SECTION LAN

LAN SYSTEM

CONTENTS

PRECAUTION

PRECAUTIONS

Precautions for Trouble Diagnosis

INFOID:0000000009799545

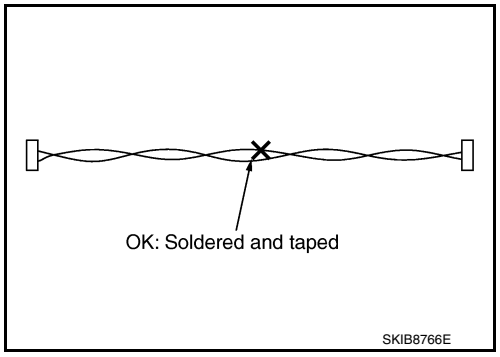
CAUTION:

- **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 battery cable from the negative terminal when checking the harness.**

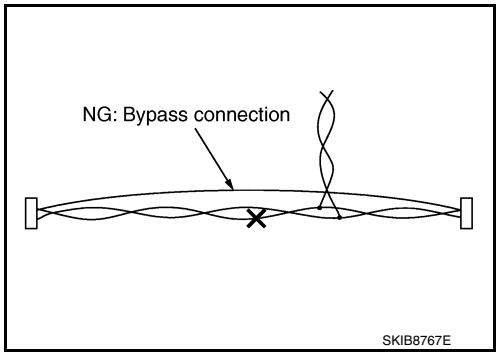
Precautions for Harness Repair

INFOID:0000000009799546

- 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

CAN COMMUNICATION SYSTEM

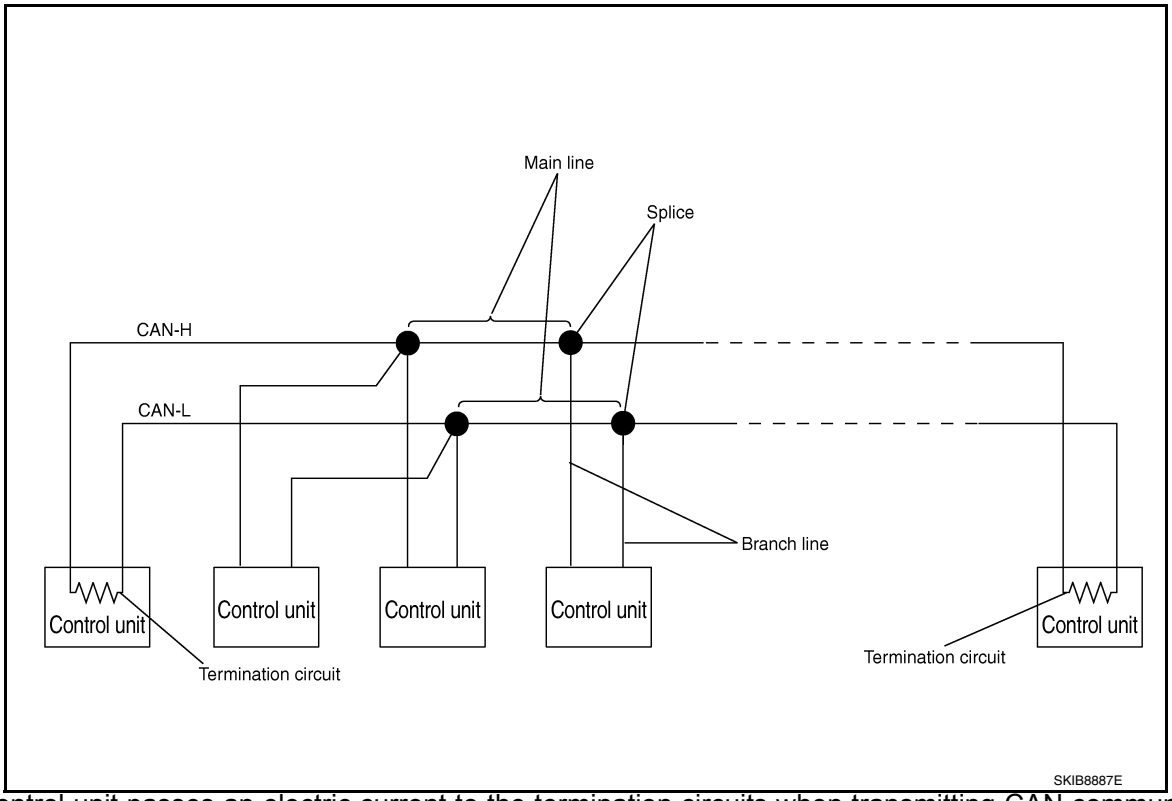
System Description

INFOID:0000000009799547

- CAN communication is a multiplex communication system. This enables the system to transmit and receive large quantities of data at high speed by connecting control units with two communication lines (CAN-H and CAN-L).
- Control units on the CAN network transmit signals using the CAN communication control circuit. They receive only necessary signals from other control units to operate various functions.
- CAN communication lines adopt twisted-pair line style (two lines twisted) for noise immunity.

System Diagram

INFOID:0000000009799548

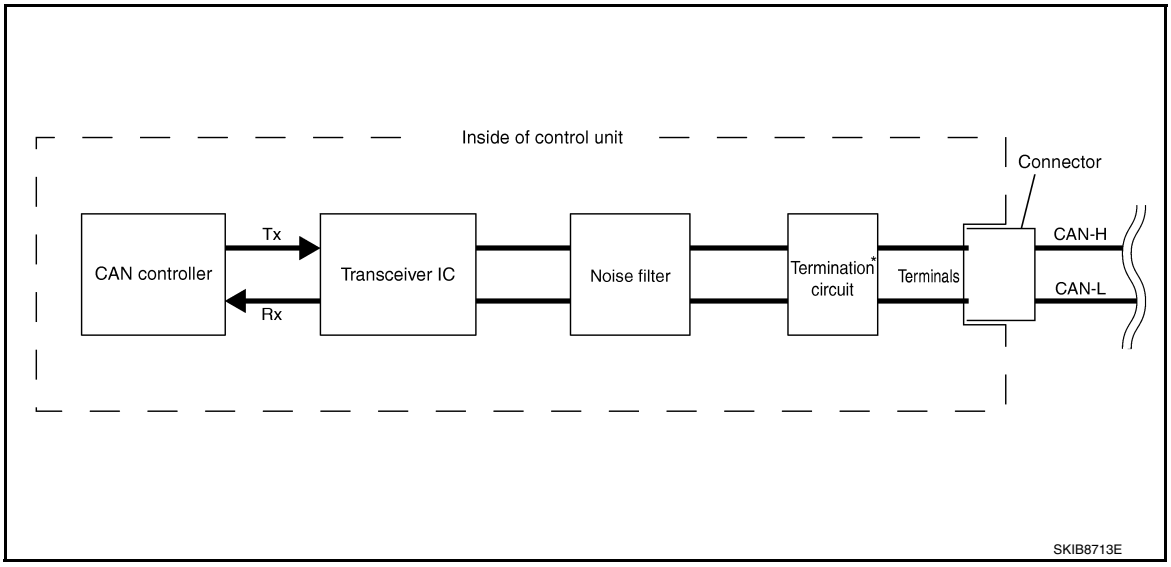


Each control unit passes an electric current to the termination circuits when transmitting CAN communication signal. The termination circuits produce an electrical potential difference between CAN-H and CAN-L. CAN communication system transmits and receives CAN communication signals by the potential difference.

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	Refer to LAN-9, "CAN Communication Control Circuit".

CAN Communication Control Circuit

INFOID:0000000009799549



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.
Noise filter	It eliminates noise of CAN communication signal.
Termination circuit* (Resistance of approx. 120 Ω)	It produces potential difference.

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

DIAG ON CAN

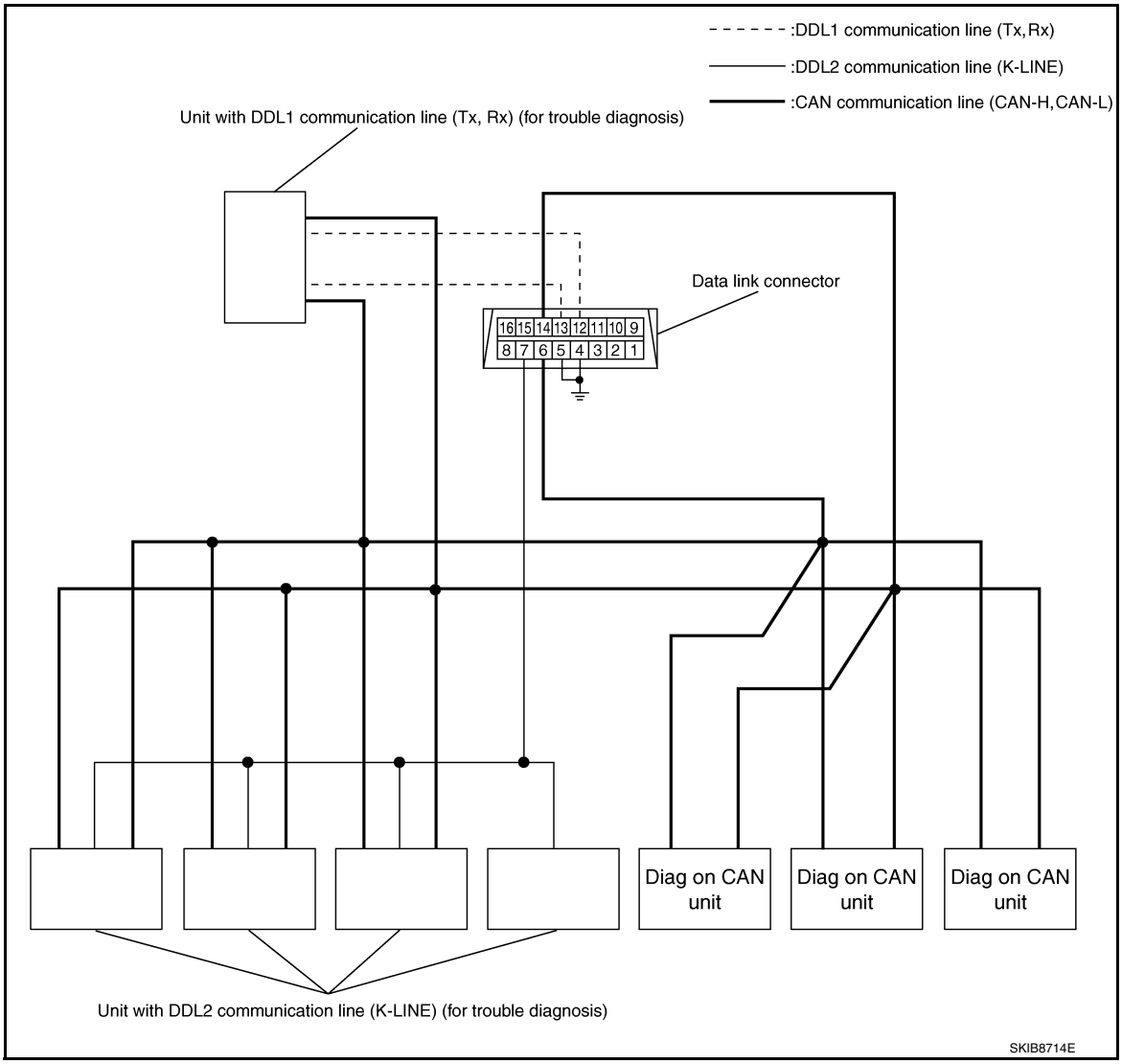
Description

INFOID:0000000009799550

"Diag on CAN" is a diagnosis using CAN communication instead of previous DDL1 and DDL2 communication lines, between control units and diagnosis unit.

System Diagram

INFOID:0000000009799551



Name	Harness	Description
DDL1	Tx Rx	It is used for trouble diagnosis. (CAN-H and CAN-L are used for controlling)
DDL2	K-LINE	It is used for trouble diagnosis. (CAN-H and CAN-L are used for controlling)
Diag on CAN	CAN-H CAN-L	It is used for trouble diagnosis and control.

TROUBLE DIAGNOSIS

Condition of Error Detection

INFOID:0000000009799552

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 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.

CAUTION:

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:0000000009799553

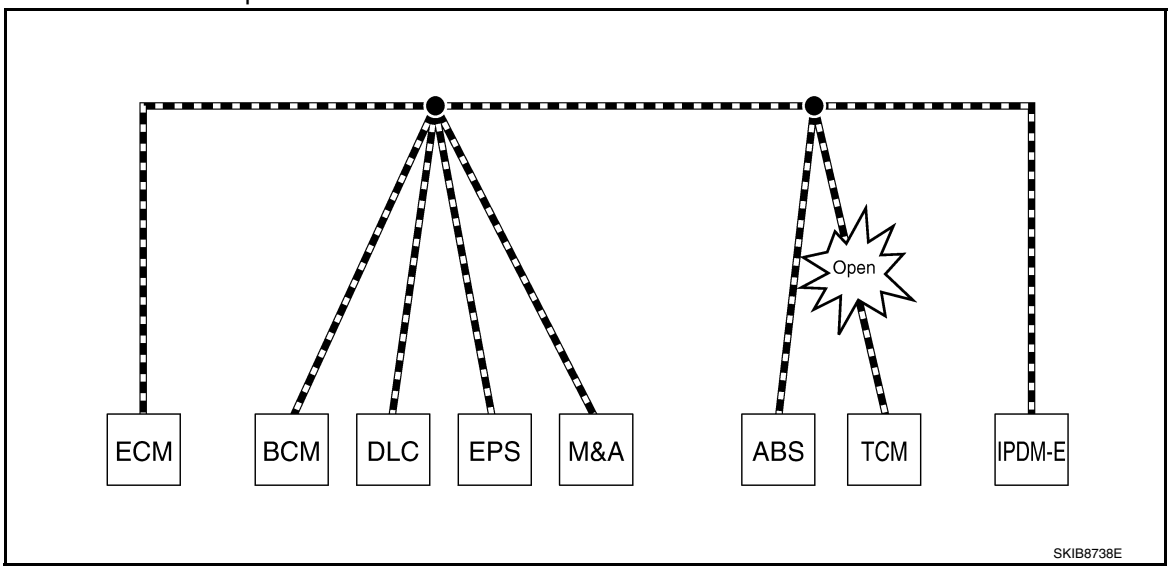
In CAN communication system, multiple units mutually transmit and receive signals. Each unit cannot transmit and receive signals if any error occurs on CAN communication line. Under this condition, multiple control units related to the root cause malfunction or go into fail-safe mode.

ERROR EXAMPLE

NOTE:

- Each vehicle differs in symptom of each unit under fail-safe mode and CAN communication line wiring.
- Refer to LAN-22, "Abbreviation List" for the unit abbreviation.

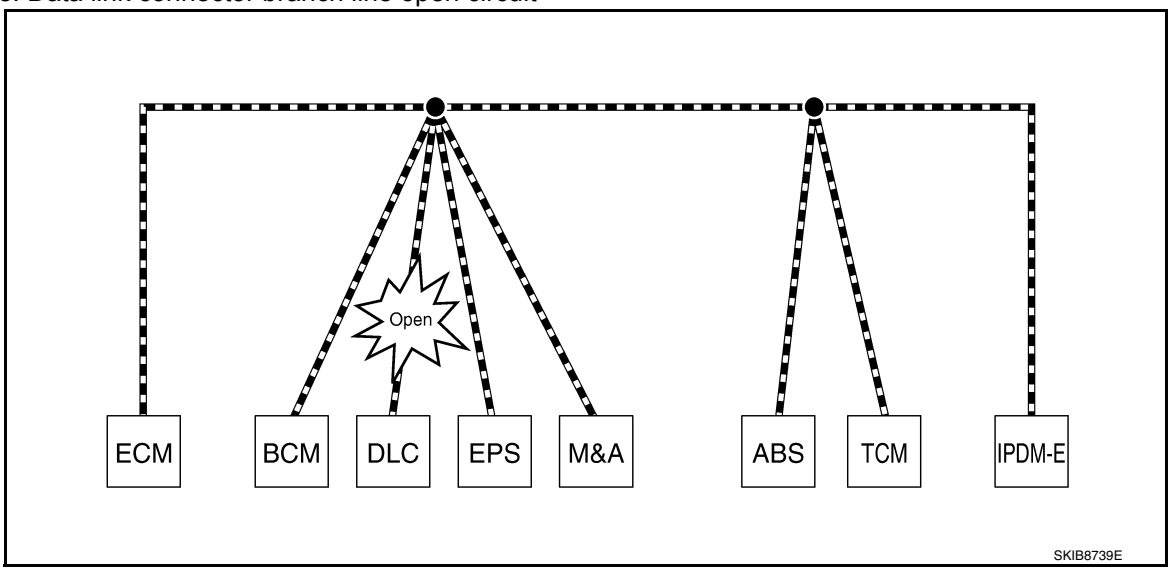
Example: TCM branch line open circuit



Unit name	Symptom
ECM	Engine torque limiting is affected, and shift harshness increases.
BCM	Reverse warning chime does not sound.

Unit name	Symptom
EPS control unit	Normal operation.
Combination meter	• Shift position indicator and OD 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.

Example: Data link connector branch line open circuit

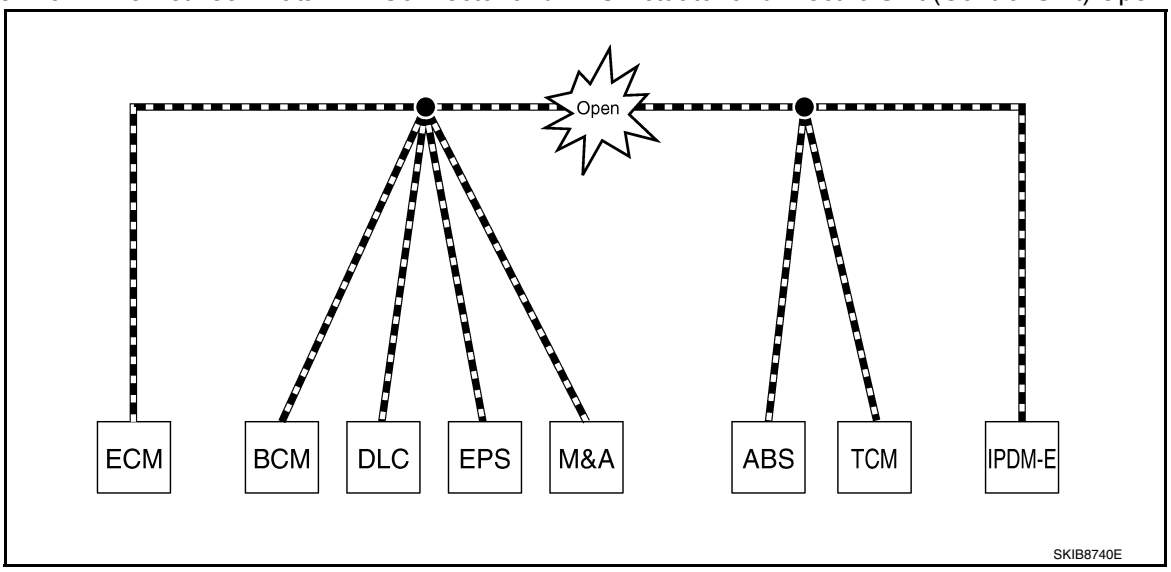


Unit name	Symptom
ECM	Normal operation.
BCM	
EPS control unit	
Combination meter	
ABS actuator and electric unit (control unit)	
TCM	
IPDM E/R	

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.
- 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.

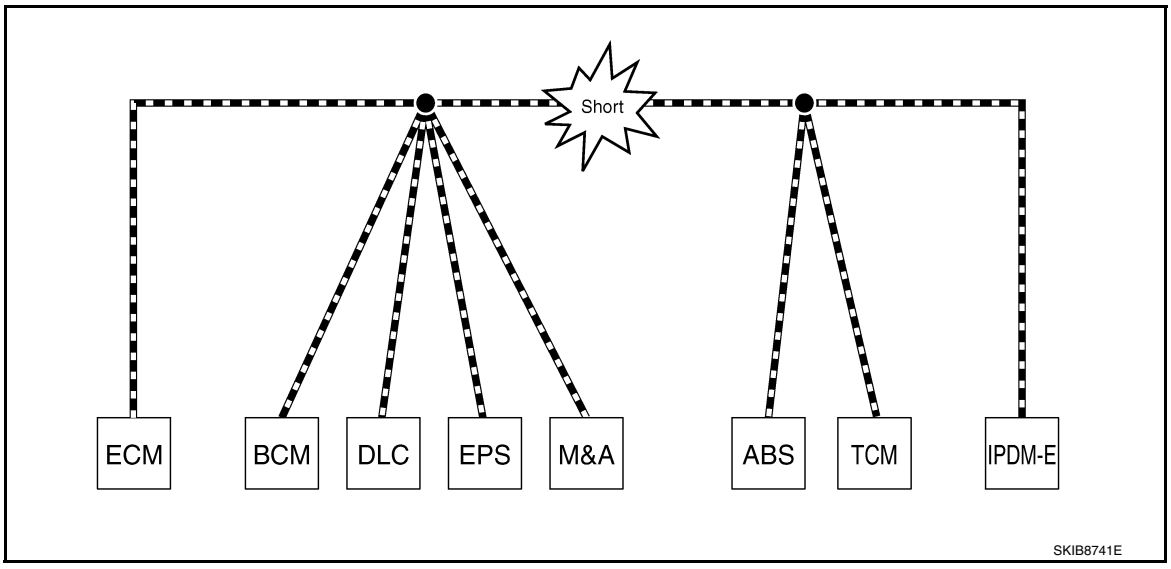
Error	Difference of symptom
Data link connector branch line open circuit	Normal operation.
CAN-H, CAN-L harness short-circuit	Most of the units which are connected to the CAN communication system enter fail-safe mode or are deactivated.

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



Unit name	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: CAN-H, CAN-L Harness Short Circuit



Unit name	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

INFOID:0000000009799554

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

INFOID:0000000009799555

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

INFOID:0000000009799556

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	-

JSMIA0964GB

Without PAST

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

MONITOR ITEM (ON-BOARD DIAGNOSIS)

NOTE:

For some models, CAN communication diagnosis result is received from the vehicle monitor.

Example: Vehicle Display

Item	Result indicated	Error counter	Description
CAN_COMM (Initial diagnosis)	OK	0	Normal at present
	NG	1 – 50	Control unit error (The number indicates how many times diagnosis has been run.)
CAN_CIRC_1 (Transmission diagnosis)	OK	0	Normal at present
	UNKWN	1 – 50	Unable to transmit for 2 seconds or more at present. (The number indicates how many times diagnosis has been run.)
CAN_CIRC_2 – 9 (Reception diagnosis of each unit)	OK	0	Normal at present
	UNKWN	1 – 50	Unable to transmit for 2 seconds or more at present. (The number indicates how many times diagnosis has been run.)
			Diagnosis not performed.
			No control unit for receiving signals. (No applicable optional parts)

How to Use CAN Communication Signal Chart

INFOID:0000000009799557

The CAN communication signal chart lists the signals needed for trouble diagnosis. It is useful for detecting the root cause by finding a signal related to the symptom, and by checking transmission and reception unit.

