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Diagnosis Procedure 515

ICC 2 BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT) 516
Diagnosis Procedure 516

TCM BRANCH LINE CIRCUIT 517
Diagnosis Procedure 517

INV/MC BRANCH LINE CIRCUIT 519
Diagnosis Procedure 519

HV BAT BRANCH LINE CIRCUIT 520
Diagnosis Procedure 520

DLC BRANCH LINE CIRCUIT 521
Diagnosis Procedure 521

AV BRANCH LINE CIRCUIT 522
Diagnosis Procedure 522

VEHICLE CAN COMMUNICATION 1 CIRCUIT 523
Diagnosis Procedure 523

VEHICLE CAN COMMUNICATION 2 CIRCUIT 525
Diagnosis Procedure 525

ITS CAN COMMUNICATION CIRCUIT 527
Diagnosis Procedure 527

IT CAN COMMUNICATION CIRCUIT 530
Diagnosis Procedure 530

DIAGNOSTIC CAN COMMUNICATION CIRCUIT 532
Diagnosis Procedure 532

HEV SYSTEM CAN CIRCUIT 534
Diagnosis Procedure 534

CAN SYSTEM (TYPE 59)

DTC/CIRCUIT DIAGNOSIS 536

MAIN LINE BETWEEN IPDM-E AND M&A CIRCUIT 536
Diagnosis Procedure 536

MAIN LINE BETWEEN M&A AND STRG CIRCUIT 537
Diagnosis Procedure 537

MAIN LINE BETWEEN STRG AND 4WD CIRCUIT 538
Diagnosis Procedure 538

MAIN LINE BETWEEN AVM AND LANE CIRCUIT 539
Diagnosis Procedure 539

MAIN LINE BETWEEN RDR-R AND AVM CIRCUIT 540
Diagnosis Procedure 540

MAIN LINE BETWEEN RDR-L AND RDR-R CIRCUIT 541
Diagnosis Procedure 541

MAIN LINE BETWEEN EV/HEV AND HV BAT CIRCUIT 542
Diagnosis Procedure 542

ECM BRANCH LINE CIRCUIT (VEHICLE CAN COMMUNICATION 1 CIRCUIT) 543
Diagnosis Procedure 543

ECM BRANCH LINE CIRCUIT (HEV SYSTEM CAN CIRCUIT) 544
Diagnosis Procedure 544

ABS BRANCH LINE CIRCUIT 545
Diagnosis Procedure 545

EV/HEV BRANCH LINE CIRCUIT (VEHICLE CAN COMMUNICATION 1 CIRCUIT) 546
Diagnosis Procedure 546

EV/HEV BRANCH LINE CIRCUIT (HEV SYSTEM CAN CIRCUIT) 547
Diagnosis Procedure 547

IPDM-E BRANCH LINE CIRCUIT 548
Diagnosis Procedure 548

M&A BRANCH LINE CIRCUIT 549
Diagnosis Procedure 549

3CH CGW BRANCH LINE CIRCUIT 550
Diagnosis Procedure 550

A-BAG BRANCH LINE CIRCUIT 551
Diagnosis Procedure 551

CCM BRANCH LINE CIRCUIT (VEHICLE CAN COMMUNICATION 1 CIRCUIT) 552
Diagnosis Procedure 552

CCM BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT) 553
Diagnosis Procedure 553

STRG BRANCH LINE CIRCUIT 554
Diagnosis Procedure 554

4WD BRANCH LINE CIRCUIT 555
Diagnosis Procedure 555

ADP BRANCH LINE CIRCUIT 556
Diagnosis Procedure 556

PWBD BRANCH LINE CIRCUIT 557
Diagnosis Procedure 557

BCM BRANCH LINE CIRCUIT 558
Diagnosis Procedure 558

BRAKE BRANCH LINE CIRCUIT 559
Diagnosis Procedure 559

EPS/DAST 3 BRANCH LINE CIRCUIT 560
Diagnosis Procedure 560

HVAC BRANCH LINE CIRCUIT 561
Diagnosis Procedure 561

VSP BRANCH LINE CIRCUIT 562
Diagnosis Procedure 562

AVM BRANCH LINE CIRCUIT 563
Diagnosis Procedure 563

RDR-R BRANCH LINE CIRCUIT 564
Diagnosis Procedure 564

RDR-L BRANCH LINE CIRCUIT 565
Diagnosis Procedure 565

ICC 2 BRANCH LINE CIRCUIT (VEHICLE CAN COMMUNICATION 2 CIRCUIT) 566
Diagnosis Procedure 566

ICC 2 BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT) 567
Diagnosis Procedure 567

LANE BRANCH LINE CIRCUIT 568
Diagnosis Procedure 568

TCM BRANCH LINE CIRCUIT 569
Diagnosis Procedure 569

INV/MC BRANCH LINE CIRCUIT 571
Diagnosis Procedure 571

HV BAT BRANCH LINE CIRCUIT 572
Diagnosis Procedure 572

DLC BRANCH LINE CIRCUIT 573
Diagnosis Procedure 573

AV BRANCH LINE CIRCUIT 574
Diagnosis Procedure 574

TCU BRANCH LINE CIRCUIT 575
Diagnosis Procedure 575

VEHICLE CAN COMMUNICATION 1 CIRCUIT 576
Diagnosis Procedure 576

VEHICLE CAN COMMUNICATION 2 CIRCUIT 578
Diagnosis Procedure 578

ITS CAN COMMUNICATION CIRCUIT 580
Diagnosis Procedure 580

IT CAN COMMUNICATION CIRCUIT 583
Diagnosis Procedure 583

DIAGNOSTIC CAN COMMUNICATION CIRCUIT 585
Diagnosis Procedure 585

HEV SYSTEM CAN CIRCUIT 587
Diagnosis Procedure 587

CAN SYSTEM (TYPE 61)

DTC/CIRCUIT DIAGNOSIS 589

MAIN LINE BETWEEN IPDM-E AND M&A CIRCUIT 589
Diagnosis Procedure 589

MAIN LINE BETWEEN M&A AND STRG CIRCUIT 590
Diagnosis Procedure 590

MAIN LINE BETWEEN STRG AND 4WD CIRCUIT 591
Diagnosis Procedure 591

MAIN LINE BETWEEN EPS/DAST 3 AND ICC CIRCUIT 592
Diagnosis Procedure 592

MAIN LINE BETWEEN AVM AND RDR-R CIRCUIT 593
Diagnosis Procedure 593

MAIN LINE BETWEEN RDR-R AND RDR-L CIRCUIT 594
Diagnosis Procedure 594

MAIN LINE BETWEEN EV/HEV AND HV BAT CIRCUIT 595
Diagnosis Procedure 595

ECM BRANCH LINE CIRCUIT (VEHICLE CAN COMMUNICATION 1 CIRCUIT) 596
Diagnosis Procedure 596

ECM BRANCH LINE CIRCUIT (HEV SYSTEM CAN CIRCUIT) 597
Diagnosis Procedure 597

ABS BRANCH LINE CIRCUIT 598
Diagnosis Procedure 598

EV/HEV BRANCH LINE CIRCUIT (VEHICLE CAN COMMUNICATION 1 CIRCUIT) 599
Diagnosis Procedure 599

EV/HEV BRANCH LINE CIRCUIT (HEV SYSTEM CAN CIRCUIT) 600
Diagnosis Procedure 600

IPDM-E BRANCH LINE CIRCUIT 601
Diagnosis Procedure 601

M&A BRANCH LINE CIRCUIT 602
Diagnosis Procedure 602

3CH CGW BRANCH LINE CIRCUIT 603
Diagnosis Procedure 603

A-BAG BRANCH LINE CIRCUIT 604
Diagnosis Procedure 604

CCM BRANCH LINE CIRCUIT (VEHICLE CAN COMMUNICATION 1 CIRCUIT) 605
Diagnosis Procedure 605

STRG BRANCH LINE CIRCUIT 606
Diagnosis Procedure 606

4WD BRANCH LINE CIRCUIT 607
Diagnosis Procedure 607

ADP BRANCH LINE CIRCUIT 608
Diagnosis Procedure 608

PWBD BRANCH LINE CIRCUIT 609
Diagnosis Procedure 609

BCM BRANCH LINE CIRCUIT 610
Diagnosis Procedure 610

BRAKE BRANCH LINE CIRCUIT 611
Diagnosis Procedure 611

EPS/DAST 3 BRANCH LINE CIRCUIT 612
Diagnosis Procedure 612

HVAC BRANCH LINE CIRCUIT 613
Diagnosis Procedure 613

ICC BRANCH LINE CIRCUIT (VEHICLE CAN COMMUNICATION 2 CIRCUIT) 614
Diagnosis Procedure 614

ICC BRANCH LINE CIRCUIT (ITS CAN COMMUNICATION CIRCUIT) 615
Diagnosis Procedure 615

ICC BRANCH LINE CIRCUIT (CHASSIS CAN COMMUNICATION CIRCUIT) 616
Diagnosis Procedure 616

VSP BRANCH LINE CIRCUIT 617
Diagnosis Procedure 617

LASER BRANCH LINE CIRCUIT 618
Diagnosis Procedure 618

AVM BRANCH LINE CIRCUIT 619
Diagnosis Procedure 619

RDR-R BRANCH LINE CIRCUIT 620
Diagnosis Procedure 620

RDR-L BRANCH LINE CIRCUIT 621
Diagnosis Procedure 621

ICC 2 BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT) 622
Diagnosis Procedure 622

ICC 2 BRANCH LINE CIRCUIT (CHASSIS COMMUNICATION CIRCUIT) 623
Diagnosis Procedure 623

LANE BRANCH LINE CIRCUIT 624
Diagnosis Procedure 624

TCM BRANCH LINE CIRCUIT 625
Diagnosis Procedure 625

INV/MC BRANCH LINE CIRCUIT 627
Diagnosis Procedure 627

HV BAT BRANCH LINE CIRCUIT 628
Diagnosis Procedure 628

DLC BRANCH LINE CIRCUIT 629
Diagnosis Procedure 629

AV BRANCH LINE CIRCUIT 630
Diagnosis Procedure 630

TCU BRANCH LINE CIRCUIT 631
Diagnosis Procedure 631

VEHICLE CAN COMMUNICATION 1 CIRCUIT 632
Diagnosis Procedure 632

VEHICLE CAN COMMUNICATION 2 CIRCUIT 634
Diagnosis Procedure 634

ITS CAN COMMUNICATION CIRCUIT 636
Diagnosis Procedure 636

CHASSIS CAN COMMUNICATION CIRCUIT . 639
Diagnosis Procedure 639

IT CAN COMMUNICATION CIRCUIT 641
Diagnosis Procedure 641

DIAGNOSTIC CAN COMMUNICATION CIRCUIT 643
Diagnosis Procedure 643

HEV SYSTEM CAN CIRCUIT 645
Diagnosis Procedure 645

PRECAUTION

PRECAUTIONS

Precautions for Trouble Diagnosis

INFOID:0000000014622407

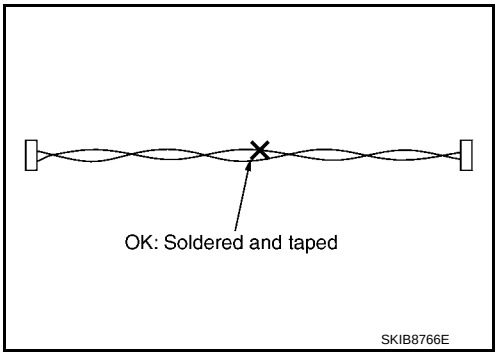
CAUTION:

- **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.**

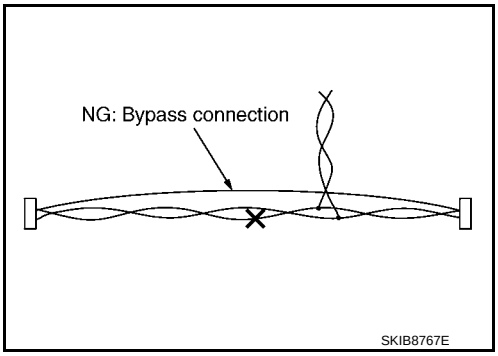
Precautions for Harness Repair

INFOID:0000000014622408

- 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

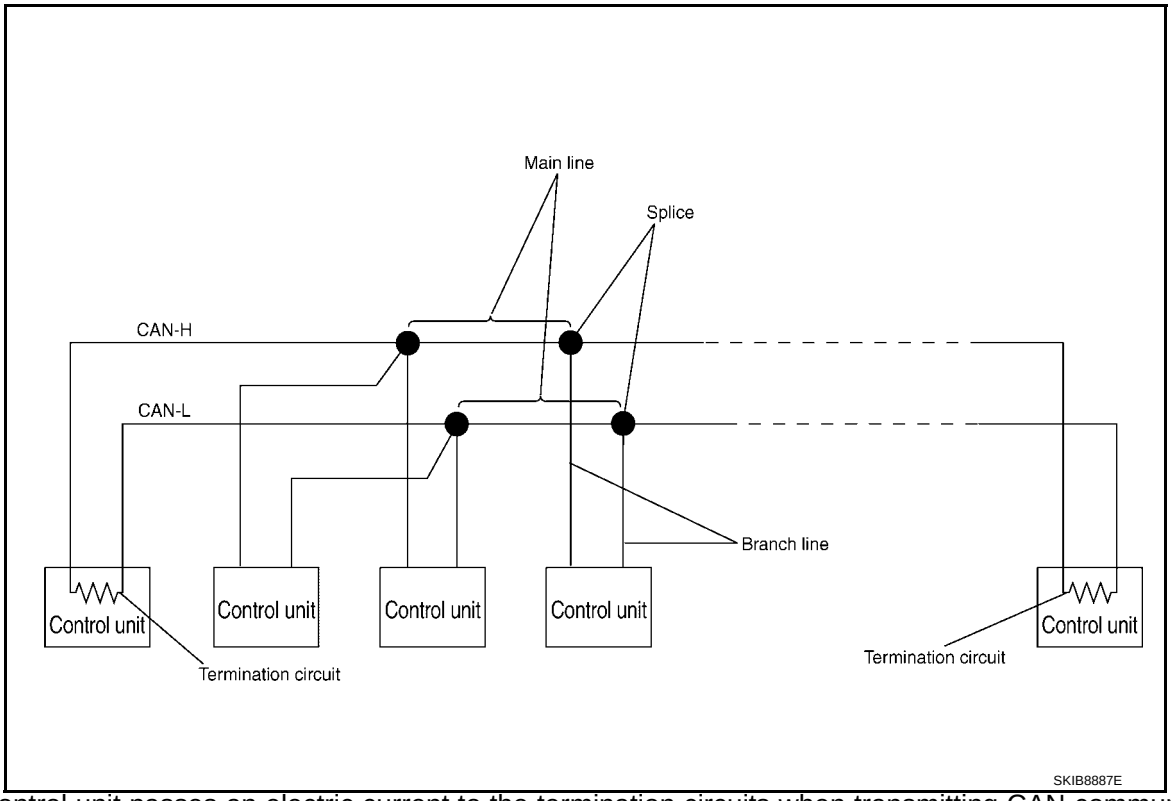
System Description

INFOID:0000000014622409

- 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:0000000014622410

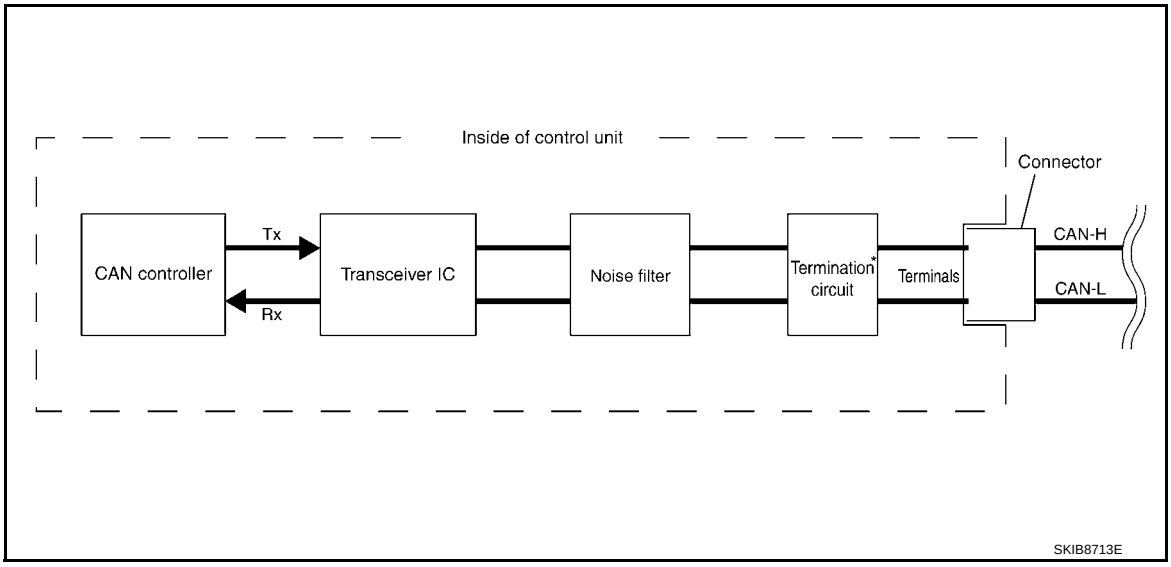


Each control unit passes an electric current to the termination circuits when transmitting CAN communication signal. The termination circuits produce an electrical potential difference between CAN-H and CAN-L. CAN communication system transmits and receives CAN communication signals by the potential 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-18, "CAN Communication Control Circuit".

CAN Communication Control Circuit

INFOID:0000000014622411



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

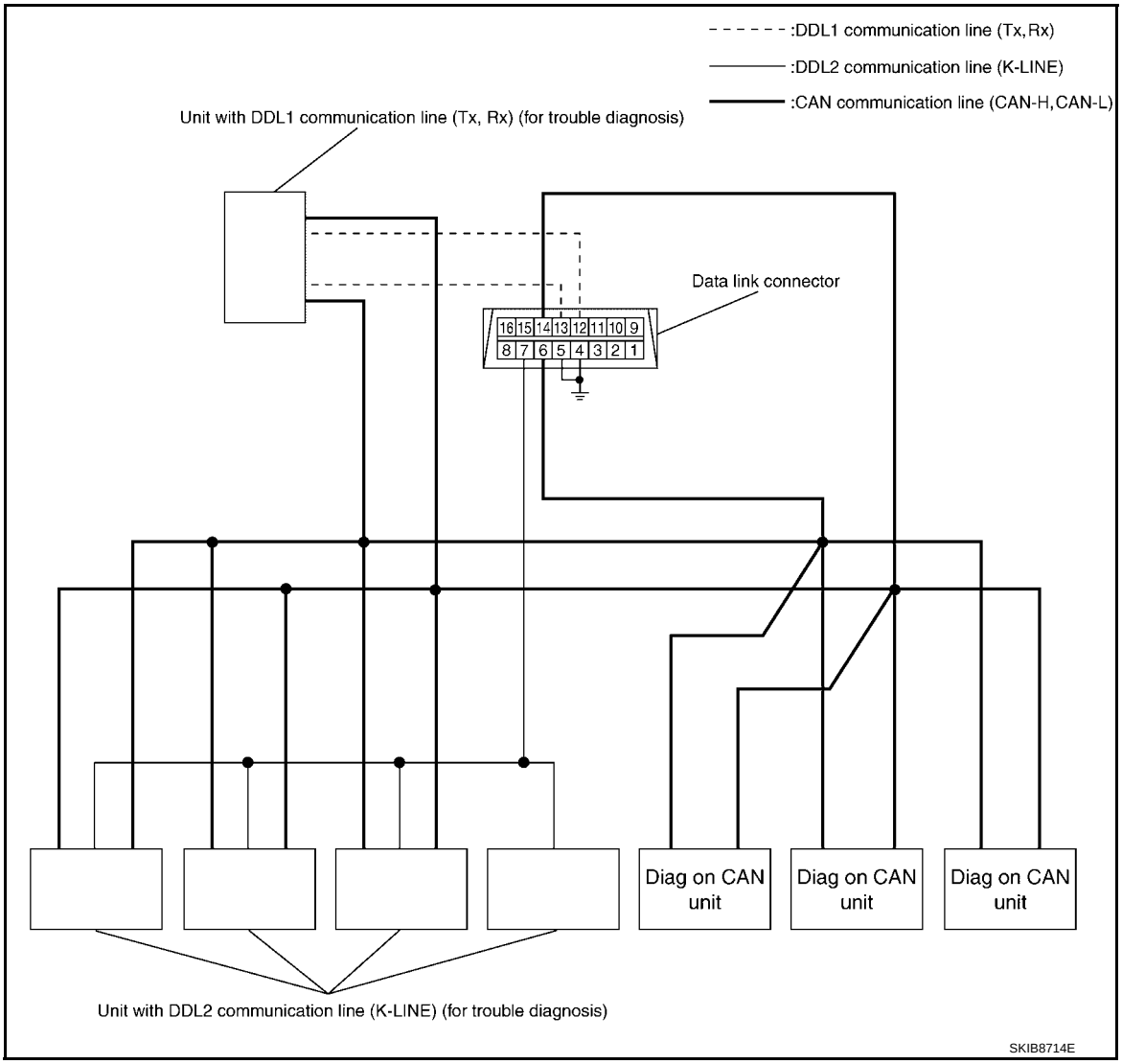
Description

INFOID:0000000014622412

"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:0000000014622413



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:0000000014622414

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:0000000014622415

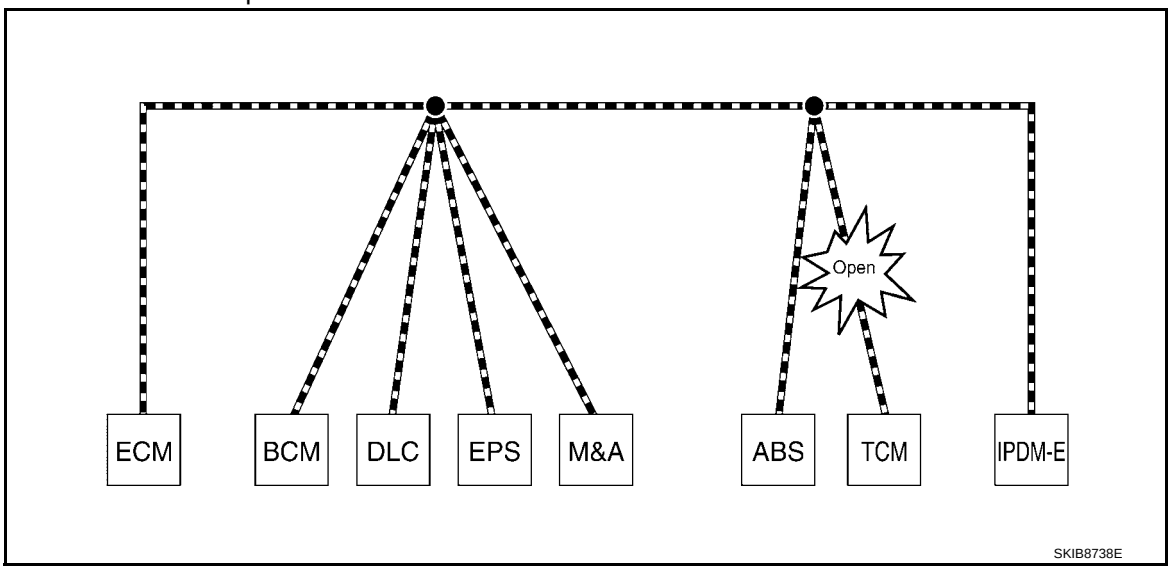
In CAN communication system, multiple units mutually transmit and receive signals. Each unit cannot transmit and receive signals if any error occurs on CAN communication line. Under this condition, multiple control units related to the root cause malfunction or go into fail-safe mode.

ERROR EXAMPLE

NOTE:

- Each vehicle differs in symptom of each unit under fail-safe mode and CAN communication line wiring.
- Refer to LAN-31, "Abbreviation List" for the unit abbreviation.

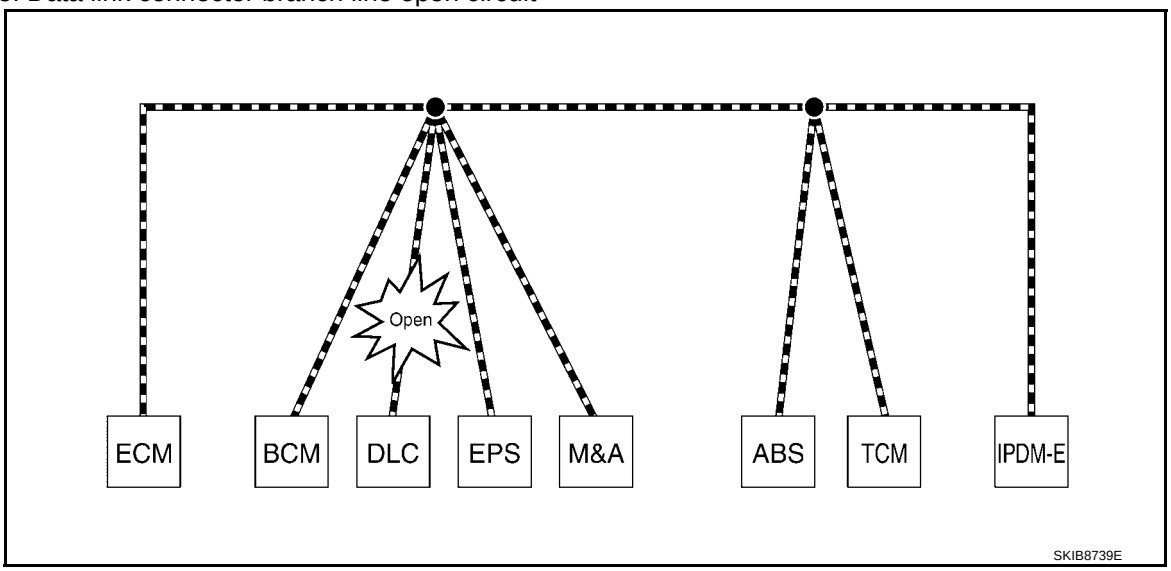
Example: TCM branch line open circuit



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

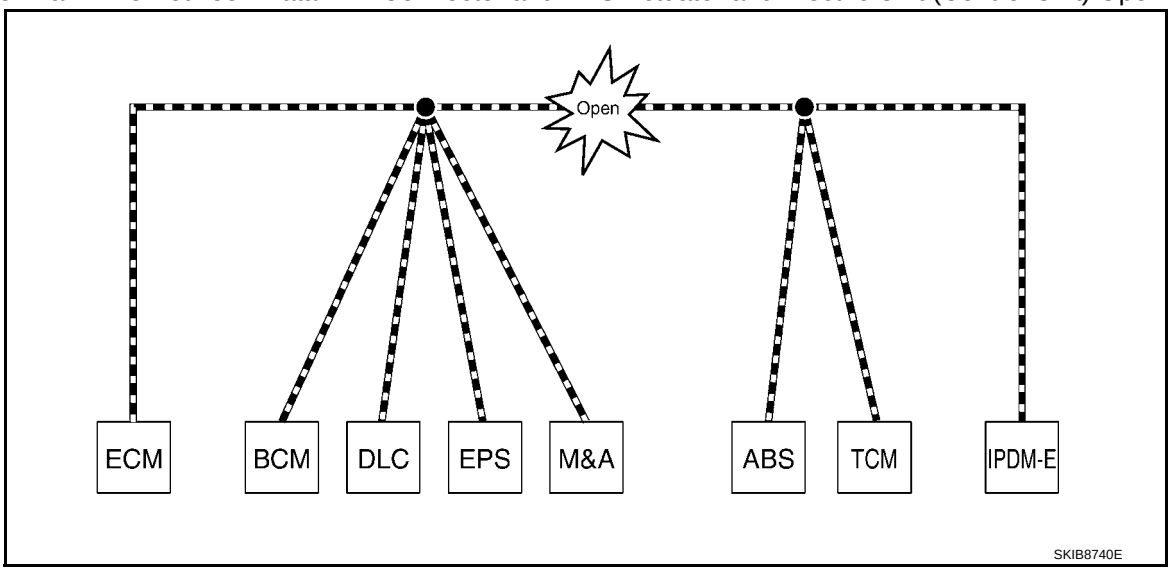


Unit name	Symptom
ECM	Normal operation.
BCM	
EPS control unit	
Combination meter	
ABS actuator and electric unit (control unit)	
TCM	
IPDM E/R	

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.

