INFOID:0000000008491414

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.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M120	39	40	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 BCM. Refer to BCS-73, "Diagnosis Procedure".

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 harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M120	39	M22	101	Existed
	40		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 (CAN COMMUNICATION CIRCUIT 1)

Diagnosis Procedure

INFOID:0000000008491415

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			Resistance (Ω)
Connector No.	Terminal No.		
B159	43	55	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 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)

Diagnosis Procedure

INFOID:0000000008491416

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			Resistance (Ω)
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 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 (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)

Diagnosis Procedure

INFOID:0000000008491417

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-driven intelligent brake unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E87	43	42	Approx. 54 – 66

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). 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 BR-251, "Diagnosis Procedure".

Is the inspection result normal?

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

BRAKE BRANCH LINE CIRCUIT (CAN COMMUNICATION CIRCUIT 2)

Diagnosis Procedure

INFOID:0000000008491418

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-driven intelligent brake unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E87	41	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the electrically-driven intelligent brake unit branch line (CAN communication circuit 2 side). 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 BR-251, "Diagnosis Procedure".

Is the inspection result normal?

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

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000008491419

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.

Power steering control module harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E97	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the power steering control module branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the power steering control module. Refer to STC-27, "Diagnosis Procedure".

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

Diagnosis Procedure

INFOID:0000000008491420

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.

IPDM E/R harness connector			Resistance (Ω)
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 PCS-28, "Diagnosis Procedure".

Is the inspection result normal?

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.

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000008491421

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			Continuity
Connector No.	Terminal No.		
M125	4	6	Existed
	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 steering angle sensor.
3. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
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 BRC-59, "Wiring Diagram".

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.

Steering angle sensor harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M37	1	M23	134	Existed
	2		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

Diagnosis Procedure

INFOID:0000000008491422

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			Continuity
Connector No.	Terminal No.		
M125	4	6	Existed
	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 ABS actuator and electric unit (control unit).
3. Check the resistance between the ABS actuator and electric unit (control unit) harness connector terminals.

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal 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 BRC-138, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-163, "Removal 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 CIRCUIT

Diagnosis Procedure

INFOID:0000000008491423

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			Continuity
Connector No.	Terminal No.		
M125	4	6	Existed
	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 AFS control unit.
3. Check the resistance between the AFS control unit harness connector terminals.

AFS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
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

Diagnosis Procedure

INFOID:0000000008491424

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.	Terminal No.		
M125	4	6	Existed
	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 driver seat control unit.
3. Check the resistance between the driver seat control unit harness connector terminals.

Driver seat control unit harness connector			Resistance (Ω)
Connector No.	Terminal 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 ADP-63, "DRIVER SEAT CONTROL UNIT : Diagnosis Procedure".

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

Diagnosis Procedure

INFOID:0000000008491425

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.		
M125	4	6	Existed
	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 ADAS control unit.
3. Check the resistance between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
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 DAS-55, "Diagnosis Procedure".

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

Diagnosis Procedure

INFOID:0000000008491426

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.		
M125	4	6	Existed
	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 (Ω)
Connector No.	Terminal No.		
B9	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 SBC-40, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the seat belt pre-tensioner retractor (driver side). Refer to SB-7, "SEAT BELT RETRACTOR : Removal and Installation".
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

Diagnosis Procedure

INFOID:0000000008491427

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.

Side radar LH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
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 DAS-524, "SIDE RADAR LH : Diagnosis Procedure".

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.

RDR-R BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000008491428

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 DAS-527, "Diagnosis Procedure".

Is the inspection result normal?

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.

Side radar RH harness connector			Resistance (Ω)
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 DAS-525, "SIDE RADAR RH : Diagnosis Procedure".

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

Diagnosis Procedure

INFOID:0000000008491429

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.

Accelerator pedal actuator harness connector			Resistance (Ω)
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.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the accelerator pedal actuator. Refer to DAS-183, "ACCELERATOR PEDAL ACTUATOR : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the accelerator pedal assembly. Refer to ACC-4, "MODELS WITH DISTANCE CONTROL ASSIST SYSTEM : Removal and Installation".
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 actuator harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M152	5	M23	138	Existed
	4		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

Diagnosis Procedure

INFOID:0000000008491430

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.

Lane camera unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
R8	4	8	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 lane camera unit. Refer to DAS-365, "LANE CAMERA UNIT : Diagnosis Procedure".

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.	
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.

LASER BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000008491431

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 (Ω)
Connector No.	Terminal No.		
E67	3	6	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 ICC sensor. Refer to CCS-150, "ICC SENSOR : Diagnosis 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 harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E67	3	M28	343	Existed
	6		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

Diagnosis Procedure

INFOID:0000000008491432

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.

Traction motor inverter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
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 TMS-53, "Diagnosis Procedure".

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 LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000008491433

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.

A/T assembly harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F61	3	8	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 TCM. Refer to TM-158, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the control valve &TCM. Refer to TM-13, "A/T CONTROL SYSTEM : Component Parts Location". (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 harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
F61	3	M28	341	Existed
	8		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

Diagnosis Procedure

INFOID:0000000008491434

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 electric oil pump inverter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
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 TM-160, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the sub electric oil pump inverter. Refer to TM-188, "Removal and Installation".
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

INFOID:0000000008491435

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 (Ω)
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".