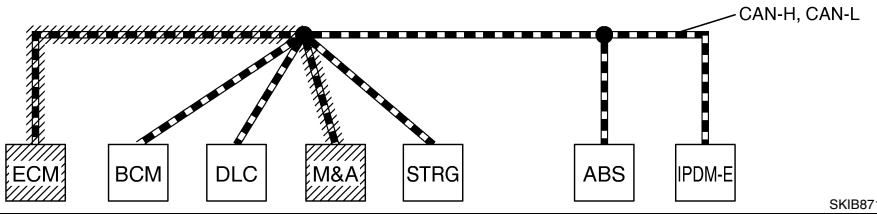
Example: Tachometer does not move even though the engine rotates.

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.

It indicates that an error occurs between ECM and M&A (Shaded area).

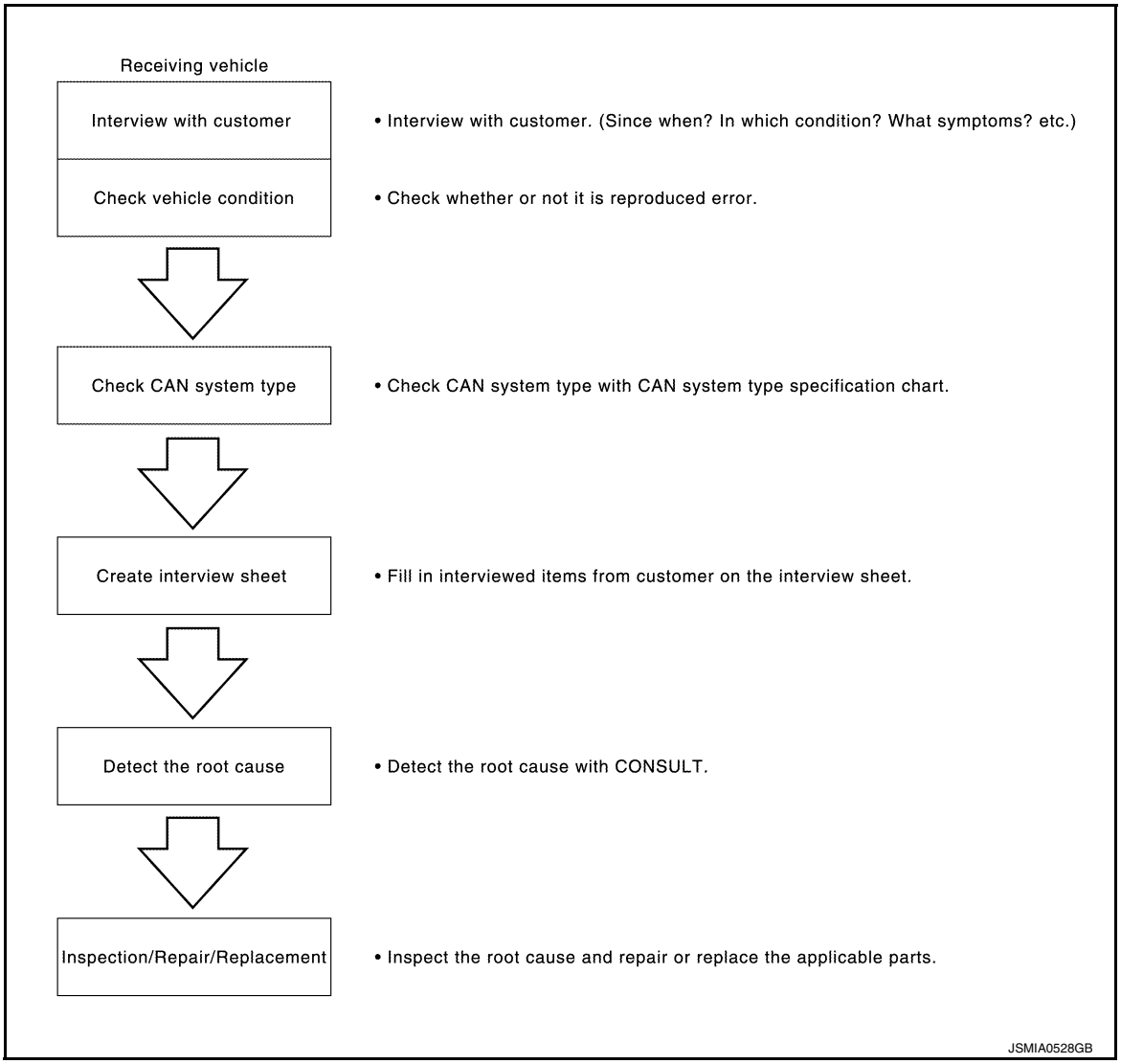


BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Trouble Diagnosis Flow Chart

INFOID:0000000009799558



Trouble Diagnosis Procedure

INFOID:0000000009799559

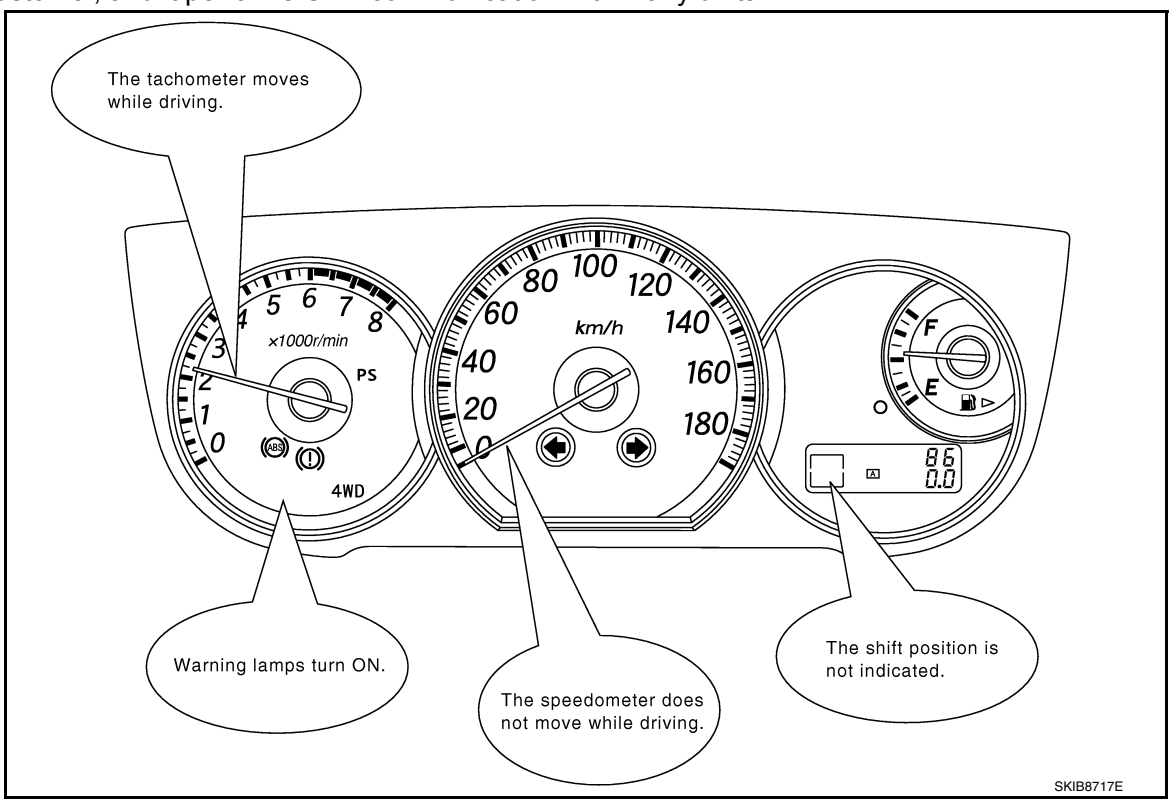
INTERVIEW WITH CUSTOMER

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

NOTE:
- 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 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.

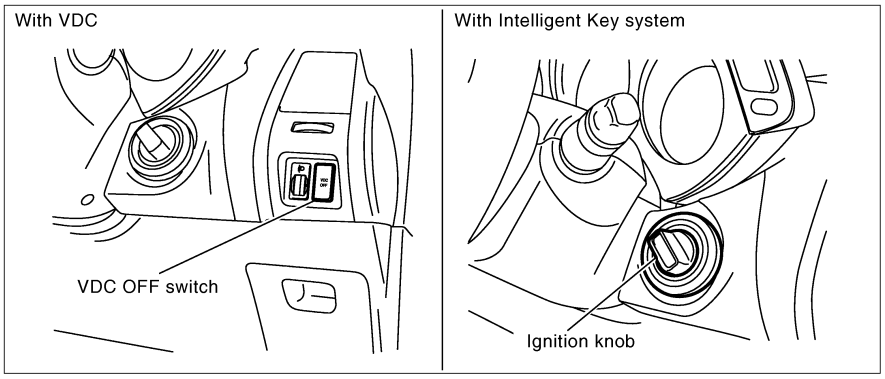
Example:
Vehicle is equipped as follows: Wagon, AWD, VQ35DE, CVT, VDC, and Intelligent Key system. (oval) shows an example of CAN system type.)

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

Body type	Wagon						Check the vehicle equipment with the vehicle identification number plate.
Axle	2WD				AWD		
Engine	QR25DE		VQ35DE				
Transmission	A/T		CVT				
Brake control	ABS				VDC		Check the vehicle equipment.
Intelligent Key system		×		×		×	
CAN system type	1	2	3	4	5	6	The number indicates the CAN system type of the vehicle.
CAN communication signal chart	XX-XX. "TYPE 1/TYPE 2"		XX-XX. "TYPE 3/TYPE 4"		XX-XX. "TYPE 5/TYPE 6"		

×: 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.

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

JSMIA0017GB

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"	YY.YY "SPECIFICATION CHART B"	XX.XX "SPECIFICATION CHART C"

×: Applicable

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

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 signal chart	XX.XX "TYPE 9/TYPE 10/TYPE 11/TYPE 12/TYPE 13/TYPE 14/TYPE 15/TYPE 16/TYPE 17/TYPE 18/TYPE 19/TYPE 20"											

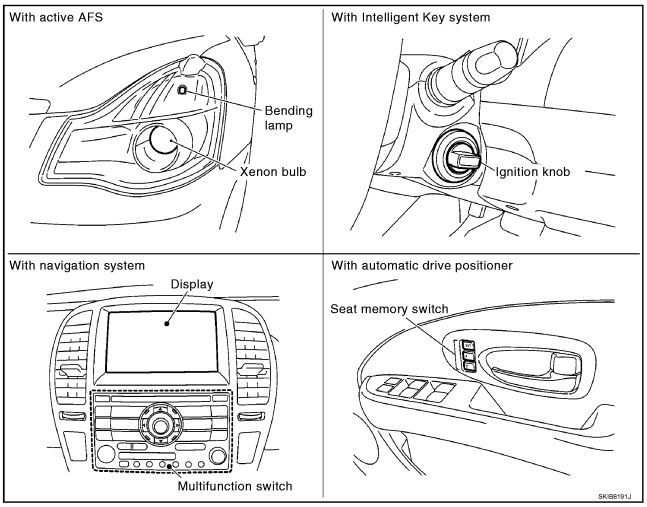
×: Applicable

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

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.

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

JSMIA0018GB

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: BDRARGZ397EDA-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.

JSMIA0019GB

DETECT THE ROOT CAUSE

CAN diagnosis function of CONSULT detects the root cause.

HOW TO USE THIS MANUAL

HOW TO USE THIS SECTION

Caution

INFOID:0000000009799560

- This section describes information peculiar to a vehicle and inspection procedures.
- For trouble diagnosis procedure, refer to LAN-17, "Trouble Diagnosis Procedure".

Abbreviation List

INFOID:0000000009799561

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

Abbreviation	Unit name
4WD	AWD control unit
A-BAG	Air bag diagnosis sensor unit
ABS	ABS actuator and electric unit (control unit)
AV	AV control unit
AVM	Around view monitor control unit
BCM	BCM
CCM	Chassis control module
DLC	Data link connector
ECM	ECM
EPS	EPS control unit
HVAC	A/C auto amp. (with auto A/C)
	Front air control (without auto A/C)
ICC	Distance sensor
IPDM-E	IPDM E/R
M&A	Combination meter
PWBD	Automatic back door control module
STRG	Steering angle sensor
TCM	TCM

PRECAUTION

PRECAUTIONS

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

INFOID:0000000010269354

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. Information necessary to service the system safely is included in the SR and SB section of this Service Manual.

WARNING:

- **To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which 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 the SR section.**
- **Do not 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:

- **When working near the Airbag Diagnosis Sensor Unit or other Airbag System sensors with the Ignition ON or engine running, DO NOT 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 battery and wait at least three minutes before performing any service.**

Precautions for Trouble Diagnosis

INFOID:0000000009799563

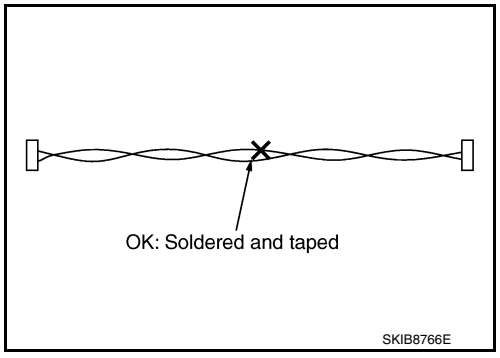
CAUTION:

- **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 battery cable from the negative terminal when checking the harness.**

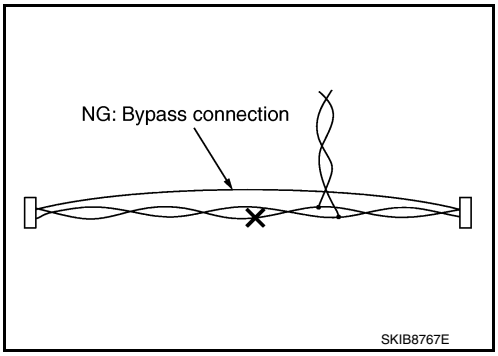
Precautions for Harness Repair

INFOID:0000000009799564

- 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.



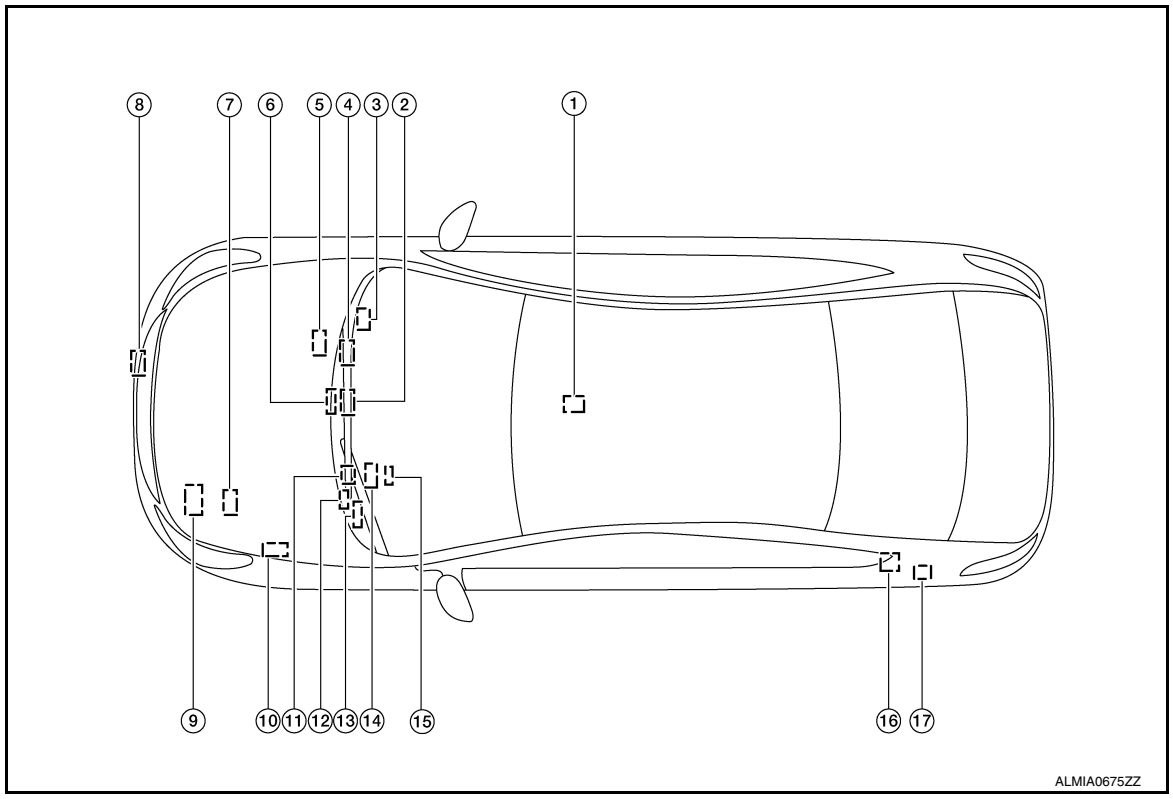
- Replace the applicable harness as an assembly if error is detected on the shield lines of CAN communication line.

SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

INFOID:0000000009799571

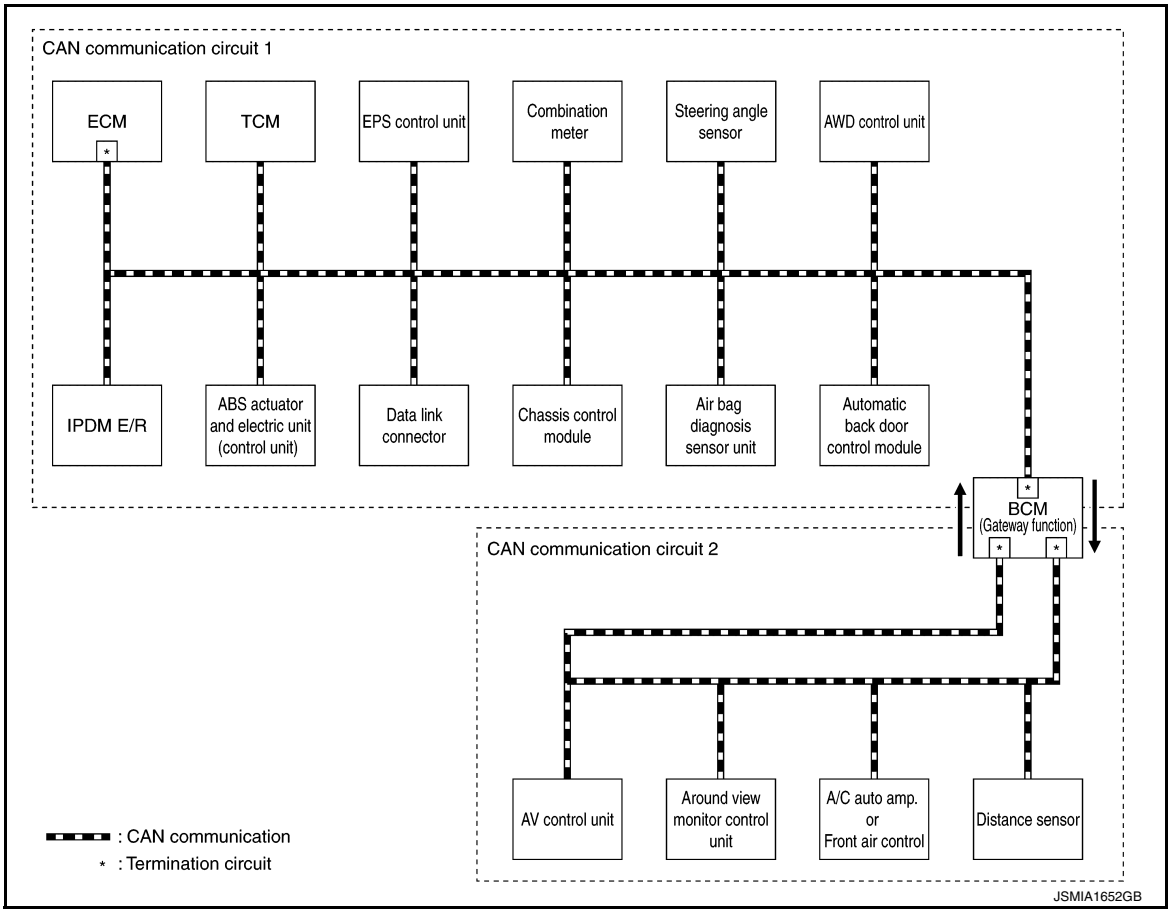


1. Air bag diagnosis sensor unit
2. AV control unit
3. Around view monitor control unit
4. Chassis control module
5. ABS actuator and electric unit (control unit)
6. • A/C auto amp. (With auto A/C)
   • Front air control (Without auto A/C)
7. TCM
8. Distance sensor
9. ECM
10. IPDM E/R
11. EPS control unit
12. Data link connector
13. BCM
14. Combination meter
15. Steering angle sensor
16. AWD control unit
17. Automatic back door control module

SYSTEM
CAN COMMUNICATION SYSTEM
CAN COMMUNICATION SYSTEM : System Description

INFOID:0000000010269365

SYSTEM DIAGRAM



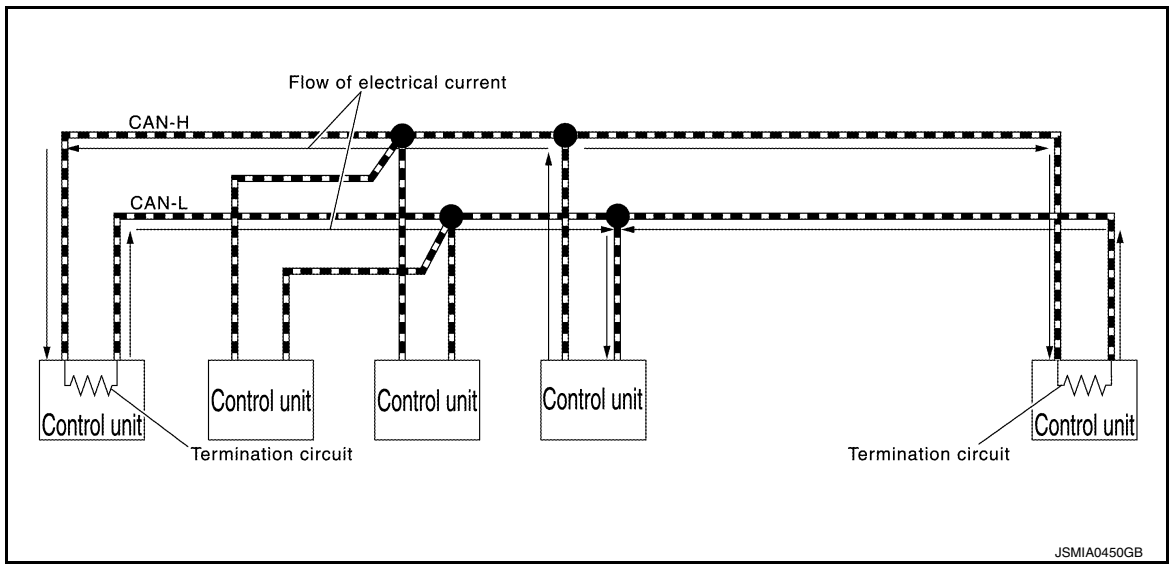
DESCRIPTION

- 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.