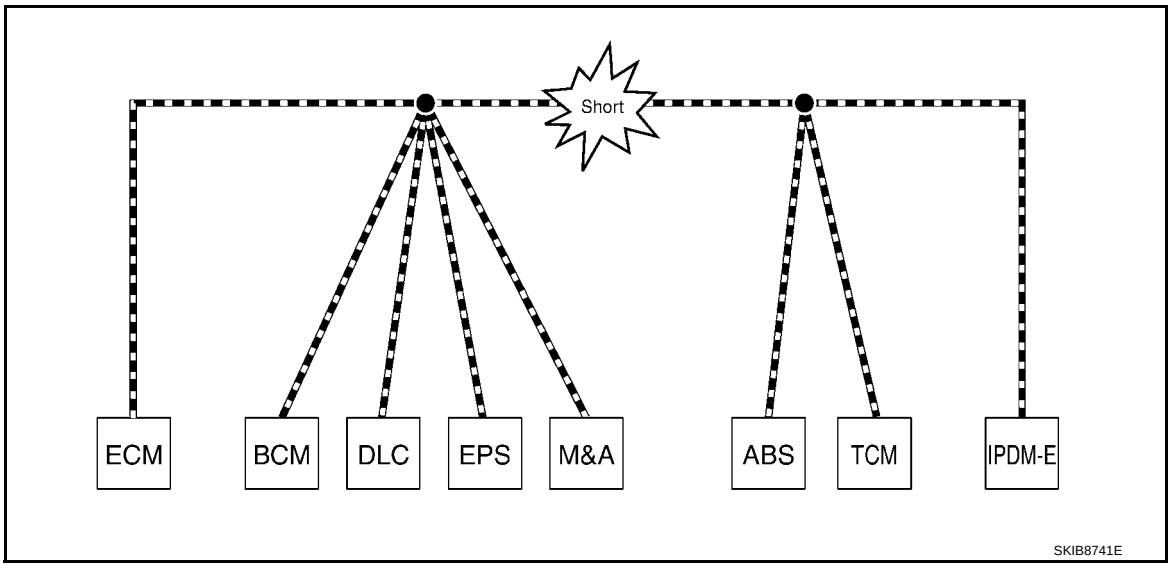
Error	Difference of symptom
Data link connector branch line open circuit	Normal operation.
CAN-H, CAN-L harness short-circuit	Most of the units which are connected to the CAN communication system enter fail-safe mode or are deactivated.

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:0000000014622416

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:0000000014622417

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:0000000014622418

MONITOR ITEM (CONSULT)

Example: CAN DIAG SUPPORT MNTR indication

Without PAST

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

With PAST

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

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Without PAST

Item	PRESENT	Description
Initial diagnosis	OK	Normal at present
	NG	Control unit error (Except for some control units)
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:0000000014622419

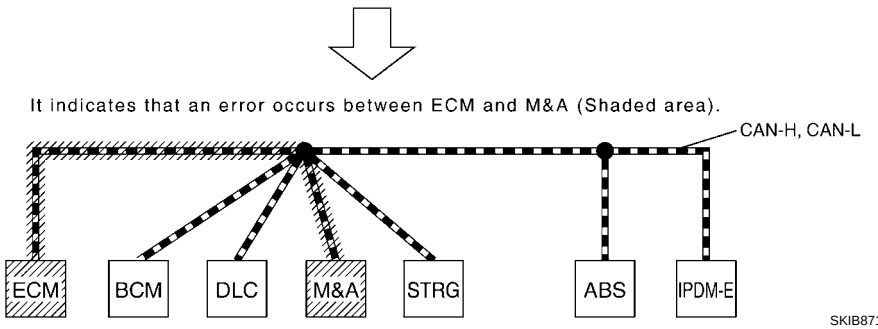
The CAN communication signal chart lists the signals needed for trouble diagnosis. It is useful for detecting the root cause by finding a signal related to the symptom, and by checking transmission and reception unit.

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.



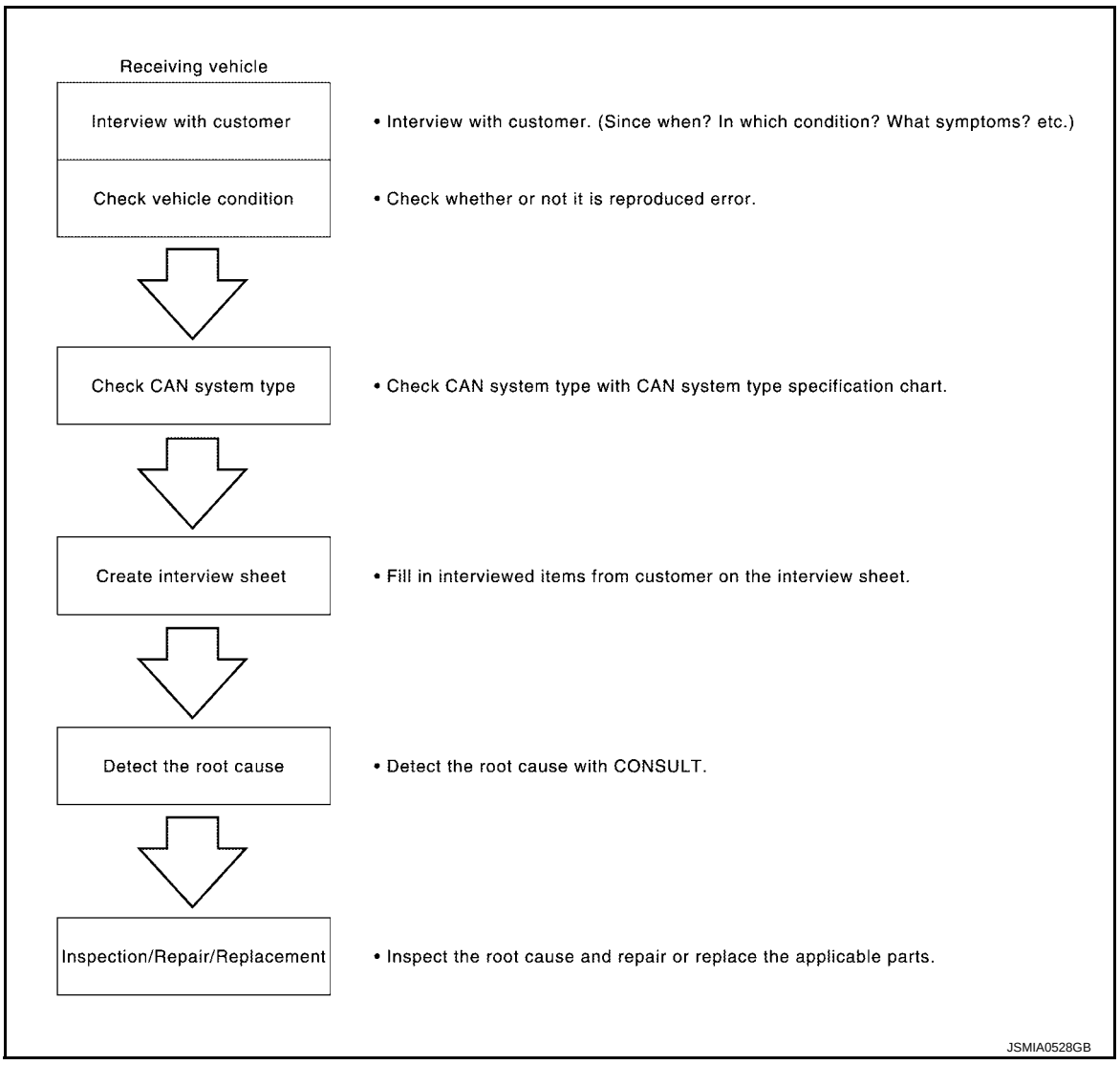
BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Trouble Diagnosis Flow Chart

INFOID:0000000014622420

DESCRIPTION



DETAIL OF TROUBLE DIAGNOSIS FLOW CHART

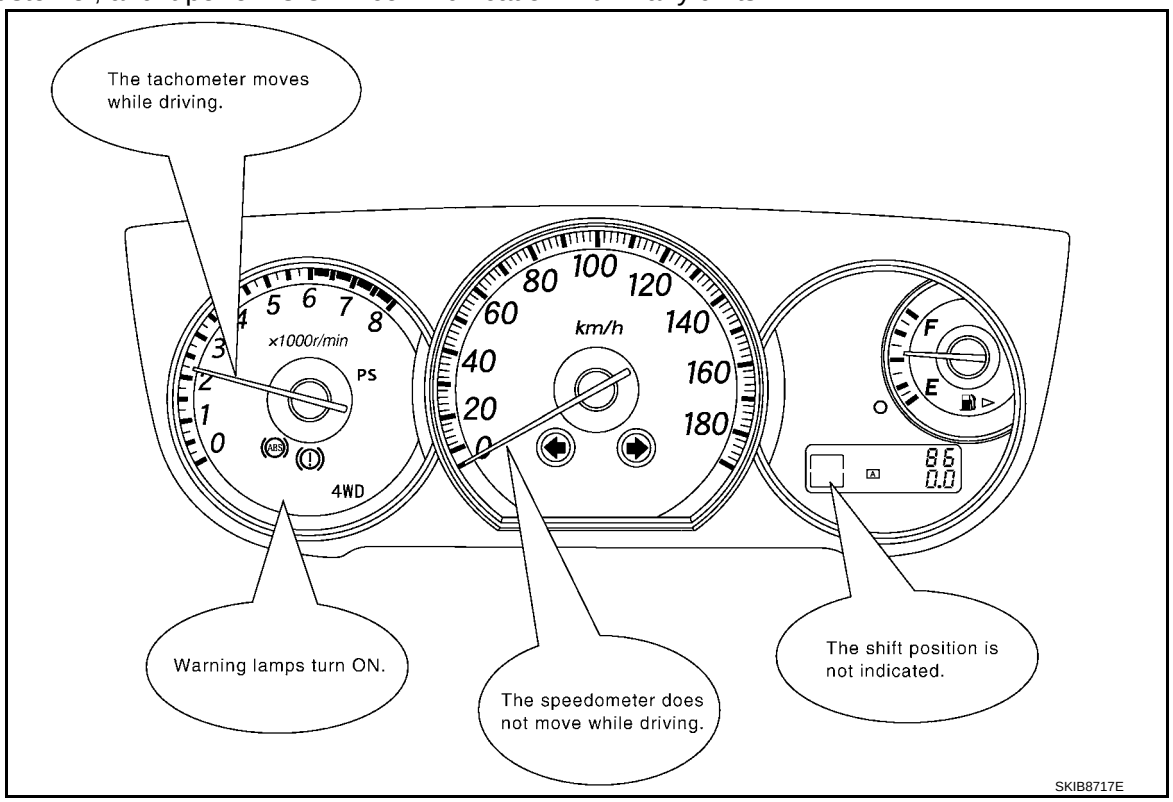
1.INTERVIEW WITH CUSTOMER

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

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

Notes for checking error symptoms:
- Check normal units as well as error symptoms.
- Example: Circuit between ECM and the combination meter is judged normal if the customer indicates tachometer functions normally.

- When a CAN communication system error is present, multiple control units may malfunction or go into fail-safe mode.
- Indication of the combination meter is important to detect the root cause because it is the most obvious to the customer, and it performs CAN communication with many units.



>> GO TO 2.

2. INSPECTION OF VEHICLE CONDITION

Check whether the symptom is reproduced or not.

NOTE:

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

>> GO TO 3.

3. CHECK OF CAN SYSTEM TYPE (HOW TO USE CAN SYSTEM TYPE SPECIFICATION CHART)

Determine CAN system type based on vehicle equipment.

NOTE:

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

  NOTE:

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

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

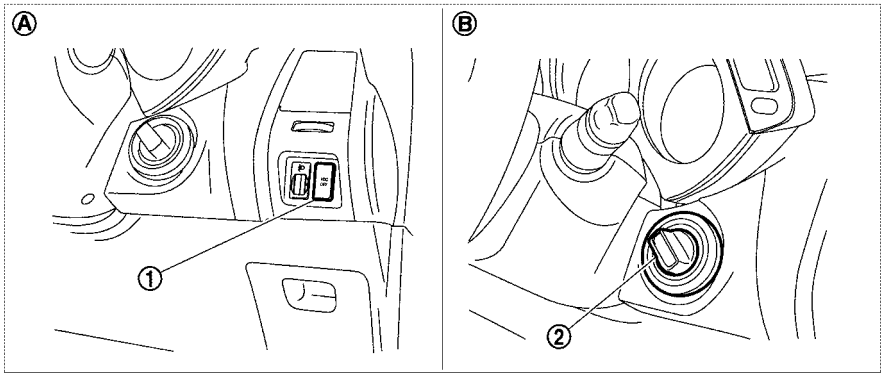
CAN System Specification Chart
Determine CAN system type from the following specification chart.

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

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

×: Applicable

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



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

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

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

JSMIA0529GB

- 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. (oval shows an example of CAN system type.)

CAN System Specification Chart

Refer to the specification as shown in the chart.

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

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

×: Applicable

SPECIFICATION CHART B

Determine CAN system type from the following specification chart.

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

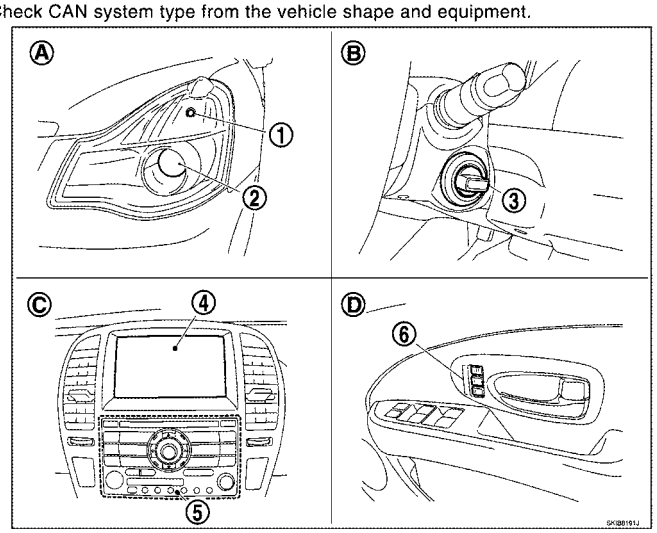
Check the vehicle equipment.
The number indicates the CAN system type of the vehicle.

×: Applicable

VEHICLE EQUIPMENT IDENTIFICATION INFORMATION

NOTE:

Check CAN system type from the vehicle shape and equipment.



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

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

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

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>> GO TO 4.

4. CREATE INTERVIEW SHEET

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

NOTE:

Interview Sheet (Example)

CAN Communication System Diagnosis Interview Sheet

Date received: 3, Feb. 2006

Type: DBA-KG11 VIN No.: KG11-005040

Model: BDRARGZG11EDA-E-J-

First registration: 10, Jan. 2001 Mileage: 62,140

CAN system type: Type 19

Symptom (Results from interview with customer)

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

Condition at inspection

Error Symptom: (Present) / Past

The engine does not start.
While turning the ignition switch ON,
- The headlamps (Lo) turn ON, and the cooling fan continues rotating.
- The interior lamp does not turn ON.

JSMIA0531GB

>> GO TO 5.

5. DETECT THE ROOT CAUSE

CAN diagnosis function of CONSULT detects a root cause.

>> GO TO 6.

6. REPAIR OR REPLACE MALFUNCTIONING PART

Repair or replace malfunctioning parts identified by CAN diagnosis function of CONSULT.

Vehicle CAN communication circuit>>Refer to LAN-89, "Vehicle CAN Communication Circuit".
ITS CAN communication circuit>> Refer to LAN-89, "ITS CAN Communication Circuit".
Chassis CAN communication circuit>> Refer to LAN-90, "Chassis CAN Communication Circuit".
IT CAN communication circuit>>Refer to LAN-90, "IT CAN Communication Circuit".
Diagnostic CAN communication circuit>> Refer to LAN-91, "Diagnostic CAN Communication Circuit".
HEV system CAN circuit>> Refer to LAN-91, "HEV system CAN Circuit".

HOW TO USE THIS MANUAL

HOW TO USE THIS SECTION

Caution

INFOID:0000000014622421

- This section describes information peculiar to a vehicle and inspection procedures.
- For trouble diagnosis procedure, refer to LAN-26, "Trouble Diagnosis Flow Chart".

Abbreviation List

INFOID:0000000014622422

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

Abbreviation	Unit name
3ch CGW	3CH CAN gateway
4WD	AWD control unit
A-BAG	Air bag diagnosis sensor unit
ABS	ABS actuator and electric unit (control unit)
ADP	Driver seat control unit
AV	AV control unit
AVM	Around view monitor control unit
BCM	BCM
BRAKE	Hydraulic brake booster unit
CCM	Chassis control module
DLC	Data link connector
ECM	ECM
EPS/DAST3	EPS control unit
EV/HEV	HPCM
HV BAT	Li-ion battery controller
HVAC	A/C auto amp.
ICC	ADAS control unit
ICC 2	ADAS control unit 2
INV/MC	Traction motor inverter
IPDM-E	IPDM E/R
LANE	Lane camera unit
LASER	Distance sensor
M&A	Combination meter
PWBD	Automatic back door control module
RDR-L	Side radar LH
RDR-R	Side radar RH
STRG	Steering angle sensor
TCM	TCM
TCU	TCU
VSP	Approaching vehicle sound for pedestrians (VSP) control unit

PRECAUTION

PRECAUTIONS

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

INFOID:0000000014622423

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, it is recommended that all maintenance and repair be performed by an authorized NISSAN/INFINITI dealer.**
- **Improper repair, 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 Air Bag Diagnosis Sensor Unit or other Air Bag 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 or batteries, and wait at least three minutes before performing any service.**

Precautions for Trouble Diagnosis

INFOID:0000000014622424

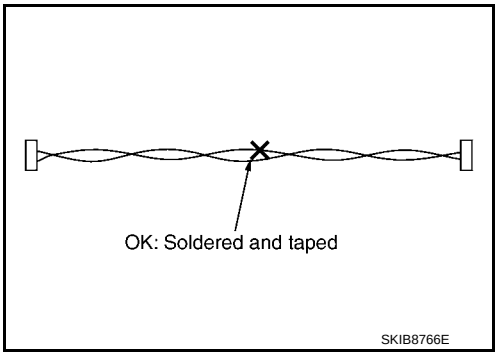
CAUTION:

- **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.**

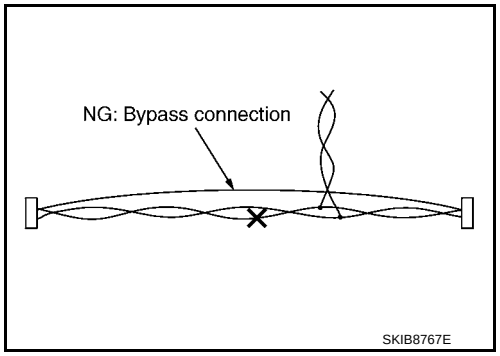
Precautions for Harness Repair

INFOID:0000000014622425

- 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.



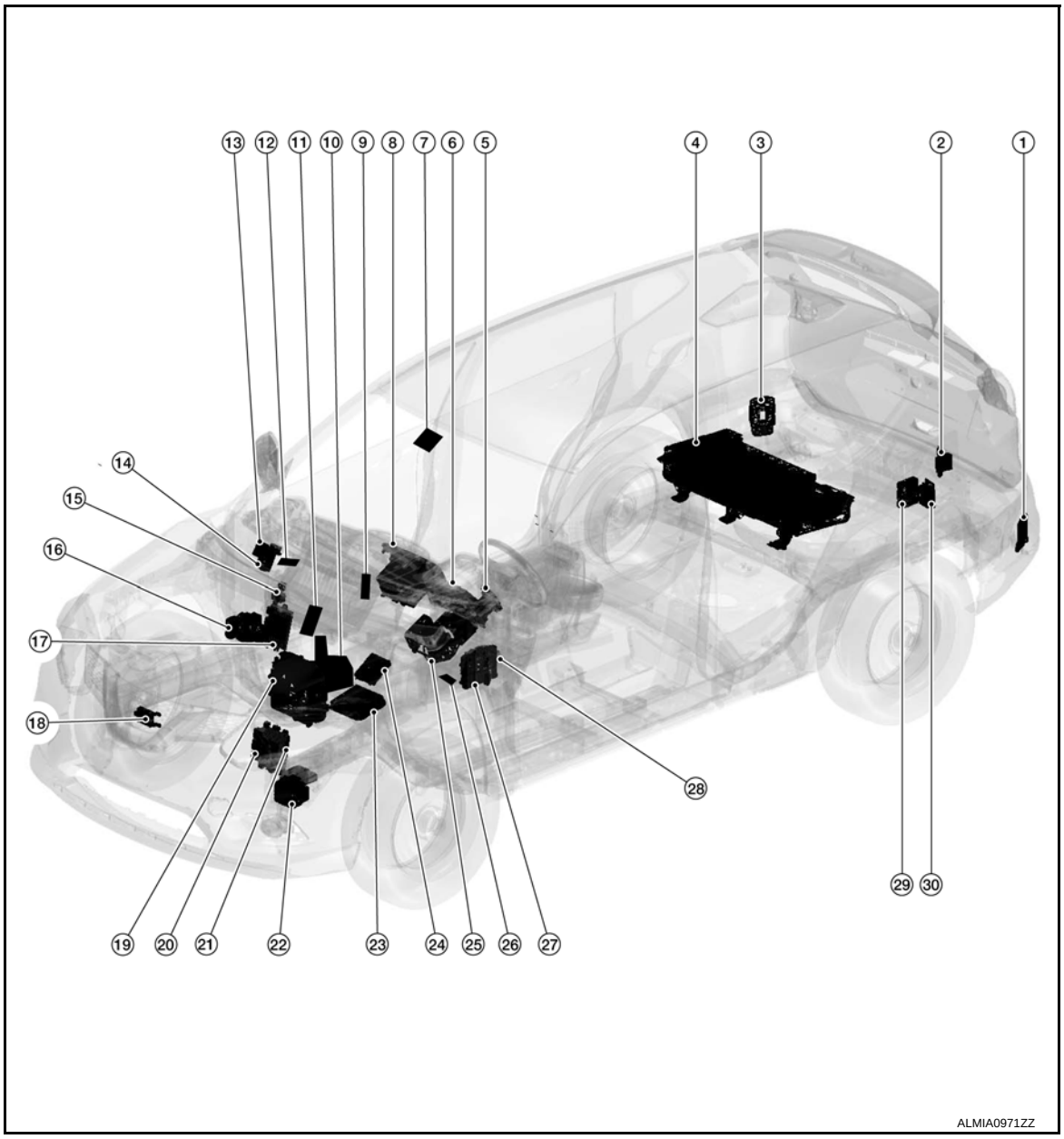
- Replace the applicable harness as an assembly if error is detected on the shield lines of CAN communication line.

SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

INFOID:0000000014622426



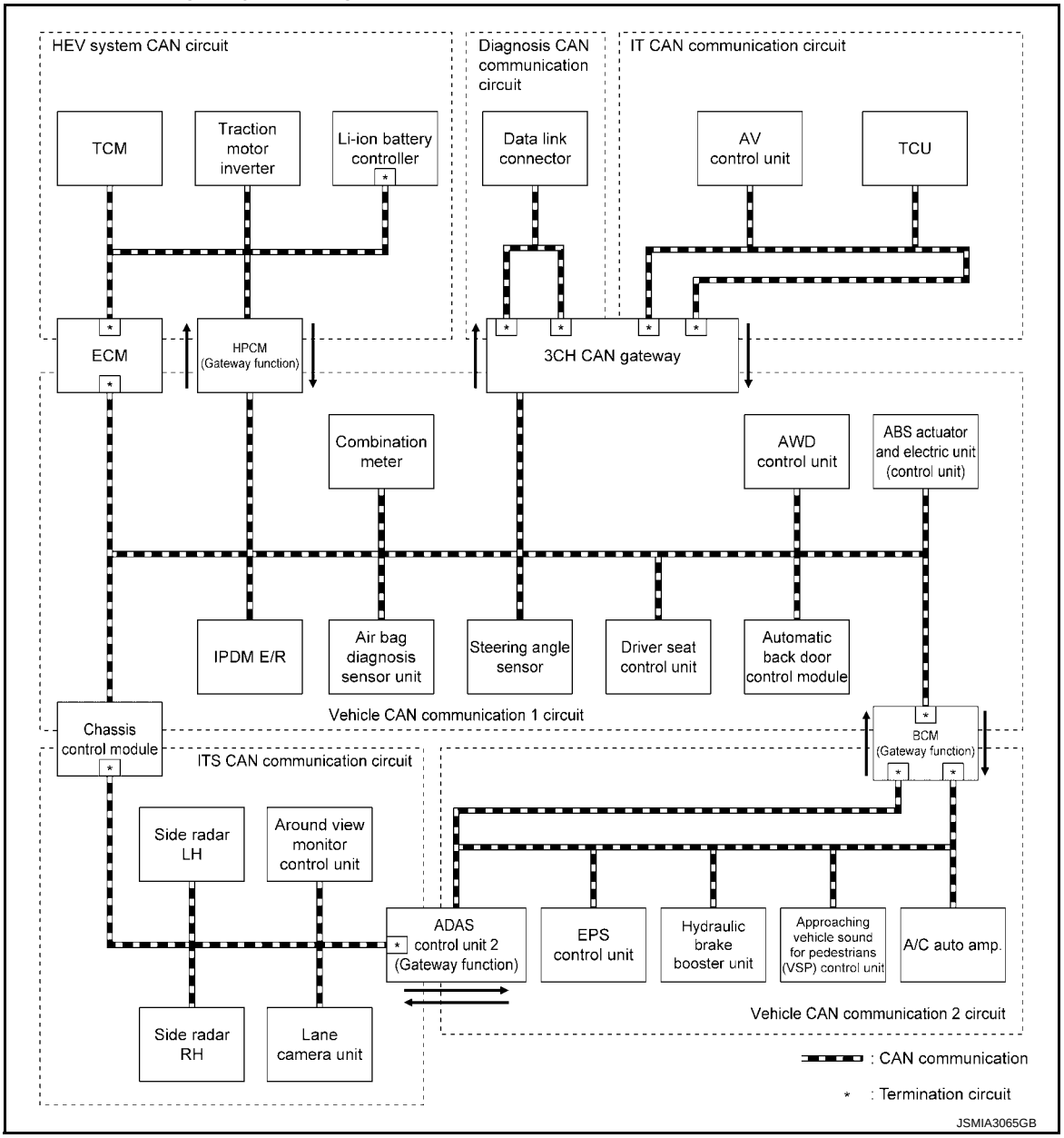
① Side radar LH	② ADAS control unit	③ Side radar RH
④ Li-ion battery controller (LBC)	⑤ Steering angle sensor	⑥ Combination meter
⑦ Lane camera unit	⑧ AV control unit	⑨ Hydraulic brake booster unit
⑩ TCU	⑪ Driver seat control unit	⑫ Chassis control module
⑬ Around view monitor control unit	⑭ ADAS control unit 2	⑮ 3CH CAN gateway
⑯ ABS actuator and electric unit (control unit)	⑰ HPCM	⑱ Distance sensor
⑲ Traction motor inverter	⑳ ECM	㉑ TCM
㉒ Approaching vehicle sound for pedestrians (VSP) control unit	㉓ IPDM E/R	㉔ A/C auto amp.