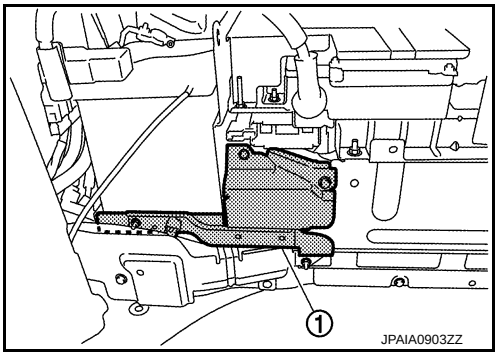
Check voltage in high voltage circuit. (Check that condenser are discharged.)

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

2. Remove harness cover (1).

DANGER:

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



3. Measure voltage between high voltage harness terminals.

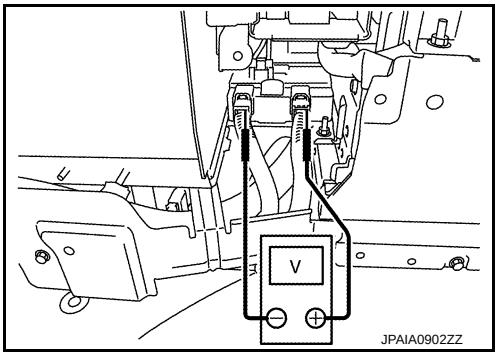
Standard : 5 V or less

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 HBB-184, "LI-ION BATTERY 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 HBB-200, "LI-ION BATTERY CONTROLLER : Disassembly and Assembly".
2. 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 HBB-23, "Circuit Diagram".

Vehicle communication harness		Continuity
Li-ion battery harness connector side	Li-ion battery controller side	
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 HBB-200, "LI-ION BATTERY CONTROLLER : Disassembly and Assembly".
YES (Past error)>>Error was detected in the Li-ion battery controller branch line.
NO >> Repair the vehicle communication harness.

CAN COMMUNICATION CIRCUIT 1

Diagnosis Procedure

INFOID:0000000008491436

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 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
Connector No.	Terminal No.		
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		Ground	Continuity
Connector No.	Terminal No.		
M182	6		Not existed
	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.

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

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

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.

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.
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.

CAN COMMUNICATION CIRCUIT 2

Diagnosis Procedure

INFOID:0000000008491437

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 LAN-31, "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			Continuity
Connector No.	Terminal No.		
M125	4	6	Existed
	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 harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M125	4	M23	133	Existed
	10		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 gateway harness connector			Continuity
Connector No.	Terminal No.		
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		Ground	Continuity
Connector No.	Terminal No.		
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		Resistance (Ω)
Terminal 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.
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.

ITS COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000008491438

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
2. Check the continuity between the ADAS control unit harness connector and the ICC sensor harness connector.

ADAS control unit harness connector		ICC sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B50	7	E67	3	Existed
	8		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.

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
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.

5.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

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

ADAS control unit harness connector		Ground	Continuity
Connector No.	Terminal No.		
B50	7		Not existed
	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

INFOID:0000000008491439

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:

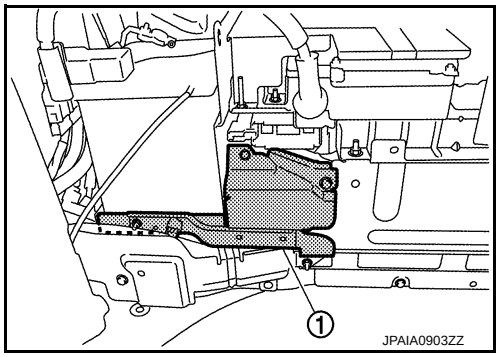
Shut off high voltage circuit. Refer to GI-30, "How to Cut Off High Voltage".

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.



3. Measure voltage between high voltage harness terminals.

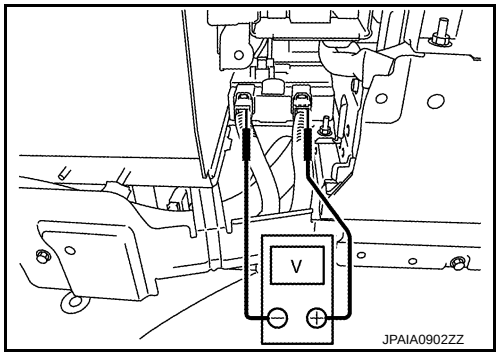
Standard : 5 V or less

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.

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 HBB-200, "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 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 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.		
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		Ground	Continuity
Connector No.	Terminal No.		
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.

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

3. Remove the Li-ion battery controller. Refer to HBB-200, "LI-ION BATTERY CONTROLLER : Disassembly and Assembly".
4. Check the resistance between the Li-ion battery controller terminals.

Li-ion battery controller		Resistance (Ω)
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.

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.
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 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.