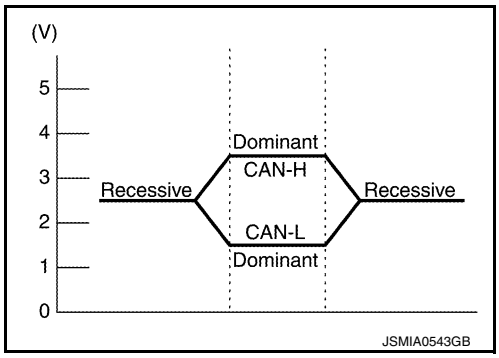
CAN communication circuit	Gateway control unit	Reference
CAN communication circuit 1 ⇔ CAN communication circuit 2	BCM	LAN-74, "System Description"

CAN Communication Signal Generation

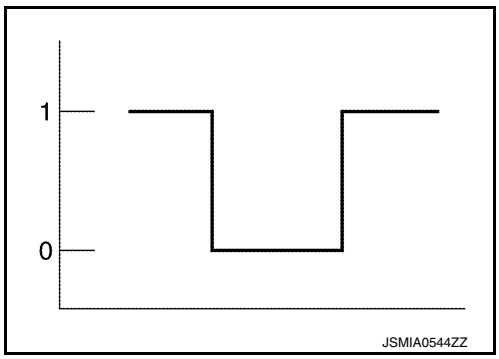
- Termination circuits (resistors) are connected across the CAN communication system. When transmitting a CAN communication signal, each control unit passes a current to the CAN-H line and the current returns to the CAN-L line.



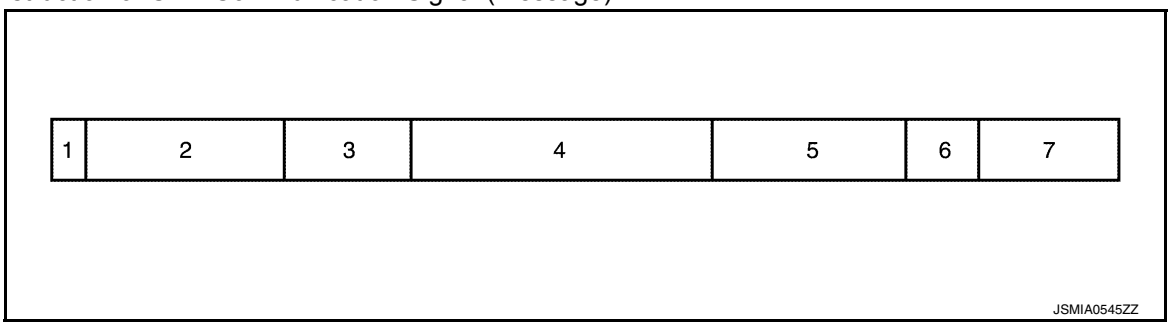
- The current flows separately into the termination circuits connected across the CAN communication system and the termination circuits drop voltage to generate a potential difference between the CAN-H line and the CAN-L line.
  NOTE:
  A signal with no current passage is called “Recessive” and one with current passage is called “Dominant”.



- The system produces digital signals for signal communications, by using the potential difference.



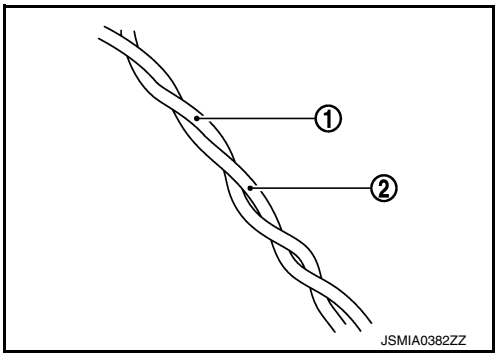
The Construction of CAN Communication Signal (Message)



No.	Message name	Description
1	Start of frame (1 bit)	Start of message.
2	Arbitration of field (11 bit)	Priorities of message-sending are shown when there is a possibility that multiple messages are sent at the same time.
3	Control field (6 bit)	Signal quantity in data field is shown.
4	Data field (0-64 bit)	Actual signal is shown.
5	CRC field (16 bit)	• The transmitting control unit calculates sending data in advance and writes the calculated value in a message. • The receiving control unit calculates received data and judges that the data reception is normal when the calculated value is the same as the value written in the sent data.
6	ACK field (2 bit)	The completion of normal reception is sent to the transmitting unit.
7	End of frame (7 bit)	End of message.

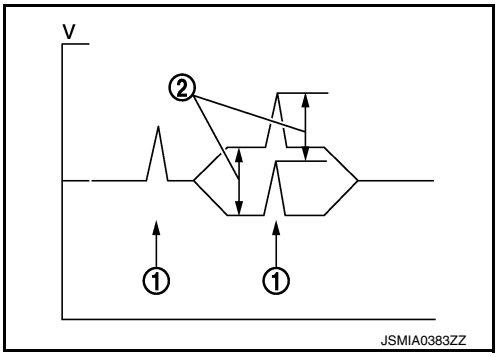
CAN Communication Line

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.

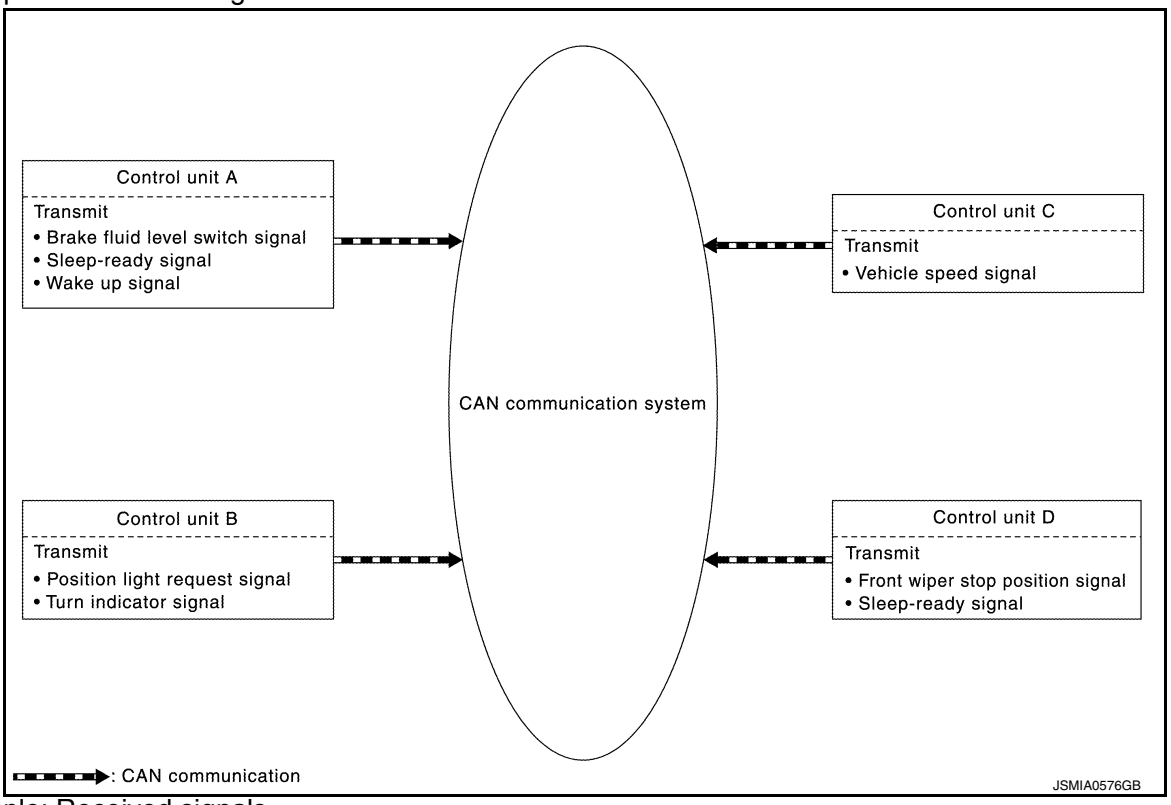
Since the CAN-H line and the CAN-L line are always adjacent to each other, the same degree of noise occurs, respectively, when a noise ① occurs. Although the noise changes the voltage, the potential difference ② between the CAN-H line and the CAN-L line is insensitive to noise. Therefore, noise-resistant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



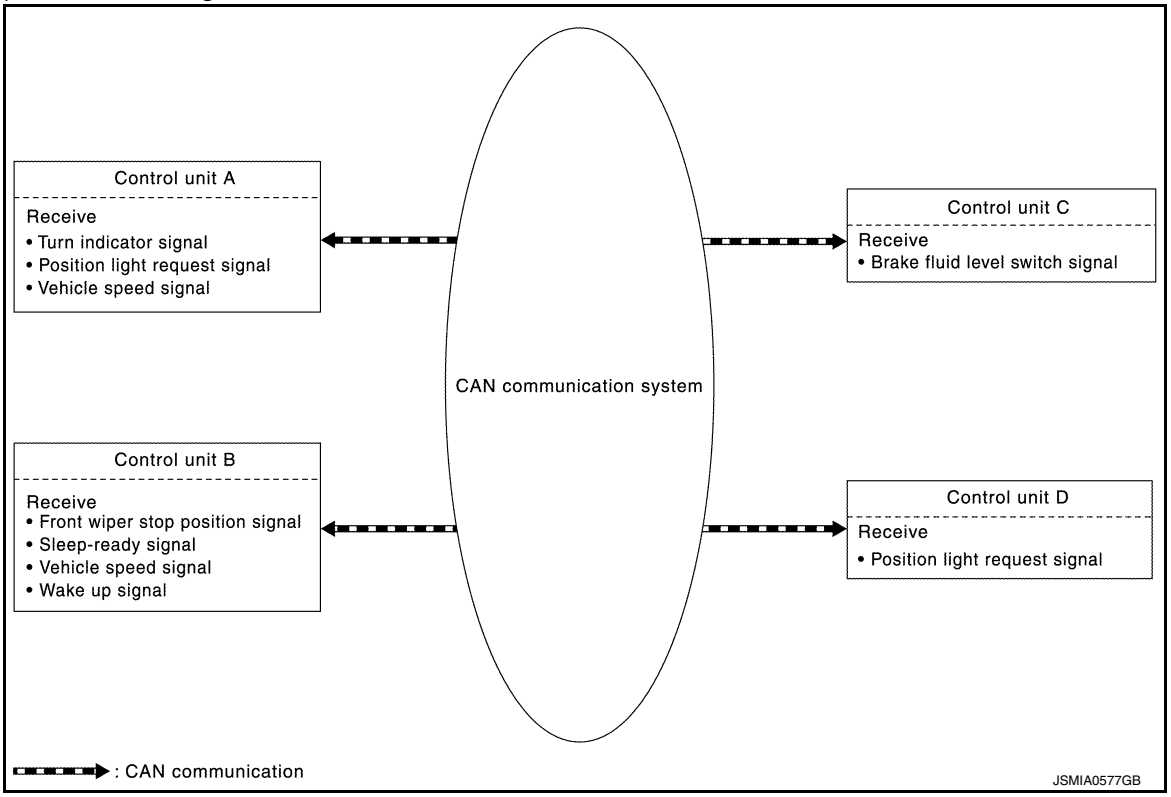
CAN Signal Communications

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

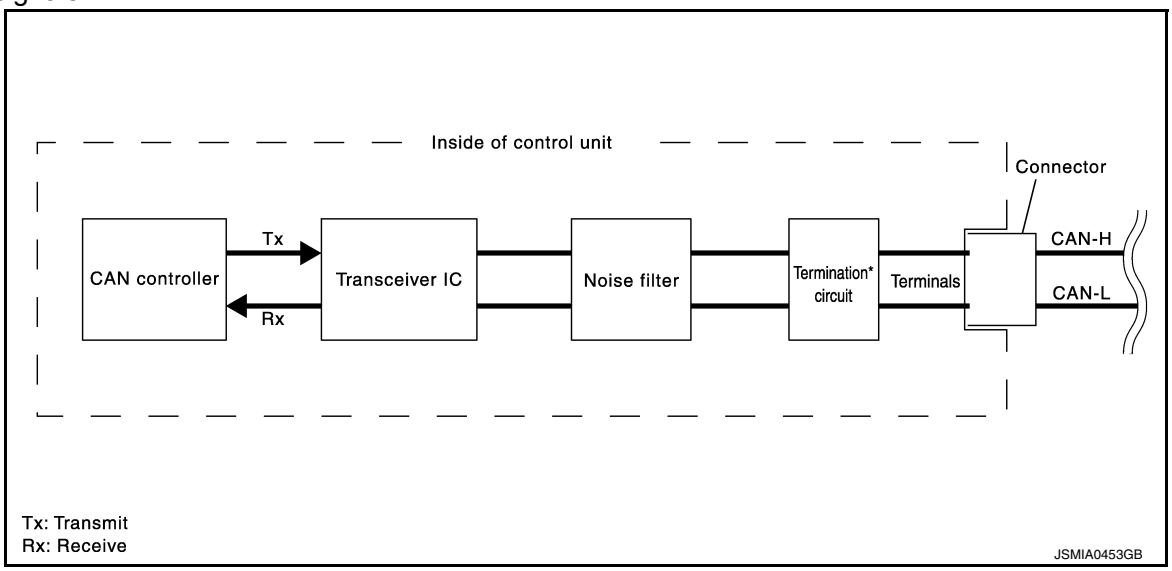


NOTE:
The above signal names and signal communications are provided for reference purposes. For CAN communications signals of this vehicle, refer to LAN-32, "CAN COMMUNICATION SYSTEM : CAN Communication Signal Chart".

CAN COMMUNICATION SYSTEM : CAN Communication Control Circuit

INFOID:0000000010269366

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.
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:0000000009799569

Determine CAN system type from the following specification chart.

NOTE:

Refer to LAN-17, "Trouble Diagnosis Procedure" for how to use CAN system specification chart.

Body type	Wagon							
Axle	2WD				AWD			
Engine	QR25DE							
Transmission	CVT							
Brake control	VDC							
Around view monitor system			×	×			×	×
Automatic back door system		×	×	×		×	×	×
Forward Collision Warning				×				×
CAN system type	1	2	3	4	5	6	7	8
CAN communication unit								
ECM	×	×	×	×	×	×	×	×
ABS actuator and electric unit (control unit)	×	×	×	×	×	×	×	×
IPDM E/R	×	×	×	×	×	×	×	×
TCM	×	×	×	×	×	×	×	×
Data link connector	×	×	×	×	×	×	×	×

Body type	Wagon							
Axle	2WD				AWD			
Engine	QR25DE							
Transmission	CVT							
Brake control	VDC							
Around view monitor system			×	×			×	×
Automatic back door system		×	×	×		×	×	×
Forward Collision Warning				×				×
CAN system type	1	2	3	4	5	6	7	8
CAN communication unit								
Combination meter	×	×	×	×	×	×	×	×
Air bag diagnosis sensor unit	×	×	×	×	×	×	×	×
Chassis control module	×	×	×	×	×	×	×	×
EPS control unit	×	×	×	×	×	×	×	×
Steering angle sensor	×	×	×	×	×	×	×	×
AWD control unit					×	×	×	×
Automatic back door control module		×	×	×		×	×	×
BCM	×	×	×	×	×	×	×	×
AV control unit			×	×			×	×
Around view monitor control unit			×	×			×	×
A/C auto amp.*1 or Front air control*2	×	×	×	×	×	×	×	×
Distance sensor				×				×

×: Applicable

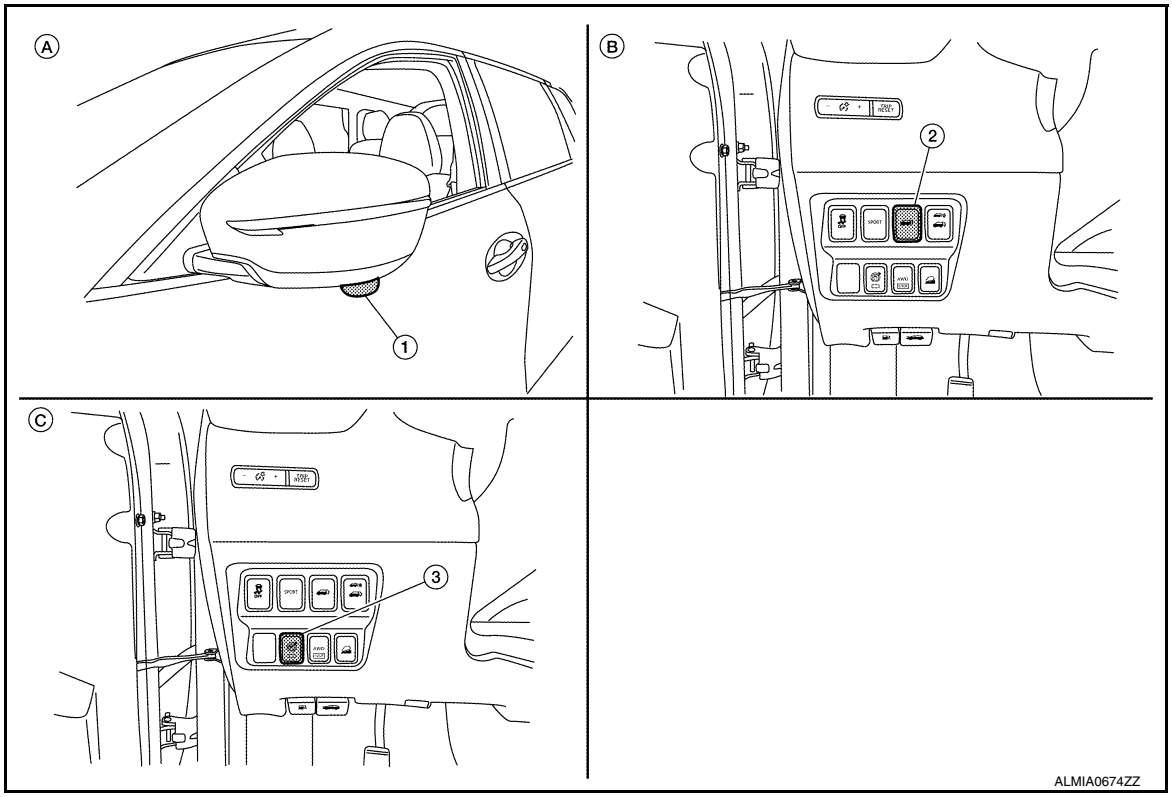
*1: With auto A/C

*2: Without auto A/C

VEHICLE EQUIPMENT IDENTIFICATION INFORMATION

NOTE:

Check CAN system type from the vehicle shape and equipment.



1. Door mirror LH side camera
2. Automatic back door main switch
3. Warning systems switch

A. With around view monitor system
B. With automatic back door system
C. With forward collision warning

CAN COMMUNICATION SYSTEM : CAN Communication Signal Chart

INFOID:0000000009799570

Refer to LAN-16, "How to Use CAN Communication Signal Chart" for how to use CAN communication signal chart.

NOTE:

Refer to LAN-22, "Abbreviation List" for the abbreviations of the connecting units.

T: Transmit R: Receive

Signal name/Connecting unit	ECM	ABS	IPDM-E	TCM	M&A	A-BAG	CCM	EPS	STRG	4WD	PWBD	BCM	AV	AVM	HVAC	ICC
A/C compressor request signal	T		R													
Accelerator pedal position signal	T	R		R			R			R				R		R
ASCD status signal	T				R											
Closed throttle position signal	T			R												
Cooling fan speed request signal	T		R												R	
Engine and CVT integrated control signal	T			R												
	R			T												
Engine coolant temperature signal	T			R	R									R	R	
Engine speed signal	T	R		R	R		R			R					R	R
Engine status signal	T				R			R				R	R	R		
Fuel consumption monitor signal	T				R								R			
Fuel filler cap warning display signal	T				R											
Malfunctioning indicator lamp signal	T				R											
	R			T												
SPORT mode indicator lamp signal	T				R											

Signal name/Connecting unit	ECM	ABS	IPDM-E	TCM	M&A	A-BAG	CCM	EPS	STRG	4WD	PWBD	BCM	AV	AVM	HVAC	ICC
Oil pressure switch signal	T				R											
ABS malfunction signal		T		R												
ABS operation signal		T		R												
ABS warning lamp signal		T			R											
G sensor signal		T		R			R									
TCS operation signal		T			R											
VDC operation signal		T			R											
VDC warning lamp signal		T			R											
VDC OFF indicator lamp signal		T			R											
A/C compressor feedback signal	R		T												R	
Front wiper stop position signal			T									R				
High beam status signal	R		T													
Hood switch signal			T									R				
Ignition relay status signal			T									R				
Low beam status signal	R		T													
Push-button ignition switch status			T									R				
Starter relay status signal			T									R				
Input shaft revolution signal	R			T												
OD OFF indicator signal				T	R											
Output shaft revolution signal	R	R		T						R						R
Shift position signal		R	R	T	R		R			R		R		R		R
SPORT mode signal	R			T												
Brake fluid level switch signal		R			T											
Fuel filler cap warning reset signal	R				T											
Overdrive control switch signal				R	T											
Parking brake switch signal		R			T					R	R	R				R
Seat belt buckle switch signal					T							R				
Sleep-ready signal					T							R				
			T									R				
SPORT mode switch signal				R	T											
Vehicle speed signal	R		R		T	R		R			R	R	R			
	R	T		R	R		R	R			R	R		R		R
EPS operation signal	R							T								
EPS warning lamp signal					R			T								
Steering angle sensor signal		R					R		T				R	R		R
AWD warning lamp signal					R					T						
Mode lamp signal					R					T						
A/C switch signal	R											T				
Blower fan motor switch signal	R											T				
Buzzer output signal					R							T				
					R									T		
					R											T
Auto accessory status					R							T				

Signal name/Connecting unit	ECM	ABS	IPDM-E	TCM	M&A	A-BAG	CCM	EPS	STRG	4WD	PWBD	BCM	AV	AVM	HVAC	ICC
Back door lock status											R	T				
Daytime running light request signal			R		R							T				
Door switch signal					R							T		R		
Front fog light request signal			R		R							T				
Front wiper request signal			R									T		R		R
High beam request signal			R		R							T				
Horn request signal			R									T				
Ignition switch signal			R								R	T				
Key warning signal					R							T				
Low beam request signal			R		R							T				
Low tire pressure warning lamp signal					R							T				
Meter ring illumination request					R							T				
Position light request signal			R		R							T				
Sleep wake up signal			R		R						R	T				
Turn indicator signal					R							T		R		
Meter display signal					R									T		
					R							T				
					R		T									
Rear window defogger control signal	R											R			T	

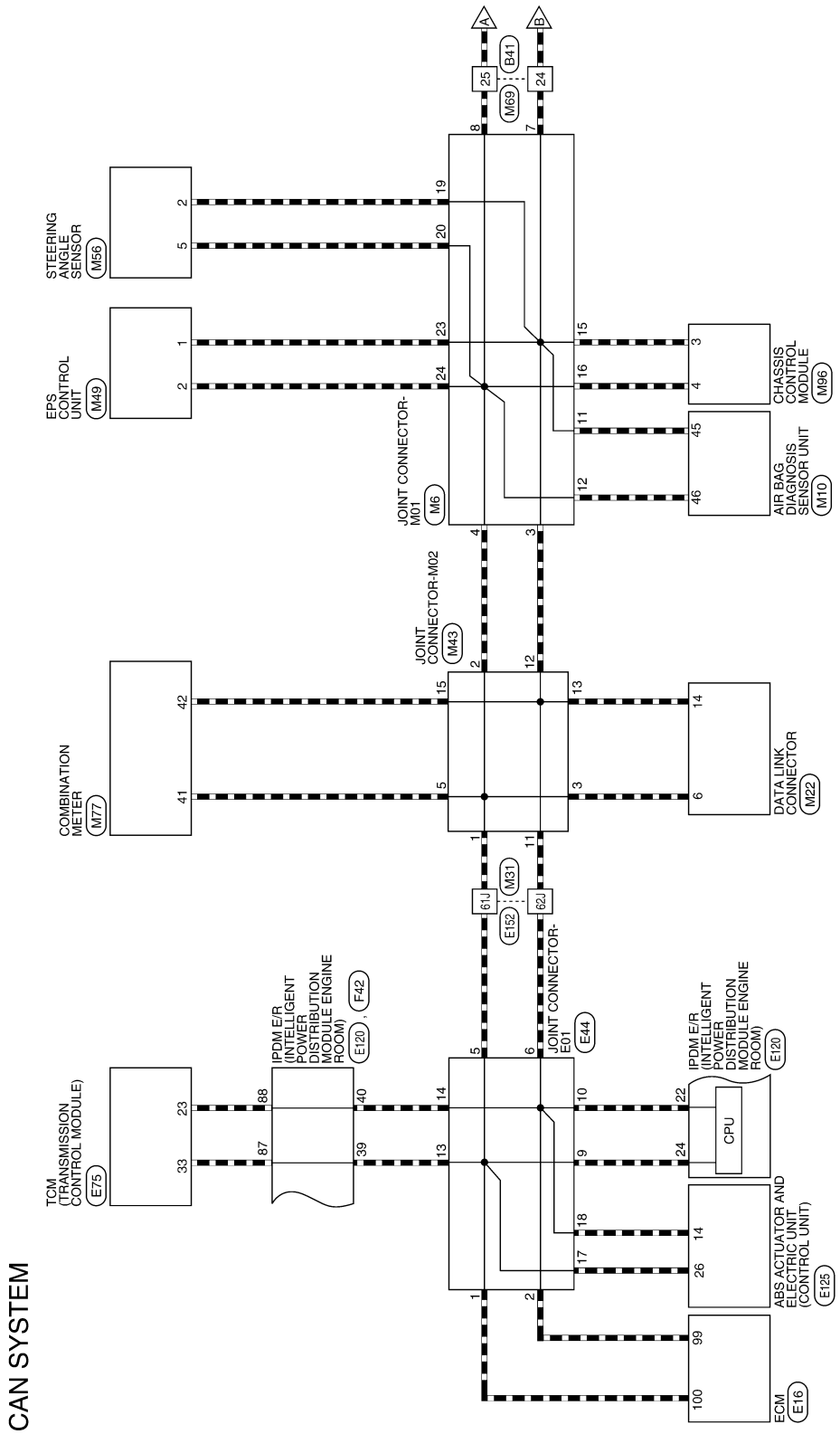
NOTE:
CAN data of the air bag diagnosis sensor unit is not used by usual service work, thus it is omitted.