㉕ EPS control unit
㉖ Data link connector
㉗ BCM
㉘ Air bag diagnosis sensor unit
㉙ Automatic back door control module
㉚ AWD control unit

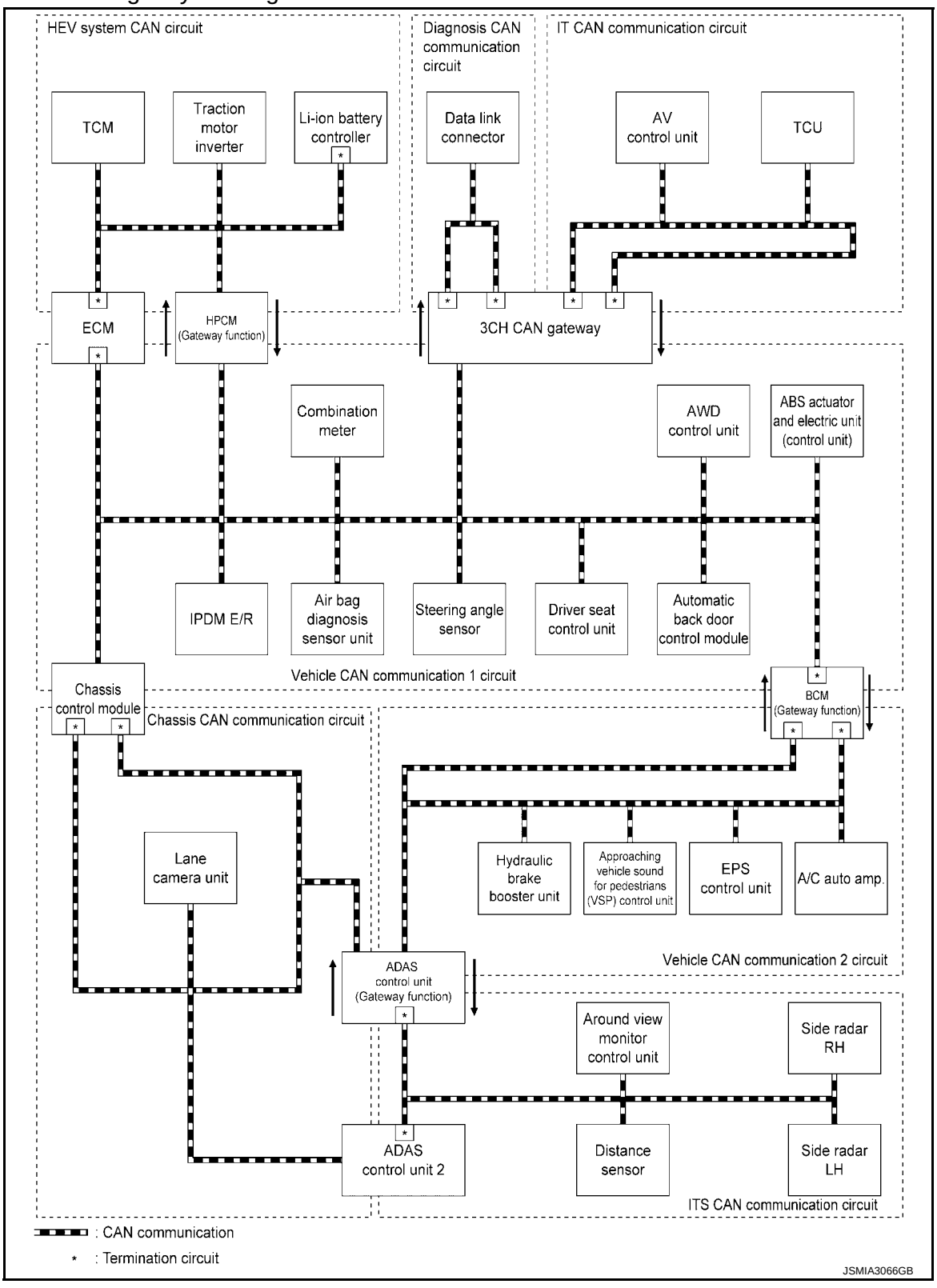
SYSTEM
CAN COMMUNICATION SYSTEM
CAN COMMUNICATION SYSTEM : System Description

INFOID:0000000014622427

Without forward emergency braking



With forward emergency braking



DESCRIPTION

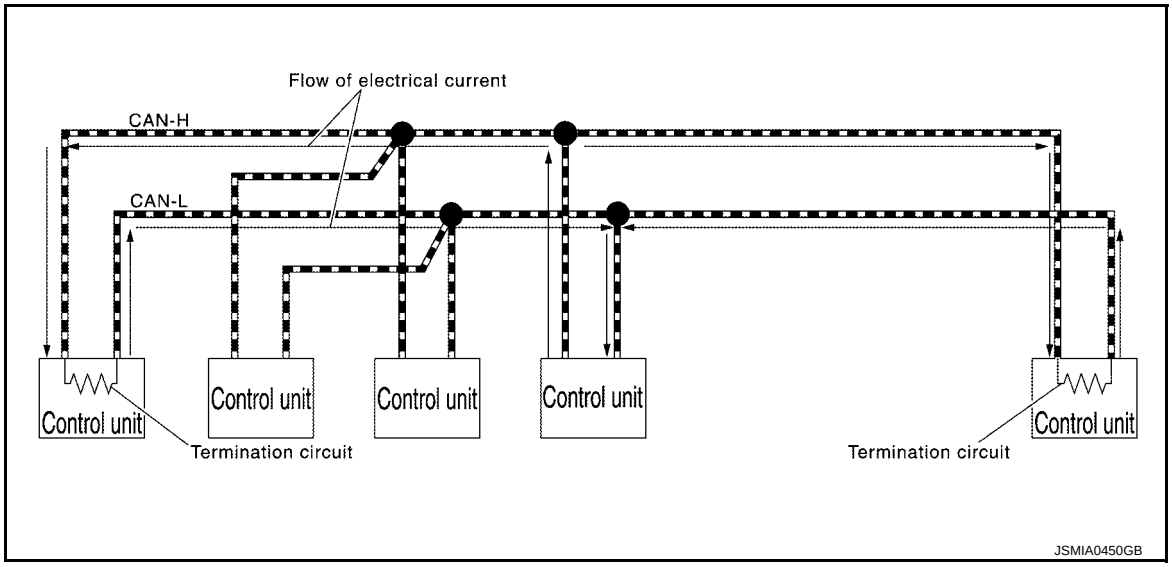
- CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares 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
Vehicle CAN communication 1 circuit ⇔ Vehicle CAN communication 2 circuit	BCM	LAN-159, "BCM (CAN GATEWAY) : System Description"
Vehicle CAN communication 2 circuit ⇔ ITS CAN communication circuit (Without forward emergency braking)	ADAS control unit 2	DAS-15, "System Description"
Vehicle CAN communication 2 circuit ⇔ ITS CAN communication circuit (With forward emergency braking)	ADAS control unit	DAS-15, "System Description"
Vehicle CAN communication 2 circuit ⇔ Chassis CAN communication circuit (With forward emergency braking)		
ITS CAN communication circuit ⇔ Chassis CAN communication circuit (With forward emergency braking)		
Vehicle CAN communication 1 circuit ⇔ Diagnosis CAN communication circuit	3CH CAN gateway	LAN-159, "3CH CAN GATEWAY : System Description"
Vehicle CAN communication 1 circuit ⇔ IT CAN communication circuit		

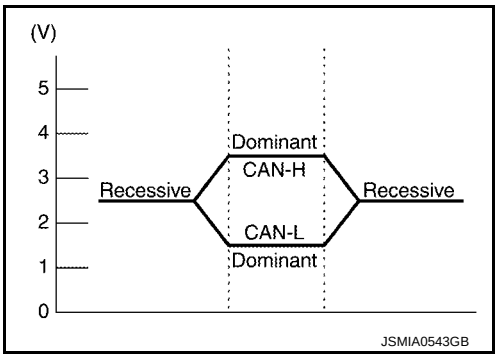
CAN Communication Signal Generation

- 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.

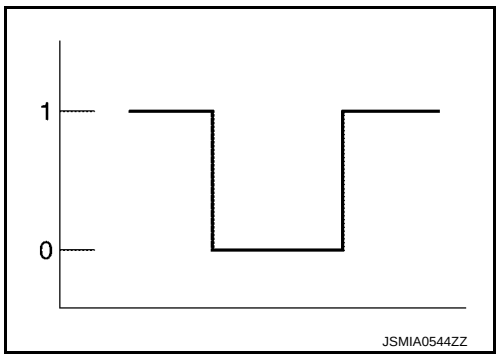


- The current flows separately into the termination circuits connected across the CAN communication system and the termination circuits drop voltage to generate a potential difference between the CAN-H line and the CAN-L line.

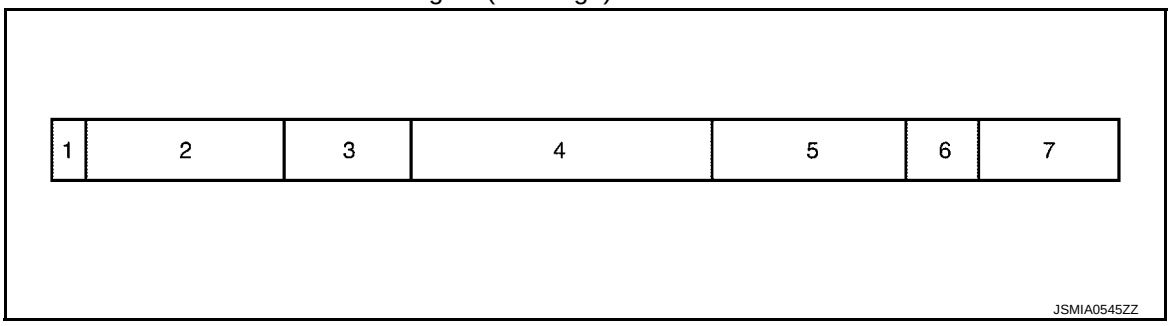
NOTE:
A signal with no current passage is called “Recessive” and one with current passage is called “Dominant”.



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



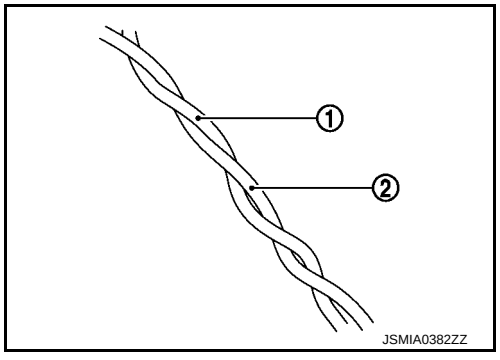
The Construction of CAN Communication Signal (Message)



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.

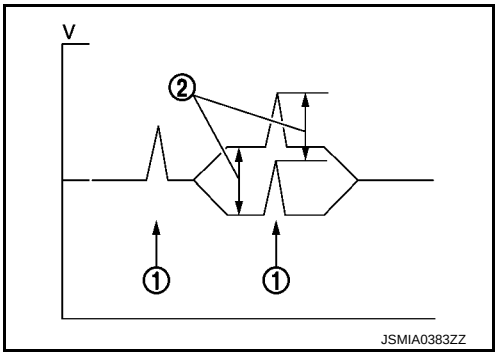
CAN Communication Line

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.

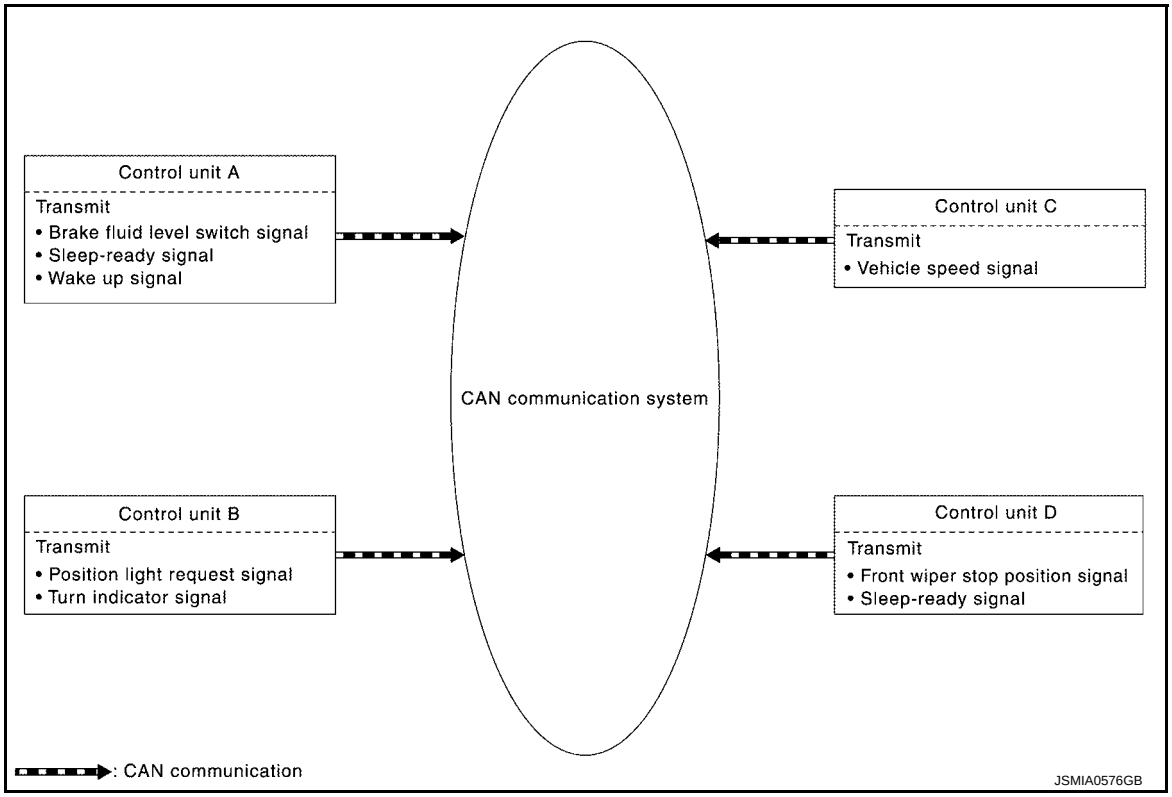
Since the CAN-H line and the CAN-L line are always adjacent to each other, the same degree of noise occurs, respectively, when a noise ① occurs. Although the noise changes the voltage, the potential difference ② between the CAN-H line and the CAN-L line is insensitive to noise. Therefore, noise-resistant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



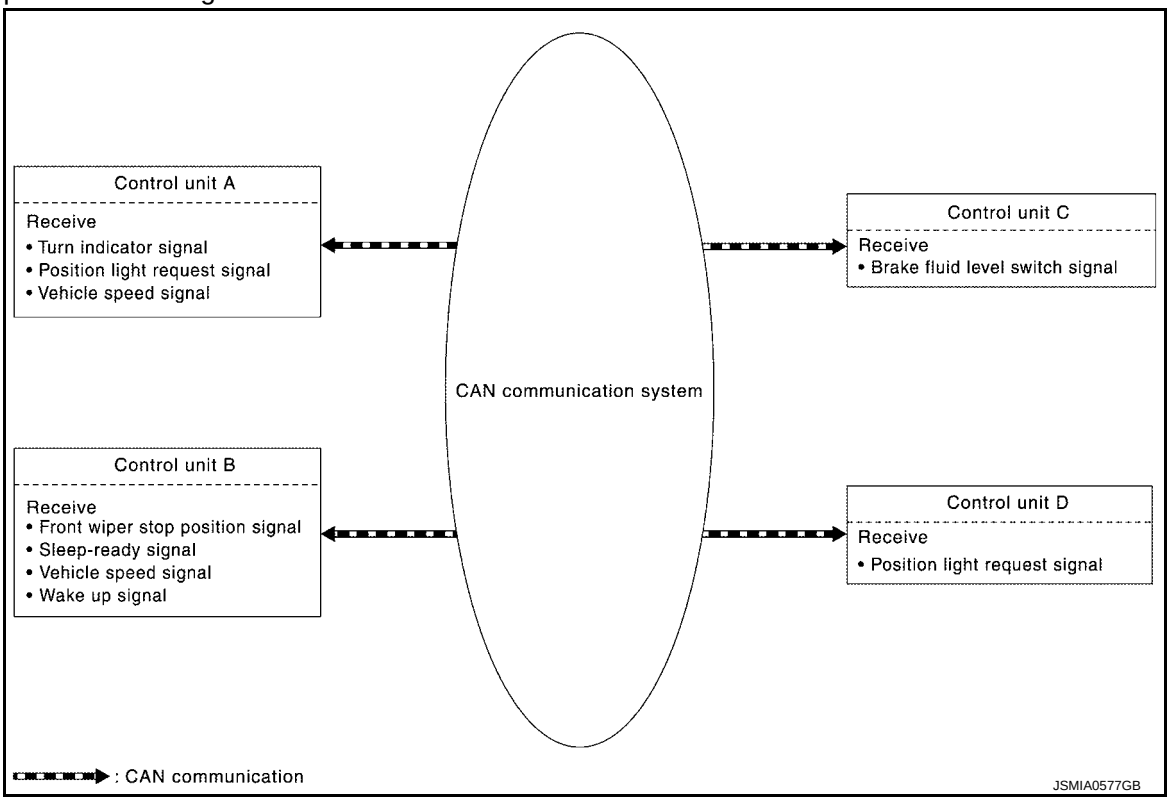
CAN Signal Communications

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

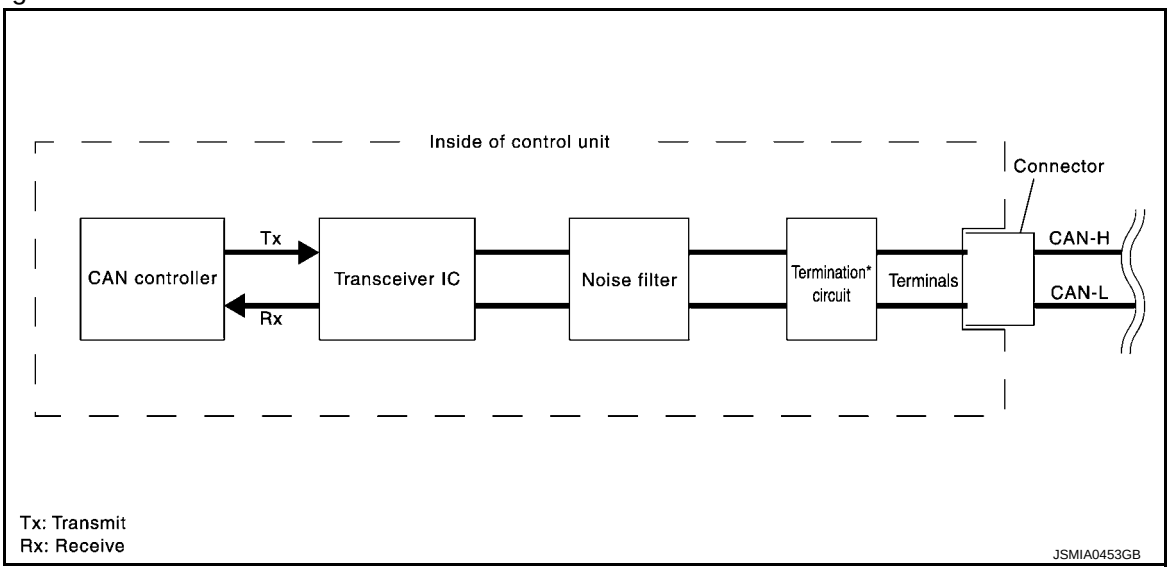


NOTE:
The above signal names and signal communications are provided for reference purposes. For CAN communications signals of this vehicle, refer to LAN-44, "CAN COMMUNICATION SYSTEM : CAN Communication Signal Chart".

CAN COMMUNICATION SYSTEM : CAN Communication Control Circuit

INFOID:0000000014622428

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



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

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

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

CAN COMMUNICATION SYSTEM : CAN System Specification Chart

INFOID:0000000014622429

Determine CAN system type from the following specification chart.
NOTE:
Refer to LAN-26, "Trouble Diagnosis Flow Chart" for how to use CAN system specification chart.

Body type	Wagon									
Axle	2WD					AWD				
Engine	MR20DD-RM31									
Transmission	CVT									
Brake control	VDC									
Blind Spot Warning system		×	×	×	×		×	×	×	×
Around view monitor system			×	×	×			×	×	×
High beam assist system				×	×				×	×
Forward emergency braking system					×					×
CAN system type	51	52	53	54	55	56	57	58	59	61
Vehicle CAN communication unit										
ECM	×	×	×	×	×	×	×	×	×	×
ABS actuator and electric unit (control unit)	×	×	×	×	×	×	×	×	×	×
HPCM	×	×	×	×	×	×	×	×	×	×
IPDM E/R	×	×	×	×	×	×	×	×	×	×
Combination meter	×	×	×	×	×	×	×	×	×	×
3CH CAN gateway	×	×	×	×	×	×	×	×	×	×
Air bag diagnosis sensor unit	×	×	×	×	×	×	×	×	×	×
Chassis control module	×	×	×	×	×	×	×	×	×	×
Steering angle sensor	×	×	×	×	×	×	×	×	×	×
AWD control unit						×	×	×	×	×
Driver seat control unit				×	×				×	×
Automatic back door control module			×	×	×			×	×	×
BCM	×	×	×	×	×	×	×	×	×	×
Hydraulic brake booster unit	×	×	×	×	×	×	×	×	×	×
EPS control unit	×	×	×	×	×	×	×	×	×	×
A/C auto amp.	×	×	×	×	×	×	×	×	×	×
Approaching vehicle sound for pedestrians (VSP) control unit	×	×	×	×	×	×	×	×	×	×
ADAS control unit					×					×
ADAS control unit 2		×	×	×			×	×	×	
Chassis CAN communication control unit										
Chassis control module					×					×
ADAS control unit					×					×
ADAS control unit 2					×					×

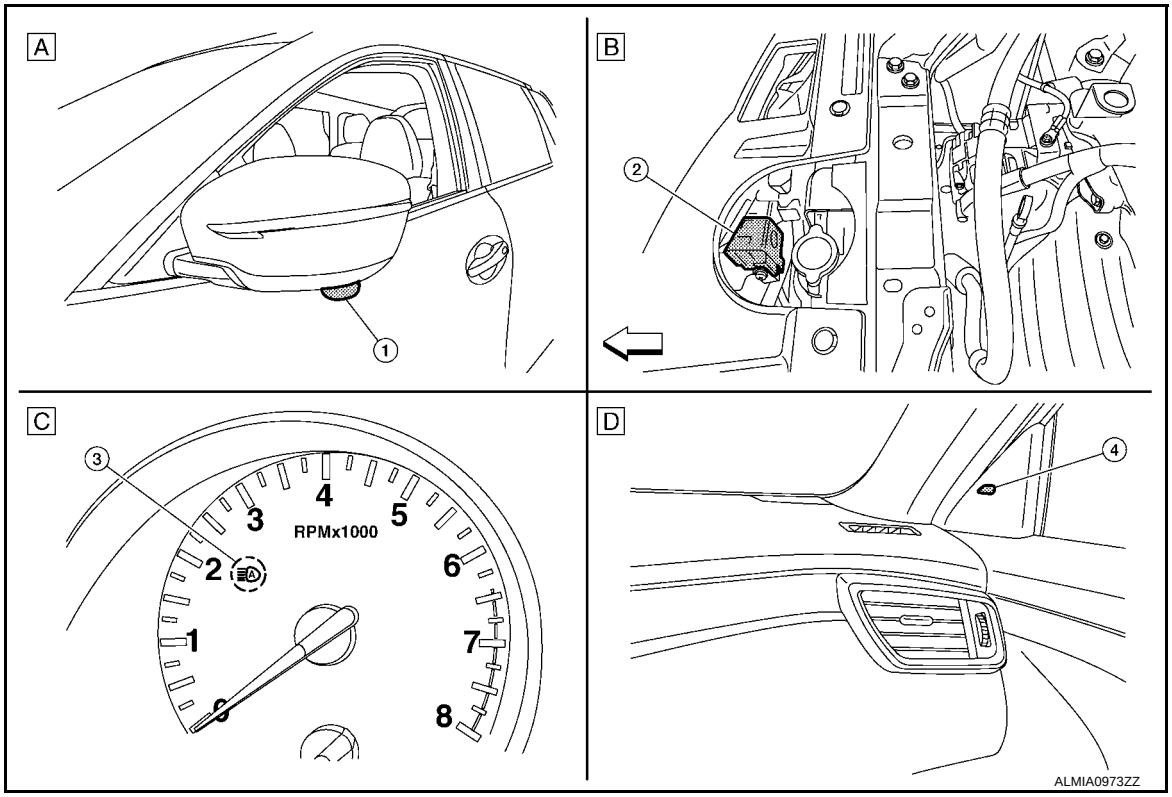
Body type	Wagon									
Axle	2WD					AWD				
Engine	MR20DD-RM31									
Transmission	CVT									
Brake control	VDC									
Blind Spot Warning system		×	×	×	×		×	×	×	×
Around view monitor system			×	×	×			×	×	×
High beam assist system				×	×				×	×
Forward emergency braking system					×					×
CAN system type	51	52	53	54	55	56	57	58	59	61
Lane camera unit					×					×
ITS CAN communication control unit										
Chassis control module		×	×	×			×	×	×	
ADAS control unit					×					×
ADAS control unit 2		×	×	×	×		×	×	×	×
Distance sensor					×					×
Around view monitor control unit			×	×	×			×	×	×
Side rader LH		×	×	×	×		×	×	×	×
Side rader RH		×	×	×	×		×	×	×	×
Lane camera unit				×					×	
IT CAN communication control unit										
3CH CAN gateway			×	×	×			×	×	×
AV control unit			×	×	×			×	×	×
TCU				×	×				×	×
Diagnostic CAN communication control unit										
3CH CAN gateway	×	×	×	×	×	×	×	×	×	×
Data link connector	×	×	×	×	×	×	×	×	×	×
HEV system CAN control unit										
TCM	×	×	×	×	×	×	×	×	×	×
ECM	×	×	×	×	×	×	×	×	×	×
HPCM	×	×	×	×	×	×	×	×	×	×
Traction motor inverter	×	×	×	×	×	×	×	×	×	×
Li-ion battery controller	×	×	×	×	×	×	×	×	×	×
3CH CAN gateway	×	×	×	×	×	×	×	×	×	×

×: Applicable

VEHICLE EQUIPMENT IDENTIFICATION INFORMATION

NOTE:

Check CAN system type from the vehicle shape and equipment.



① Door mirror LH side camera ② Distance sensor ③ High beam assist indicator
④ Side indicator RH
A With around view monitor system B With forward emergency braking system C With high beam assist system
D With blind spot warning system
⇦ Vehicle front

CAN COMMUNICATION SYSTEM : CAN Communication Signal Chart

INFOID:0000000014622430

Refer to LAN-25, "How to Use CAN Communication Signal Chart" for how to use CAN communication signal chart.

NOTE:

Refer to LAN-31, "Abbreviation List" for the abbreviations of the connecting units.

T: Transmit R: Receive

Signal name/Connecting unit	ECM	ABS	EV/HEV	IPDM-E	M&A	3ch CGW	A-BAG	CCM	STRG	4WD	ADP	PWBD	BCM	BRAKE	EPS/DAST3	HVAC	ICC	VSP	AVM	ICC 2	LANE	TCM	INV/MC	HV BAT	AV	TCU
A/C cut request signal	T		R																							
			T													R										
Accelerator pedal position signal	R	R	T					R		R																
Cooling fan speed request signal			T	R																						
	T		R																							
Engine coolant temperature signal			T		R																					
	T		R													R										
Engine oil pressure warning signal			T		R																					
	T		R																							R

Signal name/Connecting unit	ECM	ABS	EV/HEV	IPDM-E	M&A	3ch CGW	A-BAG	CCM	STRG	4WD	ADP	PWBD	BCM	BRAKE	EPS/DAST3	HVAC	ICC	VSP	AVM	ICC 2	LANE	TCM	INV/MC	HV BAT	AV	TCU
Engine speed signal	T		R																							
		R	T					R		R								R							R	
					R																	T				
Engine status signal	T		R																						R	
		R	T		R								R		R											
Engine stop permit signal	T		R																							R
Engine torque limit signal	T		R																							
Fuel cut-off prohibit signal	T		R																							
Intake air temperature signal	T		R																							
Malfunctioning indicator lamp signal	R		T																							
	R																					T				
	T		R																							R
			T		R																					
			R																				T			
Refrigerant pressure sensor signal	T															R										
Self diagnosis signal	T		R																							
			R																			T				
			R																				T			
			R																					T		
SPORT mode indicator signal	T				R																					
Target idle speed signal	T		R																							
Voltage request signal	T		R																							
ABS malfunction signal		T						R									R									
ABS operation signal		T						R		R																
ABS warning lamp signal		T			R																					R
Brake fluid pressure signal		T						R																		
Braking force signal		T	R																							
Brake system warning lamp signal		T			R																					
					R									T												
Brake warning lamp signal		T			R																					R
					R									T												
Cooperative regenerative practicable torque signal		T	R																							
EBD malfunction signal		T						R																		
EBD operation signal		T						R																		
Decel G signal		T						R		R																
Front LH wheel speed signal		T						R		R									R							
Front RH wheel speed signal		T						R		R									R							
hill start assist display request signal					R			T																		
		T						R																		
Rear LH wheel speed signal		T						R		R									R							

Signal name/Connecting unit	ECM	ABS	EV/HEV	IPDM-E	M&A	3ch CGW	A-BAG	CCM	STRG	4WD	ADP	PWBD	BCM	BRAKE	EPS/DAST3	HVAC	ICC	VSP	AVM	ICC 2	LANE	TCM	INV/MC	HV BAT	AV	TCU
Rear RH wheel speed signal		T						R		R									R							
Side G signal		T						R		R																
Steering angle signal		T						R																		
		R							T	R									R						R	
Stroke sensor signal		T												R												
TCS malfunction signal		T						R																		
TCS operation signal		T						R		R																
VDC accept permission signal		T						R																		
VDC malfunction signal		T						R																		R
VDC operation signal		T						R		R																
VDC OFF indicator lamp signal		T			R																					R
VDC OFF switch signal		T						R																		
VDC warning lamp signal		T			R																					
Yaw rate signal		T						R		R																
Assist charge signal			T		R																					
Clutch operation signal			T																			R				
Current regenerative torque signal		R	T																							
CVT input torque			T																			R				
Cooperative regenerative torque signal		R	T																							
Drive command signal			T																				R			
DC/DC converter cooling mode signal			T																					R		
ECO mode indicator signal			T		R																					
ECO pedal guide signal			T		R																					
Electric oil pump start up request signal			T																			R				
Engine idle request signal	R		T																							
Engine stop command signal	R		T																							
Engine stop notice signal	R		T																							
Engine torque signal			T							R																
Energy monitor signal			T		R																				R	
EPS operation signal			T												R											
Estimate drive torque signal			T					R																		
EV indicator lamp signal			T		R																					
Fuel consumption monitor signal			T		R																				R	
HPCM malfunction signal			T					R																		
HPCM status signal		R	T							R			R													
High voltage harness connector detecting signal			T																					R		

Signal name/Connecting unit	ECM	ABS	EV/HEV	IPDM-E	M&A	3ch CGW	A-BAG	CCM	STRG	4WD	ADP	PWBD	BCM	BRAKE	EPS/DAST3	HVAC	ICC	VSP	AVM	ICC 2	LANE	TCM	INV/MC	HV BAT	AV	TCU
Hybrid system over heat warning signal			T		R																					
Hybrid system warning lamp signal			T		R																					
Li-ion battery state of charge signal			T		R																				R	
			R																					T		
Low battery charge warning request signal			T		R																					
READY to drive indicator lamp request signal			T															R								
Request drive torque signal			T					R																		
Request drive torque status signal			T					R																		
READY to drive indicator lamp signal			T		R																					
P range request display signal			T		R																					
Starter control relay status signal			T										R													
Target cooperative regenerative torque signal		R	T																							
Target engine torque signal	R		T																							
Target motor torque signal			T																				R			
Target motor speed signal			T																				R			
Front wiper status signal				T									R													
Front wiper stop position signal				T									R													
Headlamp warning signal				T	R																					
Hood switch signal				T									R													
Ignition switch ON signal		R		T				R				R		R												
		R											T													
Ignition relay status signal				T									R													
Neutral position signal				T									R													
Push-button ignition switch status				T									R													
Reverse switch signal				T									R													
Starter relay status signal				T	R								R													
Active engine brake setting change request signal					T			R																		
Active trace control setting change request signal					T			R																		
Ambient signal					T											R										
Ambient sensor signal					T											R										
Brake fluid level switch signal		R			T																					
Combination meter malfunction signal					T			R																		
Intelligent key number signal					T						R															

Signal name/Connecting unit	ECM	ABS	EV/HEV	IPDM-E	M&A	3ch CGW	A-BAG	CCM	STRG	4WD	ADP	PWBD	BCM	BRAKE	EPS/DAST3	HVAC	ICC	VSP	AVM	ICC 2	LANE	TCM	INV/MC	HV BAT	AV	TCU
Odometer signal					T							R		R												
Parking brake switch signal		R			T					R		R	R				R									
Seat belt buckle switch (driver side) signal					T																					
Seat belt buckle switch signal					T								R													
Sleep-ready signal					T								R													
												T	R													
				T									R													
SPORT mode switch signal					T																	R				
System selection signal					T												R									
System setting signal					T														R							
TPMS reset signal					T								R													
Vehicle speed signal	R			R	T						R	R	R		R	R		R							R	
		T			R			R				R	R		R		R		R		R					
Odometer signal					T					R		R		R												
Car crash information signal							T						R													R
Seat belt buckle switch signal (passenger side)					R		T																			
Active engine brake control signal		R						T																		
Active engine brake display request signal					R			T																		
Active engine brake setting display request signal					R			T																		
Active trace control display request signal					R			T																		
Active trace control setting display request signal					R			T																		
Active trace control signal		R						T																		
Active ride control display request signal					R			T																		
Active ride control signal		R						T																		
Chassis control malfunction display request signal					R			T																		
Curve display request signal					R			T																		
Tire display request signal					R			T																		
Steering angle sensor signal		R						R	T										R							
4WD malfunction signal		R								T																
4WD operation signal		R								T																
4WD mode indicator signal					R					T																
4WD warning display signal					R					T																
Torque distribution indicator signal					R					T																
Back door open request signal												R	T													
BCM malfunction signal								R					T													

Signal name/Connecting unit	ECM	ABS	EV/HEV	IPDM-E	M&A	3ch CGW	A-BAG	CCM	STRG	4WD	ADP	PWBD	BCM	BRAKE	EPS/DAST3	HVAC	ICC	VSP	AVM	ICC 2	LANE	TCM	INV/MC	HV BAT	AV	TCU
Brake pedal position switch signal		R						R					T													
Buzzer output signal					R								T													
Cranking signal		R											T													
Daytime running light request signal				R									T													
Dimmer signal					R								T				R									
Door switch signal					R						R		T						R							R
Door unlock signal											R		T													
Front fog light request signal				R	R								T													
Front wiper request signal				R									T						R		R					
High beam request signal				R	R								T						R							
Horn request signal				R									T													
Ignition switch signal				R							R	R	T													
Key ID signal											R		T													
Key warning signal					R								T													
Low beam request signal				R									T						R							
Low tire pressure warning lamp signal					R								T													
Low tire pressure wheel location signal					R								T													
Meter effect signal					R								T													
Position light request signal				R	R								T						R							
Rear fog lamp status signal					R								T													
Rear window defogger feedback signal													T			R										
Shipping mode status signal					R								T													
Sleep wake up signal				R	R	R					R	R	T													R
Steering lock code signal													T													
Steering lock status signal													T													
Steering lock unit lock request signal													T													
Steering lock unit unlock request signal													T													
Stop lamp switch signal		R						R		R			T	R				R				R				
Theft warning horn request signal				R									T													
TPMS malfunction warning lamp signal					R								T													
Turn indicator signal					R								T				R		R		R					
Turn signal switch signal								R					T													
Electric power steering warning lamp signal					R										T											
A/C ON signal	R															T										
Blower fan ON signal	R															T										

Signal name/Connecting unit	ECM	ABS	EV/HEV	IPDM-E	M&A	3ch CGW	A-BAG	CCM	STRG	4WD	ADP	PWBD	BCM	BRAKE	EPS/DAST3	HVAC	ICC	VSP	AVM	ICC 2	LANE	TCM	INV/MC	HV BAT	AV	TCU
Cooling fan request signal	R															T										
Engine ON request signal			R													T										
Rear window defogger switch signal													R			T										
BSW indicator signal					R												T									
ICC operation signal		R															T									
VSP OFF indicator lamp signal					R													T								
Park Assist malfunction signal															R				T							
Park Assist status signal															R				T							
Steering angle command signal															R				T							
Lane camera status signal		R																			T					
Current gear position signal		R						R		R												T				
CVT accept permission signal								R														T				
CVT target gear ratio signal								R														T				
CVT ratio signal			R																			T				
Clutch 2 status signal			R																			T				
Clutch 2 temperature signal			R																			T				
ECO mode signal			R																			T				
Input speed signal								R														T				
N range signal		R																				T				
P range signal		R																				T				
R range signal		R																				T				
Shift position signal	R	R		R	R					R	R	R	R				R	R	R			T				
SPORT signal	R																					T				
TCM malfunction signal		R						R														T				
Output shaft revolution signal	R	R																				T	R	R		
Motor resolver offset request signal																						T	R			
CVT fluid temperature signal	R		R																			T				
Motor speed signal			R																				T	R		
Motor output torque signal			R																				T	R		
Motor torque limit signal			R																				T			
Traction motor inverter voltage signal			R																				T			
Traction motor inverter status signal			R																				T			
Li-ion battery status signal			R																					T		
Li-ion battery temperature signal			R																					T		
Li-ion battery voltage signal			R																					T		
Li-ion battery current signal			R																					T		

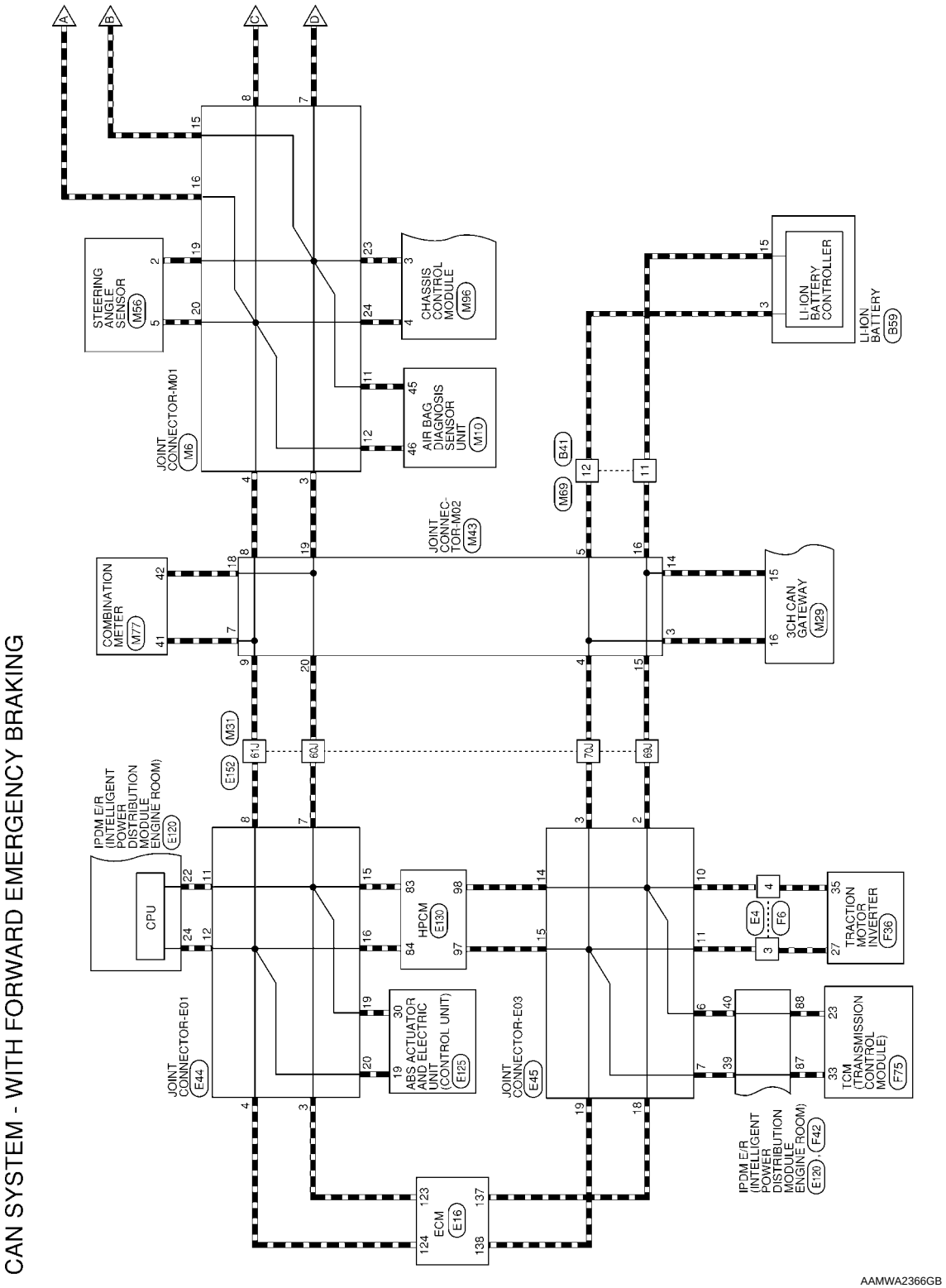
Signal name/Connecting unit	ECM	ABS	EV/HEV	IPDM-E	M&A	3ch CGW	A-BAG	CCM	STRG	4WD	ADP	PWBD	BCM	BRAKE	EPS/DAST3	HVAC	ICC	VSP	AVM	ICC 2	LANE	TCM	INV/MC	HV BAT	AV	TCU
Charge control electricity signal			R																					T		
Discharge control electricity signal			R																					T		
Camera OFF signal																			R						T	
Camera switch signal																			R						T	
Reverse signal																			R						T	

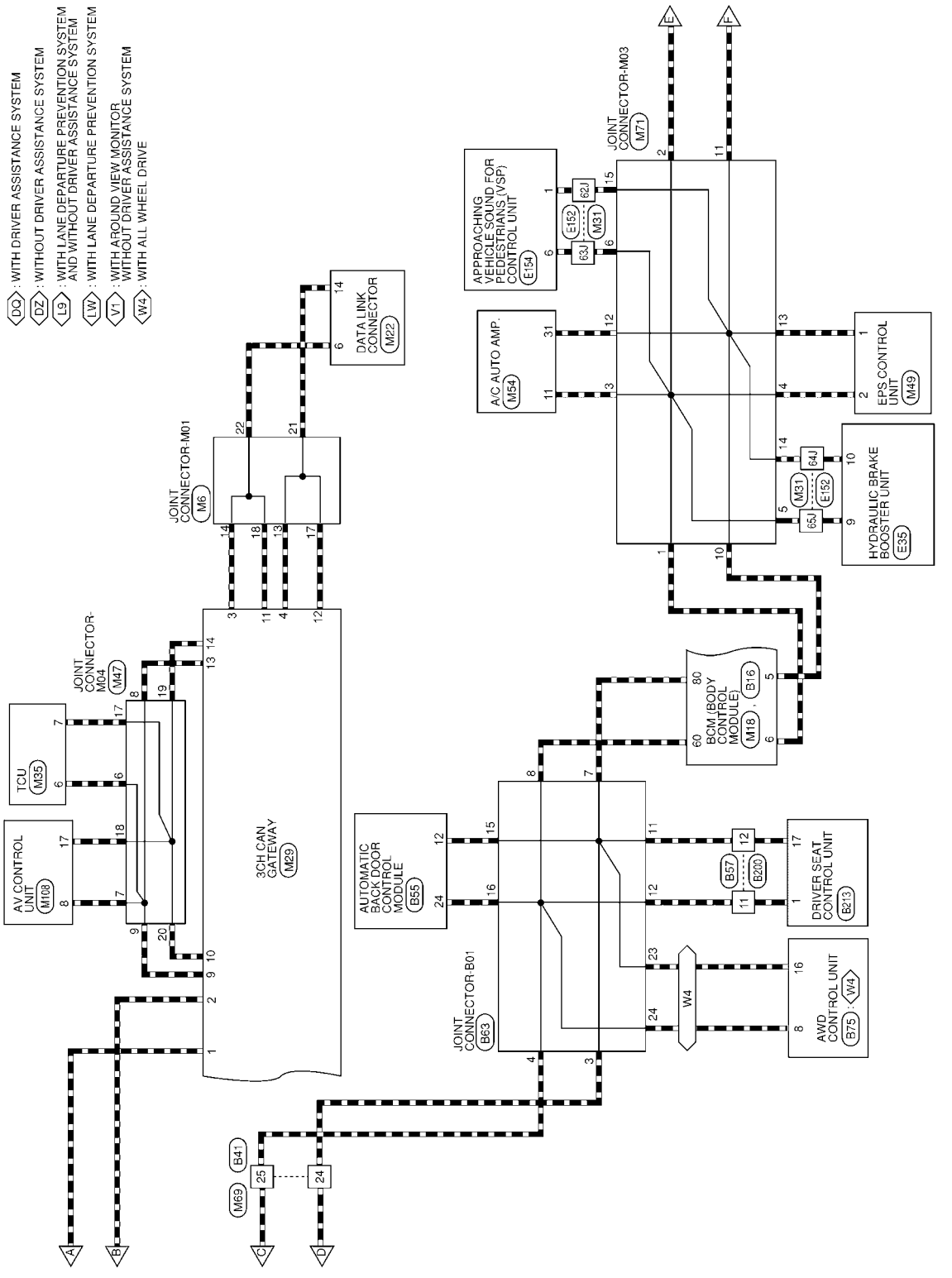
WIRING DIAGRAM

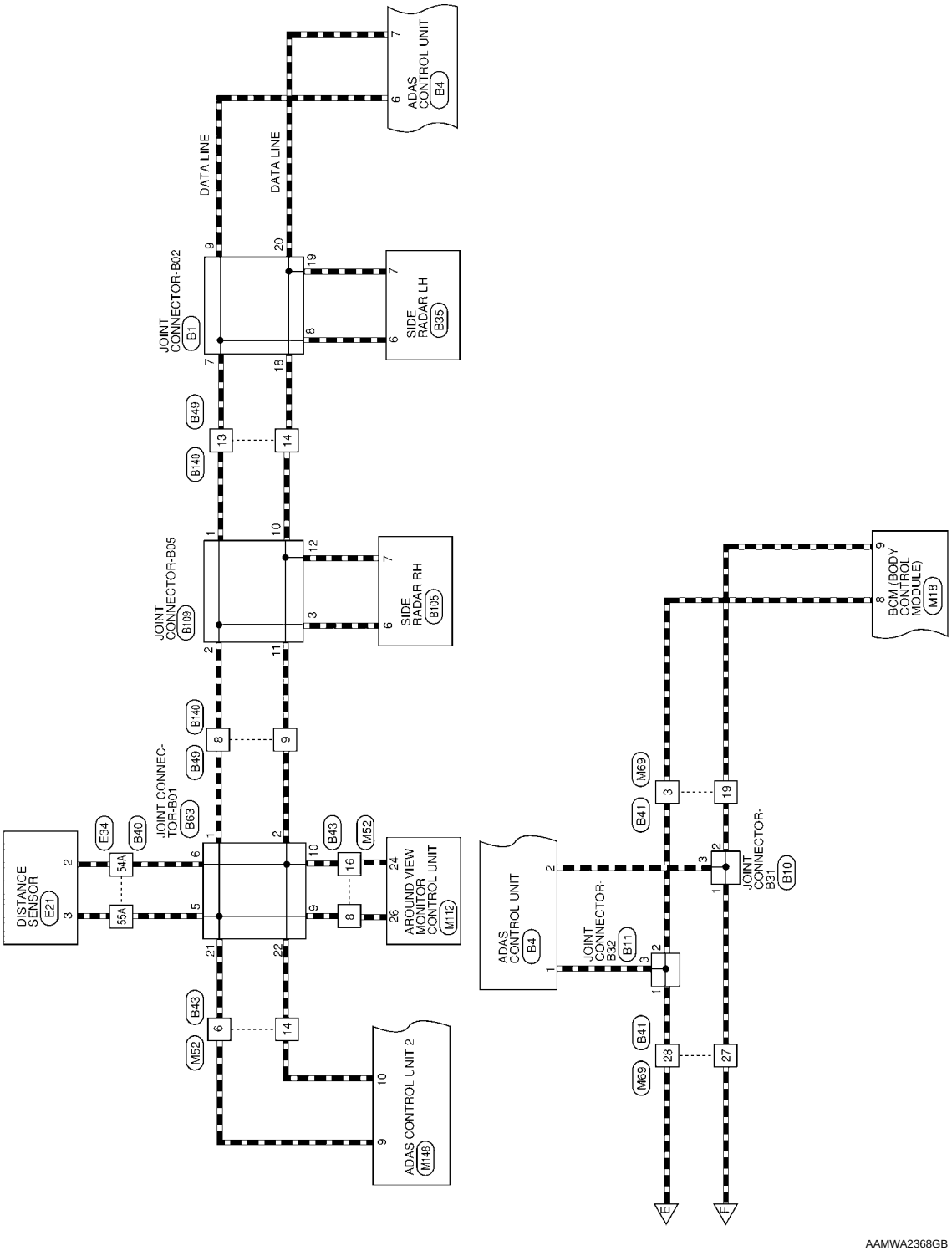
CAN SYSTEM (WITH FORWARD EMERGENCY BRAKING)

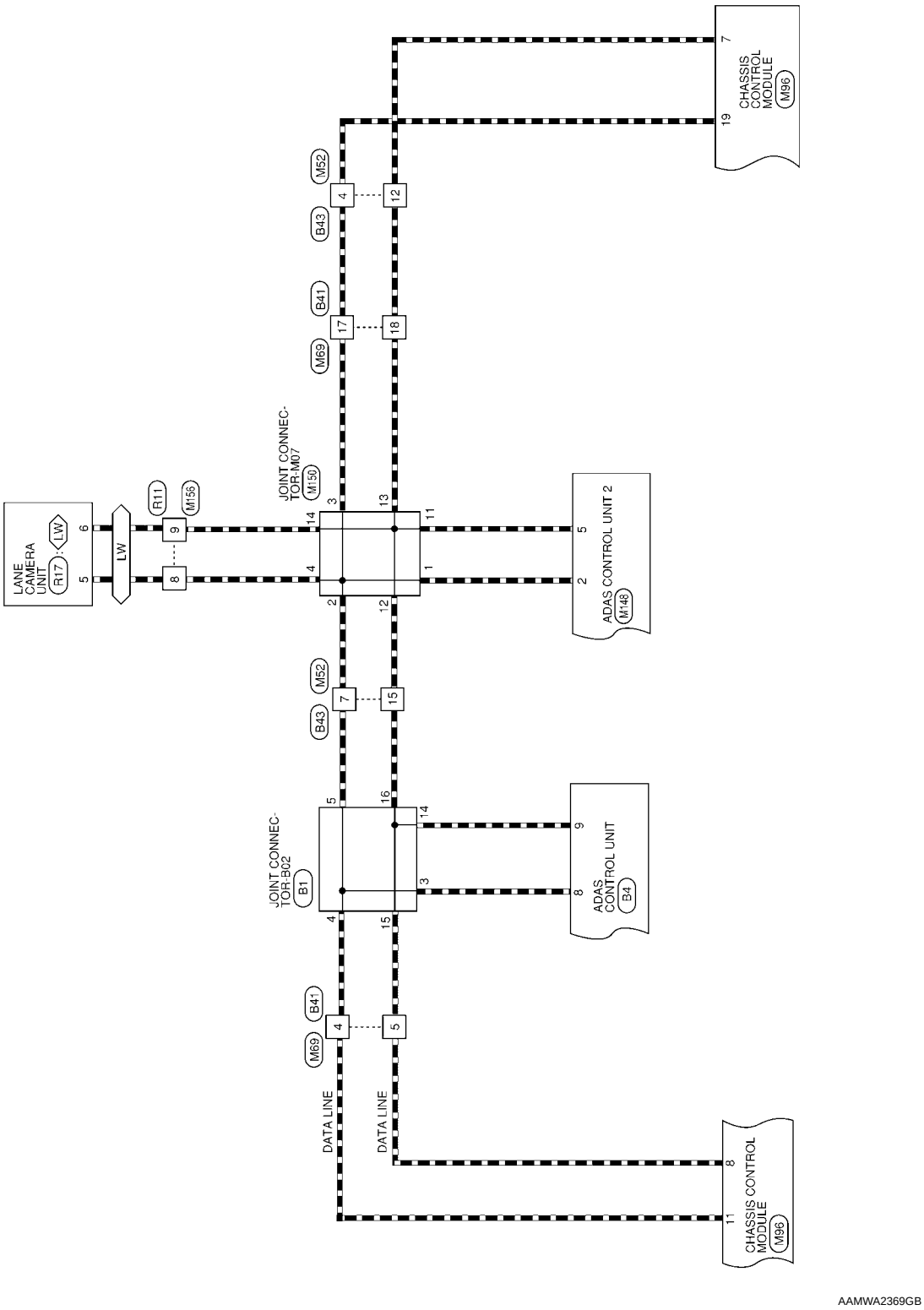
Wiring Diagram - CAN SYSTEM -

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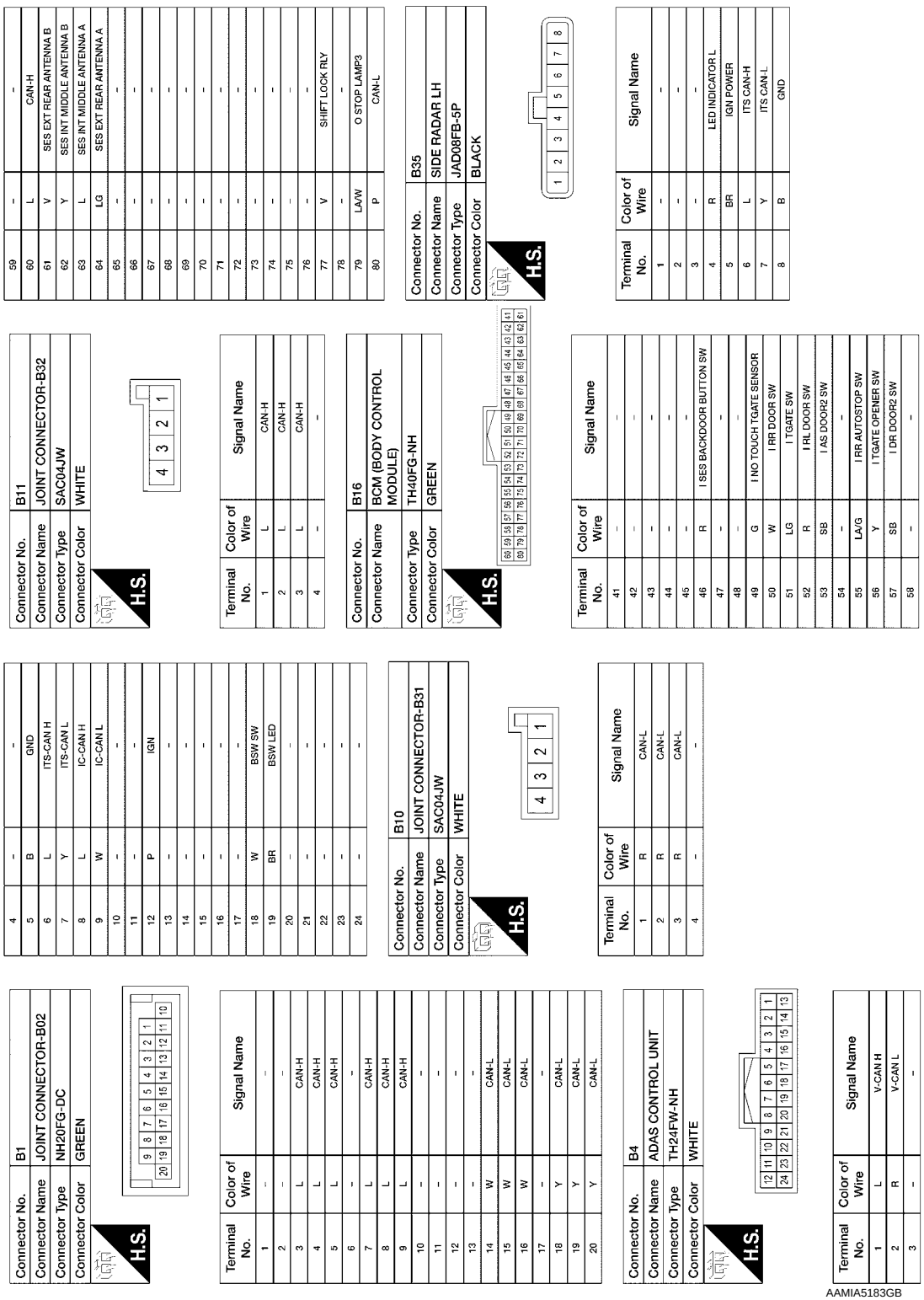

DQ : WITH DRIVER ASSISTANCE SYSTEM
DZ : WITHOUT DRIVER ASSISTANCE SYSTEM
L9 : WITH LANE DEPARTURE PREVENTION SYSTEM AND WITHOUT DRIVER ASSISTANCE SYSTEM
LW : WITH LANE DEPARTURE PREVENTION SYSTEM
V1 : WITH AROUND VIEW MONITOR WITHOUT DRIVER ASSISTANCE SYSTEM
W4 : WITH ALL WHEEL DRIVE
DATA LINK CONNECTOR M22
JOINT CONNECTOR-M01 M6
JOINT CONNECTOR-M04 M47
TCU M35
AV CONTROL UNIT M108
3CH CAN GATEWAY M29
JOINT CONNECTOR-M03 M71
APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) CONTROL UNIT E154
A/C AUTO AMP. M54
EPS CONTROL UNIT M49
HYDRAULIC BRAKE BOOSTER UNIT E35
BCM (BODY CONTROL MODULE) M18 B16
AUTOMATIC BACK DOOR CONTROL MODULE B55
JOINT CONNECTOR-B01 B63
DRIVER SEAT CONTROL UNIT B213
AWD CONTROL UNIT B75 W4
E152 M31 62J 63J 64J 65J B57 B200 B41 M69
A B C D E F
AAMWA2367GB


ADAS CONTROL UNIT B4
DATA LINE
DATA LINE
JOINT CONNECTOR-B02 B1
SIDE RADAR LH B35
B49
B140
JOINT CONNECTOR-B05 B109
SIDE RADAR RH B105
B140
B49
JOINT CONNEC-TOR-B01 B63
E34
B40
54A
55A
DISTANCE SENSOR E21
B43
M52
AROUND VIEW MONITOR CONTROL UNIT M112
B43
M52
ADAS CONTROL UNIT 2 M148
ADAS CONTROL UNIT B4
JOINT CONNECTOR B32 B11
M69
B41
JOINT CONNECTOR-B31 B10
BCM (BODY CONTROL MODULE) M18
E
F
AAMWA2368GB



AAMWA2369GB

CAN SYSTEM CONNECTORS - WITH FORWARD EMERGENCY BRAKING

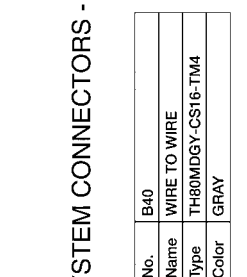


AAMIA5183GB

CAN SYSTEM CONNECTORS - WITH FORWARD EMERGENCY BRAKING

Connector No.	B40
Connector Name	WIRE TO WIRE
Connector Type	TH80MDGY-CS16-TM4
Connector Color	GRAY

H.S.