WIRING DIAGRAM

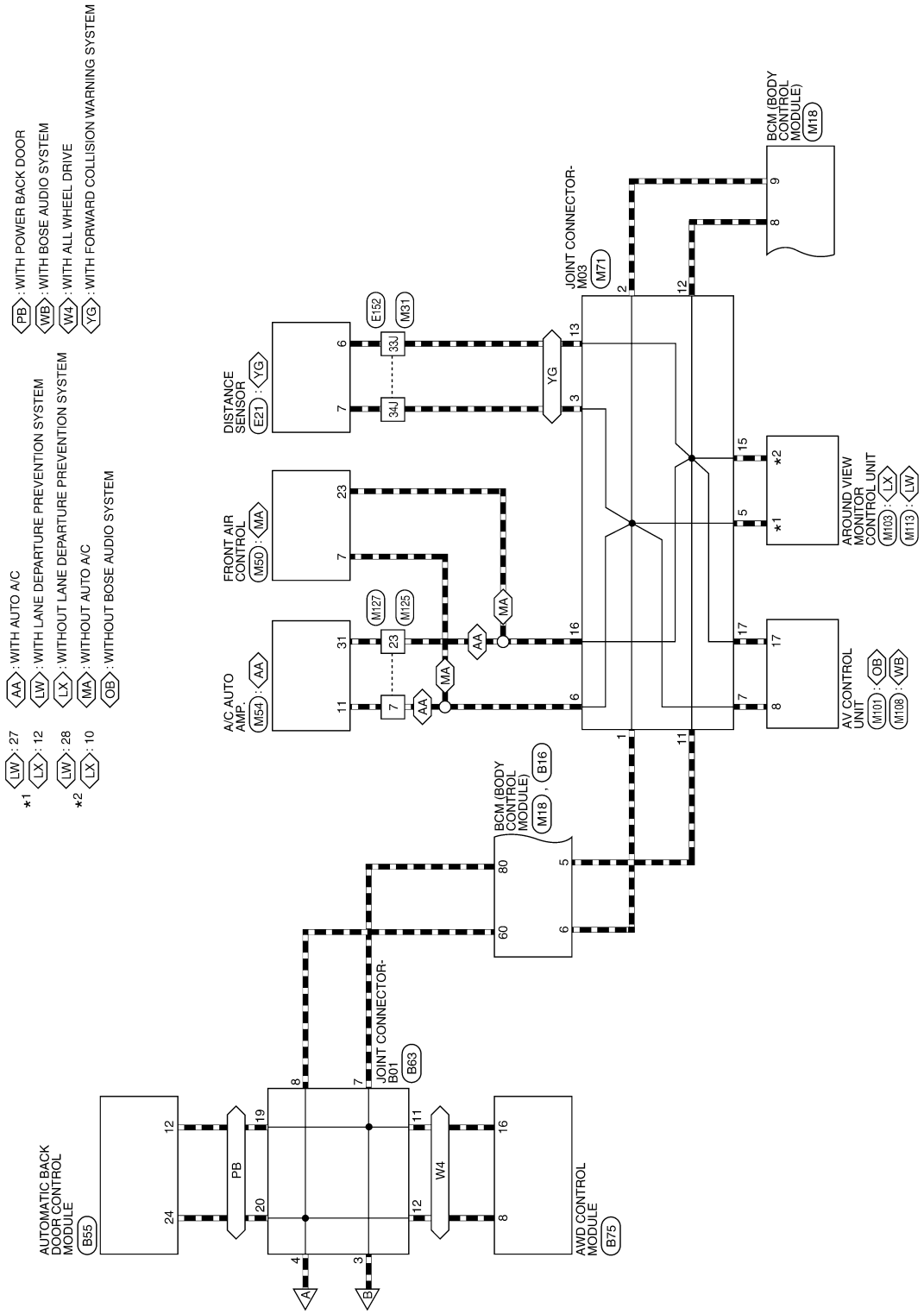
CAN SYSTEM

Wiring Diagram - CAN SYSTEM -

INFOID:0000000009799572



AAMWA1011GB



AAMWA1012GB

CAN SYSTEM CONNECTORS

Connector No.	M6
Connector Name	JOINT CONNECTOR-M01
Connector Color	GRAY

H.S.

4	3	2	1
8	7	6	5
12	11	10	9
16	15	14	13
20	19	18	17
24	23	22	21

Terminal No.	Color of Wire	Signal Name
3	P	–
4	L	–
7	P	–
8	L	–
11	P	–
12	L	–

Connector No.	M10
Connector Name	AIR BAG DIAGNOSIS SENSOR UNIT
Connector Color	YELLOW

H.S.

23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50

Terminal No.	Color of Wire	Signal Name
45	P	CAN-L
46	L	CAN-H

Terminal No.	Color of Wire	Signal Name
15	P	–
16	L	–
19	P	–
20	L	–
23	P	–
24	L	–

Connector No.	M22
Connector Name	DATA LINK CONNECTOR
Connector Color	WHITE

H.S.

9	10	11	12	13	14	15	16
1	2	3	4	5	6	7	8

Terminal No.	Color of Wire	Signal Name
6	L	–
14	P	–

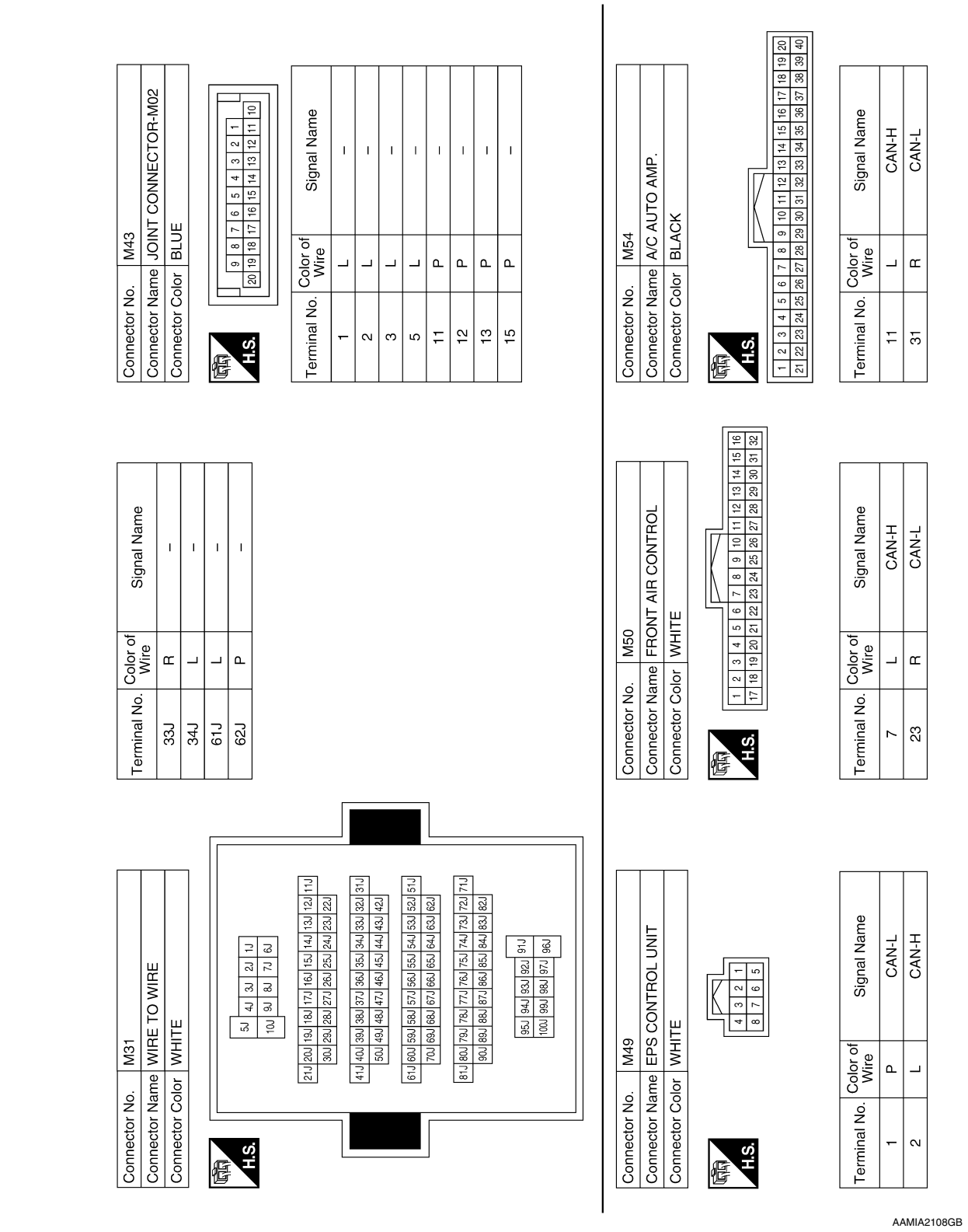
Connector No.	M18
Connector Name	BCM (BODY CONTROL MODULE)
Connector Color	GRAY

H.S.

20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21

Terminal No.	Color of Wire	Signal Name
5	R	CAN-L
6	L	CAN-H
8	L	CAN-H
9	R	CAN-L

AAMIA2107GB



AAMIA2108GB

Connector No.	M56
Connector Name	STEERING ANGLE SENSOR
Connector Color	GRAY

H.S.

1	2	3	4
5	6	7	8

Terminal No.	Color of Wire	Signal Name
2	P	–
5	L	–

Connector No.	M69
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17

Terminal No.	Color of Wire	Signal Name
24	P	–
25	L	–

Connector No.	M71
Connector Name	JOINT CONNECTOR-M03
Connector Color	BLUE

H.S.

9	8	7	6	5	4	3	2	1	
20	19	18	17	16	15	14	13	12	11	10

Terminal No.	Color of Wire	Signal Name
1	L	–
2	L	–
3	L	–
5	L	–
6	L	–
7	L	–
11	R	–
12	R	–
13	R	–
15	R	–
16	R	–
17	R	–

Connector No.	M77
Connector Name	COMBINATION METER
Connector Color	WHITE

H.S.

41	42	43	44	45	46
47	48	49	50	51	52

Terminal No.	Color of Wire	Signal Name
41	L	CAN-H
42	P	CAN-L

Connector No.	M96
Connector Name	CHASSIS CONTROL UNIT
Connector Color	WHITE

H.S.

1	2	3	4	5	6	7	8	9	10	11	12
13	14	15	16	17	18	19	20	21	22	23	24

Terminal No.	Color of Wire	Signal Name
3	P	CAN-L
4	L	CAN-H

Connector No.	M101
Connector Name	AV CONTROL UNIT (WITHOUT BOSE AUDIO SYSTEM)
Connector Color	WHITE

H.S.

19	1	2	3	4	5	6	7	8	9	20
	10	11	12	13	14	15	16	17	18	

Terminal No.	Color of Wire	Signal Name
8	L	CAN-H
17	R	CAN-L

AAMIA2109GB

Connector No.	M103
Connector Name	AROUND VIEW MONITOR CONTROL UNIT (WITHOUT DRIVER ASSISTANCE SYSTEM)
Connector Color	WHITE

H.S.

2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
1	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31	33	35	37	39

Terminal No.	Color of Wire	Signal Name
10	R	CAN-L
12	L	CAN-H

Connector No.	M108
Connector Name	AV CONTROL UNIT (WITH BOSE AUDIO SYSTEM)
Connector Color	WHITE

H.S.

1	2	3	4	5	6	7	8	9	20
19	10	11	12	13	14	15	16	17	18

Terminal No.	Color of Wire	Signal Name
8	L	CAN-H
17	R	CAN-L

Connector No.	M113
Connector Name	AROUND VIEW MONITOR CONTROL UNIT (WITH DRIVER ASSISTANCE SYSTEM)
Connector Color	WHITE

H.S.

2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
1	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31	33	35	37	39

Terminal No.	Color of Wire	Signal Name
27	L	CAN-H
28	R	CAN-L

Connector No.	M125
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32

Terminal No.	Color of Wire	Signal Name
7	L	–
23	R	–

Connector No.	M127
Connector Name	WIRE TO WIRE
Connector Color	WHITE

H.S.

16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17

Terminal No.	Color of Wire	Signal Name
7	L	–
23	R	–

Connector No.	E16
Connector Name	ECM
Connector Color	BLACK

H.S.

97	101	105	109	113	117	121	125
98	102	106	110	114	118	122	126
99	103	107	111	115	119	123	127
100	104	108	112	116	120	124	128

Terminal No.	Color of Wire	Signal Name
99	P	CAN-L
100	L	CAN-H

AAMIA2110GB

Connector No.	E21
Connector Name	DISTANCE SENSOR
Connector Color	BLACK

H.S.

Terminal No.	Color of Wire	Signal Name
6	R	CAN-L
7	L	CAN-H

Connector No.	E44
Connector Name	JOINT CONNECTOR-E01
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1	L	–
2	P	–
5	L	–
6	P	–
9	L	–

Terminal No.	Color of Wire	Signal Name
10	P	–
13	L	–
14	P	–
17	L	–
18	P	–

Connector No.	E120
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	GRAY

H.S.

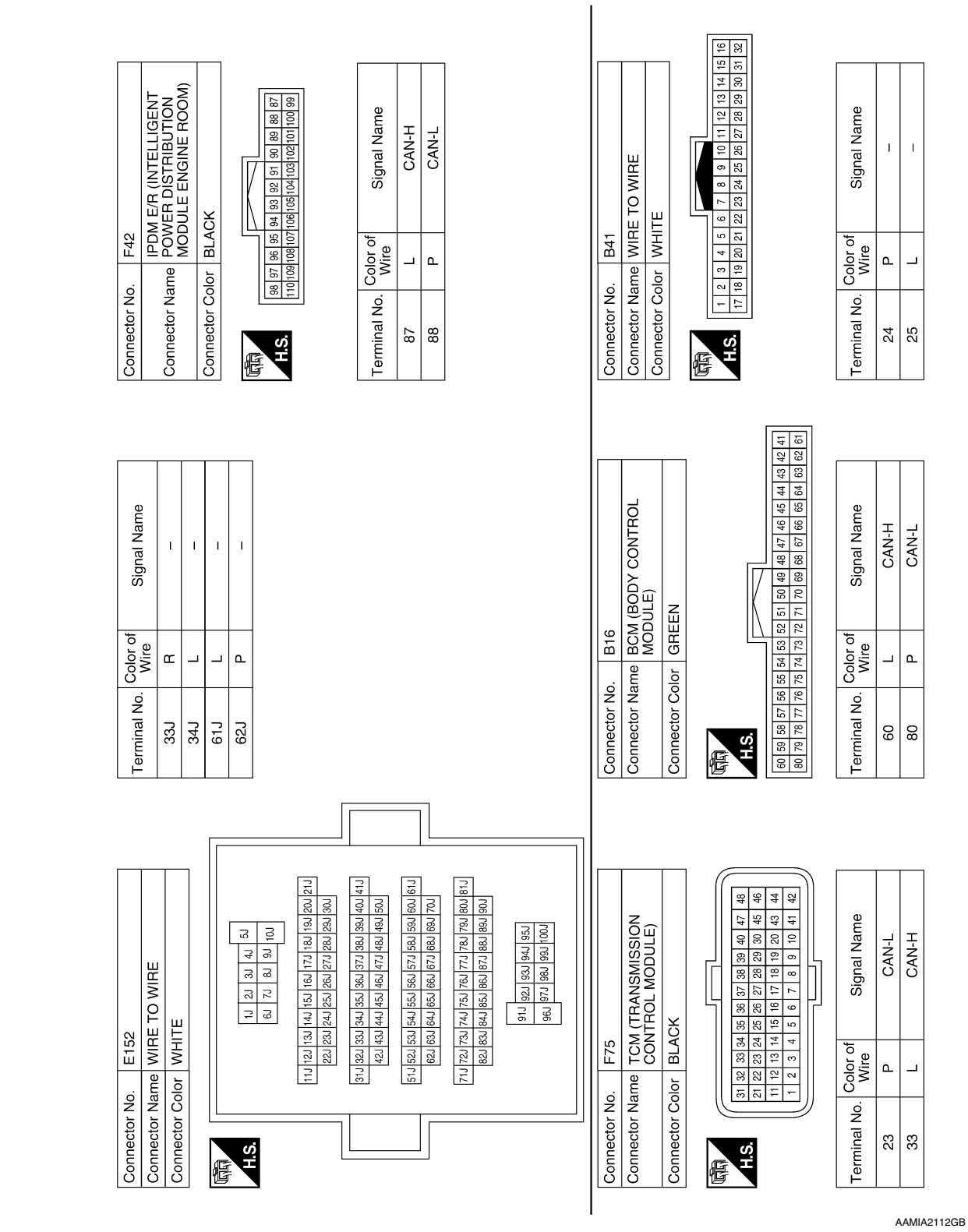
Terminal No.	Color of Wire	Signal Name
22	P	CAN-L
24	L	CAN-H
39	L	CAN-H
40	P	CAN-L

Connector No.	E125
Connector Name	ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)
Connector Color	BLACK

H.S.

Terminal No.	Color of Wire	Signal Name
14	P	CAN-L
26	L	CAN-H

AAMIA2111GB



AAMIA2112GB

Connector No.	B55
Connector Name	AUTOMATIC BACK DOOR CONTROL MODULE
Connector Color	BLACK

H.S.

1	2	3	4	5	6	7	8	9	10	11	12
13	14	15	16	17	18	19	20	21	22	23	24

Terminal No.	Color of Wire	Signal Name
12	P	CAN-L
24	L	CAN-H

Connector No.	B63
Connector Name	JOINT CONNECTOR-B01
Connector Color	GRAY

H.S.

4	3	2	1
8	7	6	5
12	11	10	9
16	15	14	13
20	19	18	17
24	23	22	21

Terminal No.	Color of Wire	Signal Name
3	P	–
4	L	–
7	P	–
8	L	–
11	P	–
12	L	–
19	P	–
20	L	–

Connector No.	B75
Connector Name	AWD CONTROL MODULE
Connector Color	WHITE

H.S.

1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	16

Terminal No.	Color of Wire	Signal Name
8	L	CAN-H
16	P	CAN-L

AAMIA2117GB

BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Interview Sheet

INFOID:0000000009799568

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

Main Line

INFOID:0000000009799573

Malfunction area	Reference
Main line between IPDM E/R and data link connector	LAN-46, "Diagnosis Procedure"
Main line between data link connector and chassis control module	LAN-47, "Diagnosis Procedure"
Main line between chassis control module and automatic back door control module	LAN-48, "Diagnosis Procedure"
Main line between chassis control module and AWD control unit	LAN-49, "Diagnosis Procedure"

Branch Line

INFOID:0000000009799574

Malfunction area	Reference
ECM branch line circuit	LAN-50, "Diagnosis Procedure"
ABS actuator and electric unit (control unit) branch line circuit	LAN-51, "Diagnosis Procedure"
IPDM E/R branch line circuit	LAN-52, "Diagnosis Procedure"
TCM branch line circuit	LAN-53, "Diagnosis Procedure"
Data link connector branch line circuit	LAN-55, "Diagnosis Procedure"
Combination meter branch line circuit	LAN-57, "Diagnosis Procedure"
Air bag diagnosis sensor unit branch line circuit	LAN-59, "Diagnosis Procedure"
Chassis control module branch line circuit	LAN-60, "Diagnosis Procedure"
EPS control unit branch line circuit	LAN-56, "Diagnosis Procedure"
Steering angle sensor branch line circuit	LAN-58, "Diagnosis Procedure"
AWD control unit branch line circuit	LAN-61, "Diagnosis Procedure"
Automatic back door control module branch line circuit	LAN-62, "Diagnosis Procedure"
BCM branch line circuit	LAN-63, "Diagnosis Procedure"
AV control unit branch line circuit	LAN-64, "Diagnosis Procedure"
Around view monitor control unit branch line circuit	LAN-65, "Diagnosis Procedure"
A/C auto amp. branch line circuit	LAN-66, "Diagnosis Procedure"
Front air control branch line circuit	
Distance sensor branch line circuit	LAN-68, "Diagnosis Procedure"

Short Circuit

INFOID:0000000009799575

Malfunction area	Reference
CAN communication circuit 1	LAN-69, "Diagnosis Procedure"
CAN communication circuit 2	LAN-71, "Diagnosis Procedure"

MAIN LINE BETWEEN IPDM-E AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000009799576

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 (connector side and harness side).

- Harness connector E152
- Harness connector M31

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.

- IPDM E/R
- Harness connectors E152 and M31

2. Check the continuity between the IPDM E/R harness connector and the harness connector.

IPDM E/R harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E120	24	E152	61J	Existed
	22		62J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the IPDM E/R and the harness connector E152.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

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

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	61J	M22	6	Existed
	62J		14	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 IPDM E/R and the data link connector.
NO >> Repair the main line between the harness connector M31 and the data link connector.

MAIN LINE BETWEEN DLC AND CCM CIRCUIT

Diagnosis Procedure

INFOID:0000000009799577

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Chassis control module
4. Check the continuity between the data link connector and the chassis control module harness connector.