Terminal No.	Color of Wire	Signal Name
1A	–	TO ENGINE ROOM HARNESS
2A	–	TO ENGINE ROOM HARNESS
3A	–	TO ENGINE ROOM HARNESS
4A	–	TO ENGINE ROOM HARNESS
5A	–	TO ENGINE ROOM HARNESS
6A	LG	TO ENGINE ROOM HARNESS
7A	Y	TO ENGINE ROOM HARNESS
8A	GR	TO ENGINE ROOM HARNESS
9A	BR	TO ENGINE ROOM HARNESS
10A	–	TO ENGINE ROOM HARNESS
11A	–	TO ENGINE ROOM HARNESS
12A	–	TO ENGINE ROOM HARNESS
13A	–	TO ENGINE ROOM HARNESS
14A	–	TO ENGINE ROOM HARNESS
15A	–	TO ENGINE ROOM HARNESS
16A	–	TO ENGINE ROOM HARNESS
17A	–	TO ENGINE ROOM HARNESS
18A	–	TO ENGINE ROOM HARNESS
19A	–	TO ENGINE ROOM HARNESS
20A	–	TO ENGINE ROOM HARNESS
21A	–	TO ENGINE ROOM HARNESS
22A	–	TO ENGINE ROOM HARNESS
23A	–	TO ENGINE ROOM HARNESS
24A	–	TO ENGINE ROOM HARNESS
25A	–	TO ENGINE ROOM HARNESS
26A	–	TO ENGINE ROOM HARNESS
27A	–	TO ENGINE ROOM HARNESS
28A	–	TO ENGINE ROOM HARNESS
29A	–	TO ENGINE ROOM HARNESS
30A	–	TO ENGINE ROOM HARNESS
31A	–	TO ENGINE ROOM HARNESS
32A	–	TO ENGINE ROOM HARNESS
33A	–	TO ENGINE ROOM HARNESS
34A	–	TO ENGINE ROOM HARNESS
35A	–	TO ENGINE ROOM HARNESS
36A	–	TO ENGINE ROOM HARNESS
37A	–	TO ENGINE ROOM HARNESS
38A	–	TO ENGINE ROOM HARNESS
39A	–	TO ENGINE ROOM HARNESS
40A	–	TO ENGINE ROOM HARNESS
41A	–	TO ENGINE ROOM HARNESS
42A	–	TO ENGINE ROOM HARNESS
43A	–	TO ENGINE ROOM HARNESS
44A	–	TO ENGINE ROOM HARNESS
45A	–	TO ENGINE ROOM HARNESS
46A	–	TO ENGINE ROOM HARNESS
47A	–	TO ENGINE ROOM HARNESS
48A	–	TO ENGINE ROOM HARNESS
49A	–	TO ENGINE ROOM HARNESS
50A	–	TO ENGINE ROOM HARNESS
51A	–	TO ENGINE ROOM HARNESS
52A	–	TO ENGINE ROOM HARNESS
53A	–	TO ENGINE ROOM HARNESS
54A	R	TO ENGINE ROOM HARNESS
55A	L	TO ENGINE ROOM HARNESS
56A	BR	TO ENGINE ROOM HARNESS
57A	W	TO ENGINE ROOM HARNESS
58A	B	TO ENGINE ROOM HARNESS
59A	LG	TO ENGINE ROOM HARNESS
60A	B	TO ENGINE ROOM HARNESS
61A	SHIELD	TO ENGINE ROOM HARNESS
62A	–	TO ENGINE ROOM HARNESS
63A	LG	TO ENGINE ROOM HARNESS
64A	Y	TO ENGINE ROOM HARNESS
65A	P	TO ENGINE ROOM HARNESS
66A	R	TO ENGINE ROOM HARNESS
67A	SB	TO ENGINE ROOM HARNESS
68A	BG	TO ENGINE ROOM HARNESS
69A	GR	TO ENGINE ROOM HARNESS
70A	G	TO ENGINE ROOM HARNESS
71A	–	TO ENGINE ROOM HARNESS
72A	–	TO ENGINE ROOM HARNESS
73A	–	TO ENGINE ROOM HARNESS
74A	–	TO ENGINE ROOM HARNESS
75A	B	TO ENGINE ROOM HARNESS
76A	G	TO ENGINE ROOM HARNESS
77A	SB	TO ENGINE ROOM HARNESS
78A	BG	TO ENGINE ROOM HARNESS
79A	Y	TO ENGINE ROOM HARNESS
80A	BR	TO ENGINE ROOM HARNESS
81A	R	TO ENGINE ROOM HARNESS
82A	–	TO ENGINE ROOM HARNESS
83A	–	TO ENGINE ROOM HARNESS
84A	–	TO ENGINE ROOM HARNESS
85A	–	TO ENGINE ROOM HARNESS
86A	–	TO ENGINE ROOM HARNESS
87A	–	TO ENGINE ROOM HARNESS
88A	–	TO ENGINE ROOM HARNESS
89A	–	TO ENGINE ROOM HARNESS
90A	–	TO ENGINE ROOM HARNESS
91A	–	TO ENGINE ROOM HARNESS
92A	–	TO ENGINE ROOM HARNESS
93A	–	TO ENGINE ROOM HARNESS
94A	–	TO ENGINE ROOM HARNESS
95A	–	TO ENGINE ROOM HARNESS
96A	BG	TO ENGINE ROOM HARNESS
97A	–	TO ENGINE ROOM HARNESS
98A	GR	TO ENGINE ROOM HARNESS
99A	LA/BR	TO ENGINE ROOM HARNESS
100A	G	TO ENGINE ROOM HARNESS

Connector No.	B41
Connector Name	WIRE TO WIRE
Connector Type	TH32MW-NH
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
1	SB	TO MAIN HARNESS
2	SB	TO MAIN HARNESS
3	L	TO MAIN HARNESS
4	L	TO MAIN HARNESS
5	W	TO MAIN HARNESS
6	Y	TO MAIN HARNESS
7	LG	TO MAIN HARNESS
8	BG	TO MAIN HARNESS
9	BR	TO MAIN HARNESS
10	Y	TO MAIN HARNESS
11	G	TO MAIN HARNESS
12	L	TO MAIN HARNESS
13	W	TO MAIN HARNESS
14	GR	TO MAIN HARNESS
15	Y	TO MAIN HARNESS
16	P	TO MAIN HARNESS
17	R	TO MAIN HARNESS
18	W	TO MAIN HARNESS
19	R	TO MAIN HARNESS
20	–	TO MAIN HARNESS
21	–	TO MAIN HARNESS
22	–	TO MAIN HARNESS
23	–	TO MAIN HARNESS
24	P	TO MAIN HARNESS
25	L	TO MAIN HARNESS
26	G	TO MAIN HARNESS
27	R	TO MAIN HARNESS
28	L	TO MAIN HARNESS
29	SHIELD	TO MAIN HARNESS
30	W	TO MAIN HARNESS
31	B	TO MAIN HARNESS
32	R	TO MAIN HARNESS

Connector No.	B43
Connector Name	WIRE TO WIRE
Connector Type	TH16MW-NH
Connector Color	WHITE

H.S.

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

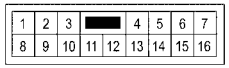
Terminal No.	Color of Wire	Signal Name
1	W	TO MAIN HARNESS
2	W	TO MAIN HARNESS
3	R	TO MAIN HARNESS
4	L	TO MAIN HARNESS
5	L	TO MAIN HARNESS
6	L	TO MAIN HARNESS
7	L	TO MAIN HARNESS
8	L	TO MAIN HARNESS
9	BR	TO MAIN HARNESS
10	BR	TO MAIN HARNESS
11	–	TO MAIN HARNESS
12	Y	TO MAIN HARNESS
13	R	TO MAIN HARNESS
14	Y	TO MAIN HARNESS
15	Y	TO MAIN HARNESS
16	Y	TO MAIN HARNESS

AAMIA5184GB

CAN SYSTEM CONNECTORS - WITH FORWARD EMERGENCY BRAKING

Connector No.	B49
Connector Name	WIRE TO WIRE
Connector Type	NS16MW-CS
Connector Color	WHITE

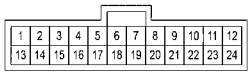
H.S.



Terminal No.	Color of Wire	Signal Name
1	SB	TO BODY NO. 2 HARNESS
2	W	TO BODY NO. 2 HARNESS
3	LA/W	TO BODY NO. 2 HARNESS
4	V	TO BODY NO. 2 HARNESS
5	SB	TO BODY NO. 2 HARNESS
6	LA/BR	TO BODY NO. 2 HARNESS
7	P	TO BODY NO. 2 HARNESS
8	LA/W	TO BODY NO. 2 HARNESS
9	LA/BR	TO BODY NO. 2 HARNESS
10	R	TO BODY NO. 2 HARNESS
11	LA/G	TO BODY NO. 2 HARNESS
12	LA/P	TO BODY NO. 2 HARNESS
13	–	TO BODY NO. 2 HARNESS
14	–	TO BODY NO. 2 HARNESS
15	G	TO BODY NO. 2 HARNESS
16	V	TO BODY NO. 2 HARNESS

Connector No.	B55
Connector Name	AUTOMATIC BACK DOOR CONTROL MODULE
Connector Type	AAC24FB
Connector Color	BLACK

H.S.



Terminal No.	Color of Wire	Signal Name
1	LG	TOUCH SENSOR RH
2	G	TOUCH SENSOR LH
3	SB	HALF LATCH SW
4	B	AUT UNLK REG
5	BR	CLOSE SW
6	W	A-SIGN LH
7	L	B-SIGN LH
8	R	A-SIGN RH
9	SB	B-SIGN RH
10	BG	MAIN SW
11	V	OPEN SW
12	P	CAN-L
13	GR	TOUCH SENSOR GND
14	–	–
15	–	–
16	–	–
17	G	IR SENSOR DUMMY SIG
18	–	–
19	V	POWER LH
20	P	POWER RH
21	G	GND
22	LG	DRIVER SW
23	W	INSIDE CLOSE SW
24	L	CAN-H

Connector No.	B57
Connector Name	WIRE TO WIRE
Connector Type	NS12FBR-CS
Connector Color	BROWN

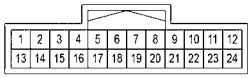
H.S.



Terminal No.	Color of Wire	Signal Name
1	LA/BG	TO FRONT SEAT LH HARNESS
2	LA/BR	TO FRONT SEAT LH HARNESS
3	LA/B	TO FRONT SEAT LH HARNESS
4	P	TO FRONT SEAT LH HARNESS
5	L	TO FRONT SEAT LH HARNESS
6	LA/GR	TO FRONT SEAT LH HARNESS
7	P	TO FRONT SEAT LH HARNESS
8	Y	TO FRONT SEAT LH HARNESS
9	W	TO FRONT SEAT LH HARNESS
10	BR	TO FRONT SEAT LH HARNESS
11	GR	TO FRONT SEAT LH HARNESS
12	LG	TO FRONT SEAT LH HARNESS

Connector No.	B59
Connector Name	LI-ION BATTERY
Connector Type	TH24FW-NH
Connector Color	WHITE

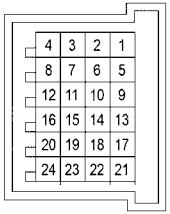
H.S.



Terminal No.	Color of Wire	Signal Name
1	SB	SIO
2	B	GND1
3	L	CAN–H
4	–	–
5	–	–
6	P	BAT
7	B	RLY2 GND
8	–	–
9	SB	PRE CHG RLY V
10	P	SDSW (+)
11	BG	RLY1 V
12	–	–
13	V	VM0
14	B	GND2
15	G	CAN–L
16	–	–
17	R	FCTL
18	LG	VIGN
19	–	–
20	–	–
21	–	–
22	Y	SDSW (–)
23	GR	RLY2 V
24	B	RLY1 GND

Connector No.	B63
Connector Name	JOINT CONNECTOR-B01
Connector Type	NH24FW-J
Connector Color	WHITE

H.S.



Terminal No.	Color of Wire	Signal Name
1	L	CAN-H
2	Y	CAN-L
3	P	CAN-L
4	L	CAN-H
5	L	CAN-H
6	Y	CAN-L
7	P	CAN-L
8	L	CAN-H
9	L	CAN-H
10	Y	CAN-L
11	P	CAN-L
12	L	CAN-H
13	–	–
14	–	–
15	P	CAN-L
16	L	CAN-H
17	–	–
18	–	–
19	–	–
20	–	–
21	L	CAN-H
22	Y	CAN-L
23	P	CAN-L
24	L	CAN-H

AAMIA5185GB

CAN SYSTEM CONNECTORS - WITH FORWARD EMERGENCY BRAKING

Connector No.	B75
Connector Name	AWD CONTROL UNIT
Connector Type	TH16FW-NH
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
1	SB	AWD SOL (+)
2	Y	AWD SOL (-)
3	–	–
4	–	–
5	–	–
6	–	–
7	LA/R	IGN
8	L	CAN-H
9	LA/G	SOL BATT
10	B	GND
11	B	GND
12	–	–
13	–	–
14	Y	LOCK SWITCH
15	LA/L	VB
16	P	CAN-L

Connector No.	B105
Connector Name	SIDE RADAR RH
Connector Type	JAD08FB-6P
Connector Color	BLACK

H.S.

1	2	3	4	5	6	7	8

Terminal No.	Color of Wire	Signal Name
1	–	–
2	–	–
3	B	GND IDENT RH
4	G	LED INDICATOR
5	BR	IGN POWER
6	L	ITS CAN-H
7	Y	ITS CAN-L

8	B		GND

Connector No.	B109
Connector Name	JOINT CONNECTOR-B05
Connector Type	NH20FL-DC
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	CAN-H
2	L	CAN-H
3	L	CAN-H
4	–	–
5	–	–
6	–	–
7	–	–
8	–	–
9	–	–
10	Y	CAN-L
11	Y	CAN-L
12	Y	CAN-L
13	Y	–
14	–	–
15	–	–
16	–	–
17	–	–
18	–	–
19	–	–
20	–	–

2	W	TO BODY HARNESS
3	LA/Y	TO BODY HARNESS
4	V	TO BODY HARNESS
5	SB	TO BODY HARNESS
6	LA/BR	TO BODY HARNESS
7	LA/V	TO BODY HARNESS
8	L	TO BODY HARNESS
9	Y	TO BODY HARNESS
10	R	TO BODY HARNESS
11	V	TO BODY HARNESS
12	LG	TO BODY HARNESS
13	L	TO BODY HARNESS
14	Y	TO BODY HARNESS
15	LA/GR	TO BODY HARNESS
16	LA/LG	TO BODY HARNESS

Connector No.	B200
Connector Name	WIRE TO WIRE
Connector Type	NS12MBR-CS
Connector Color	BROWN

H.S.

1	2	3	4	5
6	7	8	9	10	11	12

Terminal No.	Color of Wire	Signal Name
1	W	TO BODY HARNESS
2	G	TO BODY HARNESS
3	B	TO BODY HARNESS
4	L	TO BODY HARNESS
5	P	TO BODY HARNESS
6	R	TO BODY HARNESS
7	Y	TO BODY HARNESS
8	LG	TO BODY HARNESS
9	BR	TO BODY HARNESS
10	L	TO BODY HARNESS
11	SB	TO BODY HARNESS
12	GR	TO BODY HARNESS

Connector No.	B140
Connector Name	WIRE TO WIRE
Connector Type	NS16FW-CS
Connector Color	WHITE

H.S.

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

Terminal No.	Color of Wire	Signal Name
1	GR	TO BODY HARNESS

Connector No.	B213
Connector Name	DRIVER SEAT CONTROL UNIT
Connector Type	TH32FW-NH
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

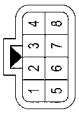
Terminal No.	Color of Wire	Signal Name
1	P	CAN-H
2	GR	UART (TX/RX)
3	–	–
4	V	PULSE (RECLINER)
5	–	–
6	L	ADDRESS 2
7	LG	IND 2
8	L/W	SLIDE SW (BACKWARD)
9	GR/R	RECLINER SW (BACKWARD))
10	–	–
11	V/W	REAR LIFTER SW (DOWNWARD)
12	W	POWER SUPPLY (ENCODER)
13	–	–
14	–	–
15	–	–
16	–	–
17	L	CAN-L
18	V	PULSE (SLIDE)
19	–	–
20	O	PULSE (REAR LIFTER)
21	–	–
22	BR	ADDRESS 1
23	Y	IND 1
24	BR/W	SLIDE SW (FORWARD)
25	G/W	RECLINER SW (FORWARD)
26	–	–
27	Y/R	REAR LIFTER SW (UPWARD)
28	SB	SET SW
29	–	–
30	–	–
31	–	–
32	–	–

AAMIA5186GB

CAN SYSTEM CONNECTORS - WITH FORWARD EMERGENCY BRAKING

Connector No.	E4
Connector Name	WIRE TO WIRE
Connector Type	RS08MGY-PR
Connector Color	GRAY

H.S.



Terminal No.	Color of Wire	Signal Name
1	Y	TO ENGINE CONTROL HARNESS
2	–	TO ENGINE CONTROL HARNESS
3	L	TO ENGINE CONTROL HARNESS
4	G	TO ENGINE CONTROL HARNESS
5	–	TO ENGINE CONTROL HARNESS
6	–	TO ENGINE CONTROL HARNESS
7	–	TO ENGINE CONTROL HARNESS
8	–	TO ENGINE CONTROL HARNESS

Connector No.	E16
Connector Name	ECM
Connector Type	RH24FB-RZ8-L-LH
Connector Color	BLACK

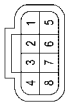
H.S.



Terminal No.	Color of Wire	Signal Name
121	L	EVAP CONTROL SYSTEM PRESSURE SENSOR
122	–	–
123	P	CAN-L
124	L	CAN-H
125	R	SENSOR POWER SUPPLY
126	–	–
127	–	–
128	BG	FUEL TANK TEMPERATURE SENSOR
129	–	–
130	–	–
131	–	–
132	–	–
133	LG	IGNITION SWITCH
134	–	–
135	–	–
136	–	–
137	G	HEV CAN-L
138	L	HEV CAN-H
139	Y	STOP LAMP SWITCH
140	GR	BRAKE PEDAL POSITION SWITCH
141	Y	EVAP CANISTER VENT CONTROL VALVE
142	–	–
143	–	–
144	–	–
145	G	ECM POWER SUPPLY
146	–	–
147	GR	ECM GROUND
148	B	SENSOR GROUND
149	GR	ECM GROUND
150	–	–
151	–	–
152	GR	ECM GROUND

Connector No.	E21
Connector Name	DISTANCE SENSOR
Connector Type	SAZ08FGY
Connector Color	GRAY

H.S.



Terminal No.	Color of Wire	Signal Name
1	B	GND
2	R	ITS CAN-L
3	L	ITS CAN-H
4	–	–
5	–	–
6	–	–
7	–	–
8	SB	IGN

AAMIA5187GB

CAN SYSTEM CONNECTORS - WITH FORWARD EMERGENCY BRAKING

Connector No.	E34
Connector Name	WIRE TO WIRE
Connector Type	TH80FDGY-CS16-TM4
Connector Color	GRAY

H.S.

Terminal No.	Color of Wire	Signal Name
1A	–	TO BODY HARNESS
2A	–	TO BODY HARNESS
3A	–	TO BODY HARNESS
4A	–	TO BODY HARNESS
5A	–	TO BODY HARNESS
6A	L	TO BODY HARNESS
7A	R	TO BODY HARNESS
8A	GR	TO BODY HARNESS
9A	BR	TO BODY HARNESS
10A	–	TO BODY HARNESS
11A	–	TO BODY HARNESS
12A	–	TO BODY HARNESS
13A	–	TO BODY HARNESS
14A	–	TO BODY HARNESS
15A	–	TO BODY HARNESS
16A	–	TO BODY HARNESS
17A	–	TO BODY HARNESS
18A	–	TO BODY HARNESS
19A	–	TO BODY HARNESS
20A	–	TO BODY HARNESS
21A	–	TO BODY HARNESS
22A	–	TO BODY HARNESS
23A	–	TO BODY HARNESS
24A	–	TO BODY HARNESS
25A	–	TO BODY HARNESS
26A	–	TO BODY HARNESS
27A	–	TO BODY HARNESS
28A	–	TO BODY HARNESS
29A	–	TO BODY HARNESS
30A	–	TO BODY HARNESS
31A	–	TO BODY HARNESS
32A	–	TO BODY HARNESS
33A	–	TO BODY HARNESS
34A	–	TO BODY HARNESS
35A	–	TO BODY HARNESS
36A	–	TO BODY HARNESS
37A	–	TO BODY HARNESS
38A	–	TO BODY HARNESS
39A	–	TO BODY HARNESS
40A	–	TO BODY HARNESS
41A	–	TO BODY HARNESS
42A	–	TO BODY HARNESS
43A	–	TO BODY HARNESS
44A	–	TO BODY HARNESS
45A	–	TO BODY HARNESS
46A	–	TO BODY HARNESS
47A	–	TO BODY HARNESS
48A	–	TO BODY HARNESS
49A	–	TO BODY HARNESS
50A	–	TO BODY HARNESS
51A	–	TO BODY HARNESS
52A	–	TO BODY HARNESS
53A	–	TO BODY HARNESS
54A	R	TO BODY HARNESS
55A	L	TO BODY HARNESS
56A	BR	TO BODY HARNESS
57A	W	TO BODY HARNESS
58A	V	TO BODY HARNESS
59A	Y	TO BODY HARNESS
60A	B	TO BODY HARNESS
61A	SHIELD	TO BODY HARNESS
62A	–	TO BODY HARNESS
63A	L	TO BODY HARNESS
64A	Y	TO BODY HARNESS
65A	P	TO BODY HARNESS
66A	R	TO BODY HARNESS
67A	SB	TO BODY HARNESS
68A	BG	TO BODY HARNESS
69A	GR	TO BODY HARNESS
70A	LG	TO BODY HARNESS
71A	–	TO BODY HARNESS
72A	–	TO BODY HARNESS
73A	–	TO BODY HARNESS
74A	–	TO BODY HARNESS
75A	B	TO BODY HARNESS
76A	G	TO BODY HARNESS
77A	SB	TO BODY HARNESS
78A	BG	TO BODY HARNESS
79A	LG	TO BODY HARNESS
80A	BR	TO BODY HARNESS
81A	G	TO BODY HARNESS
82A	–	TO BODY HARNESS
83A	–	TO BODY HARNESS
84A	–	TO BODY HARNESS
85A	–	TO BODY HARNESS
86A	–	TO BODY HARNESS
87A	–	TO BODY HARNESS
88A	–	TO BODY HARNESS
89A	–	TO BODY HARNESS
90A	–	TO BODY HARNESS
91A	–	TO BODY HARNESS
92A	–	TO BODY HARNESS
93A	–	TO BODY HARNESS
94A	–	TO BODY HARNESS
95A	–	TO BODY HARNESS
96A	G	TO BODY HARNESS
97A	–	TO BODY HARNESS
98A	GR	TO BODY HARNESS
99A	W	TO BODY HARNESS
100A	G	TO BODY HARNESS
12	–	–
13	BG	ACC
14	V	IG
15	–	–
16	–	–
17	–	–
18	–	–
19	–	–
20	–	–
21	–	–
22	–	–
23	–	–
24	–	–
25	–	–
26	–	–
27	–	–
28	–	–
29	–	–
30	–	–
31	–	–
32	–	–
33	–	–
34	–	–

Connector No.	E35
Connector Name	HYDRAULIC BRAKE BOOSTER UNIT
Connector Type	SAZ30FB-SJZ4-D
Connector Color	BLACK

H.S.

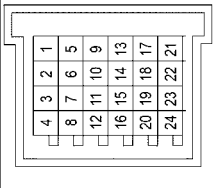
Terminal No.	Color of Wire	Signal Name
1	B	GND1
2	B	GND2
3	R	BM1
4	G	BM2
5	–	–
6	–	–
7	W	BZ
8	–	–
9	L	CAN-H
10	R	CAN-L
11	–	–

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CAN SYSTEM CONNECTORS - WITH FORWARD EMERGENCY BRAKING

Connector No.	E44
Connector Name	JOINT CONNECTOR-E01
Connector Type	NH24FG-J
Connector Color	GREEN

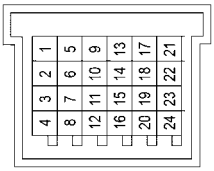
H.S.



Terminal No.	Color of Wire	Signal Name
1	V	SENSOR GROUND
2	LG	I BRAKE SW2
3	P	CAN-L
4	L	CAN-H
5	B	SENSOR GROUND
6	LG	I BRAKE SW2
7	P	CAN-L
8	L	CAN-H
9	W	SENSOR GROUND
10	Y	STOP LAMP SWITCH
11	P	CAN-L
12	L	CAN-H
13	–	–
14	R	STOP LAMP SWITCH
15	P	CAN-L
16	L	CAN-H
17	BR	EVAP CONTROL SYSTEM PRESSURE SENSOR
18	–	–
19	P	CAN-L
20	L	CAN-H
21	L	EVAP CONTROL SYSTEM PRESSURE SENSOR
22	–	–
23	–	–
24	–	–

Connector No.	E45
Connector Name	JOINT CONNECTOR-E03
Connector Type	NH24FW-J
Connector Color	WHITE

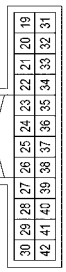
H.S.



Terminal No.	Color of Wire	Signal Name
1	B	GROUND
2	G	CAN-L
3	L	CAN-H
4	–	–
5	B	GROUND
6	G	HEV CAN-L
7	L	HEV CAN-H
8	–	–
9	B	GROUND
10	G	CAN-L
11	L	CAN-H
12	–	–
13	SHIELD	SHIELD
14	G	CAN-L
15	L	CAN-H
16	–	–
17	B	GROUND
18	G	HEV CAN-L
19	L	HEV CAN-H
20	–	–
21	B	GROUND
22	–	–
23	–	–
24	–	–

Connector No.	E120
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	TH24FGY-NH
Connector Color	GRAY

H.S.



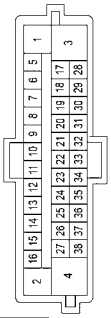
Terminal No.	Color of Wire	Signal Name
19	LG	O IGN ECM
20	–	–
21	–	–
22	P	CAN-L
23	–	–
24	L	CAN-H
25	–	–
26	–	–
27	SB	CABIN MOTOR 5
28	R	CABIN MOTOR 6
29	LG	CABIN MOTOR 7
30	Y	CABIN MOTOR 8
31	B	2ND SIGNAL GROUND
32	GR	LI PUSH SW
33	BR	I AUTO STOP WIPER
34	–	–
35	–	–
36	–	–
37	–	–
38	–	–
39	L	HEV CAN-H
40	G	HEV CAN-L
41	W	CABIN MOTOR 3
42	R	CABIN MOTOR 4

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CAN SYSTEM CONNECTORS - WITH FORWARD EMERGENCY BRAKING

Connector No.	E125
Connector Name	ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)
Connector Type	SAZ34FB-HS2-SJZ2-DH
Connector Color	BLACK

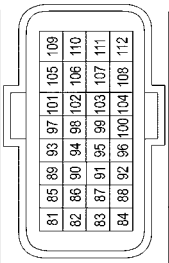
H.S.



Terminal No.	Color of Wire	Signal Name
1	BR	UB VR
2	B	GND MR
3	Y	UB MR
4	B	GND ECU
5	–	–
6	–	–
7	–	–
8	W	SKS1 (S1)
9	BR	VDC OFF
10	G	SKS2 (S2)
11	V	WSP FR
12	SB	WSS FR
13	BR	WSP RL
14	G	WSS RL
15	–	–
16	–	–
17	–	–
18	–	–
19	L	CAN- H
20	–	–
21	–	–
22	–	–
23	W	WSP FL
24	P	WSS FL
25	BG	WSP RR
26	LG	WSS RR
27	–	–
28	GR	WAU
29	–	–
30	P	CAN- L
31	B	VSSG (GND)
32	–	–
33	R	ASSM (VCC)
35	–	–
36	–	–
37	–	–
38	–	–

Connector No.	E130
Connector Name	HPCM
Connector Type	RH24FB-RZ8-L-RH
Connector Color	BLACK

H.S.



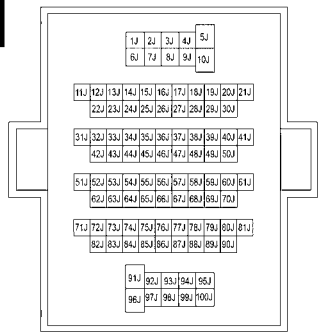
Terminal No.	Color of Wire	Signal Name
81	R	12V BATTERY VOLTAGE
82	–	–
83	P	CAN-L
84	L	CAN-H
85	–	–
86	–	–
87	–	–
88	B	DC/DC CONVERTER VOLTAGE STABILIZER SIGNAL
89	–	–
90	–	–
91	–	–
92	–	–
93	Y	IGNITION SIGNAL
94	G	ASCD STEERING SWITCH
95	BR	ASCD STEERING SWITCH GROUND
96	–	–
97	L	HEV SYSTEM CAN-H
98	G	HEV SYSTEM CAN-L
99	R	STOP LAMP SWITCH
100	W	BRAKE PEDAL POSITION SWITCH
101	–	–
102	SB	SENSOR POWER SUPPLY
103	BR	ACCELERATOR PEDAL POSITION SENSOR 2
104	LG	SENSOR GROUND
105	BR	POWER SUPPLY FOR HPCM
106	V	SENSOR POWER SUPPLY
107	–	–
108	B	HPCM GND
109	–	–
110	GR	ACCELERATOR PEDAL POSITION SENSOR 1
111	R	SENSOR GROUND
112	GR	HPCM GND

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CAN SYSTEM CONNECTORS - WITH FORWARD EMERGENCY BRAKING

Connector No.	E152
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-CS16-TM4
Connector Color	WHITE

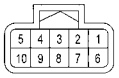
H.S.



Terminal No.	Color of Wire	Signal Name
1J	–	TO MAIN HARNESS
2J	Y	TO MAIN HARNESS
3J	–	TO MAIN HARNESS
4J	–	TO MAIN HARNESS
5J	–	TO MAIN HARNESS
6J	–	TO MAIN HARNESS
7J	–	TO MAIN HARNESS
8J	–	TO MAIN HARNESS
9J	BR	TO MAIN HARNESS
10J	–	TO MAIN HARNESS
11J	–	TO MAIN HARNESS
12J	–	TO MAIN HARNESS
13J	–	TO MAIN HARNESS
14J	–	TO MAIN HARNESS
15J	–	TO MAIN HARNESS
16J	–	TO MAIN HARNESS
17J	–	TO MAIN HARNESS
18J	–	TO MAIN HARNESS
19J	–	TO MAIN HARNESS
20J	–	TO MAIN HARNESS
21J	GR	TO MAIN HARNESS
22J	SHIELD	TO MAIN HARNESS
23J	LG	TO MAIN HARNESS
24J	V	TO MAIN HARNESS
25J	L	TO MAIN HARNESS
26J	BR	TO MAIN HARNESS
27J	G	TO MAIN HARNESS
28J	R	TO MAIN HARNESS
29J	L	TO MAIN HARNESS
30J	V	TO MAIN HARNESS
31J	–	TO MAIN HARNESS
32J	–	TO MAIN HARNESS
33J	R	TO MAIN HARNESS
34J	L	TO MAIN HARNESS
35J	BG	TO MAIN HARNESS
36J	LG	TO MAIN HARNESS
37J	GR	TO MAIN HARNESS
38J	BR	TO MAIN HARNESS
39J	–	TO MAIN HARNESS
40J	–	TO MAIN HARNESS
41J	G	TO MAIN HARNESS
42J	W	TO MAIN HARNESS
43J	L	TO MAIN HARNESS
44J	B	TO MAIN HARNESS
45J	SB	TO MAIN HARNESS
46J	BR	TO MAIN HARNESS
47J	W	TO MAIN HARNESS
48J	W	TO MAIN HARNESS
49J	L	TO MAIN HARNESS
50J	P	TO MAIN HARNESS
51J	W	TO MAIN HARNESS
52J	R	TO MAIN HARNESS
53J	SB	TO MAIN HARNESS
54J	LG	TO MAIN HARNESS
55J	W	TO MAIN HARNESS
56J	BG	TO MAIN HARNESS
57J	R	TO MAIN HARNESS
58J	V	TO MAIN HARNESS
59J	BR	TO MAIN HARNESS
60J	P	TO MAIN HARNESS
61J	L	TO MAIN HARNESS
62J	P	TO MAIN HARNESS
63J	L	TO MAIN HARNESS
64J	R	TO MAIN HARNESS
65J	L	TO MAIN HARNESS
66J	BG	TO MAIN HARNESS
67J	–	TO MAIN HARNESS
68J	–	TO MAIN HARNESS
69J	G	TO MAIN HARNESS
70J	L	TO MAIN HARNESS
71J	–	TO MAIN HARNESS
72J	–	TO MAIN HARNESS
73J	–	TO MAIN HARNESS
74J	–	TO MAIN HARNESS
75J	–	TO MAIN HARNESS
76J	–	TO MAIN HARNESS
77J	–	TO MAIN HARNESS
78J	–	TO MAIN HARNESS
79J	SHIELD	TO MAIN HARNESS
80J	B	TO MAIN HARNESS
81J	W	TO MAIN HARNESS
82J	–	TO MAIN HARNESS
83J	–	TO MAIN HARNESS
84J	–	TO MAIN HARNESS
85J	–	TO MAIN HARNESS
86J	–	TO MAIN HARNESS
87J	–	TO MAIN HARNESS
88J	–	TO MAIN HARNESS
89J	–	TO MAIN HARNESS
90J	–	TO MAIN HARNESS
91J	–	TO MAIN HARNESS
92J	LG	TO MAIN HARNESS
93J	L	TO MAIN HARNESS
94J	L	TO MAIN HARNESS
95J	BR	TO MAIN HARNESS
96J	–	TO MAIN HARNESS
97J	GR	TO MAIN HARNESS
98J	P	TO MAIN HARNESS
99J	W	TO MAIN HARNESS
100J	Y	TO MAIN HARNESS

Connector No.	E154
Connector Name	APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) CONTROL UNIT
Connector Type	RH10FB
Connector Color	BLACK

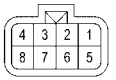
H.S.



Terminal No.	Color of Wire	Signal Name
1	P	CAN-L
2	GR	GND
3	LG	BAT
4	–	–
5	–	–
6	L	CAN-H
7	–	–
8	–	–
9	BR	IGN
10	–	–

Connector No.	F6
Connector Name	WIRE TO WIRE
Connector Type	RS08FGY-PR
Connector Color	GRAY

H.S.



Terminal No.	Color of Wire	Signal Name
1	P	TO ENGINE ROOM HARNESS
2	–	TO ENGINE ROOM HARNESS
3	L	TO ENGINE ROOM HARNESS
4	G	TO ENGINE ROOM HARNESS
5	–	TO ENGINE ROOM HARNESS
6	–	TO ENGINE ROOM HARNESS
7	–	TO ENGINE ROOM HARNESS
8	–	TO ENGINE ROOM HARNESS

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CAN SYSTEM CONNECTORS - WITH FORWARD EMERGENCY BRAKING

Connector No.	F36
Connector Name	TRACTION MOTOR INVERTER
Connector Type	SAZ36FB-HS4-1V-LH
Connector Color	BLACK

H.S.

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

Terminal No.	Color of Wire	Signal Name
1	–	–
2	V	TRACTION MOTOR RESOLVER SIGNAL S1
3	–	–
4	G	TRACTION MOTOR RESOLVER SIGNAL R1
5	–	–
6	–	–
7	R	POWER SUPPLY (IGN)
8	–	–
9	P	CONNECTION DETECTION (+)
10	LG	TRACTION MOTOR RESOLVER SIGNAL S3
11	–	–
12	Y	TRACTION MOTOR RESOLVER SIGNAL R2
13	–	–
14	–	–
15	–	–
16	–	–
17	W	CONNECTION DETECTION (-)
18	–	–
19	–	–
20	W	TRACTION MOTOR RESOLVER SIGNAL S2
21	–	–
22	–	–
23	–	–
24	–	–
25	–	–
26	–	–
27	L	HEV SYSTEM CAN-H
28	B	TRACTION MOTOR RESOLVER SIGNAL S4
29	–	–
30	–	–
31	–	–
32	–	–
33	–	–

34	–	–
35	G	HEV SYSTEM CAN-L
36	–	–
37	B	GND
38	P	POWER SUPPLY (BAT)
39	B	GND
40	P	POWER SUPPLY (BAT)

Connector No.	F42
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	TH24FB-NH
Connector Color	BLACK

H.S.

98	97	96	95	94	93	92	91	90	89	88	87
110	109	108	107	106	105	104	103	102	101	100	99

Terminal No.	Color of Wire	Signal Name
87	L	HEV CAN-H
88	G	HEV CAN-L
89	W	MOTOR CABIN 3
90	R	MOTOR CABIN 4
91	–	–
92	BG	LI NP SW
93	P	LI ECM DRIVER
94	–	–
95	–	–
96	–	–
97	–	–
98	–	–
99	BG	MOTOR CABIN 5
100	GR	MOTOR CABIN 6
101	LG	MOTOR CABIN 7
102	Y	MOTOR CABIN 8
103	W	HOOD SW2
104	–	–
105	–	–
106	BR	LO FAN RELAY2(PWM)
107	–	–
108	–	–
109	–	–
110	–	–

Connector No.	F75
Connector Name	TCM (TRANSMISSION CONTROL MODULE)
Connector Type	RH40FB-RZ8-L-LH
Connector Color	BLACK

H.S.

31	32	33	34	35	36	37	38	39	40	47	48
21	22	23	24	25	26	27	28	29	30	45	46
11	12	13	14	15	16	17	18	19	20	43	44
1	2	3	4	5	6	7	8	9	10	41	42

Terminal No.	Color of Wire	Signal Name
1	–	–
2	SB	L RANGE SW
3	LG	CLUTCH 2 TEMP SENSOR
4	Y	D RANGE SW
5	R	N RANGE SW
6	G	R RANGE SW
7	V	P RANGE SW
8	–	–
9	–	–
10	–	–
11	W	SENSOR GND
12	LG	CVT FLUID TEMP SENS
13	–	–
14	–	–
15	B	SENSOR GND
16	R	SEC PRESS SENS
17	L	PRI PRESS SENS
18	–	–
19	–	–
20	–	–
21	–	–
22	–	–
23	G	HEV CAN-L
24	–	–
25	W	EOP SIG
26	P	SENS PWR SUPPLY
27	–	–
28	–	–
29	–	–
30	BR	LINE PRESS SOL VALVE
31	–	–
32	P	EOP STATE
33	L	HEV CAN-H
34	R	OUTPUT SPEED SENS
35	LG	PRI SPEED SENS
36	–	–
37	BG	SELECT SOL VALVE

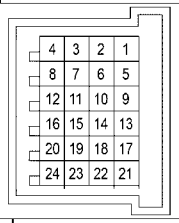
38	GR	TCC SOL VALVE
39	SB	SEC PRESS SOL VALVE
40	V	PRI PRESS SOL VALVE
41	B	GND
42	B	GND
43	–	–
44	–	–
45	LG	BATT
46	LG	BATT
47	R	VIGN
48	R	VIGN

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CAN SYSTEM CONNECTORS - WITH FORWARD EMERGENCY BRAKING

Connector No.	M6
Connector Name	JOINT CONNECTOR-M01
Connector Type	NH24FGY-J
Connector Color	GRAY

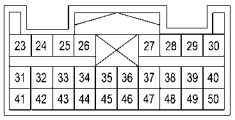
H.S.



Terminal No.	Color of Wire	Signal Name
1	GR	K-LINE
2	R	IGNITION
3	P	CAN-L
4	L	CAN-H
5	–	–
6	–	–
7	P	CAN-L
8	L	CAN-H
9	GR	K-LINE
10	R	IGNITION
11	P	CAN-L
12	L	CAN-H
13	P	CAN-L
14	L	CAN-H
15	P	CAN-L
16	L	CAN-H
17	P	CAN-L
18	L	CAN-H
19	P	CAN-L
20	L	CAN-H
21	P	CAN-L
22	L	CAN-H
23	P	CAN-L
24	L	CAN-H

Connector No.	M10
Connector Name	AIR BAG DIAGNOSIS SENSOR UNIT
Connector Type	NH28FY-EX
Connector Color	YELLOW

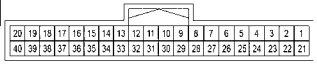
H.S.



Terminal No.	Color of Wire	Signal Name
23	L	AS2+
24	BG	AS2-
25	LG	AS1-
26	SB	AS1+
27	B	GND
28	V	DR2+
29	Y	DR1- & DR2-
30	G	DR1+
31	B	ECZS-
32	BR	RH DOOR-SAT-
33	–	–
34	R	LH DOOR-SAT-
35	–	–
36	–	–
37	–	–
38	–	–
39	B	GND
40	–	–
41	W	ECZS+
42	GR	RH DOOR-SAT+
43	–	–
44	G	LH DOOR-SAT+
45	P	CAN-L
46	L	CAN-H
47	GR	TELLTALE LAMP OFF
48	–	–
49	–	–
50	R	IGN

Connector No.	M18
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	TH40FGY-NH
Connector Color	GRAY

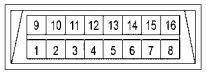
H.S.



Terminal No.	Color of Wire	Signal Name
1	L	LIN 3 D
2	LA/G	O DI FR LEFT D
3	LA/Y	O DI FR RIGHT D
4	P	O SPARE4 RL N
5	R	CAN-L
6	L	CAN-H
7	–	–
8	L	CAN-H
9	R	CAN-L
10	BG	I DOORLOCK SW
11	Y	I HAZARD SW D
12	W	O PWR AUTOLIGHT SENSOR
13	–	–
14	–	–
15	–	–
16	–	–
17	L	O PWR ATDVC
18	–	–
19	LG	I AUTOLIGHT SENSOR
20	–	–
21	–	–
22	–	–
23	G	O WL AUTHORIZATION RL
24	LA/R	O DEFROSTER RL D
25	BR	O BAT TEMP1 RL
26	–	–
27	Y	O IGN1 RL
28	LA/W	O IGN2 RL
29	–	–
30	V	O GND AUTOLIGHT SENSOR
31	–	–
32	–	–
33	LG	O CSW 5
34	Y	I CSW 5
35	BG	O SECURITY LED
36	G	O CSW 3
37	GR	O CSW 4
38	V	O CSW 1
39	W	O CSW 2
40	SB	I DOORUNLOCK SW

Connector No.	M22
Connector Name	DATA LINK CONNECTOR
Connector Type	BD16FW
Connector Color	WHITE

H.S.



Terminal No.	Color of Wire	Signal Name
1	–	–
2	–	–
3	–	–
4	B	GROUND
5	B	GROUND
6	L	CAN-H
7	GR	K-LINE
8	Y	IGNITION
9	–	–
10	–	–
11	–	–
12	–	–
13	–	–
14	P	CAN-L
15	–	–
16	W	BATTERY

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CAN SYSTEM CONNECTORS - WITH FORWARD EMERGENCY BRAKING

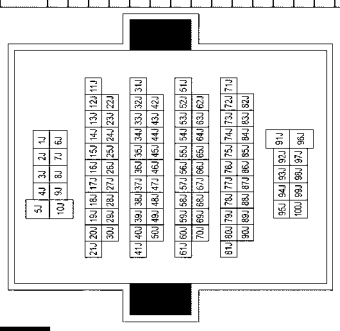
Connector No.	M29
Connector Name	3CH CAN GATEWAY
Connector Type	TH16FW-NH
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1	L	VEHICLE CAN COMMUNICATION 1-H
2	P	VEHICLE CAN COMMUNICATION 1-L
3	L	DIAGNOSTIC CAN COMMUNICATION-H
4	P	DIAGNOSTIC CAN COMMUNICATION-L
5	Y	IGNITION POWER SUPPLY
6	B	GROUND
7	B	GROUND
8	W	BATTERY POWER SUPPLY
9	L	IT CAN COMMUNICATION-H
10	V	IT CAN COMMUNICATION-L
11	L	DIAGNOSTIC CAN COMMUNICATION-H
12	P	DIAGNOSTIC CAN COMMUNICATION-L
13	L	IT CAN COMMUNICATION-H
14	V	IT CAN COMMUNICATION-L
15	L	–
16	G	–

Connector No.	M31
Connector Name	WIRE TO WIRE
Connector Type	TH80MW-CS16-TM4
Connector Color	WHITE

H.S.



Terminal No.	Color of Wire	Signal Name
1J	–	TO ENGINE ROOM HARNESS
2J	R	TO ENGINE ROOM HARNESS
3J	–	TO ENGINE ROOM HARNESS
4J	–	TO ENGINE ROOM HARNESS
5J	–	TO ENGINE ROOM HARNESS
6J	–	TO ENGINE ROOM HARNESS
7J	–	TO ENGINE ROOM HARNESS
8J	–	TO ENGINE ROOM HARNESS
9J	W	TO ENGINE ROOM HARNESS
10J	–	TO ENGINE ROOM HARNESS
11J	–	TO ENGINE ROOM HARNESS
12J	–	TO ENGINE ROOM HARNESS
13J	–	TO ENGINE ROOM HARNESS
14J	–	TO ENGINE ROOM HARNESS
15J	–	TO ENGINE ROOM HARNESS
16J	–	TO ENGINE ROOM HARNESS
17J	–	TO ENGINE ROOM HARNESS
18J	–	TO ENGINE ROOM HARNESS
19J	–	TO ENGINE ROOM HARNESS
20J	–	TO ENGINE ROOM HARNESS
21J	LA/L	TO ENGINE ROOM HARNESS
22J	SHIELD	TO ENGINE ROOM HARNESS
23J	LG	TO ENGINE ROOM HARNESS
24J	V	TO ENGINE ROOM HARNESS
25J	L	TO ENGINE ROOM HARNESS
26J	BR	TO ENGINE ROOM HARNESS
27J	G	TO ENGINE ROOM HARNESS

28J	Y	TO ENGINE ROOM HARNESS
29J	L	TO ENGINE ROOM HARNESS
30J	V	TO ENGINE ROOM HARNESS
31J	–	TO ENGINE ROOM HARNESS
32J	–	TO ENGINE ROOM HARNESS
33J	R	TO ENGINE ROOM HARNESS
33J	Y	TO ENGINE ROOM HARNESS - (WITH DRIVER ASSISTNACE SYSTEM)
34J	L	TO ENGINE ROOM HARNESS
35J	BG	TO ENGINE ROOM HARNESS
36J	GR	TO ENGINE ROOM HARNESS
37J	Y	TO ENGINE ROOM HARNESS
38J	LA/BR	TO ENGINE ROOM HARNESS
39J	–	TO ENGINE ROOM HARNESS
40J	–	TO ENGINE ROOM HARNESS
41J	LA/R	TO ENGINE ROOM HARNESS
42J	W	TO ENGINE ROOM HARNESS
43J	L	TO ENGINE ROOM HARNESS
44J	B	TO ENGINE ROOM HARNESS
45J	SB	TO ENGINE ROOM HARNESS
46J	BR	TO ENGINE ROOM HARNESS
47J	W	TO ENGINE ROOM HARNESS
48J	R	TO ENGINE ROOM HARNESS
49J	SB	TO ENGINE ROOM HARNESS
50J	GR	TO ENGINE ROOM HARNESS
51J	W	TO ENGINE ROOM HARNESS
52J	R	TO ENGINE ROOM HARNESS
53J	BR	TO ENGINE ROOM HARNESS
54J	LG	TO ENGINE ROOM HARNESS
55J	LA/Y	TO ENGINE ROOM HARNESS
56J	LA/V	TO ENGINE ROOM HARNESS
57J	LA/R	TO ENGINE ROOM HARNESS
58J	W	TO ENGINE ROOM HARNESS
59J	BR	TO ENGINE ROOM HARNESS
60J	P	TO ENGINE ROOM HARNESS
61J	L	TO ENGINE ROOM HARNESS
62J	R	TO ENGINE ROOM HARNESS
63J	L	TO ENGINE ROOM HARNESS
64J	R	TO ENGINE ROOM HARNESS
65J	L	TO ENGINE ROOM HARNESS
66J	BG	TO ENGINE ROOM HARNESS
67J	–	TO ENGINE ROOM HARNESS
68J	–	TO ENGINE ROOM HARNESS
69J	G	TO ENGINE ROOM HARNESS
70J	L	TO ENGINE ROOM HARNESS
71J	–	TO ENGINE ROOM HARNESS
72J	–	TO ENGINE ROOM HARNESS
73J	–	TO ENGINE ROOM HARNESS
74J	–	TO ENGINE ROOM HARNESS
75J	–	TO ENGINE ROOM HARNESS
76J	–	TO ENGINE ROOM HARNESS
77J	–	TO ENGINE ROOM HARNESS

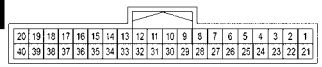
78J	–	TO ENGINE ROOM HARNESS
79J	SHIELD	TO ENGINE ROOM HARNESS
80J	B	TO ENGINE ROOM HARNESS
81J	W	TO ENGINE ROOM HARNESS
82J	–	TO ENGINE ROOM HARNESS
83J	–	TO ENGINE ROOM HARNESS
84J	–	TO ENGINE ROOM HARNESS
85J	–	TO ENGINE ROOM HARNESS
86J	–	TO ENGINE ROOM HARNESS
87J	–	TO ENGINE ROOM HARNESS
88J	–	TO ENGINE ROOM HARNESS
89J	–	TO ENGINE ROOM HARNESS
90J	–	TO ENGINE ROOM HARNESS
91J	–	TO ENGINE ROOM HARNESS
92J	Y	TO ENGINE ROOM HARNESS
93J	G	TO ENGINE ROOM HARNESS
94J	L	TO ENGINE ROOM HARNESS
95J	P	TO ENGINE ROOM HARNESS
96J	–	TO ENGINE ROOM HARNESS
97J	SB	TO ENGINE ROOM HARNESS
98J	P	TO ENGINE ROOM HARNESS
99J	LA/R	TO ENGINE ROOM HARNESS
100J	R	TO ENGINE ROOM HARNESS

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CAN SYSTEM CONNECTORS - WITH FORWARD EMERGENCY BRAKING

Connector No.	M35
Connector Name	TCU
Connector Type	TH40FB-NH
Connector Color	BLACK

H.S.

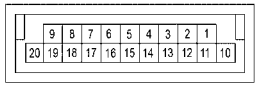


Terminal No.	Color of Wire	Signal Name
1	L	B+
2	–	–
3	–	–
4	–	–
5	Y	LED A
6	L	CAN-H
7	R	CAN-L
8	–	–
9	–	–
10	LG	IGN
11	SHIELD	MIC OUT GND
12	W	MIC OUT SIG
13	–	–
14	–	–
15	–	–
16	SHIELD	MIC GND
17	W	MIC SIG
18	B	MIC VCC
19	–	–
20	–	–
21	–	–
22	–	–
23	–	–
24	–	–
25	–	–
26	SB	M-CAN H
27	LG	M-CAN L
28	B	GND
29	B	GND
30	–	–
31	R	AUDIO HU OUT+
32	L	AUDIO HU OUT-
33	–	–
34	–	–
35	–	–
36	–	–
37	BG	ECALL SW
38	–	–
39	–	–
40	–	–

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Connector No.	M43
Connector Name	JOINT CONNECTOR-M02
Connector Type	NH20FG-DC
Connector Color	GREEN

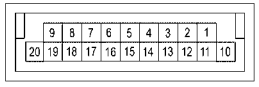
H.S.



Terminal No.	Color of Wire	Signal Name
1	–	–
2	–	–
3	L	CAN-H
4	L	CAN-H
5	L	CAN-H
6	–	–
7	L	CAN-H
8	L	CAN-H
9	L	CAN-H
10	–	–
11	–	–
12	–	–
13	–	–
14	G	CAN-L
15	G	CAN-L
16	G	CAN-L
17	–	–
18	P	CAN-L
19	P	CAN-L
20	P	CAN-L

Connector No.	M47
Connector Name	JOINT CONNECTOR-M04
Connector Type	NH20FG-DC
Connector Color	GREEN

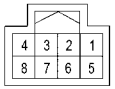
H.S.



Terminal No.	Color of Wire	Signal Name
1	–	–
2	SB	M-CAN H
3	SB	M-CAN H
4	SB	M-CAN H
5	SB	M-CAN H
6	L	CAN-H
7	L	CAN-H
8	L	CAN-H
9	L	CAN-H
10	–	–
11	–	–
12	–	–
13	LG	M-CAN L
14	LG	M-CAN L
15	LG	M-CAN L
16	LG	M-CAN L
17	R	CAN-L
18	R	CAN-L
19	V	CAN-L
20	V	CAN-L

Connector No.	M49
Connector Name	EPS CONTROL UNIT
Connector Type	TH08FW-NH
Connector Color	WHITE

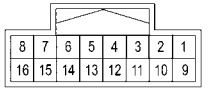
H.S.



Terminal No.	Color of Wire	Signal Name
1	R	CAN-L
2	L	CAN-H
3	–	–
4	SB	IG SIGNAL
5	–	–
6	–	–
7	–	–
8	–	–

Connector No.	M52
Connector Name	WIRE TO WIRE
Connector Type	TH16FW-NH
Connector Color	WHITE

H.S.



Terminal No.	Color of Wire	Signal Name
1	W	TO BODY HARNESS
2	W	TO BODY HARNESS
3	R	TO BODY HARNESS
4	L	TO BODY HARNESS
5	L	TO BODY HARNESS
6	L	TO BODY HARNESS
7	L	TO BODY HARNESS
8	L	TO BODY HARNESS
9	BR	TO BODY HARNESS
10	BR	TO BODY HARNESS
11	–	TO BODY HARNESS
12	Y	TO BODY HARNESS
13	R	TO BODY HARNESS
14	R	TO BODY HARNESS
15	Y	TO BODY HARNESS
16	Y	TO BODY HARNESS

CAN SYSTEM CONNECTORS - WITH FORWARD EMERGENCY BRAKING

Connector No.	M54
Connector Name	A/C AUTO AMP.
Connector Type	TH40FB-NH
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	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

Terminal No.	Color of Wire	Signal Name
1	BG	AUTO ACC
2	–	–
3	R	GND
4	–	–
5	–	–
6	–	–
7	–	–
8	–	–
9	B	LIN COMP
10	–	–
11	L	CAN-H
12	–	–
13	P	INCAR SEN
14	V	SUN SEN
15	–	–
16	–	–
17	–	–
18	–	–
19	–	–
20	–	–
21	–	–
22	–	–
23	G	SEN GND
24	–	–
25	–	–
26	BR	STRG HEATER RLY
27	–	–
28	–	–
29	–	–
30	–	–
31	W	CAN-L
32	–	–
33	Y	LIN SW AMP
34	–	–
35	–	–
36	–	–
37	LG	STRG HEATER SW
38	–	–
39	–	–
40	–	–

Connector No.	M56
Connector Name	STEERING ANGLE SENSOR
Connector Type	TH08GY-NH
Connector Color	GRAY

H.S.