Data link connector		Chassis control module harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	6	M96	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 data link connector and the chassis control module.
NO >> Repair the main line between the data link connector and the chassis control module.

MAIN LINE BETWEEN CCM AND PWBD CIRCUIT

Diagnosis Procedure

INFOID:0000000010269403

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 (connector side and harness side).

- Harness connector M69
- Harness connector B41

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.

- Chassis control module
- Harness connectors M69 and B41

2. Check the continuity between the chassis control module harness connector and the harness connector.

Chassis control module harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M96	4	M69	25	Existed
	3		24	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the chassis control module and the harness connector M69.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of automatic back door control module.
2. Check the continuity between the harness connector and the automatic back door control module harness connector.

Harness connector		Automatic back door control module harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	25	B55	24	Existed
	24		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 chassis control module and the automatic back door control module.
NO >> Repair the main line between the harness connector B41 and the automatic back door control module.

MAIN LINE BETWEEN CCM AND 4WD CIRCUIT

Diagnosis Procedure

INFOID:0000000010351443

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 (connector side and harness side).

- Harness connector M69
- Harness connector B41

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.

- Chassis control module
- Harness connectors M69 and B41

2. Check the continuity between the chassis control module harness connector and the harness connector.

Chassis control module harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M96	4	M69	25	Existed
	3		24	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the chassis control module and the harness connector M69.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of AWD control unit.
2. Check the continuity between the harness connector and the AWD control unit harness connector.

Harness connector		AWD control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	25	B75	8	Existed
	24		16	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 chassis control module and the AWD control unit.
NO >> Repair the main line between the harness connector B41 and the AWD control unit.

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000009799578

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ECM 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 ECM.
2. Check the resistance between the ECM harness connector terminals.

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	100	99	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to EC-165, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to EC-499, "Removal and Installation".
YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000009799588

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ABS actuator and electric unit (control 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 ABS actuator and electric unit (control unit).
2. 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.		
E125	26	14	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ABS actuator and electric unit (control unit) branch line.

3.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-114, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-136, "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.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000009799590

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 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.		
E120	24	22	Approx. 54 – 66

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-34, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-35, "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.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000009799589

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).

- TCM
- IPDM E/R

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.

- TCM
- IPDM E/R

2. Check the continuity between the TCM harness connector and the IPDM E/R harness connector.

TCM harness connector		IPDM E/R harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
F75	33	F42	87	Existed
	23		88	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the branch line between the TCM and IPDM E/R.

3.CHECK IPDM E/R (OPEN CIRCUIT)

Check the continuity between the IPDM E/R terminals.

IPDM E/R terminals		Continuity
Terminal No.	Terminal No.	
87	39	Existed
88	40	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace the IPDM E/R.

4.CHECK HARNESS FOR OPEN CIRCUIT

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

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E120	39	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the IPDM E/R branch line.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to TM-176, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the TCM. Refer to TM-202, "Removal and Installation".

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

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000009799585

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

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.		
M22	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 circuit.
NO >> Repair the data link connector branch line.

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000009799586

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS control 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M49	2	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the EPS control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to STC-20, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to STC-36, "Removal and Installation".
YES (Past error)>>Error was detected in the EPS control unit branch line.
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000009799587

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the combination meter 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 combination meter.
2. Check the resistance between the combination meter harness connector terminals.

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M77	41	42	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the combination meter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the combination meter. Refer to MWI-59, "COMBINATION METER : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to MWI-82, "Removal and Installation".
YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000009799583

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the steering angle sensor 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 steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M56	5	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the steering angle sensor branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to BRC-57, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-139, "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.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000009799580

WARNING:

- **Before servicing, turn ignition switch OFF, disconnect 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 battery cable from the negative terminal.
3. Check the terminals and connectors of the air bag diagnosis sensor unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the main harness.

2.CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to SRC-39, "Work Flow".

Is the inspection result normal?

YES >> Replace the main harness.
NO >> Replace parts whose air bag system has a malfunction.

CCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010269413

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the chassis control module connector 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 chassis control module.
2. Check the resistance between the chassis control module harness connector terminals.

Chassis control module harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M96	4	3	Approx. 54 – 66

Is the measurement value within the specification?

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

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the chassis control module. Refer to DAS-272, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the chassis control module. Refer to DAS-277, "Removal and Installation".
YES (Past error)>>Error was detected in the chassis control module branch line.
NG >> Repair the power supply and the ground circuit.

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000009799579

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the AWD control 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 AWD control unit.
2. Check the resistance between the AWD control unit harness connector terminals.

AWD control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B75	8	16	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the AWD control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the AWD control unit. Refer to DLN-57, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the AWD control unit. Refer to DLN-67, "Removal and Installation".
YES (Past error)>>Error was detected in the AWD control unit branch line.
NG >> Repair the power supply and the ground circuit.

PWBD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010269414

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the automatic back door 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 automatic back door control module.
2. Check the resistance between the automatic back door control module harness connector terminals.

Automatic back door control module harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B55	24	12	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the automatic back door control module branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the automatic back door control module. Refer to DLK-141, "AUTOMATIC BACK DOOR CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the automatic back door control module. Refer to DLK-276, "Removal and Installation".
YES (Past error)>>Error was detected in the automatic back door control module branch line.
NG >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000009799581

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the BCM 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 BCM.
2. Check the resistance between the BCM harness connector terminals.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B16	60	80	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the BCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to the following.
- With intelligent key system: BCS-68, "Diagnosis Procedure".
- Without intelligent key system: BCS-128, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to the following.
- With intelligent key system: BCS-75, "Removal and Installation".
- Without intelligent key system: BCS-135, "Removal and Installation".

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

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010269418

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).

- AV control unit
- BCM

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

BCM harness connector			Continuity
Connector No.	Terminal No.		
M18	6	8	Existed
	5	9	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side). Refer to LAN-71, "Diagnosis Procedure".

3.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 BOSE audio system

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M108	8	17	Approx. 54 – 66

- Models without BOSE audio system

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M101	8	17	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the AV control unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

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

- Navigation with BOSE: AV-337, "AV CONTROL UNIT : Diagnosis Procedure"
- Navigation without BOSE: AV-180, "AV CONTROL UNIT : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the AV control unit. Refer to following.
- Navigation with BOSE: AV-376, "Removal and Installation"
- Navigation without BOSE: AV-209, "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.

AVM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000009799584

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).

- Around view monitor control unit
- BCM

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

BCM harness connector			Continuity
Connector No.	Terminal No.		
M18	6	8	Existed
	5	9	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side). Refer to LAN-71, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of around view monitor control unit.
2. Check the resistance between the around view monitor control unit harness connector terminals.

- With lane departure prevention system

Around view monitor control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M113	27	28	Approx. 54 – 66

- Without lane departure prevention system

Around view monitor control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M103	12	10	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the around view monitor control unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the around view monitor control unit. Refer to the following.

- Navigation with BOSE: AV-338, "AROUND VIEW MONITOR CONTROL UNIT : Diagnosis Procedure"
- Navigation without BOSE: AV-180, "AROUND VIEW MONITOR CONTROL UNIT : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the around view monitor control unit. Refer to the following.
- Navigation with BOSE: AV-387, "Removal and Installation"
- Navigation without BOSE: AV-217, "Removal and Installation"

YES (Past error)>>Error was detected in the around view monitor control unit branch line.
NO >> Repair the power supply and the ground circuit.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010269419

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).

- A/C auto amp. (With auto A/C)
- Harness connector M127 (With auto A/C)
- Harness connector M125 (With auto A/C)
- Front air control (Without auto A/C)
- BCM

Is the inspection result normal?

YES >> GO TO 2. (With auto A/C)
YES >> GO TO 3. (Without auto A/C)
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

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

BCM harness connector			Continuity
Connector No.	Terminal No.		
M18	6	8	Existed
	5	9	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side). Refer to LAN-71, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of BCM (With auto A/C).
2. Disconnect the connector of A/C auto amp. (With auto A/C) or front air control (Without auto A/C).
3. Check the resistance between the A/C auto amp. (With auto A/C) or front air control (Without auto A/C) harness connector terminals.

- With auto A/C

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M54	11	31	Approx. 54 – 66

- Without auto A/C

Front air control harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M50	7	23	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the A/C auto amp. (With auto A/C) or front air control (Without auto A/C) branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the A/C auto amp. (With auto A/C) or front air control (Without auto A/C). Refer to the following.

- Automatic air conditioning: HAC-56, "Diagnosis Procedure".

• Manual air conditioning: HAC-166, "FRONT A/C CONTROL : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the A/C auto amp. (With auto A/C) or front air control (Without auto A/C). Refer to the following.
- Automatic air conditioning: HAC-103, "Removal and Installation".
- Manual air conditioning: HAC-181, "Removal and Installation".

YES (Past error)>>Error was detected in the A/C auto amp. (With auto A/C) or front air control (Without auto A/C) branch line.

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

ICC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010269420

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).

- Distance sensor
- Harness connector E152
- Harness connector M31
- BCM

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

BCM harness connector			Continuity
Connector No.	Terminal No.		
M18	6	8	Existed
	5	9	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side). Refer to LAN-71, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of BCM.
2. Disconnect the connector of distance sensor.
3. Check the resistance between the distance sensor harness connector terminals.

Distance sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E21	7	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the distance sensor branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the distance sensor. Refer to DAS-144, "DISTANCE SENSOR : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the distance sensor. Refer to DAS-160, "Removal and Installation".
YES (Past error)>>Error was detected in the distance sensor branch line.
NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT 1

Diagnosis Procedure

INFOID:0000000010269395

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit 1.
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.		
M22	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 fuse block (J/B) 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.		
M22	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 fuse block (J/B) is short) the root cause.

4.CHECK ECM AND BCM TERMINATION CIRCUIT

1. Remove the ECM and the BCM.
2. Check the resistance between the IPDM E/R terminals.

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
60	80	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ECM and/or the BCM.

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 battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit 1.
   NOTE:
   ECM and BCM have a termination circuit. Check other units first.
4. Connect the 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:0000000010269396

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the BCM 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 CONTINUITY (OPEN CIRCUIT)

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

BCM harness connector			Continuity
Connector No.	Terminal No.		
M18	6	8	Existed
	5	9	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair or replace the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

1. Disconnect all the unit connectors on CAN communication circuit 2.
2. Check the continuity between the BCM harness connector terminals.

BCM harness connector			Continuity
Connector No.	Terminal No.		
M18	6	5	Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair or replace the root cause.

4.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the BCM and the ground.

BCM harness connector		Ground	Continuity
Connector No.	Terminal No.		
M18	6		Not existed
	5		Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair or replace (if shield line is short) the root cause.

5.CHECK BCM TERMINATION CIRCUIT

1. Remove the BCM.
2. Check the resistance between the BCM terminals.

BCM	Resistance (Ω)
Terminal No.	

6	5	Approx. 108 – 132
8	9	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Replace the chassis control module.

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 UNIT REPRODUCTION

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

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit 2.
   NOTE:
   BCM has two termination circuits. Check other units first.
4. Connect the 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.

PRECAUTION

PRECAUTIONS

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

INFOID:0000000010352027

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. Information necessary to service the system safely is included in the SR and SB section of this Service Manual.

WARNING:

- **To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which 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 the SR section.**
- **Do not 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:

- **When working near the Airbag Diagnosis Sensor Unit or other Airbag System sensors with the Ignition ON or engine running, DO NOT 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 battery and wait at least three minutes before performing any service.**

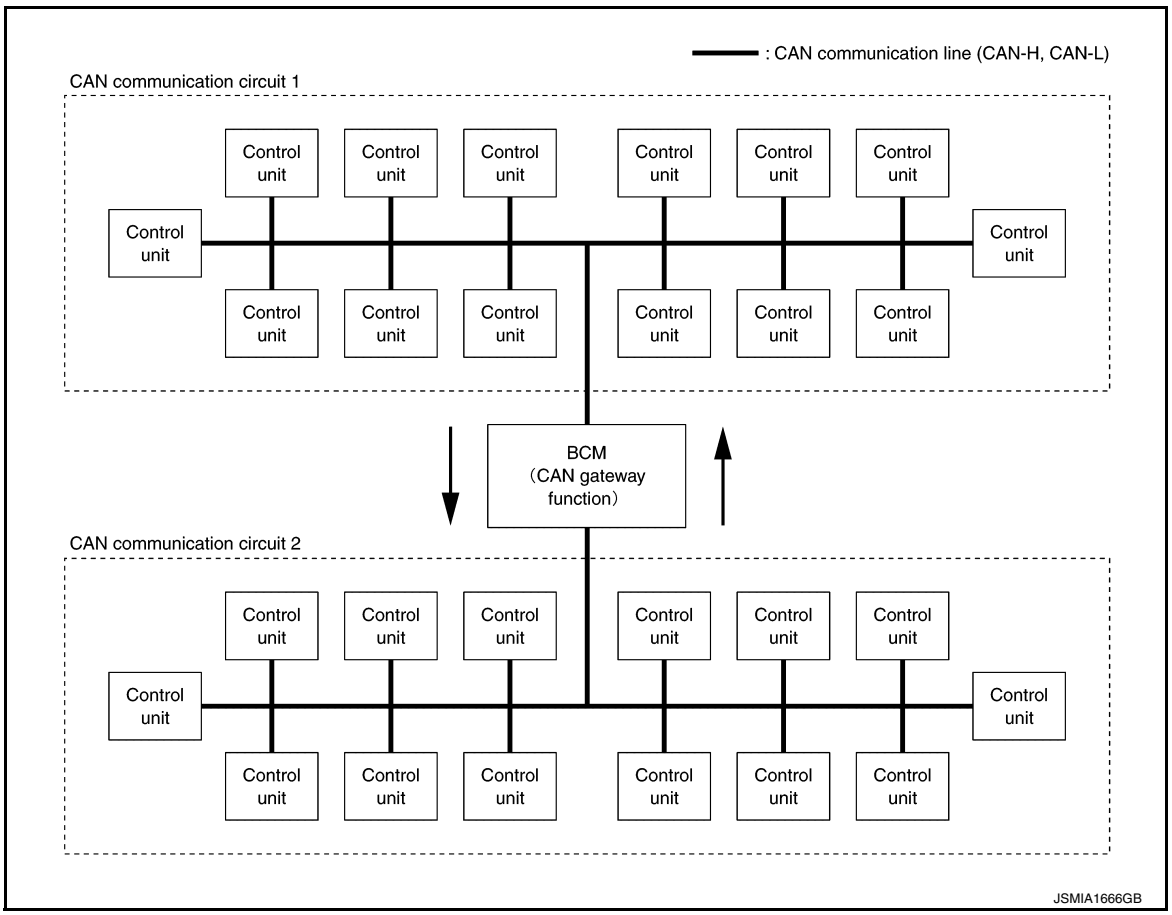
SYSTEM DESCRIPTION

SYSTEM

System Description

INFOID:0000000010335053

SYSTEM DIAGRAM



SYSTEM DESCRIPTION

- The BCM has a CAN gateway function.
- The BCM communicates between two CAN communication circuits.
- The BCM selects and transmits only necessary information.

DIAGNOSIS SYSTEM (CAN GATEWAY)

CONSULT Function

INFOID:0000000010335054

APPLICATION ITEM

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

Diagnosis mode	Function Description
Ecu Identification	The CAN gateway software number is displayed.
Self Diagnostic Result	Displays the diagnosis results of BCM CAN gateway function.
Data Monitor	Displays real-time input/output data of BCM CAN gateway function.
Configuration	• Read and save the vehicle specification. • Write the vehicle specification when replacing of BCM.

ECU IDENTIFICATION

The CAN gateway part number is displayed.

SELF DIAGNOSTIC RESULT

Refer to LAN-76, "DTC Index".

- When “CRNT” is displayed on self-diagnosis result
- The system is presently malfunctioning.
- When “PAST” is displayed on self-diagnosis result
- System malfunction in the past is detected, but the system is presently normal.

Freeze Frame Data (FFD)

When DTC is detected, a vehicle state shown below is recorded and displayed on CONSULT.

Item name	Display item
Milage (Kirometers)	Displays the total mileage when a DTC is detected.

DATA MONITOR

Monitor item	Description
CAN GW MODE (UNCONF/MALF/NORMAL)	Displays the status of BCM CAN gateway function.
IGN SIGNAL (Off/On)	Displays the status of ignition switch.

CONFIGURATION

Function		Description
Read / Write Configuration	Before Replace ECU	• Reads the vehicle configuration of current BCM. • 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 BCM.:

- **When replacing BCM 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 BCM.**

ECU DIAGNOSIS INFORMATION

CAN GATEWAY

Reference Value

INFOID:0000000010335055

VALUES ON THE DIAGNOSIS TOOL

NOTE:

The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

Monitor item	Condition	Value/Status
CAN GW MODE	When the configuration of the BCM CAN gateway function is not written	UNCONF
	When the BCM CAN Gateway function is malfunction	MALF
	When BCM CAN Gateway function is normal.	NORMAL
IGN SIGNAL	Ignition switch in OFF or ACC position	Off
	Ignition switch in ON position	On

DTC Index

INFOID:0000000010335057

DTC	Reference
No DTC is detected. Further testing may be required.	—
B2600-46: CONFIG ERROR	LAN-78, "DTC Description"
B2600-55: CONFIG ERROR	LAN-79, "DTC Description"

BASIC INSPECTION

CONFIGURATION (CAN GATEWAY)

Work Procedure

INFOID:0000000010335061

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

B2600-46 CONFIG ERROR

DTC Description

INFOID:0000000010335098

DTC DETECTION LOGIC

DTC	Trouble diagnosis (Trouble diagnosis contents)	Detecting condition
B2600-46	CONFIG ERROR (Configuration error)	When errors are detected in the configuration data stored in the BCM (CAN gateway function).

POSSIBLE CAUSE

BCM

FAIL-SAFE

Transmission and reception of the signal between CAN communication circuit 1 and CAN communication circuit 2 are stopped

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON and wait at least 2 seconds or more.
2. Select “Self Diagnostic Result” mode of “CAN GATEWAY” using CONSULT.
3. Check DTC.

Is DTC B2600-46 detected?

YES >> Proceed to LAN-78, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: GI-41, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000010335099

1.PERFORM DTC CONFIRMATION PROCEDURE AGAIN

1. Turn ignition switch ON.
2. Erase DTC.
3. Perform DTC confirmation procedure again. Refer to LAN-78, "DTC Description".
4. Check DTC.

Is DTC B2600-46 detected again?

YES >> Replace BCM. Refer to the following.
- WIth Intelligent Key system: BCS-75, "Removal and Installation".
- WIthout Intelligent Key system: BCS-135, "Removal and Installation".

NO >> INSPECTION END

B2600-55 CONFIG ERROR

DTC Description

INFOID:0000000010352109

DTC DETECTION LOGIC

DTC	Trouble diagnosis (Trouble diagnosis contents)	Detecting condition
B2600-55	CONFIG ERROR (Configuration error)	When no data are stored in the BCM (CAN gateway function).

POSSIBLE CAUSE

- Configuration is incomplete
- BCM

FAIL-SAFE

Transmission and reception of the signal between CAN communication circuit 1 and CAN communication circuit 2 are stopped

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

With CONSULT

1. Turn ignition switch ON and wait at least 2 seconds or more.
2. Select “Self Diagnostic Result” mode of “CAN GATEWAY” using CONSULT.
3. Check DTC.

Is DTC B2600-55 detected?

YES >> Proceed to LAN-79, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: GI-41, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000010352111

1.PERFORM CONFIGURATION OF CAN GATEWAY

Perform CAN gateway configuration. Refer to LAN-77, "Work Procedure".

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE AGAIN

1. Turn ignition switch ON.
2. Perform DTC confirmation procedure again. Refer to LAN-79, "DTC Description".
3. Check DTC.

Is DTC B2600-55 detected again?

YES >> Replace BCM. Refer to the following.
- WIth Intelligent Key system: BCS-75, "Removal and Installation".
- WIthout Intelligent Key system: BCS-135, "Removal and Installation".

NO >> INSPECTION END

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN IPDM-E AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000010337418

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 (connector side and harness side).

- Harness connector E152
- Harness connector M31

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.

- IPDM E/R
- Harness connectors E152 and M31

2. Check the continuity between the IPDM E/R harness connector and the harness connector.

IPDM E/R harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E120	24	E152	61J	Existed
	22		62J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the IPDM E/R and the harness connector E152.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

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

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	61J	M22	6	Existed
	62J		14	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 IPDM E/R and the data link connector.
NO >> Repair the main line between the harness connector M31 and the data link connector.

MAIN LINE BETWEEN DLC AND CCM CIRCUIT

Diagnosis Procedure

INFOID:0000000010337419

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Chassis control module

4. Check the continuity between the data link connector and the chassis control module harness connector.

Data link connector		Chassis control module harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	6	M96	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 data link connector and the chassis control module.
NO >> Repair the main line between the data link connector and the chassis control module.

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337421

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ECM 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 ECM.
2. Check the resistance between the ECM harness connector terminals.

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	100	99	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to EC-165, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to EC-499, "Removal and Installation".
YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337422

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ABS actuator and electric unit (control 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 ABS actuator and electric unit (control unit).
2. 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.		
E125	26	14	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ABS actuator and electric unit (control unit) branch line.

3.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-114, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-136, "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.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337423

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 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.		
E120	24	22	Approx. 54 – 66

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-34, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-35, "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.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337424

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).

- TCM
- IPDM E/R

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.

- TCM
- IPDM E/R

2. Check the continuity between the TCM harness connector and the IPDM E/R harness connector.

TCM harness connector		IPDM E/R harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
F75	33	F42	87	Existed
	23		88	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the branch line between the TCM and IPDM E/R.

3.CHECK IPDM E/R (OPEN CIRCUIT)

Check the continuity between the IPDM E/R terminals.

IPDM E/R terminals		Continuity
Terminal No.	Terminal No.	
87	39	Existed
88	40	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace the IPDM E/R.

4.CHECK HARNESS FOR OPEN CIRCUIT

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

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E120	39	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the IPDM E/R branch line.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to TM-176, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the TCM. Refer to TM-202, "Removal and Installation".

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

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337425

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

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.		
M22	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 circuit.
NO >> Repair the data link connector branch line.

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337426

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS control 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M49	2	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the EPS control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to STC-20, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to STC-36, "Removal and Installation".
YES (Past error)>>Error was detected in the EPS control unit branch line.
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337427

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the combination meter 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 combination meter.
2. Check the resistance between the combination meter harness connector terminals.

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M77	41	42	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the combination meter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the combination meter. Refer to MWI-59, "COMBINATION METER : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to MWI-82, "Removal and Installation".
YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337428

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the steering angle sensor 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 steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M56	5	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the steering angle sensor branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to BRC-57, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-139, "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.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337429

WARNING:

- **Before servicing, turn ignition switch OFF, disconnect 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 battery cable from the negative terminal.
3. Check the terminals and connectors of the air bag diagnosis sensor unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the main harness.

2.CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to SRC-39, "Work Flow".

Is the inspection result normal?

YES >> Replace the main harness.
NO >> Replace parts whose air bag system has a malfunction.

CCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337430

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the chassis control module connector 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 chassis control module.
2. Check the resistance between the chassis control module harness connector terminals.

Chassis control module harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M96	4	3	Approx. 54 – 66

Is the measurement value within the specification?