1	2	3	4
5	6	7	8

Terminal No.	Color of Wire	Signal Name
1	B	GND
2	P	CAN-L
3	–	–
4	G	IGN
5	L	CAN-H
6	–	–
7	–	–
8	–	–

Connector No.	M69
Connector Name	WIRE TO WIRE
Connector Type	TH32FW-NH
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
1	SB	TO BODY HARNESS
2	BR	TO BODY HARNESS
3	L	TO BODY HARNESS
4	L	TO BODY HARNESS
5	W	TO BODY HARNESS
6	Y	TO BODY HARNESS
7	LG	TO BODY HARNESS
8	BG	TO BODY HARNESS
9	BR	TO BODY HARNESS
10	Y	TO BODY HARNESS
11	G	TO BODY HARNESS
12	L	TO BODY HARNESS
13	W	TO BODY HARNESS
14	GR	TO BODY HARNESS
15	Y	TO BODY HARNESS
16	P	TO BODY HARNESS
17	R	TO BODY HARNESS
18	W	TO BODY HARNESS
19	R	TO BODY HARNESS
20	–	TO BODY HARNESS
21	–	TO BODY HARNESS
22	–	TO BODY HARNESS
23	–	TO BODY HARNESS
24	P	TO BODY HARNESS
25	L	TO BODY HARNESS
26	BR	TO BODY HARNESS
27	R	TO BODY HARNESS
28	L	TO BODY HARNESS
29	SHIELD	TO BODY HARNESS
30	W	TO BODY HARNESS
31	B	TO BODY HARNESS
32	R	TO BODY HARNESS

Connector No.	M71
Connector Name	JOINT CONNECTOR-M03
Connector Type	NH20FL-DC
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	CAN-H
2	L	CAN-H
3	L	CAN-H
4	L	CAN-H
5	L	CAN-H
6	L	CAN-H
7	L	CAN-H
8	–	–
9	–	–
10	R	CAN-L
11	R	CAN-L
12	R	CAN-L
13	R	CAN-L
14	R	CAN-L
15	R	CAN-L
16	R	CAN-L
17	–	–
18	–	–
19	–	–
20	–	–

Connector No.	M77
Connector Name	COMBINATION METER
Connector Type	TH12FW-NH
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
43	R	ILL CONT OUT
44	LA/B	FUEL SENSOR GND
45	G	BAT
46	V	IGN
47	SB	M-CAN H
48	LG	M-CAN L
49	–	–
50	–	–
51	LA/L	FUEL SENSOR
52	B	G1

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CAN SYSTEM CONNECTORS - WITH FORWARD EMERGENCY BRAKING

Connector No.	M96
Connector Name	CHASSIS CONTROL MODULE
Connector Type	TH24FW-NH
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
1	–	–
2	–	–
3	P	CAN-L
4	L	CAN-H
5	–	–
6	–	–
7	W	IC-CAN L
8	W	IC-CAN L
9	–	–
10	SB	IGN
11	L	IC-CAN H
12	B	GND
13	–	–
14	–	–
15	–	–
16	–	–
17	–	–
18	–	–
19	L	IC-CAN H
20	–	–
21	–	–
22	–	–
23	–	–
24	–	–

Connector No.	M108
Connector Name	AV CONTROL UNIT (WITH BOSE AUDIO SYSTEM)
Connector Type	NH18FW-CS2
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

Terminal No.	Color of Wire	Signal Name
1	BR	AMP ON
2	R	FR SP LH (+)
3	G	FR SP LH (-)
4	V	RR SP LH (+)
5	LG	RR SP LH (-)
6	–	–
7	W	ACC
8	L	CAN-H
9	V	ILL (+), LIGHT SW
10	B	PRE AMP SHIELD
11	R	FR SP RH (+)
12	W	FR SP RH (-)
13	L	RR SP RH (+)
14	Y	RR SP RH (-)
15	–	–
16	–	–
17	R	CAN-L
18	G	SPEED SIGNAL
19	L	BAT
20	B	GND

Connector No.	M112
Connector Name	AROUND VIEW MONITOR CONTROL UNIT
Connector Type	TH40FW-NH
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
1	–	–
2	–	–
3	SHIELD	VIDEO OUTPUT GND
4	G	VIDEO OUTPUT SIGNAL
5	V	FV POWER GND
6	L	FV POWER 6.2V
7	SHIELD	FV VIDEO GND
8	LG	FV VIDEO SIGNAL
9	L	SV1 POWER GND
10	B	SV1 POWER 6.2V
11	SHIELD	SV1 VIDEO GND
12	Y	SV1 VIDEO SIGNAL
13	Y	SV2 POWER GND
14	L	SV2 POWER 6.2V
15	SHIELD	SV2 VIDEO GND
16	G	SV2 VIDEO SIGNAL
17	B	RV POWER GND
18	R	RV POWER 6.2V
19	SHIELD	RV VIDEO GND
20	W	RV VIDEO SIGNAL
21	–	–
22	–	–
23	–	–
24	R	CAN-L (WITHOUT DRIVER ASSISTANCE SYSTEM)
24	Y	ITS CAN-L (WITH DRIVER ASSISTANCE SYSTEM)
25	–	–
26	L	CAN-H (WITHOUT DRIVER ASSISTANCE SYSTEM)
26	L	ITS CAN-H (WITH DRIVER ASSISTANCE SYSTEM)
27	–	–
28	–	–
29	–	–
30	–	–
31	–	–
32	–	–
33	–	–
34	–	–
35	–	–
36	–	–
37	–	–
38	–	–
39	B	GND
40	SB	IGN

Connector No.	M148
Connector Name	ADAS CONTROL UNIT 2
Connector Type	TH24FW-NH
Connector Color	WHITE

H.S.

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

Terminal No.	Color of Wire	Signal Name
1	BR	GND
2	L	ITS CAN-H
3	P	IGN
4	–	–
5	Y	ITS CAN-L
6	Y	3RD CAN-L
7	–	–
8	–	–
9	L	V-CAN-H
10	R	V-CAN-L
11	W	BSW SW
12	GR	SPOUT (+)
13	–	–
14	–	–
15	–	–
16	–	–
17	BR	BSW LED
18	L	3RD CAN-H
19	–	–
20	–	–
21	–	–
22	–	–
23	–	–
24	B	SPOUT (-)

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CAN SYSTEM CONNECTORS - WITH FORWARD EMERGENCY BRAKING

Connector No.	M150
Connector Name	JOINT CONNECTOR-M07
Connector Type	NH20FL-DC
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	CAN-H
2	L	CAN-H
3	L	CAN-H
4	L	CAN-H
5	–	–
6	Y	–
7	Y	–
8	Y	–
9	Y	–
10	–	–
11	Y	CAN-L
12	Y	CAN-L
13	W	CAN-L
14	Y	CAN-L
15	–	–
16	–	–
17	L	–
18	L	–
19	L	–
20	L	–

Connector No.	M156
Connector Name	WIRE TO WIRE
Connector Type	TH24FW-CS
Connector Color	WHITE

H.S.

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

Terminal No.	Color of Wire	Signal Name
1	B	TO ROOM LAMP HARNESS
2	W	TO ROOM LAMP HARNESS
3	SHIELD	TO ROOM LAMP HARNESS

4	R	TO ROOM LAMP HARNESS
5	–	TO ROOM LAMP HARNESS
6	Y	TO ROOM LAMP HARNESS
7	LG	TO ROOM LAMP HARNESS
8	L	TO ROOM LAMP HARNESS
9	R	TO ROOM LAMP HARNESS
10	–	TO ROOM LAMP HARNESS
11	–	TO ROOM LAMP HARNESS
12	–	TO ROOM LAMP HARNESS
13	SB	TO ROOM LAMP HARNESS
14	GR	TO ROOM LAMP HARNESS
15	SB	TO ROOM LAMP HARNESS
16	GR	TO ROOM LAMP HARNESS
17	V	TO ROOM LAMP HARNESS
18	G	TO ROOM LAMP HARNESS
19	SB	TO ROOM LAMP HARNESS
20	R	TO ROOM LAMP HARNESS
21	B	TO ROOM LAMP HARNESS
22	GR	TO ROOM LAMP HARNESS
23	–	TO ROOM LAMP HARNESS
24	–	TO ROOM LAMP HARNESS

Connector No.	R11
Connector Name	WIRE TO WIRE
Connector Type	TH24MW-NH
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
1	B	TO MAIN HARNESS
2	W	TO MAIN HARNESS
3	SHIELD	TO MAIN HARNESS
4	SB	TO MAIN HARNESS
5	–	TO MAIN HARNESS
6	LG	TO MAIN HARNESS
7	LG	TO MAIN HARNESS
8	–	TO MAIN HARNESS
9	–	TO MAIN HARNESS
10	–	TO MAIN HARNESS
11	–	TO MAIN HARNESS
12	–	TO MAIN HARNESS
13	SB	TO MAIN HARNESS
14	P	TO MAIN HARNESS
15	–	TO MAIN HARNESS
16	–	TO MAIN HARNESS

17	–	TO MAIN HARNESS
18	–	TO MAIN HARNESS
19	SB	TO MAIN HARNESS
20	R	TO MAIN HARNESS
21	B	TO MAIN HARNESS
22	L	TO MAIN HARNESS
23	–	TO MAIN HARNESS
24	–	TO MAIN HARNESS

Connector No.	R17
Connector Name	LANE CAMERA UNIT
Connector Type	MUB12FB
Connector Color	BLACK

H.S.

1	2				3	4
5	6	7	8	9	10	11	12

Terminal No.	Color of Wire	Signal Name
1	B	GROUND
2	–	–
3	LG	IGN
4	–	–
5	L	CAN-H
6	Y	CAN-L
7	–	–
8	–	–
9	–	–
10	–	–
11	–	–
12	–	–

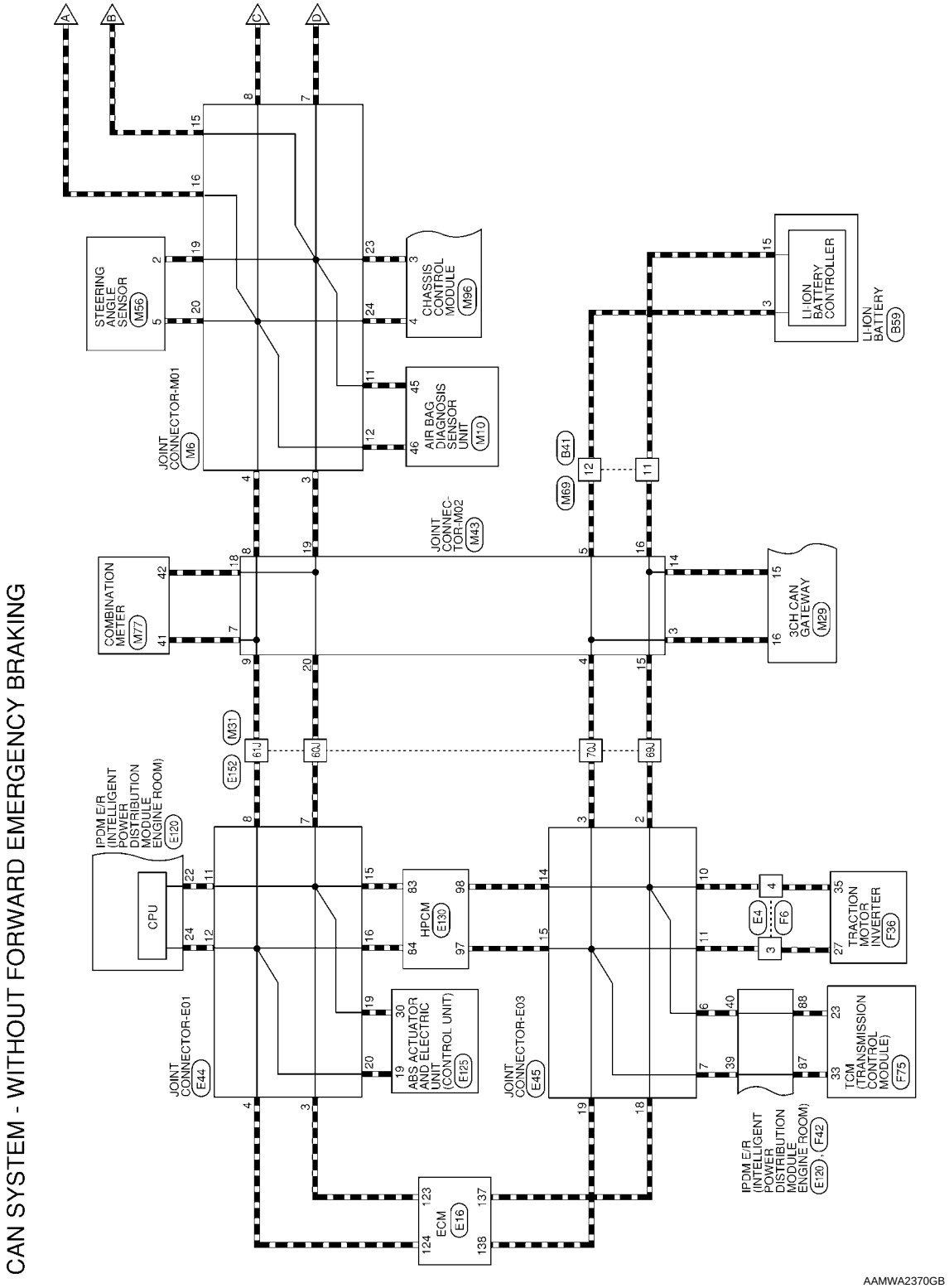
Terminal No.	Color of Wire	Signal Name
1	B	TO ROOM LAMP HARNESS
2	W	TO ROOM LAMP HARNESS
3	SHIELD	TO ROOM LAMP HARNESS

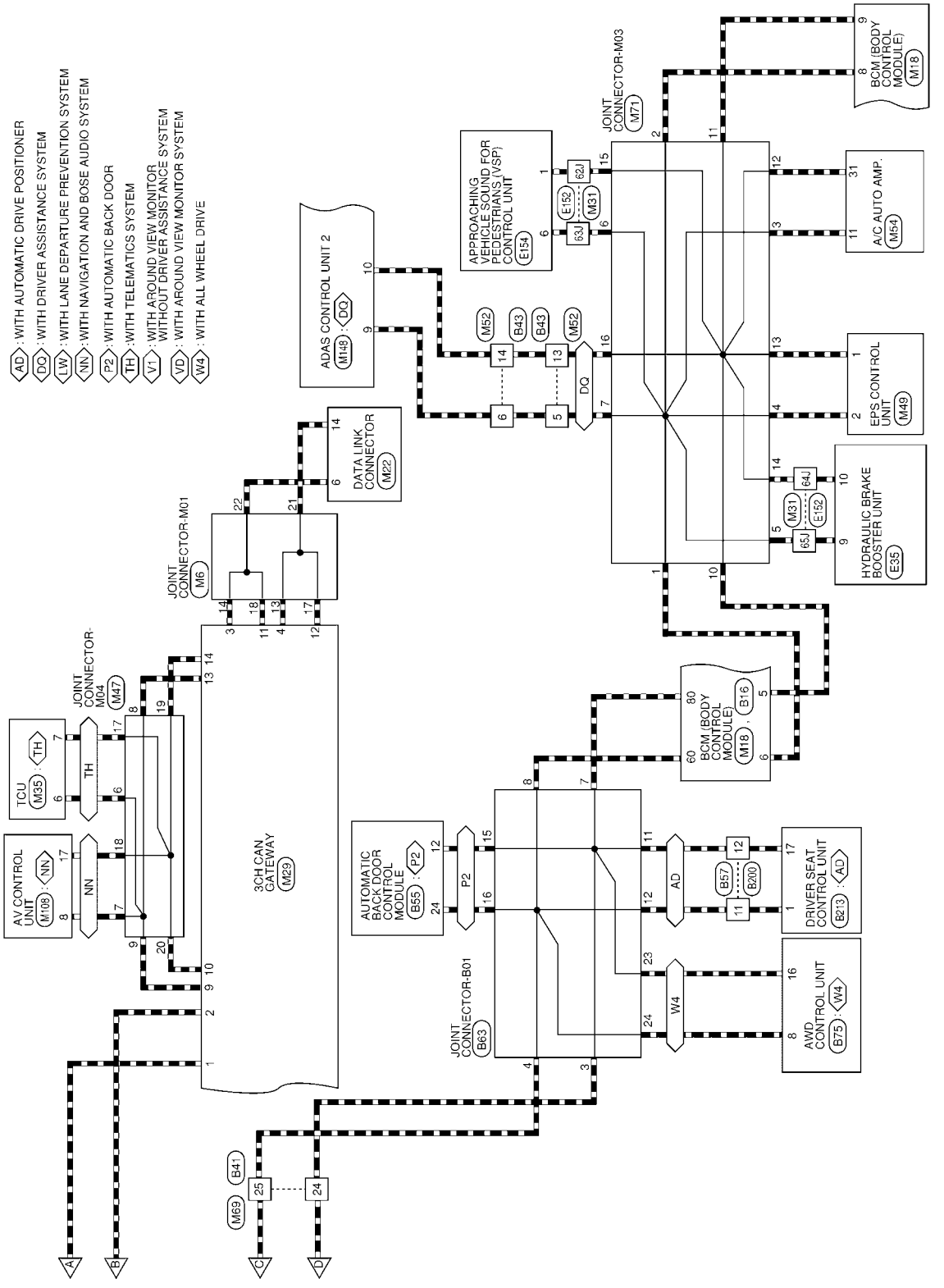
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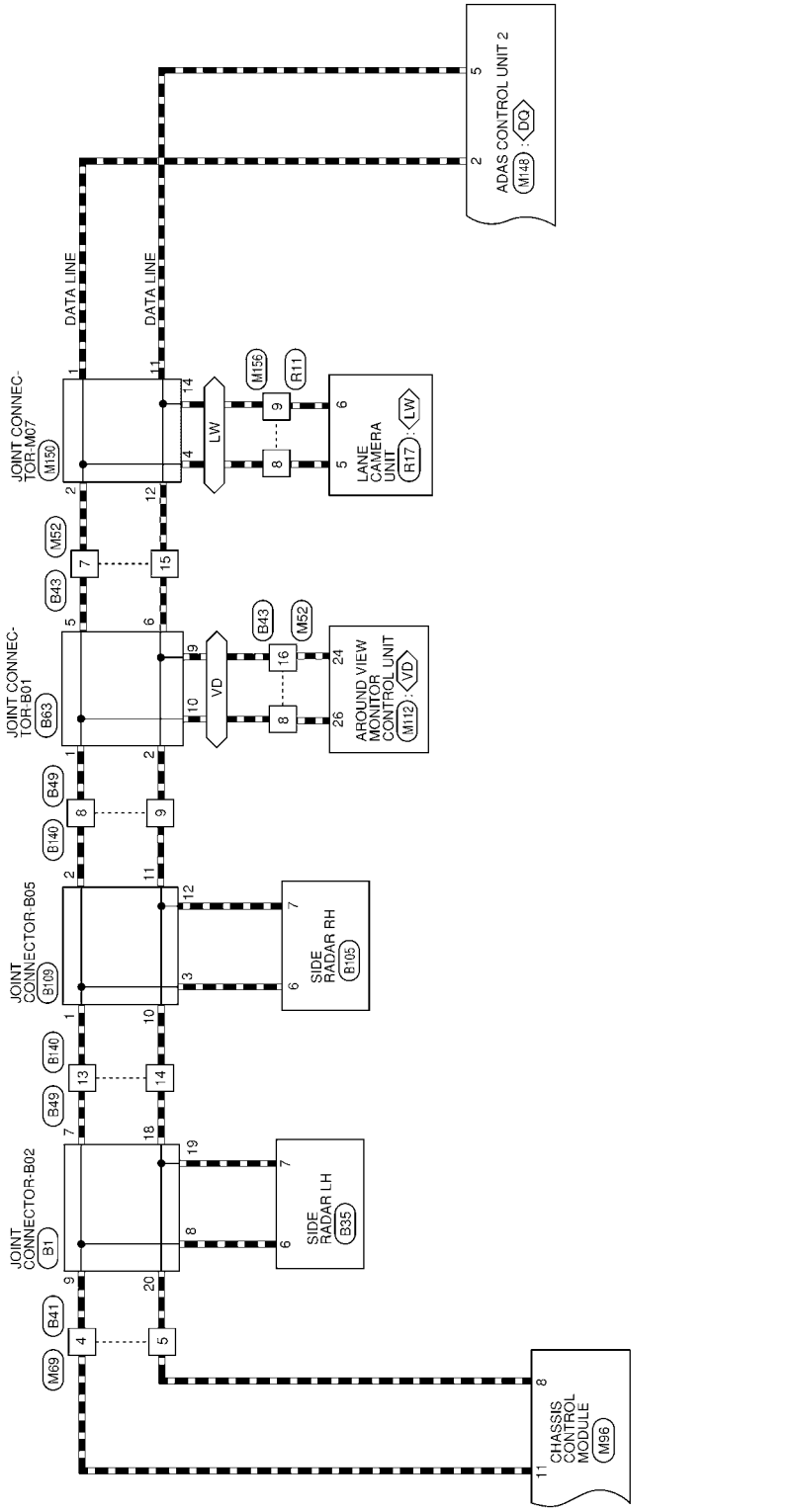
CAN SYSTEM (WITHOUT FORWARD EMERGENCY BRAKING)

Wiring Diagram - CAN SYSTEM -

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AD : WITH AUTOMATIC DRIVE POSITIONER
DQ : WITH DRIVER ASSISTANCE SYSTEM
LW : WITH LANE DEPARTURE PREVENTION SYSTEM
NN : WITH NAVIGATION AND BOSE AUDIO SYSTEM
P2 : WITH AUTOMATIC BACK DOOR
TH : WITH TELEMATICS SYSTEM
V1 : WITH AROUND VIEW MONITOR WITHOUT DRIVER ASSISTANCE SYSTEM
VD : WITH AROUND VIEW MONITOR SYSTEM
W4 : WITH ALL WHEEL DRIVE
ADAS CONTROL UNIT 2 M148 DQ
APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) CONTROL UNIT E154
JOINT CONNECTOR-M03 M71
BCM (BODY CONTROL MODULE) M18
A/C AUTO AMP. M54
EPS CONTROL UNIT M49
HYDRAULIC BRAKE BOOSTER UNIT E35
DATA LINK CONNECTOR M22
JOINT CONNECTOR-M01 M6
JOINT CONNECTOR-M04 M47
TCU M35 TH
AV CONTROL UNIT M108 NN
3CH CAN GATEWAY M29
AUTOMATIC BACK DOOR CONTROL MODULE B55 P2
BCM (BODY CONTROL MODULE) M18 B16
DRIVER SEAT CONTROL UNIT B213 AD
AWD CONTROL UNIT B75 W4
JOINT CONNECTOR-B01 B63
AAMWA2371GB



AAMWA2372GB

CAN SYSTEM CONNECTORS - WITHOUT FORWARD EMERGENCY BRAKING

Connector No.	B1
Connector Name	JOINT CONNECTOR-B02
Connector Type	NH20FG-DC
Connector Color	GREEN

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	–	–
2	–	–
3	L	CAN-H
4	L	CAN-H
5	L	CAN-H
6	–	–
7	L	CAN-H
8	L	CAN-H
9	L	CAN-H
10	–	–
11	–	–
12	–	–
13	–	–
14	W	CAN-L
15	W	CAN-L
16	W	CAN-L
17	–	–
18	Y	CAN-L
19	Y	CAN-L
20	Y	CAN-L

Connector No.	B16
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	TH40FG-NH
Connector Color	GREEN

H.S.

60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41
80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61

Terminal No.	Color of Wire	Signal Name
41	–	–
42	–	–
43	–	–
44	–	–
45	–	–
46	R	I SES BACKDOOR BUTTON SW
47	–	–
48	–	–
49	G	I NO TOUCH TGATE SENSOR
50	W	I RR DOOR SW
51	LG	I TGATE SW
52	R	I RL DOOR SW
53	SB	I AS DOOR2 SW
54	–	–
55	LA/G	I RR AUTOSTOP SW
56	Y	I TGATE OPENER SW
57	SB	I DR DOOR2 SW
58	–	–
59	–	–
60	L	CAN-H
61	V	SES EXT REAR ANTENNA B
62	Y	SES INT MIDDLE ANTENNA B
63	L	SES INT MIDDLE ANTENNA A
64	LG	SES EXT REAR ANTENNA A
65	–	–
66	–	–
67	–	–
68	–	–
69	–	–
70	–	–
71	–	–
72	–	–
73	–	–
74	–	–
75	–	–
76	–	–
77	V	SHIFT LOCK RLY
78	–	–
79	LA/W	O STOP LAMP3
80	P	CAN-L

Connector No.	B35
Connector Name	SIDE RADAR LH
Connector Type	JAD08FB-5P
Connector Color	BLACK

H.S.

1	2	3	4	5	6	7	8

Terminal No.	Color of Wire	Signal Name
1	–	–
2	–	–
3	–	–
4	R	LED INDICATOR L
5	BR	IGN POWER
6	L	ITS CAN-H
7	Y	ITS CAN-L
8	B	GND

Connector No.	B41
Connector Name	WIRE TO WIRE
Connector Type	TH32MW-NH
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
1	SB	TO MAIN HARNESS
2	SB	TO MAIN HARNESS
3	L	TO MAIN HARNESS
4	L	TO MAIN HARNESS
5	W	TO MAIN HARNESS
6	Y	TO MAIN HARNESS
7	LG	TO MAIN HARNESS
8	BG	TO MAIN HARNESS
9	BR	TO MAIN HARNESS
10	Y	TO MAIN HARNESS
11	G	TO MAIN HARNESS
12	L	TO MAIN HARNESS
13	W	TO MAIN HARNESS
14	GR	TO MAIN HARNESS
15	Y	TO MAIN HARNESS
16	P	TO MAIN HARNESS
17	R	TO MAIN HARNESS
18	W	TO MAIN HARNESS
19	R	TO MAIN HARNESS
20	–	TO MAIN HARNESS
21	–	TO MAIN HARNESS
22	–	TO MAIN HARNESS
23	–	TO MAIN HARNESS
24	P	TO MAIN HARNESS
25	L	TO MAIN HARNESS
26	G	TO MAIN HARNESS
27	R	TO MAIN HARNESS
28	L	TO MAIN HARNESS
29	SHIELD	TO MAIN HARNESS
30	W	TO MAIN HARNESS
31	B	TO MAIN HARNESS
32	R	TO MAIN HARNESS

Connector No.	B43
Connector Name	WIRE TO WIRE
Connector Type	TH16MW-NH
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
1	W	TO MAIN HARNESS
2	W	TO MAIN HARNESS
3	R	TO MAIN HARNESS
4	L	TO MAIN HARNESS
5	L	TO MAIN HARNESS
6	L	TO MAIN HARNESS
7	L	TO MAIN HARNESS
8	L	TO MAIN HARNESS
9	BR	TO MAIN HARNESS
10	BR	TO MAIN HARNESS
11	–	TO MAIN HARNESS
12	Y	TO MAIN HARNESS
13	R	TO MAIN HARNESS
14	Y	TO MAIN HARNESS
15	Y	TO MAIN HARNESS
16	Y	TO MAIN HARNESS

AAMIA5198GB

CAN SYSTEM CONNECTORS - WITHOUT FORWARD EMERGENCY BRAKING

Connector No.	B49
Connector Name	WIRE TO WIRE
Connector Type	NS16MW-CS
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
1	SB	TO BODY NO. 2 HARNESS
2	W	TO BODY NO. 2 HARNESS
3	LA/W	TO BODY NO. 2 HARNESS
4	V	TO BODY NO. 2 HARNESS
5	SB	TO BODY NO. 2 HARNESS
6	LA/BR	TO BODY NO. 2 HARNESS
7	P	TO BODY NO. 2 HARNESS
8	LA/W	TO BODY NO. 2 HARNESS
9	LA/BR	TO BODY NO. 2 HARNESS
10	R	TO BODY NO. 2 HARNESS
11	LA/G	TO BODY NO. 2 HARNESS
12	LA/P	TO BODY NO. 2 HARNESS
13	–	TO BODY NO. 2 HARNESS
14	–	TO BODY NO. 2 HARNESS
15	G	TO BODY NO. 2 HARNESS
16	V	TO BODY NO. 2 HARNESS

7	L	B-SIGN LH
8	R	A-SIGN RH
9	SB	B-SIGN RH
10	BG	MAIN SW
11	V	OPEN SW
12	P	CAN-L
13	GR	TOUCH SENSOR GND
14	–	–
15	–	–
16	–	–
17	G	IR SENSOR DUMMY SIG
18	–	–
19	V	POWER LH
20	P	POWER RH
21	G	GND
22	LG	DRIVER SW
23	W	INSIDE CLOSE SW
24	L	CAN-H

Connector No.	B57
Connector Name	WIRE TO WIRE
Connector Type	NS12FBR-CS
Connector Color	BROWN

H.S.

5	4		3	2	1
12	11	10	9	8	7	6

Terminal No.	Color of Wire	Signal Name
1	LA/BG	TO FRONT SEAT LH HARNESS
2	LA/BR	TO FRONT SEAT LH HARNESS
3	LA/B	TO FRONT SEAT LH HARNESS
4	P	TO FRONT SEAT LH HARNESS
5	L	TO FRONT SEAT LH HARNESS
6	LA/GR	TO FRONT SEAT LH HARNESS
7	P	TO FRONT SEAT LH HARNESS
8	Y	TO FRONT SEAT LH HARNESS
9	W	TO FRONT SEAT LH HARNESS
10	BR	TO FRONT SEAT LH HARNESS
11	GR	TO FRONT SEAT LH HARNESS
12	LG	TO FRONT SEAT LH HARNESS

Connector No.	B59
Connector Name	LI-ION BATTERY
Connector Type	TH24FW-NH
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
1	SB	SIO
2	B	GND1
3	L	CAN–H
4	–	–
5	–	–
6	P	BAT
7	B	RLY2 GND
8	–	–
9	SB	PRE CHG RLY V
10	P	SDSW (+)
11	BG	RLY1 V
12	–	–
13	V	VM0
14	B	GND2
15	G	CAN–L
16	–	–
17	R	FCTL
18	LG	VIGN
19	–	–
20	–	–
21	–	–
22	Y	SDSW (–)
23	GR	RLY2 V
24	B	RLY1 GND

Connector No.	B63
Connector Name	JOINT CONNECTOR-B01
Connector Type	NH24FW-J
Connector Color	WHITE

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

Connector No.	B55
Connector Name	AUTOMATIC BACK DOOR CONTROL MODULE
Connector Type	AAC24FB
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

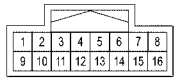
Terminal No.	Color of Wire	Signal Name
1	LG	TOUCH SENSOR RH
2	G	TOUCH SENSOR LH
3	SB	HALF LATCH SW
4	B	AUT UNLK REG
5	BR	CLOSE SW
6	W	A-SIGN LH

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CAN SYSTEM CONNECTORS - WITHOUT FORWARD EMERGENCY BRAKING

Connector No.	B75
Connector Name	AWD CONTROL UNIT
Connector Type	TH16FW-NH
Connector Color	WHITE

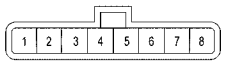
H.S.