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

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the chassis control module. Refer to DAS-272, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the chassis control module. Refer to DAS-277, "Removal and Installation".
YES (Past error)>>Error was detected in the chassis control module branch line.
NG >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337433

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the BCM 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 BCM.
2. Check the resistance between the BCM harness connector terminals.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B16	60	80	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the BCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to the following.
- With intelligent key system: BCS-68, "Diagnosis Procedure".
- Without intelligent key system: BCS-128, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to the following.
- With intelligent key system: BCS-75, "Removal and Installation".
- Without intelligent key system: BCS-135, "Removal and Installation".

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

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337436

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).

- A/C auto amp. (With auto A/C)
- Harness connector M127 (With auto A/C)
- Harness connector M125 (With auto A/C)
- Front air control (Without auto A/C)
- BCM

Is the inspection result normal?

YES >> GO TO 2. (With auto A/C)
YES >> GO TO 3. (Without auto A/C)
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

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

BCM harness connector			Continuity
Connector No.	Terminal No.		
M18	6	8	Existed
	5	9	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side). Refer to LAN-265, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of BCM (With auto A/C).
2. Disconnect the connector of A/C auto amp. (With auto A/C) or front air control (Without auto A/C).
3. Check the resistance between the A/C auto amp. (With auto A/C) or front air control (Without auto A/C) harness connector terminals.

- With auto A/C

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M54	11	31	Approx. 54 – 66

- Without auto A/C

Front air control harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M50	7	23	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the A/C auto amp. (With auto A/C) or front air control (Without auto A/C) branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the A/C auto amp. (With auto A/C) or front air control (Without auto A/C). Refer to the following.

- Automatic air conditioning: HAC-56, "Diagnosis Procedure".

- Manual air conditioning: HAC-166, "FRONT A/C CONTROL : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the A/C auto amp. (With auto A/C) or front air control (Without auto A/C). Refer to the following.
- Automatic air conditioning: HAC-103, "Removal and Installation".
- Manual air conditioning: HAC-181, "Removal and Installation".

YES (Past error)>>Error was detected in the A/C auto amp. (With auto A/C) or front air control (Without auto A/C) branch line.

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

CAN COMMUNICATION CIRCUIT 1

Diagnosis Procedure

INFOID:0000000010337438

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit 1.
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.		
M22	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 fuse block (J/B) 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.		
M22	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 fuse block (J/B) is short) the root cause.

4.CHECK ECM AND BCM TERMINATION CIRCUIT

1. Remove the ECM and the BCM.
2. Check the resistance between the IPDM E/R terminals.

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
60	80	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ECM and/or the BCM.

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 battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit 1.
   NOTE:
   ECM and BCM have a termination circuit. Check other units first.
4. Connect the 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:0000000010337465

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the BCM 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 CONTINUITY (OPEN CIRCUIT)

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

BCM harness connector			Continuity
Connector No.	Terminal No.		
M18	6	8	Existed
	5	9	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair or replace the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

1. Disconnect all the unit connectors on CAN communication circuit 2.
2. Check the continuity between the BCM harness connector terminals.

BCM harness connector			Continuity
Connector No.	Terminal No.		
M18	6	5	Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair or replace the root cause.

4.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the BCM and the ground.

BCM harness connector		Ground	Continuity
Connector No.	Terminal No.		
M18	6		Not existed
	5		Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair or replace (if shield line is short) the root cause.

5.CHECK BCM TERMINATION CIRCUIT

1. Remove the BCM.
2. Check the resistance between the BCM terminals.

BCM	Resistance (Ω)
Terminal No.	

6	5	Approx. 108 – 132
8	9	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Replace the chassis control module.

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 UNIT REPRODUCTION

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

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit 2.
   NOTE:
   BCM has two termination circuits. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

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

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN IPDM-E AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000010337441

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 (connector side and harness side).

- Harness connector E152
- Harness connector M31

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.

- IPDM E/R
- Harness connectors E152 and M31

2. Check the continuity between the IPDM E/R harness connector and the harness connector.

IPDM E/R harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E120	24	E152	61J	Existed
	22		62J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the IPDM E/R and the harness connector E152.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

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

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	61J	M22	6	Existed
	62J		14	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 IPDM E/R and the data link connector.
NO >> Repair the main line between the harness connector M31 and the data link connector.

MAIN LINE BETWEEN DLC AND CCM CIRCUIT

Diagnosis Procedure

INFOID:0000000010337442

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Chassis control module

4. Check the continuity between the data link connector and the chassis control module harness connector.

Data link connector		Chassis control module harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	6	M96	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 data link connector and the chassis control module.
NO >> Repair the main line between the data link connector and the chassis control module.

MAIN LINE BETWEEN CCM AND PWBD CIRCUIT

Diagnosis Procedure

INFOID:0000000010337443

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 (connector side and harness side).

- Harness connector M69
- Harness connector B41

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.

- Chassis control module
- Harness connectors M69 and B41

2. Check the continuity between the chassis control module harness connector and the harness connector.

Chassis control module harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M96	4	M69	25	Existed
	3		24	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the chassis control module and the harness connector M69.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of automatic back door control module.
2. Check the continuity between the harness connector and the automatic back door control module harness connector.

Harness connector		Automatic back door control module harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	25	B55	24	Existed
	24		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 chassis control module and the automatic back door control module.
NO >> Repair the main line between the harness connector B41 and the automatic back door control module.

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337444

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ECM 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 ECM.
2. Check the resistance between the ECM harness connector terminals.

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	100	99	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to EC-165, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to EC-499, "Removal and Installation".
YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337445

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ABS actuator and electric unit (control 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 ABS actuator and electric unit (control unit).
2. 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.		
E125	26	14	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ABS actuator and electric unit (control unit) branch line.

3.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-114, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-136, "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.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337446

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 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.		
E120	24	22	Approx. 54 – 66

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-34, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-35, "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.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337447

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).

- TCM
- IPDM E/R

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.

- TCM
- IPDM E/R

2. Check the continuity between the TCM harness connector and the IPDM E/R harness connector.

TCM harness connector		IPDM E/R harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
F75	33	F42	87	Existed
	23		88	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the branch line between the TCM and IPDM E/R.

3.CHECK IPDM E/R (OPEN CIRCUIT)

Check the continuity between the IPDM E/R terminals.

IPDM E/R terminals		Continuity
Terminal No.	Terminal No.	
87	39	Existed
88	40	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace the IPDM E/R.

4.CHECK HARNESS FOR OPEN CIRCUIT

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

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E120	39	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the IPDM E/R branch line.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to TM-176, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the TCM. Refer to TM-202, "Removal and Installation".

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

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337448

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

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.		
M22	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 circuit.
NO >> Repair the data link connector branch line.

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337449

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS control 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M49	2	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the EPS control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to STC-20, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to STC-36, "Removal and Installation".
YES (Past error)>>Error was detected in the EPS control unit branch line.
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337450

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the combination meter 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 combination meter.
2. Check the resistance between the combination meter harness connector terminals.

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M77	41	42	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the combination meter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the combination meter. Refer to MWI-59, "COMBINATION METER : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to MWI-82, "Removal and Installation".
YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337451

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the steering angle sensor 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 steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M56	5	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the steering angle sensor branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to BRC-57, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-139, "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.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337452

WARNING:

- **Before servicing, turn ignition switch OFF, disconnect 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 battery cable from the negative terminal.
3. Check the terminals and connectors of the air bag diagnosis sensor unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the main harness.

2.CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to SRC-39, "Work Flow".

Is the inspection result normal?

YES >> Replace the main harness.
NO >> Replace parts whose air bag system has a malfunction.

CCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337453

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the chassis control module connector 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 chassis control module.
2. Check the resistance between the chassis control module harness connector terminals.

Chassis control module harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M96	4	3	Approx. 54 – 66

Is the measurement value within the specification?

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

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the chassis control module. Refer to DAS-272, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the chassis control module. Refer to DAS-277, "Removal and Installation".
YES (Past error)>>Error was detected in the chassis control module branch line.
NG >> Repair the power supply and the ground circuit.

PWBD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337455

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the automatic back door 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 automatic back door control module.
2. Check the resistance between the automatic back door control module harness connector terminals.

Automatic back door control module harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B55	24	12	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the automatic back door control module branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the automatic back door control module. Refer to DLK-141, "AUTOMATIC BACK DOOR CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the automatic back door control module. Refer to DLK-276, "Removal and Installation".
YES (Past error)>>Error was detected in the automatic back door control module branch line.
NG >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337456

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the BCM 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 BCM.
2. Check the resistance between the BCM harness connector terminals.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B16	60	80	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the BCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to the following.
- With intelligent key system: BCS-68, "Diagnosis Procedure".
- Without intelligent key system: BCS-128, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to the following.
- With intelligent key system: BCS-75, "Removal and Installation".
- Without intelligent key system: BCS-135, "Removal and Installation".

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

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337459

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).

- A/C auto amp. (With auto A/C)
- Harness connector M127 (With auto A/C)
- Harness connector M125 (With auto A/C)
- Front air control (Without auto A/C)
- BCM

Is the inspection result normal?

YES >> GO TO 2. (With auto A/C)
YES >> GO TO 3. (Without auto A/C)
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

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

BCM harness connector			Continuity
Connector No.	Terminal No.		
M18	6	8	Existed
	5	9	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side). Refer to LAN-265, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of BCM (With auto A/C).
2. Disconnect the connector of A/C auto amp. (With auto A/C) or front air control (Without auto A/C).
3. Check the resistance between the A/C auto amp. (With auto A/C) or front air control (Without auto A/C) harness connector terminals.

- With auto A/C

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M54	11	31	Approx. 54 – 66

- Without auto A/C

Front air control harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M50	7	23	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the A/C auto amp. (With auto A/C) or front air control (Without auto A/C) branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the A/C auto amp. (With auto A/C) or front air control (Without auto A/C). Refer to the following.

- Automatic air conditioning: HAC-56, "Diagnosis Procedure".

- Manual air conditioning: HAC-166, "FRONT A/C CONTROL : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the A/C auto amp. (With auto A/C) or front air control (Without auto A/C). Refer to the following.
- Automatic air conditioning: HAC-103, "Removal and Installation".
- Manual air conditioning: HAC-181, "Removal and Installation".

YES (Past error)>>Error was detected in the A/C auto amp. (With auto A/C) or front air control (Without auto A/C) branch line.

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

CAN COMMUNICATION CIRCUIT 1

Diagnosis Procedure

INFOID:0000000010337461

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit 1.
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.		
M22	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 fuse block (J/B) 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.		
M22	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 fuse block (J/B) is short) the root cause.

4.CHECK ECM AND BCM TERMINATION CIRCUIT

1. Remove the ECM and the BCM.
2. Check the resistance between the IPDM E/R terminals.

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
60	80	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ECM and/or the BCM.

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 battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit 1.
   NOTE:
   ECM and BCM have a termination circuit. Check other units first.
4. Connect the 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:0000000010337462

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the BCM 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 CONTINUITY (OPEN CIRCUIT)

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

BCM harness connector			Continuity
Connector No.	Terminal No.		
M18	6	8	Existed
	5	9	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair or replace the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

1. Disconnect all the unit connectors on CAN communication circuit 2.
2. Check the continuity between the BCM harness connector terminals.

BCM harness connector			Continuity
Connector No.	Terminal No.		
M18	6	5	Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair or replace the root cause.

4.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the BCM and the ground.

BCM harness connector		Ground	Continuity
Connector No.	Terminal No.		
M18	6		Not existed
	5		Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair or replace (if shield line is short) the root cause.

5.CHECK BCM TERMINATION CIRCUIT

1. Remove the BCM.
2. Check the resistance between the BCM terminals.

BCM	Resistance (Ω)
Terminal No.	

6	5	Approx. 108 – 132
8	9	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Replace the chassis control module.

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 UNIT REPRODUCTION

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

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit 2.
   NOTE:
   BCM has two termination circuits. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

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

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN IPDM-E AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000010337466

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 (connector side and harness side).

- Harness connector E152
- Harness connector M31

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.

- IPDM E/R
- Harness connectors E152 and M31

2. Check the continuity between the IPDM E/R harness connector and the harness connector.

IPDM E/R harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E120	24	E152	61J	Existed
	22		62J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the IPDM E/R and the harness connector E152.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

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

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	61J	M22	6	Existed
	62J		14	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 IPDM E/R and the data link connector.
NO >> Repair the main line between the harness connector M31 and the data link connector.

MAIN LINE BETWEEN DLC AND CCM CIRCUIT

Diagnosis Procedure

INFOID:0000000010337467

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Chassis control module

4. Check the continuity between the data link connector and the chassis control module harness connector.

Data link connector		Chassis control module harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	6	M96	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 data link connector and the chassis control module.
NO >> Repair the main line between the data link connector and the chassis control module.

MAIN LINE BETWEEN CCM AND PWBD CIRCUIT

Diagnosis Procedure

INFOID:0000000010337468

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 (connector side and harness side).

- Harness connector M69
- Harness connector B41

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.

- Chassis control module
- Harness connectors M69 and B41

2. Check the continuity between the chassis control module harness connector and the harness connector.

Chassis control module harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M96	4	M69	25	Existed
	3		24	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the chassis control module and the harness connector M69.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of automatic back door control module.
2. Check the continuity between the harness connector and the automatic back door control module harness connector.

Harness connector		Automatic back door control module harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	25	B55	24	Existed
	24		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 chassis control module and the automatic back door control module.
NO >> Repair the main line between the harness connector B41 and the automatic back door control module.

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337469

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ECM 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 ECM.
2. Check the resistance between the ECM harness connector terminals.

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	100	99	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to EC-165, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to EC-499, "Removal and Installation".
YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337470

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ABS actuator and electric unit (control 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 ABS actuator and electric unit (control unit).
2. 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.		
E125	26	14	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ABS actuator and electric unit (control unit) branch line.

3.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-114, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-136, "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.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337471

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 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.		
E120	24	22	Approx. 54 – 66

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-34, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-35, "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.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337472

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).

- TCM
- IPDM E/R

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.

- TCM
- IPDM E/R

2. Check the continuity between the TCM harness connector and the IPDM E/R harness connector.

TCM harness connector		IPDM E/R harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
F75	33	F42	87	Existed
	23		88	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the branch line between the TCM and IPDM E/R.

3.CHECK IPDM E/R (OPEN CIRCUIT)

Check the continuity between the IPDM E/R terminals.

IPDM E/R terminals		Continuity
Terminal No.	Terminal No.	
87	39	Existed
88	40	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace the IPDM E/R.

4.CHECK HARNESS FOR OPEN CIRCUIT

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

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E120	39	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the IPDM E/R branch line.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to TM-176, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the TCM. Refer to TM-202, "Removal and Installation".

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

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337473

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

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.		
M22	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 circuit.
NO >> Repair the data link connector branch line.

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337474

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS control 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M49	2	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the EPS control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to STC-20, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to STC-36, "Removal and Installation".
YES (Past error)>>Error was detected in the EPS control unit branch line.
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337475

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the combination meter 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 combination meter.
2. Check the resistance between the combination meter harness connector terminals.

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M77	41	42	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the combination meter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the combination meter. Refer to MWI-59, "COMBINATION METER : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to MWI-82, "Removal and Installation".
YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337476

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the steering angle sensor 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 steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M56	5	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the steering angle sensor branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to BRC-57, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-139, "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.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337477

WARNING:

- **Before servicing, turn ignition switch OFF, disconnect 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 battery cable from the negative terminal.
3. Check the terminals and connectors of the air bag diagnosis sensor unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the main harness.

2.CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to SRC-39, "Work Flow".

Is the inspection result normal?

YES >> Replace the main harness.
NO >> Replace parts whose air bag system has a malfunction.

CCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337478

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the chassis control module connector 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 chassis control module.
2. Check the resistance between the chassis control module harness connector terminals.

Chassis control module harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M96	4	3	Approx. 54 – 66

Is the measurement value within the specification?

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

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the chassis control module. Refer to DAS-272, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the chassis control module. Refer to DAS-277, "Removal and Installation".
YES (Past error)>>Error was detected in the chassis control module branch line.
NG >> Repair the power supply and the ground circuit.

PWBD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337480

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the automatic back door 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 automatic back door control module.
2. Check the resistance between the automatic back door control module harness connector terminals.

Automatic back door control module harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B55	24	12	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the automatic back door control module branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the automatic back door control module. Refer to DLK-141, "AUTOMATIC BACK DOOR CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the automatic back door control module. Refer to DLK-276, "Removal and Installation".
YES (Past error)>>Error was detected in the automatic back door control module branch line.
NG >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337481

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the BCM 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 BCM.
2. Check the resistance between the BCM harness connector terminals.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B16	60	80	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the BCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to the following.
- With intelligent key system: BCS-68, "Diagnosis Procedure".
- Without intelligent key system: BCS-128, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to the following.
- With intelligent key system: BCS-75, "Removal and Installation".
- Without intelligent key system: BCS-135, "Removal and Installation".

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

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337482

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).

- AV control unit
- BCM

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

BCM harness connector			Continuity
Connector No.	Terminal No.		
M18	6	8	Existed
	5	9	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side). Refer to LAN-265, "Diagnosis Procedure".

3.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 BOSE audio system

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M108	8	17	Approx. 54 – 66

- Models without BOSE audio system

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M101	8	17	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the AV control unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

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

- Navigation with BOSE: AV-337, "AV CONTROL UNIT : Diagnosis Procedure"
- Navigation without BOSE: AV-180, "AV CONTROL UNIT : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the AV control unit. Refer to following.
- Navigation with BOSE: AV-376, "Removal and Installation"
- Navigation without BOSE: AV-209, "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.

AVM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337483

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).

- Around view monitor control unit
- BCM

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

BCM harness connector			Continuity
Connector No.	Terminal No.		
M18	6	8	Existed
	5	9	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side). Refer to LAN-265, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of around view monitor control unit.
2. Check the resistance between the around view monitor control unit harness connector terminals.

- With lane departure prevention system

Around view monitor control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M113	27	28	Approx. 54 – 66

- Without lane departure prevention system

Around view monitor control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M103	12	10	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the around view monitor control unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the around view monitor control unit. Refer to the following.

- Navigation with BOSE: AV-338, "AROUND VIEW MONITOR CONTROL UNIT : Diagnosis Procedure"
- Navigation without BOSE: AV-180, "AROUND VIEW MONITOR CONTROL UNIT : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the around view monitor control unit. Refer to the following.
- Navigation with BOSE: AV-387, "Removal and Installation"
- Navigation without BOSE: AV-217, "Removal and Installation"

YES (Past error)>>Error was detected in the around view monitor control unit branch line.
NO >> Repair the power supply and the ground circuit.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337484

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).

- A/C auto amp. (With auto A/C)
- Harness connector M127 (With auto A/C)
- Harness connector M125 (With auto A/C)
- Front air control (Without auto A/C)
- BCM

Is the inspection result normal?

YES >> GO TO 2. (With auto A/C)
YES >> GO TO 3. (Without auto A/C)
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

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

BCM harness connector			Continuity
Connector No.	Terminal No.		
M18	6	8	Existed
	5	9	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side). Refer to LAN-265, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of BCM (With auto A/C).
2. Disconnect the connector of A/C auto amp. (With auto A/C) or front air control (Without auto A/C).
3. Check the resistance between the A/C auto amp. (With auto A/C) or front air control (Without auto A/C) harness connector terminals.

- With auto A/C

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M54	11	31	Approx. 54 – 66

- Without auto A/C

Front air control harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M50	7	23	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the A/C auto amp. (With auto A/C) or front air control (Without auto A/C) branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the A/C auto amp. (With auto A/C) or front air control (Without auto A/C). Refer to the following.

- Automatic air conditioning: HAC-56, "Diagnosis Procedure".

- Manual air conditioning: HAC-166, "FRONT A/C CONTROL : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the A/C auto amp. (With auto A/C) or front air control (Without auto A/C). Refer to the following.
- Automatic air conditioning: HAC-103, "Removal and Installation".
- Manual air conditioning: HAC-181, "Removal and Installation".

YES (Past error)>>Error was detected in the A/C auto amp. (With auto A/C) or front air control (Without auto A/C) branch line.

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

CAN COMMUNICATION CIRCUIT 1

Diagnosis Procedure

INFOID:0000000010337486

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit 1.
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.		
M22	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 fuse block (J/B) 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.		
M22	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 fuse block (J/B) is short) the root cause.

4.CHECK ECM AND BCM TERMINATION CIRCUIT

1. Remove the ECM and the BCM.
2. Check the resistance between the IPDM E/R terminals.

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
60	80	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ECM and/or the BCM.

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 battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit 1.
   NOTE:
   ECM and BCM have a termination circuit. Check other units first.
4. Connect the 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:0000000010337487

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the BCM 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 CONTINUITY (OPEN CIRCUIT)

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

BCM harness connector			Continuity
Connector No.	Terminal No.		
M18	6	8	Existed
	5	9	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair or replace the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

1. Disconnect all the unit connectors on CAN communication circuit 2.
2. Check the continuity between the BCM harness connector terminals.

BCM harness connector			Continuity
Connector No.	Terminal No.		
M18	6	5	Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair or replace the root cause.

4.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the BCM and the ground.

BCM harness connector		Ground	Continuity
Connector No.	Terminal No.		
M18	6		Not existed
	5		Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair or replace (if shield line is short) the root cause.

5.CHECK BCM TERMINATION CIRCUIT

1. Remove the BCM.
2. Check the resistance between the BCM terminals.

BCM	Resistance (Ω)
Terminal No.	

6	5	Approx. 108 – 132
8	9	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Replace the chassis control module.

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 UNIT REPRODUCTION

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

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit 2.
   NOTE:
   BCM has two termination circuits. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

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

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN IPDM-E AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000010337489

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 (connector side and harness side).

- Harness connector E152
- Harness connector M31

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.

- IPDM E/R
- Harness connectors E152 and M31

2. Check the continuity between the IPDM E/R harness connector and the harness connector.

IPDM E/R harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E120	24	E152	61J	Existed
	22		62J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the IPDM E/R and the harness connector E152.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

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

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	61J	M22	6	Existed
	62J		14	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 IPDM E/R and the data link connector.
NO >> Repair the main line between the harness connector M31 and the data link connector.

MAIN LINE BETWEEN DLC AND CCM CIRCUIT

Diagnosis Procedure

INFOID:0000000010337490

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Chassis control module

4. Check the continuity between the data link connector and the chassis control module harness connector.

Data link connector		Chassis control module harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	6	M96	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 data link connector and the chassis control module.
NO >> Repair the main line between the data link connector and the chassis control module.

MAIN LINE BETWEEN CCM AND PWBD CIRCUIT

Diagnosis Procedure

INFOID:0000000010337491

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 (connector side and harness side).

- Harness connector M69
- Harness connector B41

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.

- Chassis control module
- Harness connectors M69 and B41

2. Check the continuity between the chassis control module harness connector and the harness connector.

Chassis control module harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M96	4	M69	25	Existed
	3		24	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the chassis control module and the harness connector M69.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of automatic back door control module.
2. Check the continuity between the harness connector and the automatic back door control module harness connector.

Harness connector		Automatic back door control module harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	25	B55	24	Existed
	24		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 chassis control module and the automatic back door control module.
NO >> Repair the main line between the harness connector B41 and the automatic back door control module.

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337492

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ECM 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 ECM.
2. Check the resistance between the ECM harness connector terminals.

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	100	99	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to EC-165, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to EC-499, "Removal and Installation".
YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337493

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ABS actuator and electric unit (control 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 ABS actuator and electric unit (control unit).
2. 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.		
E125	26	14	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ABS actuator and electric unit (control unit) branch line.

3.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-114, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-136, "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.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337494

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 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.		
E120	24	22	Approx. 54 – 66

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-34, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-35, "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.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337495

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).

- TCM
- IPDM E/R

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.

- TCM
- IPDM E/R

2. Check the continuity between the TCM harness connector and the IPDM E/R harness connector.

TCM harness connector		IPDM E/R harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
F75	33	F42	87	Existed
	23		88	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the branch line between the TCM and IPDM E/R.

3.CHECK IPDM E/R (OPEN CIRCUIT)

Check the continuity between the IPDM E/R terminals.

IPDM E/R terminals		Continuity
Terminal No.	Terminal No.	
87	39	Existed
88	40	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace the IPDM E/R.

4.CHECK HARNESS FOR OPEN CIRCUIT

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

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E120	39	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the IPDM E/R branch line.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to TM-176, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the TCM. Refer to TM-202, "Removal and Installation".

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

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337496

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

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.		
M22	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 circuit.
NO >> Repair the data link connector branch line.

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337497

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS control 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M49	2	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the EPS control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to STC-20, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to STC-36, "Removal and Installation".
YES (Past error)>>Error was detected in the EPS control unit branch line.
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337498

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the combination meter 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 combination meter.
2. Check the resistance between the combination meter harness connector terminals.

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M77	41	42	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the combination meter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the combination meter. Refer to MWI-59, "COMBINATION METER : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to MWI-82, "Removal and Installation".
YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337499

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the steering angle sensor 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 steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M56	5	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the steering angle sensor branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to BRC-57, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-139, "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.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337500

WARNING:

- **Before servicing, turn ignition switch OFF, disconnect 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 battery cable from the negative terminal.
3. Check the terminals and connectors of the air bag diagnosis sensor unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the main harness.

2.CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to SRC-39, "Work Flow".

Is the inspection result normal?

YES >> Replace the main harness.
NO >> Replace parts whose air bag system has a malfunction.

CCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337501

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the chassis control module connector 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 chassis control module.
2. Check the resistance between the chassis control module harness connector terminals.

Chassis control module harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M96	4	3	Approx. 54 – 66

Is the measurement value within the specification?

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

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the chassis control module. Refer to DAS-272, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the chassis control module. Refer to DAS-277, "Removal and Installation".
YES (Past error)>>Error was detected in the chassis control module branch line.
NG >> Repair the power supply and the ground circuit.

PWBD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337503

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the automatic back door 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 automatic back door control module.
2. Check the resistance between the automatic back door control module harness connector terminals.

Automatic back door control module harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B55	24	12	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the automatic back door control module branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the automatic back door control module. Refer to DLK-141, "AUTOMATIC BACK DOOR CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the automatic back door control module. Refer to DLK-276, "Removal and Installation".
YES (Past error)>>Error was detected in the automatic back door control module branch line.
NG >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337504

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the BCM 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 BCM.
2. Check the resistance between the BCM harness connector terminals.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B16	60	80	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the BCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to the following.
- With intelligent key system: BCS-68, "Diagnosis Procedure".
- Without intelligent key system: BCS-128, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to the following.
- With intelligent key system: BCS-75, "Removal and Installation".
- Without intelligent key system: BCS-135, "Removal and Installation".

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

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337505

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).

- AV control unit
- BCM

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

BCM harness connector			Continuity
Connector No.	Terminal No.		
M18	6	8	Existed
	5	9	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side). Refer to LAN-265, "Diagnosis Procedure".

3.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 BOSE audio system

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M108	8	17	Approx. 54 – 66

- Models without BOSE audio system

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M101	8	17	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the AV control unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

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

- Navigation with BOSE: AV-337, "AV CONTROL UNIT : Diagnosis Procedure"
- Navigation without BOSE: AV-180, "AV CONTROL UNIT : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the AV control unit. Refer to following.
- Navigation with BOSE: AV-376, "Removal and Installation"
- Navigation without BOSE: AV-209, "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.

AVM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337506

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).

- Around view monitor control unit
- BCM

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

BCM harness connector			Continuity
Connector No.	Terminal No.		
M18	6	8	Existed
	5	9	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side). Refer to LAN-265, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of around view monitor control unit.
2. Check the resistance between the around view monitor control unit harness connector terminals.

- With lane departure prevention system

Around view monitor control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M113	27	28	Approx. 54 – 66

- Without lane departure prevention system

Around view monitor control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M103	12	10	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the around view monitor control unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the around view monitor control unit. Refer to the following.

- Navigation with BOSE: AV-338, "AROUND VIEW MONITOR CONTROL UNIT : Diagnosis Procedure"
- Navigation without BOSE: AV-180, "AROUND VIEW MONITOR CONTROL UNIT : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the around view monitor control unit. Refer to the following.
- Navigation with BOSE: AV-387, "Removal and Installation"
- Navigation without BOSE: AV-217, "Removal and Installation"

YES (Past error)>>Error was detected in the around view monitor control unit branch line.
NO >> Repair the power supply and the ground circuit.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337507

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).

- A/C auto amp. (With auto A/C)
- Harness connector M127 (With auto A/C)
- Harness connector M125 (With auto A/C)
- Front air control (Without auto A/C)
- BCM

Is the inspection result normal?

YES >> GO TO 2. (With auto A/C)
YES >> GO TO 3. (Without auto A/C)
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

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

BCM harness connector			Continuity
Connector No.	Terminal No.		
M18	6	8	Existed
	5	9	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side). Refer to LAN-265, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of BCM (With auto A/C).
2. Disconnect the connector of A/C auto amp. (With auto A/C) or front air control (Without auto A/C).
3. Check the resistance between the A/C auto amp. (With auto A/C) or front air control (Without auto A/C) harness connector terminals.

- With auto A/C

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M54	11	31	Approx. 54 – 66

- Without auto A/C

Front air control harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M50	7	23	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the A/C auto amp. (With auto A/C) or front air control (Without auto A/C) branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the A/C auto amp. (With auto A/C) or front air control (Without auto A/C). Refer to the following.

- Automatic air conditioning: HAC-56, "Diagnosis Procedure".

- Manual air conditioning: HAC-166, "FRONT A/C CONTROL : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the A/C auto amp. (With auto A/C) or front air control (Without auto A/C). Refer to the following.
- Automatic air conditioning: HAC-103, "Removal and Installation".
- Manual air conditioning: HAC-181, "Removal and Installation".

YES (Past error)>>Error was detected in the A/C auto amp. (With auto A/C) or front air control (Without auto A/C) branch line.

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

ICC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337508

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).

- Distance sensor
- Harness connector E152
- Harness connector M31
- BCM

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

BCM harness connector			Continuity
Connector No.	Terminal No.		
M18	6	8	Existed
	5	9	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side). Refer to LAN-265, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of BCM.
2. Disconnect the connector of distance sensor.
3. Check the resistance between the distance sensor harness connector terminals.

Distance sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E21	7	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the distance sensor branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the distance sensor. Refer to DAS-144, "DISTANCE SENSOR : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the distance sensor. Refer to DAS-160, "Removal and Installation".
YES (Past error)>>Error was detected in the distance sensor branch line.
NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT 1

Diagnosis Procedure

INFOID:0000000010337509

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit 1.
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.		
M22	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 fuse block (J/B) 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.		
M22	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 fuse block (J/B) is short) the root cause.

4.CHECK ECM AND BCM TERMINATION CIRCUIT

1. Remove the ECM and the BCM.
2. Check the resistance between the IPDM E/R terminals.

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
60	80	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ECM and/or the BCM.

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 battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit 1.
   NOTE:
   ECM and BCM have a termination circuit. Check other units first.
4. Connect the 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:0000000010337510

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the BCM 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 CONTINUITY (OPEN CIRCUIT)

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

BCM harness connector			Continuity
Connector No.	Terminal No.		
M18	6	8	Existed
	5	9	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair or replace the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

1. Disconnect all the unit connectors on CAN communication circuit 2.
2. Check the continuity between the BCM harness connector terminals.

BCM harness connector			Continuity
Connector No.	Terminal No.		
M18	6	5	Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair or replace the root cause.

4.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the BCM and the ground.

BCM harness connector		Ground	Continuity
Connector No.	Terminal No.		
M18	6		Not existed
	5		Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair or replace (if shield line is short) the root cause.

5.CHECK BCM TERMINATION CIRCUIT

1. Remove the BCM.
2. Check the resistance between the BCM terminals.

BCM	Resistance (Ω)
Terminal No.	

6	5	Approx. 108 – 132
8	9	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Replace the chassis control module.

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 UNIT REPRODUCTION

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

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit 2.
   NOTE:
   BCM has two termination circuits. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

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

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN IPDM-E AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000010337697

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 (connector side and harness side).

- Harness connector E152
- Harness connector M31

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.

- IPDM E/R
- Harness connectors E152 and M31

2. Check the continuity between the IPDM E/R harness connector and the harness connector.

IPDM E/R harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E120	24	E152	61J	Existed
	22		62J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the IPDM E/R and the harness connector E152.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

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

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	61J	M22	6	Existed
	62J		14	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 IPDM E/R and the data link connector.
NO >> Repair the main line between the harness connector M31 and the data link connector.

MAIN LINE BETWEEN DLC AND CCM CIRCUIT

Diagnosis Procedure

INFOID:0000000010337698

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Chassis control module

4. Check the continuity between the data link connector and the chassis control module harness connector.

Data link connector		Chassis control module harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	6	M96	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 data link connector and the chassis control module.
NO >> Repair the main line between the data link connector and the chassis control module.

MAIN LINE BETWEEN CCM AND 4WD CIRCUIT

Diagnosis Procedure

INFOID:0000000010351798

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 (connector side and harness side).

- Harness connector M69
- Harness connector B41

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.

- Chassis control module
- Harness connectors M69 and B41

2. Check the continuity between the chassis control module harness connector and the harness connector.

Chassis control module harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M96	4	M69	25	Existed
	3		24	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the chassis control module and the harness connector M69.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of AWD control unit.
2. Check the continuity between the harness connector and the AWD control unit harness connector.

Harness connector		AWD control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	25	B75	8	Existed
	24		16	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 chassis control module and the AWD control unit.
NO >> Repair the main line between the harness connector B41 and the AWD control unit.

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337700

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ECM 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 ECM.
2. Check the resistance between the ECM harness connector terminals.

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	100	99	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to EC-165, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to EC-499, "Removal and Installation".
YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337701

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ABS actuator and electric unit (control 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 ABS actuator and electric unit (control unit).
2. 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.		
E125	26	14	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ABS actuator and electric unit (control unit) branch line.

3.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-114, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-136, "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.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337702

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 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.		
E120	24	22	Approx. 54 – 66

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-34, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-35, "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.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337703

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).

- TCM
- IPDM E/R

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.

- TCM
- IPDM E/R

2. Check the continuity between the TCM harness connector and the IPDM E/R harness connector.

TCM harness connector		IPDM E/R harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
F75	33	F42	87	Existed
	23		88	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the branch line between the TCM and IPDM E/R.

3.CHECK IPDM E/R (OPEN CIRCUIT)

Check the continuity between the IPDM E/R terminals.

IPDM E/R terminals		Continuity
Terminal No.	Terminal No.	
87	39	Existed
88	40	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace the IPDM E/R.

4.CHECK HARNESS FOR OPEN CIRCUIT

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

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E120	39	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the IPDM E/R branch line.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to TM-176, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the TCM. Refer to TM-202, "Removal and Installation".

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

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337704

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

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.		
M22	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 circuit.
NO >> Repair the data link connector branch line.

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337705

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS control 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M49	2	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the EPS control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to STC-20, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to STC-36, "Removal and Installation".
YES (Past error)>>Error was detected in the EPS control unit branch line.
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337706

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the combination meter 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 combination meter.
2. Check the resistance between the combination meter harness connector terminals.

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M77	41	42	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the combination meter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the combination meter. Refer to MWI-59, "COMBINATION METER : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to MWI-82, "Removal and Installation".
YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337707

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the steering angle sensor 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 steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M56	5	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the steering angle sensor branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to BRC-57, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-139, "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.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337708

WARNING:

- **Before servicing, turn ignition switch OFF, disconnect 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 battery cable from the negative terminal.
3. Check the terminals and connectors of the air bag diagnosis sensor unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the main harness.

2.CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to SRC-39, "Work Flow".

Is the inspection result normal?

YES >> Replace the main harness.
NO >> Replace parts whose air bag system has a malfunction.

CCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337709

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the chassis control module connector 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 chassis control module.
2. Check the resistance between the chassis control module harness connector terminals.

Chassis control module harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M96	4	3	Approx. 54 – 66

Is the measurement value within the specification?

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

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the chassis control module. Refer to DAS-272, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the chassis control module. Refer to DAS-277, "Removal and Installation".
YES (Past error)>>Error was detected in the chassis control module branch line.
NG >> Repair the power supply and the ground circuit.

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337710

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the AWD control 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 AWD control unit.
2. Check the resistance between the AWD control unit harness connector terminals.

AWD control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B75	8	16	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the AWD control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the AWD control unit. Refer to DLN-57, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the AWD control unit. Refer to DLN-67, "Removal and Installation".
YES (Past error)>>Error was detected in the AWD control unit branch line.
NG >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337712

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the BCM 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 BCM.
2. Check the resistance between the BCM harness connector terminals.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B16	60	80	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the BCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to the following.
- With intelligent key system: BCS-68, "Diagnosis Procedure".
- Without intelligent key system: BCS-128, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to the following.
- With intelligent key system: BCS-75, "Removal and Installation".
- Without intelligent key system: BCS-135, "Removal and Installation".

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

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337715

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).

- A/C auto amp. (With auto A/C)
- Harness connector M127 (With auto A/C)
- Harness connector M125 (With auto A/C)
- Front air control (Without auto A/C)
- BCM

Is the inspection result normal?

YES >> GO TO 2. (With auto A/C)
YES >> GO TO 3. (Without auto A/C)
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

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

BCM harness connector			Continuity
Connector No.	Terminal No.		
M18	6	8	Existed
	5	9	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side). Refer to LAN-265, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of BCM (With auto A/C).
2. Disconnect the connector of A/C auto amp. (With auto A/C) or front air control (Without auto A/C).
3. Check the resistance between the A/C auto amp. (With auto A/C) or front air control (Without auto A/C) harness connector terminals.

- With auto A/C

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M54	11	31	Approx. 54 – 66

- Without auto A/C

Front air control harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M50	7	23	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the A/C auto amp. (With auto A/C) or front air control (Without auto A/C) branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the A/C auto amp. (With auto A/C) or front air control (Without auto A/C). Refer to the following.

- Automatic air conditioning: HAC-56, "Diagnosis Procedure".

- Manual air conditioning: HAC-166, "FRONT A/C CONTROL : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the A/C auto amp. (With auto A/C) or front air control (Without auto A/C). Refer to the following.
- Automatic air conditioning: HAC-103, "Removal and Installation".
- Manual air conditioning: HAC-181, "Removal and Installation".

YES (Past error)>>Error was detected in the A/C auto amp. (With auto A/C) or front air control (Without auto A/C) branch line.

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

CAN COMMUNICATION CIRCUIT 1

Diagnosis Procedure

INFOID:0000000010337717

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit 1.
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.		
M22	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 fuse block (J/B) 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.		
M22	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 fuse block (J/B) is short) the root cause.

4.CHECK ECM AND BCM TERMINATION CIRCUIT

1. Remove the ECM and the BCM.
2. Check the resistance between the IPDM E/R terminals.

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
60	80	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ECM and/or the BCM.

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 battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit 1.
   NOTE:
   ECM and BCM have a termination circuit. Check other units first.
4. Connect the 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:0000000010337718

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the BCM 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 CONTINUITY (OPEN CIRCUIT)

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

BCM harness connector			Continuity
Connector No.	Terminal No.		
M18	6	8	Existed
	5	9	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair or replace the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

1. Disconnect all the unit connectors on CAN communication circuit 2.
2. Check the continuity between the BCM harness connector terminals.

BCM harness connector			Continuity
Connector No.	Terminal No.		
M18	6	5	Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair or replace the root cause.

4.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the BCM and the ground.

BCM harness connector		Ground	Continuity
Connector No.	Terminal No.		
M18	6		Not existed
	5		Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair or replace (if shield line is short) the root cause.

5.CHECK BCM TERMINATION CIRCUIT

1. Remove the BCM.
2. Check the resistance between the BCM terminals.

BCM	Resistance (Ω)
Terminal No.	

6	5	Approx. 108 – 132
8	9	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Replace the chassis control module.

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 UNIT REPRODUCTION

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

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit 2.
   NOTE:
   BCM has two termination circuits. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

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

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN IPDM-E AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000010337721

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 (connector side and harness side).

- Harness connector E152
- Harness connector M31

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.

- IPDM E/R
- Harness connectors E152 and M31

2. Check the continuity between the IPDM E/R harness connector and the harness connector.

IPDM E/R harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E120	24	E152	61J	Existed
	22		62J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the IPDM E/R and the harness connector E152.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

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

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	61J	M22	6	Existed
	62J		14	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 IPDM E/R and the data link connector.
NO >> Repair the main line between the harness connector M31 and the data link connector.

MAIN LINE BETWEEN DLC AND CCM CIRCUIT

Diagnosis Procedure

INFOID:0000000010337722

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Chassis control module

4. Check the continuity between the data link connector and the chassis control module harness connector.

Data link connector		Chassis control module harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	6	M96	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 data link connector and the chassis control module.
NO >> Repair the main line between the data link connector and the chassis control module.

MAIN LINE BETWEEN CCM AND PWBD CIRCUIT

Diagnosis Procedure

INFOID:0000000010337723

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 (connector side and harness side).

- Harness connector M69
- Harness connector B41

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.

- Chassis control module
- Harness connectors M69 and B41

2. Check the continuity between the chassis control module harness connector and the harness connector.

Chassis control module harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M96	4	M69	25	Existed
	3		24	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the chassis control module and the harness connector M69.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of automatic back door control module.
2. Check the continuity between the harness connector and the automatic back door control module harness connector.

Harness connector		Automatic back door control module harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	25	B55	24	Existed
	24		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 chassis control module and the automatic back door control module.
NO >> Repair the main line between the harness connector B41 and the automatic back door control module.

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337724

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ECM 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 ECM.
2. Check the resistance between the ECM harness connector terminals.

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	100	99	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to EC-165, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to EC-499, "Removal and Installation".
YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337725

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ABS actuator and electric unit (control 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 ABS actuator and electric unit (control unit).
2. 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.		
E125	26	14	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ABS actuator and electric unit (control unit) branch line.

3.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-114, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-136, "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.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337726

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 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.		
E120	24	22	Approx. 54 – 66

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-34, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-35, "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.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337727

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).

- TCM
- IPDM E/R

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.

- TCM
- IPDM E/R

2. Check the continuity between the TCM harness connector and the IPDM E/R harness connector.

TCM harness connector		IPDM E/R harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
F75	33	F42	87	Existed
	23		88	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the branch line between the TCM and IPDM E/R.

3.CHECK IPDM E/R (OPEN CIRCUIT)

Check the continuity between the IPDM E/R terminals.

IPDM E/R terminals		Continuity
Terminal No.	Terminal No.	
87	39	Existed
88	40	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace the IPDM E/R.

4.CHECK HARNESS FOR OPEN CIRCUIT

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

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E120	39	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the IPDM E/R branch line.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to TM-176, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the TCM. Refer to TM-202, "Removal and Installation".

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

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337728

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

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.		
M22	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 circuit.
NO >> Repair the data link connector branch line.

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337729

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS control 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M49	2	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the EPS control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to STC-20, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to STC-36, "Removal and Installation".
YES (Past error)>>Error was detected in the EPS control unit branch line.
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337730

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the combination meter 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 combination meter.
2. Check the resistance between the combination meter harness connector terminals.

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M77	41	42	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the combination meter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the combination meter. Refer to MWI-59, "COMBINATION METER : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to MWI-82, "Removal and Installation".
YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337731

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the steering angle sensor 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 steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M56	5	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the steering angle sensor branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to BRC-57, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-139, "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.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337732

WARNING:

- **Before servicing, turn ignition switch OFF, disconnect 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 battery cable from the negative terminal.
3. Check the terminals and connectors of the air bag diagnosis sensor unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the main harness.

2.CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to SRC-39, "Work Flow".

Is the inspection result normal?

YES >> Replace the main harness.
NO >> Replace parts whose air bag system has a malfunction.

CCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337733

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the chassis control module connector 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 chassis control module.
2. Check the resistance between the chassis control module harness connector terminals.

Chassis control module harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M96	4	3	Approx. 54 – 66

Is the measurement value within the specification?

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

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the chassis control module. Refer to DAS-272, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the chassis control module. Refer to DAS-277, "Removal and Installation".
YES (Past error)>>Error was detected in the chassis control module branch line.
NG >> Repair the power supply and the ground circuit.

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337734

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the AWD control 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 AWD control unit.
2. Check the resistance between the AWD control unit harness connector terminals.

AWD control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B75	8	16	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the AWD control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the AWD control unit. Refer to DLN-57, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the AWD control unit. Refer to DLN-67, "Removal and Installation".
YES (Past error)>>Error was detected in the AWD control unit branch line.
NG >> Repair the power supply and the ground circuit.

PWBD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337735

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the automatic back door 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 automatic back door control module.
2. Check the resistance between the automatic back door control module harness connector terminals.

Automatic back door control module harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B55	24	12	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the automatic back door control module branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the automatic back door control module. Refer to DLK-141, "AUTOMATIC BACK DOOR CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the automatic back door control module. Refer to DLK-276, "Removal and Installation".
YES (Past error)>>Error was detected in the automatic back door control module branch line.
NG >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337736

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the BCM 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 BCM.
2. Check the resistance between the BCM harness connector terminals.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B16	60	80	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the BCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to the following.
- With intelligent key system: BCS-68, "Diagnosis Procedure".
- Without intelligent key system: BCS-128, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to the following.
- With intelligent key system: BCS-75, "Removal and Installation".
- Without intelligent key system: BCS-135, "Removal and Installation".

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

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337739

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).

- A/C auto amp. (With auto A/C)
- Harness connector M127 (With auto A/C)
- Harness connector M125 (With auto A/C)
- Front air control (Without auto A/C)
- BCM

Is the inspection result normal?

YES >> GO TO 2. (With auto A/C)
YES >> GO TO 3. (Without auto A/C)
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

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

BCM harness connector			Continuity
Connector No.	Terminal No.		
M18	6	8	Existed
	5	9	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side). Refer to LAN-265, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of BCM (With auto A/C).
2. Disconnect the connector of A/C auto amp. (With auto A/C) or front air control (Without auto A/C).
3. Check the resistance between the A/C auto amp. (With auto A/C) or front air control (Without auto A/C) harness connector terminals.

- With auto A/C

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M54	11	31	Approx. 54 – 66

- Without auto A/C

Front air control harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M50	7	23	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the A/C auto amp. (With auto A/C) or front air control (Without auto A/C) branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the A/C auto amp. (With auto A/C) or front air control (Without auto A/C). Refer to the following.

- Automatic air conditioning: HAC-56, "Diagnosis Procedure".

- Manual air conditioning: HAC-166, "FRONT A/C CONTROL : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the A/C auto amp. (With auto A/C) or front air control (Without auto A/C). Refer to the following.
- Automatic air conditioning: HAC-103, "Removal and Installation".
- Manual air conditioning: HAC-181, "Removal and Installation".

YES (Past error)>>Error was detected in the A/C auto amp. (With auto A/C) or front air control (Without auto A/C) branch line.

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

CAN COMMUNICATION CIRCUIT 1

Diagnosis Procedure

INFOID:0000000010337741

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit 1.
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.		
M22	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 fuse block (J/B) 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.		
M22	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 fuse block (J/B) is short) the root cause.

4.CHECK ECM AND BCM TERMINATION CIRCUIT

1. Remove the ECM and the BCM.
2. Check the resistance between the IPDM E/R terminals.

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
60	80	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ECM and/or the BCM.

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 battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit 1.
   NOTE:
   ECM and BCM have a termination circuit. Check other units first.
4. Connect the 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:0000000010337742

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the BCM 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 CONTINUITY (OPEN CIRCUIT)

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

BCM harness connector			Continuity
Connector No.	Terminal No.		
M18	6	8	Existed
	5	9	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair or replace the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

1. Disconnect all the unit connectors on CAN communication circuit 2.
2. Check the continuity between the BCM harness connector terminals.

BCM harness connector			Continuity
Connector No.	Terminal No.		
M18	6	5	Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair or replace the root cause.

4.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the BCM and the ground.

BCM harness connector		Ground	Continuity
Connector No.	Terminal No.		
M18	6		Not existed
	5		Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair or replace (if shield line is short) the root cause.

5.CHECK BCM TERMINATION CIRCUIT

1. Remove the BCM.
2. Check the resistance between the BCM terminals.

BCM	Resistance (Ω)
Terminal No.	

6	5	Approx. 108 – 132
8	9	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Replace the chassis control module.

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 UNIT REPRODUCTION

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

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit 2.
   NOTE:
   BCM has two termination circuits. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

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

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN IPDM-E AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000010337743

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 (connector side and harness side).

- Harness connector E152
- Harness connector M31

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.

- IPDM E/R
- Harness connectors E152 and M31

2. Check the continuity between the IPDM E/R harness connector and the harness connector.

IPDM E/R harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E120	24	E152	61J	Existed
	22		62J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the IPDM E/R and the harness connector E152.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

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

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	61J	M22	6	Existed
	62J		14	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 IPDM E/R and the data link connector.
NO >> Repair the main line between the harness connector M31 and the data link connector.

MAIN LINE BETWEEN DLC AND CCM CIRCUIT

Diagnosis Procedure

INFOID:0000000010337744

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Chassis control module

4. Check the continuity between the data link connector and the chassis control module harness connector.

Data link connector		Chassis control module harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	6	M96	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 data link connector and the chassis control module.
NO >> Repair the main line between the data link connector and the chassis control module.

MAIN LINE BETWEEN CCM AND PWBD CIRCUIT

Diagnosis Procedure

INFOID:0000000010337745

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 (connector side and harness side).

- Harness connector M69
- Harness connector B41

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.

- Chassis control module
- Harness connectors M69 and B41

2. Check the continuity between the chassis control module harness connector and the harness connector.

Chassis control module harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M96	4	M69	25	Existed
	3		24	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the chassis control module and the harness connector M69.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of automatic back door control module.
2. Check the continuity between the harness connector and the automatic back door control module harness connector.

Harness connector		Automatic back door control module harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	25	B55	24	Existed
	24		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 chassis control module and the automatic back door control module.
NO >> Repair the main line between the harness connector B41 and the automatic back door control module.

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337746

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ECM 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 ECM.
2. Check the resistance between the ECM harness connector terminals.

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	100	99	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to EC-165, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to EC-499, "Removal and Installation".
YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337747

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ABS actuator and electric unit (control 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 ABS actuator and electric unit (control unit).
2. 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.		
E125	26	14	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ABS actuator and electric unit (control unit) branch line.

3.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-114, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-136, "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.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337748

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 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.		
E120	24	22	Approx. 54 – 66

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-34, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-35, "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.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337749

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).

- TCM
- IPDM E/R

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.

- TCM
- IPDM E/R

2. Check the continuity between the TCM harness connector and the IPDM E/R harness connector.

TCM harness connector		IPDM E/R harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
F75	33	F42	87	Existed
	23		88	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the branch line between the TCM and IPDM E/R.

3.CHECK IPDM E/R (OPEN CIRCUIT)

Check the continuity between the IPDM E/R terminals.

IPDM E/R terminals		Continuity
Terminal No.	Terminal No.	
87	39	Existed
88	40	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace the IPDM E/R.

4.CHECK HARNESS FOR OPEN CIRCUIT

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

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E120	39	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the IPDM E/R branch line.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to TM-176, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the TCM. Refer to TM-202, "Removal and Installation".

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

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337750

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

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.		
M22	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 circuit.
NO >> Repair the data link connector branch line.

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337751

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS control 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M49	2	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the EPS control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to STC-20, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to STC-36, "Removal and Installation".
YES (Past error)>>Error was detected in the EPS control unit branch line.
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337752

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the combination meter 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 combination meter.
2. Check the resistance between the combination meter harness connector terminals.

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M77	41	42	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the combination meter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the combination meter. Refer to MWI-59, "COMBINATION METER : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to MWI-82, "Removal and Installation".
YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337753

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the steering angle sensor 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 steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M56	5	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the steering angle sensor branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to BRC-57, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-139, "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.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337754

WARNING:

- **Before servicing, turn ignition switch OFF, disconnect 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 battery cable from the negative terminal.
3. Check the terminals and connectors of the air bag diagnosis sensor unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the main harness.

2.CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to SRC-39, "Work Flow".

Is the inspection result normal?

YES >> Replace the main harness.
NO >> Replace parts whose air bag system has a malfunction.

CCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337755

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the chassis control module connector 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 chassis control module.
2. Check the resistance between the chassis control module harness connector terminals.

Chassis control module harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M96	4	3	Approx. 54 – 66

Is the measurement value within the specification?

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

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the chassis control module. Refer to DAS-272, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the chassis control module. Refer to DAS-277, "Removal and Installation".
YES (Past error)>>Error was detected in the chassis control module branch line.
NG >> Repair the power supply and the ground circuit.

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337756

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the AWD control 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 AWD control unit.
2. Check the resistance between the AWD control unit harness connector terminals.

AWD control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B75	8	16	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the AWD control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the AWD control unit. Refer to DLN-57, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the AWD control unit. Refer to DLN-67, "Removal and Installation".
YES (Past error)>>Error was detected in the AWD control unit branch line.
NG >> Repair the power supply and the ground circuit.

PWBD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337757

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the automatic back door 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 automatic back door control module.
2. Check the resistance between the automatic back door control module harness connector terminals.

Automatic back door control module harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B55	24	12	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the automatic back door control module branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the automatic back door control module. Refer to DLK-141, "AUTOMATIC BACK DOOR CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the automatic back door control module. Refer to DLK-276, "Removal and Installation".
YES (Past error)>>Error was detected in the automatic back door control module branch line.
NG >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337758

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the BCM 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 BCM.
2. Check the resistance between the BCM harness connector terminals.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B16	60	80	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the BCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to the following.

- With intelligent key system: BCS-68, "Diagnosis Procedure".
- Without intelligent key system: BCS-128, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to the following.
- With intelligent key system: BCS-75, "Removal and Installation".
- Without intelligent key system: BCS-135, "Removal and Installation".

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

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337759

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).

- AV control unit
- BCM

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

BCM harness connector			Continuity
Connector No.	Terminal No.		
M18	6	8	Existed
	5	9	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side). Refer to LAN-265, "Diagnosis Procedure".

3.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 BOSE audio system

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M108	8	17	Approx. 54 – 66

- Models without BOSE audio system

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M101	8	17	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the AV control unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

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

- Navigation with BOSE: AV-337, "AV CONTROL UNIT : Diagnosis Procedure"
- Navigation without BOSE: AV-180, "AV CONTROL UNIT : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the AV control unit. Refer to following.
- Navigation with BOSE: AV-376, "Removal and Installation"
- Navigation without BOSE: AV-209, "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.

AVM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337760

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).

- Around view monitor control unit
- BCM

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

BCM harness connector			Continuity
Connector No.	Terminal No.		
M18	6	8	Existed
	5	9	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side). Refer to LAN-265, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of around view monitor control unit.
2. Check the resistance between the around view monitor control unit harness connector terminals.

- With lane departure prevention system

Around view monitor control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M113	27	28	Approx. 54 – 66

- Without lane departure prevention system

Around view monitor control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M103	12	10	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the around view monitor control unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the around view monitor control unit. Refer to the following.

- Navigation with BOSE: AV-338, "AROUND VIEW MONITOR CONTROL UNIT : Diagnosis Procedure"
- Navigation without BOSE: AV-180, "AROUND VIEW MONITOR CONTROL UNIT : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the around view monitor control unit. Refer to the following.
- Navigation with BOSE: AV-387, "Removal and Installation"
- Navigation without BOSE: AV-217, "Removal and Installation"

YES (Past error)>>Error was detected in the around view monitor control unit branch line.
NO >> Repair the power supply and the ground circuit.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337761

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).

- A/C auto amp. (With auto A/C)
- Harness connector M127 (With auto A/C)
- Harness connector M125 (With auto A/C)
- Front air control (Without auto A/C)
- BCM

Is the inspection result normal?

YES >> GO TO 2. (With auto A/C)
YES >> GO TO 3. (Without auto A/C)
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

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

BCM harness connector			Continuity
Connector No.	Terminal No.		
M18	6	8	Existed
	5	9	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side). Refer to LAN-265, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of BCM (With auto A/C).
2. Disconnect the connector of A/C auto amp. (With auto A/C) or front air control (Without auto A/C).
3. Check the resistance between the A/C auto amp. (With auto A/C) or front air control (Without auto A/C) harness connector terminals.

- With auto A/C

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M54	11	31	Approx. 54 – 66

- Without auto A/C

Front air control harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M50	7	23	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the A/C auto amp. (With auto A/C) or front air control (Without auto A/C) branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the A/C auto amp. (With auto A/C) or front air control (Without auto A/C). Refer to the following.

- Automatic air conditioning: HAC-56, "Diagnosis Procedure".

- Manual air conditioning: HAC-166, "FRONT A/C CONTROL : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the A/C auto amp. (With auto A/C) or front air control (Without auto A/C). Refer to the following.
- Automatic air conditioning: HAC-103, "Removal and Installation".
- Manual air conditioning: HAC-181, "Removal and Installation".

YES (Past error)>>Error was detected in the A/C auto amp. (With auto A/C) or front air control (Without auto A/C) branch line.

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

CAN COMMUNICATION CIRCUIT 1

Diagnosis Procedure

INFOID:0000000010337763

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit 1.
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.		
M22	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 fuse block (J/B) 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.		
M22	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 fuse block (J/B) is short) the root cause.

4.CHECK ECM AND BCM TERMINATION CIRCUIT

1. Remove the ECM and the BCM.
2. Check the resistance between the IPDM E/R terminals.

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
60	80	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ECM and/or the BCM.

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 battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit 1.
   NOTE:
   ECM and BCM have a termination circuit. Check other units first.
4. Connect the 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:0000000010337764

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the BCM 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 CONTINUITY (OPEN CIRCUIT)

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

BCM harness connector			Continuity
Connector No.	Terminal No.		
M18	6	8	Existed
	5	9	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair or replace the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

1. Disconnect all the unit connectors on CAN communication circuit 2.
2. Check the continuity between the BCM harness connector terminals.

BCM harness connector			Continuity
Connector No.	Terminal No.		
M18	6	5	Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair or replace the root cause.

4.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the BCM and the ground.

BCM harness connector		Ground	Continuity
Connector No.	Terminal No.		
M18	6		Not existed
	5		Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair or replace (if shield line is short) the root cause.

5.CHECK BCM TERMINATION CIRCUIT

1. Remove the BCM.
2. Check the resistance between the BCM terminals.

BCM	Resistance (Ω)
Terminal No.	

6	5	Approx. 108 – 132
8	9	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Replace the chassis control module.

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 UNIT REPRODUCTION

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

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit 2.
   NOTE:
   BCM has two termination circuits. Check other units first.
4. Connect the battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

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

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN IPDM-E AND DLC CIRCUIT

Diagnosis Procedure

INFOID:0000000010337777

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 (connector side and harness side).

- Harness connector E152
- Harness connector M31

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.

- IPDM E/R
- Harness connectors E152 and M31

2. Check the continuity between the IPDM E/R harness connector and the harness connector.

IPDM E/R harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E120	24	E152	61J	Existed
	22		62J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the IPDM E/R and the harness connector E152.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

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

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	61J	M22	6	Existed
	62J		14	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 IPDM E/R and the data link connector.
NO >> Repair the main line between the harness connector M31 and the data link connector.

MAIN LINE BETWEEN DLC AND CCM CIRCUIT

Diagnosis Procedure

INFOID:0000000010337778

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
- ECM
- Chassis control module
4. Check the continuity between the data link connector and the chassis control module harness connector.

Data link connector		Chassis control module harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M22	6	M96	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 data link connector and the chassis control module.
NO >> Repair the main line between the data link connector and the chassis control module.

MAIN LINE BETWEEN CCM AND PWBD CIRCUIT

Diagnosis Procedure

INFOID:0000000010337779

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 (connector side and harness side).

- Harness connector M69
- Harness connector B41

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.

- Chassis control module
- Harness connectors M69 and B41

2. Check the continuity between the chassis control module harness connector and the harness connector.

Chassis control module harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M96	4	M69	25	Existed
	3		24	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the chassis control module and the harness connector M69.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of automatic back door control module.
2. Check the continuity between the harness connector and the automatic back door control module harness connector.

Harness connector		Automatic back door control module harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	25	B55	24	Existed
	24		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 chassis control module and the automatic back door control module.
NO >> Repair the main line between the harness connector B41 and the automatic back door control module.

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337780

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ECM 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 ECM.
2. Check the resistance between the ECM harness connector terminals.

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E16	100	99	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to EC-165, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to EC-499, "Removal and Installation".
YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337781

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the ABS actuator and electric unit (control 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 ABS actuator and electric unit (control unit).
2. 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.		
E125	26	14	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ABS actuator and electric unit (control unit) branch line.

3.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-114, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-136, "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.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337782

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 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.		
E120	24	22	Approx. 54 – 66

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-34, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-35, "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.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337783

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).

- TCM
- IPDM E/R

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.

- TCM
- IPDM E/R

2. Check the continuity between the TCM harness connector and the IPDM E/R harness connector.

TCM harness connector		IPDM E/R harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
F75	33	F42	87	Existed
	23		88	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the branch line between the TCM and IPDM E/R.

3.CHECK IPDM E/R (OPEN CIRCUIT)

Check the continuity between the IPDM E/R terminals.

IPDM E/R terminals		Continuity
Terminal No.	Terminal No.	
87	39	Existed
88	40	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace the IPDM E/R.

4.CHECK HARNESS FOR OPEN CIRCUIT

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

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E120	39	40	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Repair the IPDM E/R branch line.

5.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to TM-176, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the TCM. Refer to TM-202, "Removal and Installation".

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

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337784

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the data link connector for damage, bend and loose connection (connector side and harness side).

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.		
M22	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 circuit.
NO >> Repair the data link connector branch line.

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337785

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the EPS control 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 EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M49	2	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the EPS control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to STC-20, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to STC-36, "Removal and Installation".
YES (Past error)>>Error was detected in the EPS control unit branch line.
NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337786

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the combination meter 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 combination meter.
2. Check the resistance between the combination meter harness connector terminals.

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M77	41	42	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the combination meter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the combination meter. Refer to MWI-59, "COMBINATION METER : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to MWI-82, "Removal and Installation".
YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337787

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the steering angle sensor 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 steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M56	5	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the steering angle sensor branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the steering angle sensor. Refer to BRC-57, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-139, "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.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337788

WARNING:

- **Before servicing, turn ignition switch OFF, disconnect 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 battery cable from the negative terminal.
3. Check the terminals and connectors of the air bag diagnosis sensor unit for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

YES >> GO TO 2.
NO >> Replace the main harness.

2.CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to SRC-39, "Work Flow".

Is the inspection result normal?

YES >> Replace the main harness.
NO >> Replace parts whose air bag system has a malfunction.

CCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337789

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the chassis control module connector 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 chassis control module.
2. Check the resistance between the chassis control module harness connector terminals.

Chassis control module harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M96	4	3	Approx. 54 – 66

Is the measurement value within the specification?

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

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the chassis control module. Refer to DAS-272, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the chassis control module. Refer to DAS-277, "Removal and Installation".
YES (Past error)>>Error was detected in the chassis control module branch line.
NG >> Repair the power supply and the ground circuit.

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337790

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the AWD control 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 AWD control unit.
2. Check the resistance between the AWD control unit harness connector terminals.

AWD control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B75	8	16	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the AWD control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the AWD control unit. Refer to DLN-57, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the AWD control unit. Refer to DLN-67, "Removal and Installation".
YES (Past error)>>Error was detected in the AWD control unit branch line.
NG >> Repair the power supply and the ground circuit.

PWBD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337791

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the automatic back door 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 automatic back door control module.
2. Check the resistance between the automatic back door control module harness connector terminals.

Automatic back door control module harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B55	24	12	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the automatic back door control module branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the automatic back door control module. Refer to DLK-141, "AUTOMATIC BACK DOOR CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the automatic back door control module. Refer to DLK-276, "Removal and Installation".
YES (Past error)>>Error was detected in the automatic back door control module branch line.
NG >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337792

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the BCM 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 BCM.
2. Check the resistance between the BCM harness connector terminals.

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B16	60	80	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the BCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to the following.
- With intelligent key system: BCS-68, "Diagnosis Procedure".
- Without intelligent key system: BCS-128, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to the following.
- With intelligent key system: BCS-75, "Removal and Installation".
- Without intelligent key system: BCS-135, "Removal and Installation".

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

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337793

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).

- AV control unit
- BCM

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

BCM harness connector			Continuity
Connector No.	Terminal No.		
M18	6	8	Existed
	5	9	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side). Refer to LAN-265, "Diagnosis Procedure".

3.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 BOSE audio system

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M108	8	17	Approx. 54 – 66

- Models without BOSE audio system

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M101	8	17	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the AV control unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

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

- Navigation with BOSE: AV-337, "AV CONTROL UNIT : Diagnosis Procedure"
- Navigation without BOSE: AV-180, "AV CONTROL UNIT : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the AV control unit. Refer to following.
- Navigation with BOSE: AV-376, "Removal and Installation"
- Navigation without BOSE: AV-209, "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.

AVM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337794

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).

- Around view monitor control unit
- BCM

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

BCM harness connector			Continuity
Connector No.	Terminal No.		
M18	6	8	Existed
	5	9	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side). Refer to LAN-265, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of around view monitor control unit.
2. Check the resistance between the around view monitor control unit harness connector terminals.

- With lane departure prevention system

Around view monitor control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M113	27	28	Approx. 54 – 66

- Without lane departure prevention system

Around view monitor control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M103	12	10	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the around view monitor control unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the around view monitor control unit. Refer to the following.

- Navigation with BOSE: AV-338, "AROUND VIEW MONITOR CONTROL UNIT : Diagnosis Procedure"
- Navigation without BOSE: AV-180, "AROUND VIEW MONITOR CONTROL UNIT : Diagnosis Procedure"

Is the inspection result normal?

YES (Present error)>>Replace the around view monitor control unit. Refer to the following.
- Navigation with BOSE: AV-387, "Removal and Installation"
- Navigation without BOSE: AV-217, "Removal and Installation"

YES (Past error)>>Error was detected in the around view monitor control unit branch line.
NO >> Repair the power supply and the ground circuit.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337795

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).

- A/C auto amp. (With auto A/C)
- Harness connector M127 (With auto A/C)
- Harness connector M125 (With auto A/C)
- Front air control (Without auto A/C)
- BCM

Is the inspection result normal?

YES >> GO TO 2. (With auto A/C)
YES >> GO TO 3. (Without auto A/C)
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

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

BCM harness connector			Continuity
Connector No.	Terminal No.		
M18	6	8	Existed
	5	9	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side). Refer to LAN-265, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of BCM (With auto A/C).
2. Disconnect the connector of A/C auto amp. (With auto A/C) or front air control (Without auto A/C).
3. Check the resistance between the A/C auto amp. (With auto A/C) or front air control (Without auto A/C) harness connector terminals.

- With auto A/C

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M54	11	31	Approx. 54 – 66

- Without auto A/C

Front air control harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M50	7	23	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the A/C auto amp. (With auto A/C) or front air control (Without auto A/C) branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the A/C auto amp. (With auto A/C) or front air control (Without auto A/C). Refer to the following.

- Automatic air conditioning: HAC-56, "Diagnosis Procedure".

- Manual air conditioning: HAC-166, "FRONT A/C CONTROL : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the A/C auto amp. (With auto A/C) or front air control (Without auto A/C). Refer to the following.
- Automatic air conditioning: HAC-103, "Removal and Installation".
- Manual air conditioning: HAC-181, "Removal and Installation".

YES (Past error)>>Error was detected in the A/C auto amp. (With auto A/C) or front air control (Without auto A/C) branch line.

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

ICC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010337796

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).

- Distance sensor
- Harness connector E152
- Harness connector M31
- BCM

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

BCM harness connector			Continuity
Connector No.	Terminal No.		
M18	6	8	Existed
	5	9	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (CAN communication circuit 2 side). Refer to LAN-265, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of BCM.
2. Disconnect the connector of distance sensor.
3. Check the resistance between the distance sensor harness connector terminals.

Distance sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E21	7	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the distance sensor branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the distance sensor. Refer to DAS-144, "DISTANCE SENSOR : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the distance sensor. Refer to DAS-160, "Removal and Installation".
YES (Past error)>>Error was detected in the distance sensor branch line.
NO >> Repair the power supply and the ground circuit.

CAN COMMUNICATION CIRCUIT 1

Diagnosis Procedure

INFOID:0000000010337797

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication circuit 1.
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.		
M22	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 fuse block (J/B) 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.		
M22	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 fuse block (J/B) is short) the root cause.

4.CHECK ECM AND BCM TERMINATION CIRCUIT

1. Remove the ECM and the BCM.
2. Check the resistance between the IPDM E/R terminals.

ECM		Resistance (Ω)
Terminal No.		
100	99	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
60	80	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 5.
NO >> Replace the ECM and/or the BCM.

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 battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit 1.
   NOTE:
   ECM and BCM have a termination circuit. Check other units first.
4. Connect the 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:0000000010337798

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the BCM 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 CONTINUITY (OPEN CIRCUIT)

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

BCM harness connector			Continuity
Connector No.	Terminal No.		
M18	6	8	Existed
	5	9	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair or replace the root cause.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

1. Disconnect all the unit connectors on CAN communication circuit 2.
2. Check the continuity between the BCM harness connector terminals.

BCM harness connector			Continuity
Connector No.	Terminal No.		
M18	6	5	Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Check the harness and repair or replace the root cause.

4.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the BCM and the ground.

BCM harness connector		Ground	Continuity
Connector No.	Terminal No.		
M18	6		Not existed
	5		Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair or replace (if shield line is short) the root cause.

5.CHECK BCM TERMINATION CIRCUIT

1. Remove the BCM.
2. Check the resistance between the BCM terminals.

BCM	Resistance (Ω)
Terminal No.	

6	5	Approx. 108 – 132
8	9	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Replace the chassis control module.

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 UNIT REPRODUCTION

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

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication circuit 2.
   NOTE:
   BCM has two termination circuits. Check other units first.
4. Connect the 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.