Terminal No.	Color of Wire	Signal Name
1	SB	AWD SOL (+)
2	Y	AWD SOL (-)
3	–	–
4	–	–
5	–	–
6	–	–
7	LA/R	IGN
8	L	CAN-H
9	LA/G	SOL BATT
10	B	GND
11	B	GND
12	–	–
13	–	–
14	Y	LOCK SWITCH
15	LA/L	VB
16	P	CAN-L

Connector No.	B105
Connector Name	SIDE RADAR RH
Connector Type	JAD08FB-6P
Connector Color	BLACK

H.S.



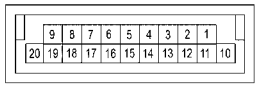
Terminal No.	Color of Wire	Signal Name
1	–	–
2	–	–
3	B	GND IDENT RH
4	G	LED INDICATOR
5	BR	IGN POWER
6	L	ITS CAN-H
7	Y	ITS CAN-L

AAMIA5200GB

8	B	GND

Connector No.	B109
Connector Name	JOINT CONNECTOR-B05
Connector Type	NH20FL-DC
Connector Color	BLUE

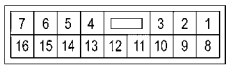
H.S.



Terminal No.	Color of Wire	Signal Name
1	L	CAN-H
2	L	CAN-H
3	L	CAN-H
4	–	–
5	–	–
6	–	–
7	–	–
8	–	–
9	–	–
10	Y	CAN-L
11	Y	CAN-L
12	Y	CAN-L
13	Y	–
14	–	–
15	–	–
16	–	–
17	–	–
18	–	–
19	–	–
20	–	–

Connector No.	B140
Connector Name	WIRE TO WIRE
Connector Type	NS16FW-CS
Connector Color	WHITE

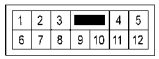
H.S.



Terminal No.	Color of Wire	Signal Name
1	GR	TO BODY HARNESS
2	W	TO BODY HARNESS
3	LA/Y	TO BODY HARNESS
4	V	TO BODY HARNESS
5	SB	TO BODY HARNESS
6	LA/BR	TO BODY HARNESS
7	LA/V	TO BODY HARNESS
8	L	TO BODY HARNESS
9	Y	TO BODY HARNESS
10	R	TO BODY HARNESS
11	V	TO BODY HARNESS
12	LG	TO BODY HARNESS
13	L	TO BODY HARNESS
14	Y	TO BODY HARNESS
15	LA/GR	TO BODY HARNESS
16	LA/LG	TO BODY HARNESS

Connector No.	B200
Connector Name	WIRE TO WIRE
Connector Type	NS12MBR-CS
Connector Color	BROWN

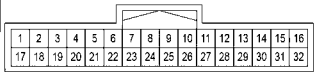
H.S.



Terminal No.	Color of Wire	Signal Name
1	W	TO BODY HARNESS
2	G	TO BODY HARNESS
3	B	TO BODY HARNESS
4	L	TO BODY HARNESS
5	P	TO BODY HARNESS
6	R	TO BODY HARNESS
7	Y	TO BODY HARNESS
8	LG	TO BODY HARNESS
9	BR	TO BODY HARNESS
10	L	TO BODY HARNESS
11	SB	TO BODY HARNESS
12	GR	TO BODY HARNESS

Connector No.	B213
Connector Name	DRIVER SEAT CONTROL UNIT
Connector Type	TH32FW-NH
Connector Color	WHITE

H.S.

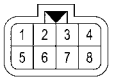


Terminal No.	Color of Wire	Signal Name
1	P	CAN-H
2	GR	UART (TX/RX)
3	–	–
4	V	PULSE (RECLINER)
5	–	–
6	L	ADDRESS 2
7	LG	IND 2
8	L/W	SLIDE SW (BACKWARD)
9	GR/R	RECLINER SW (BACKWARD))
10	–	–
11	V/W	REAR LIFTER SW (DOWNWARD)
12	W	POWER SUPPLY (ENCODER)
13	–	–
14	–	–
15	–	–
16	–	–
17	L	CAN-L
18	V	PULSE (SLIDE)
19	–	–
20	O	PULSE (REAR LIFTER)
21	–	–
22	BR	ADDRESS 1
23	Y	IND 1
24	BR/W	SLIDE SW (FORWARD)
25	G/W	RECLINER SW (FORWARD)
26	–	–
27	Y/R	REAR LIFTER SW (UPWARD)
28	SB	SET SW
29	–	–
30	–	–
31	–	–
32	–	–

CAN SYSTEM CONNECTORS - WITHOUT FORWARD EMERGENCY BRAKING

Connector No.	E4
Connector Name	WIRE TO WIRE
Connector Type	RS08MGY-PR
Connector Color	GRAY

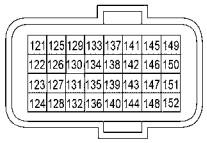
H.S.



Terminal No.	Color of Wire	Signal Name
1	Y	TO ENGINE CONTROL HARNESS
2	–	TO ENGINE CONTROL HARNESS
3	L	TO ENGINE CONTROL HARNESS
4	G	TO ENGINE CONTROL HARNESS
5	–	TO ENGINE CONTROL HARNESS
6	–	TO ENGINE CONTROL HARNESS
7	–	TO ENGINE CONTROL HARNESS
8	–	TO ENGINE CONTROL HARNESS

Connector No.	E16
Connector Name	ECM
Connector Type	RH24FB-RZ8-L-LH
Connector Color	BLACK

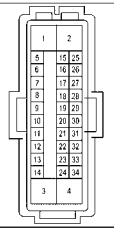
H.S.



Terminal No.	Color of Wire	Signal Name
121	L	EVAP CONTROL SYSTEM PRESSURE SENSOR
122	–	–
123	P	CAN-L
124	L	CAN-H
125	R	SENSOR POWER SUPPLY
126	–	–
127	–	–
128	BG	FUEL TANK TEMPERATURE SENSOR
129	–	–
130	–	–
131	–	–
132	–	–
133	LG	IGNITION SWITCH
134	–	–
135	–	–
136	–	–
137	G	HEV CAN-L
138	L	HEV CAN-H
139	Y	STOP LAMP SWITCH
140	GR	BRAKE PEDAL POSITION SWITCH
141	Y	EVAP CANISTER VENT CONTROL VALVE
142	–	–
143	–	–
144	–	–
145	G	ECM POWER SUPPLY
146	–	–
147	GR	ECM GROUND
148	B	SENSOR GROUND
149	GR	ECM GROUND
150	–	–
151	–	–
152	GR	ECM GROUND

Connector No.	E35
Connector Name	HYDRAULIC BRAKE BOOSTER UNIT
Connector Type	SAZ30FB-SJZ4-D
Connector Color	BLACK

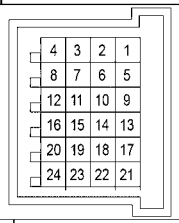
H.S.



Terminal No.	Color of Wire	Signal Name
1	B	GND1
2	B	GND2
3	R	BM1
4	G	BM2
5	–	–
6	–	–
7	W	BZ
8	–	–
9	L	CAN-H
10	R	CAN-L
11	–	–
12	–	–
13	BG	ACC
14	V	IG
15	–	–
16	–	–
17	–	–
18	–	–
19	–	–
20	–	–
21	–	–
22	–	–
23	–	–
24	–	–
25	–	–
26	–	–
27	–	–
28	–	–
29	–	–
30	–	–
31	–	–
32	–	–
33	–	–
34	–	–

Connector No.	E44
Connector Name	JOINT CONNECTOR-E01
Connector Type	NH24FG-J
Connector Color	GREEN

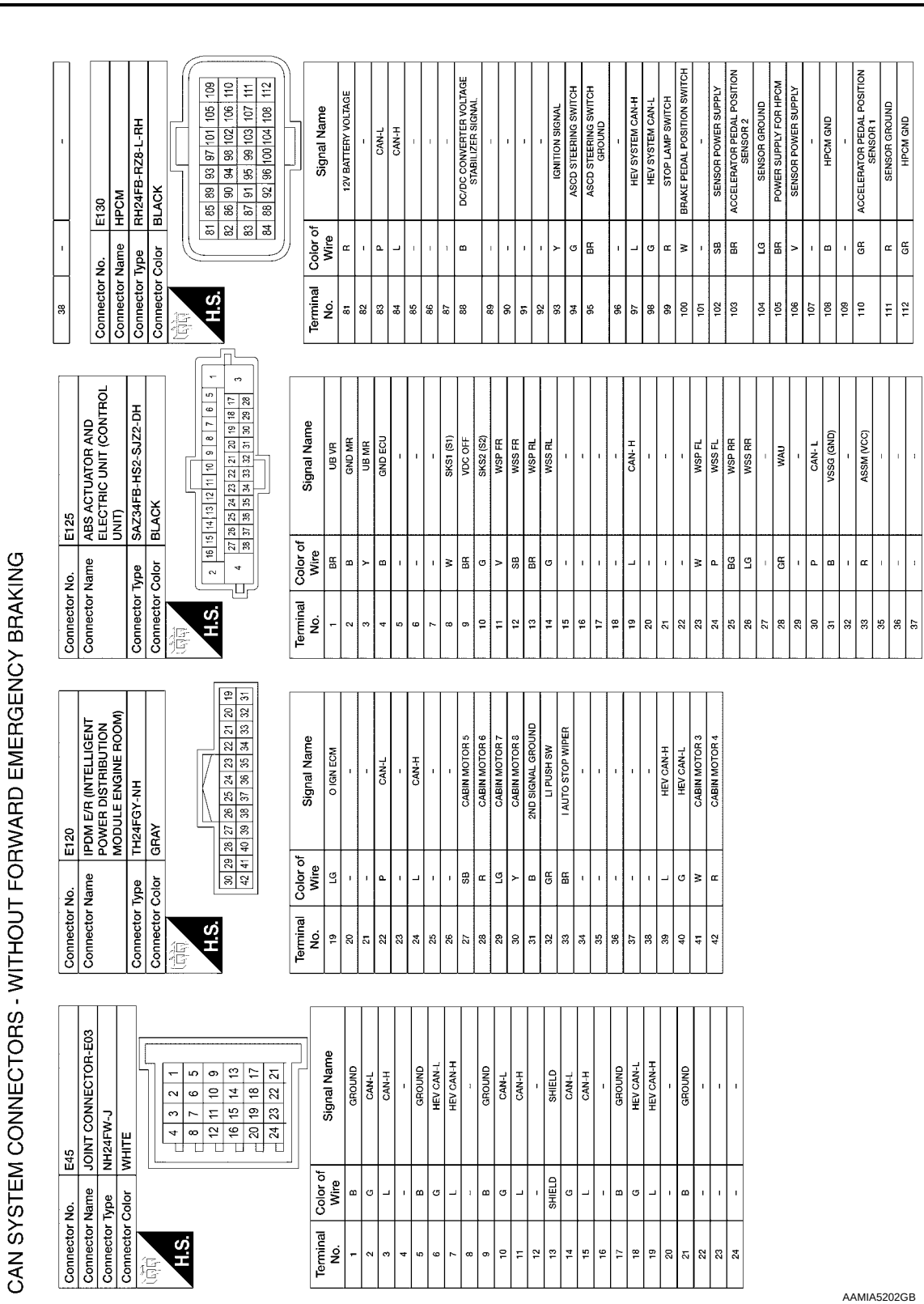
H.S.



Terminal No.	Color of Wire	Signal Name
1	V	SENSOR GROUND
2	LG	I BRAKE SW2
3	P	CAN-L
4	L	CAN-H
5	B	SENSOR GROUND
6	LG	I BRAKE SW2
7	P	CAN-L
8	L	CAN-H
9	W	SENSOR GROUND
10	Y	STOP LAMP SWITCH
11	P	CAN-L
12	L	CAN-H
13	–	–
14	R	STOP LAMP SWITCH
15	P	CAN-L
16	L	CAN-H
17	BR	EVAP CONTROL SYSTEM PRESSURE SENSOR
18	–	–
19	P	CAN-L
20	L	CAN-H
21	L	EVAP CONTROL SYSTEM PRESSURE SENSOR
22	–	–
23	–	–
24	–	–

AAMIA5201GB

CAN SYSTEM CONNECTORS - WITHOUT FORWARD EMERGENCY BRAKING

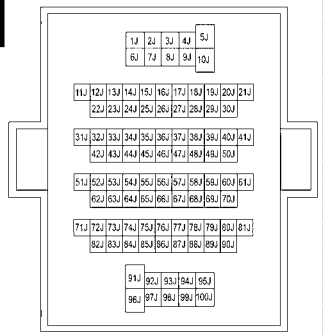


AAMIA5202GB

CAN SYSTEM CONNECTORS - WITHOUT FORWARD EMERGENCY BRAKING

Connector No.	E152
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-CS16-TM4
Connector Color	WHITE

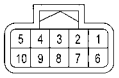
H.S.



Terminal No.	Color of Wire	Signal Name
1J	–	TO MAIN HARNESS
2J	Y	TO MAIN HARNESS
3J	–	TO MAIN HARNESS
4J	–	TO MAIN HARNESS
5J	–	TO MAIN HARNESS
6J	–	TO MAIN HARNESS
7J	–	TO MAIN HARNESS
8J	–	TO MAIN HARNESS
9J	BR	TO MAIN HARNESS
10J	–	TO MAIN HARNESS
11J	–	TO MAIN HARNESS
12J	–	TO MAIN HARNESS
13J	–	TO MAIN HARNESS
14J	–	TO MAIN HARNESS
15J	–	TO MAIN HARNESS
16J	–	TO MAIN HARNESS
17J	–	TO MAIN HARNESS
18J	–	TO MAIN HARNESS
19J	–	TO MAIN HARNESS
20J	–	TO MAIN HARNESS
21J	GR	TO MAIN HARNESS
22J	SHIELD	TO MAIN HARNESS
23J	LG	TO MAIN HARNESS
24J	V	TO MAIN HARNESS
25J	L	TO MAIN HARNESS
26J	BR	TO MAIN HARNESS
27J	G	TO MAIN HARNESS
28J	R	TO MAIN HARNESS
29J	L	TO MAIN HARNESS
30J	V	TO MAIN HARNESS
31J	–	TO MAIN HARNESS
32J	–	TO MAIN HARNESS
33J	R	TO MAIN HARNESS
34J	L	TO MAIN HARNESS
35J	BG	TO MAIN HARNESS
36J	LG	TO MAIN HARNESS
37J	GR	TO MAIN HARNESS
38J	BR	TO MAIN HARNESS
39J	–	TO MAIN HARNESS
40J	–	TO MAIN HARNESS
41J	G	TO MAIN HARNESS
42J	W	TO MAIN HARNESS
43J	L	TO MAIN HARNESS
44J	B	TO MAIN HARNESS
45J	SB	TO MAIN HARNESS
46J	BR	TO MAIN HARNESS
47J	W	TO MAIN HARNESS
48J	W	TO MAIN HARNESS
49J	L	TO MAIN HARNESS
50J	P	TO MAIN HARNESS
51J	W	TO MAIN HARNESS
52J	R	TO MAIN HARNESS
53J	SB	TO MAIN HARNESS
54J	LG	TO MAIN HARNESS
55J	W	TO MAIN HARNESS
56J	BG	TO MAIN HARNESS
57J	R	TO MAIN HARNESS
58J	V	TO MAIN HARNESS
59J	BR	TO MAIN HARNESS
60J	P	TO MAIN HARNESS
61J	L	TO MAIN HARNESS
62J	P	TO MAIN HARNESS
63J	L	TO MAIN HARNESS
64J	R	TO MAIN HARNESS
65J	L	TO MAIN HARNESS
66J	BG	TO MAIN HARNESS
67J	–	TO MAIN HARNESS
68J	–	TO MAIN HARNESS
69J	G	TO MAIN HARNESS
70J	L	TO MAIN HARNESS
71J	–	TO MAIN HARNESS
72J	–	TO MAIN HARNESS
73J	–	TO MAIN HARNESS
74J	–	TO MAIN HARNESS
75J	–	TO MAIN HARNESS
76J	–	TO MAIN HARNESS
77J	–	TO MAIN HARNESS
78J	–	TO MAIN HARNESS
79J	SHIELD	TO MAIN HARNESS
80J	B	TO MAIN HARNESS
81J	W	TO MAIN HARNESS
82J	–	TO MAIN HARNESS
83J	–	TO MAIN HARNESS
84J	–	TO MAIN HARNESS
85J	–	TO MAIN HARNESS
86J	–	TO MAIN HARNESS
87J	–	TO MAIN HARNESS
88J	–	TO MAIN HARNESS
89J	–	TO MAIN HARNESS
90J	–	TO MAIN HARNESS
91J	–	TO MAIN HARNESS
92J	LG	TO MAIN HARNESS
93J	L	TO MAIN HARNESS
94J	L	TO MAIN HARNESS
95J	BR	TO MAIN HARNESS
96J	–	TO MAIN HARNESS
97J	GR	TO MAIN HARNESS
98J	P	TO MAIN HARNESS
99J	W	TO MAIN HARNESS
100J	Y	TO MAIN HARNESS

Connector No.	E154
Connector Name	APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) CONTROL UNIT
Connector Type	RH10FB
Connector Color	BLACK

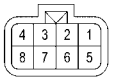
H.S.



Terminal No.	Color of Wire	Signal Name
1	P	CAN-L
2	GR	GND
3	LG	BAT
4	–	–
5	–	–
6	L	CAN-H
7	–	–
8	–	–
9	BR	IGN
10	–	–

Connector No.	F6
Connector Name	WIRE TO WIRE
Connector Type	RS08FGY-PR
Connector Color	GRAY

H.S.



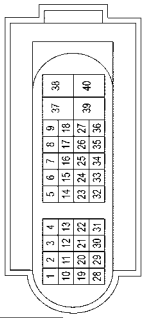
Terminal No.	Color of Wire	Signal Name
1	P	TO ENGINE ROOM HARNESS
2	–	TO ENGINE ROOM HARNESS
3	L	TO ENGINE ROOM HARNESS
4	G	TO ENGINE ROOM HARNESS
5	–	TO ENGINE ROOM HARNESS
6	–	TO ENGINE ROOM HARNESS
7	–	TO ENGINE ROOM HARNESS
8	–	TO ENGINE ROOM HARNESS

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CAN SYSTEM CONNECTORS - WITHOUT FORWARD EMERGENCY BRAKING

Connector No.	F36
Connector Name	TRACTION MOTOR INVERTER
Connector Type	SAZ36FB-HS4-1V-LH
Connector Color	BLACK

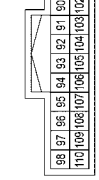
H.S.



Terminal No.	Color of Wire	Signal Name
1	–	–
2	V	TRACTION MOTOR RESOLVER SIGNAL S1
3	–	–
4	G	TRACTION MOTOR RESOLVER SIGNAL R1
5	–	–
6	–	–
7	R	POWER SUPPLY (IGN)
8	–	–
9	P	CONNECTION DETECTION (+)
10	LG	TRACTION MOTOR RESOLVER SIGNAL S3
11	–	–
12	Y	TRACTION MOTOR RESOLVER SIGNAL R2
13	–	–
14	–	–
15	–	–
16	–	–
17	W	CONNECTION DETECTION (-)
18	–	–
19	–	–
20	W	TRACTION MOTOR RESOLVER SIGNAL S2
21	–	–
22	–	–
23	–	–
24	–	–
25	–	–
26	–	–
27	L	HEV SYSTEM CAN-H
28	B	TRACTION MOTOR RESOLVER SIGNAL S4
29	–	–
30	–	–
31	–	–
32	–	–
33	–	–
34	–	–
35	G	HEV SYSTEM CAN-L
36	–	–
37	B	GND
38	P	POWER SUPPLY (BAT)
39	B	GND
40	P	POWER SUPPLY (BAT)

Connector No.	F42
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	TH24FB-NH
Connector Color	BLACK

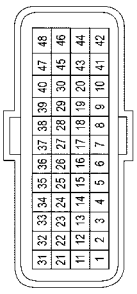
H.S.



Terminal No.	Color of Wire	Signal Name
87	L	HEV CAN-H
88	G	HEV CAN-L
89	W	MOTOR CABIN 3
90	R	MOTOR CABIN 4
91	–	–
92	BG	LI NP SW
93	P	LI ECM DRIVER
94	–	–
95	–	–
96	–	–
97	–	–
98	–	–
99	BG	MOTOR CABIN 5
100	GR	MOTOR CABIN 6
101	LG	MOTOR CABIN 7
102	Y	MOTOR CABIN 8
103	W	HOOD SW2
104	–	–
105	–	–
106	BR	LO FAN RELAY2(PWM)
107	–	–
108	–	–
109	–	–
110	–	–

Connector No.	F75
Connector Name	TCM (TRANSMISSION CONTROL MODULE)
Connector Type	RH40FB-RZ8-L-LH
Connector Color	BLACK

H.S.



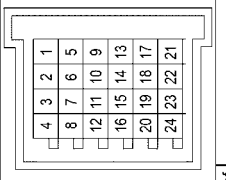
Terminal No.	Color of Wire	Signal Name
1	–	–
2	SB	L RANGE SW
3	LG	CLUTCH 2 TEMP SENSOR
4	Y	D RANGE SW
5	R	N RANGE SW
6	G	R RANGE SW
7	V	P RANGE SW
8	–	–
9	–	–
10	–	–
11	W	SENSOR GND
12	LG	CVT FLUID TEMP SENS
13	–	–
14	–	–
15	B	SENSOR GND
16	R	SEC PRESS SENS
17	L	PRI PRESS SENS
18	–	–
19	–	–
20	–	–
21	–	–
22	–	–
23	G	HEV CAN-L
24	–	–
25	W	EOP SIG
26	P	SENS PWR SUPPLY
27	–	–
28	–	–
29	–	–
30	BR	LINE PRESS SOL VALVE
31	–	–
32	P	EOP STATE
33	L	HEV CAN-H
34	R	OUTPUT SPEED SENS
35	LG	PRI SPEED SENS
36	–	–
37	BG	SELECT SOL VALVE
38	GR	TCC SOL VALVE
39	SB	SEC PRESS SOL VALVE
40	V	PRI PRESS SOL VALVE
41	B	GND
42	B	GND
43	–	–
44	–	–
45	LG	BATT
46	LG	BATT
47	R	VIGN
48	R	VIGN

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CAN SYSTEM CONNECTORS - WITHOUT FORWARD EMERGENCY BRAKING

Connector No.	M6
Connector Name	JOINT CONNECTOR-M01
Connector Type	NH24FGY-J
Connector Color	GRAY

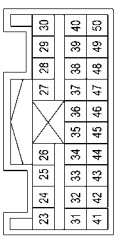
H.S.



Terminal No.	Color of Wire	Signal Name
1	GR	K-LINE
2	R	IGNITION
3	P	CAN-L
4	L	CAN-H
5	–	–
6	–	–
7	P	CAN-L
8	L	CAN-H
9	GR	K-LINE
10	R	IGNITION
11	P	CAN-L
12	L	CAN-H
13	P	CAN-L
14	L	CAN-H
15	P	CAN-L
16	L	CAN-H
17	P	CAN-L
18	L	CAN-H
19	P	CAN-L
20	L	CAN-H
21	P	CAN-L
22	L	CAN-H
23	P	CAN-L
24	L	CAN-H

Connector No.	M10
Connector Name	AIR BAG DIAGNOSIS SENSOR UNIT
Connector Type	NH28FY-EX
Connector Color	YELLOW

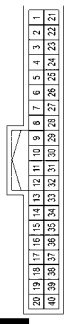
H.S.



Terminal No.	Color of Wire	Signal Name
23	L	AS2+
24	BG	AS2-
25	LG	AS1-
26	SB	AS1+
27	B	GND
28	V	DR2+
29	Y	DR1- & DR2-
30	G	DR1+
31	B	ECZS-
32	BR	RH DOOR-SAT-
33	–	–
34	R	LH DOOR-SAT-
35	–	–
36	–	–
37	–	–
38	–	–
39	B	GND
40	–	–
41	W	ECZS+
42	GR	RH DOOR-SAT+
43	–	–
44	G	LH DOOR-SAT+
45	P	CAN-L
46	L	CAN-H
47	GR	TELLTALE LAMP OFF
48	–	–
49	–	–
50	R	IGN

Connector No.	M18
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	TH40FGY-NH
Connector Color	GRAY

H.S.



Terminal No.	Color of Wire	Signal Name
1	L	LIN 3 D
2	LA/G	O DI FR LEFT D
3	LA/Y	O DI FR RIGHT D
4	P	O SPARE4 RL N
5	R	CAN-L
6	L	CAN-H
7	–	–
8	L	CAN-H
9	R	CAN-L
10	BG	I DOORLOCK SW
11	Y	I HAZARD SW D
12	W	O PWR AUTOLIGHT SENSOR
13	–	–
14	–	–
15	–	–
16	–	–
17	L	O PWR ATDVC
18	–	–
19	LG	I AUTOLIGHT SENSOR
20	–	–
21	–	–
22	–	–
23	G	O WL AUTHORIZATION RL
24	LA/R	O DEFROSTER RL D
25	BR	O BAT TEMP1 RL
26	–	–
27	Y	O IGN1 RL
28	LA/W	O IGN2 RL
29	–	–
30	V	O GND AUTOLIGHT SENSOR
31	–	–
32	–	–
33	LG	O CSW 5
34	Y	I CSW 5
35	BG	O SECURITY LED
36	G	O CSW 3
37	GR	O CSW 4
38	V	O CSW 1
39	W	O CSW 2
40	SB	I DOORUNLOCK SW

Connector No.	M22
Connector Name	DATA LINK CONNECTOR
Connector Type	BD16FW
Connector Color	WHITE

H.S.



Terminal No.	Color of Wire	Signal Name
1	–	–
2	–	–
3	–	–
4	B	GROUND
5	B	GROUND
6	L	CAN-H
7	GR	K-LINE
8	Y	IGNITION
9	–	–
10	–	–
11	–	–
12	–	–
13	–	–
14	P	CAN-L
15	–	–
16	W	BATTERY

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CAN SYSTEM CONNECTORS - WITHOUT FORWARD EMERGENCY BRAKING

Connector No.	M29
Connector Name	3CH CAN GATEWAY
Connector Type	TH16FW-NH
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1	L	VEHICLE CAN COMMUNICATION 1-H
2	P	VEHICLE CAN COMMUNICATION 1-L
3	L	DIAGNOSTIC CAN COMMUNICATION-H
4	P	DIAGNOSTIC CAN COMMUNICATION-L
5	Y	IGNITION POWER SUPPLY
6	B	GROUND
7	B	GROUND
8	W	BATTERY POWER SUPPLY
9	L	IT CAN COMMUNICATION-H
10	V	IT CAN COMMUNICATION-L
11	L	DIAGNOSTIC CAN COMMUNICATION-H
12	P	DIAGNOSTIC CAN COMMUNICATION-L
13	L	IT CAN COMMUNICATION-H
14	V	IT CAN COMMUNICATION-L
15	L	–
16	G	–

Connector No.	M31
Connector Name	WIRE TO WIRE
Connector Type	TH80MW-CS16-TM4
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
1J	–	TO ENGINE ROOM HARNESS
2J	R	TO ENGINE ROOM HARNESS
3J	–	TO ENGINE ROOM HARNESS
4J	–	TO ENGINE ROOM HARNESS
5J	–	TO ENGINE ROOM HARNESS
6J	–	TO ENGINE ROOM HARNESS
7J	–	TO ENGINE ROOM HARNESS
8J	–	TO ENGINE ROOM HARNESS
9J	W	TO ENGINE ROOM HARNESS
10J	–	TO ENGINE ROOM HARNESS
11J	–	TO ENGINE ROOM HARNESS
12J	–	TO ENGINE ROOM HARNESS
13J	–	TO ENGINE ROOM HARNESS
14J	–	TO ENGINE ROOM HARNESS
15J	–	TO ENGINE ROOM HARNESS
16J	–	TO ENGINE ROOM HARNESS
17J	–	TO ENGINE ROOM HARNESS
18J	–	TO ENGINE ROOM HARNESS
19J	–	TO ENGINE ROOM HARNESS
20J	–	TO ENGINE ROOM HARNESS
21J	LA/L	TO ENGINE ROOM HARNESS
22J	SHIELD	TO ENGINE ROOM HARNESS
23J	LG	TO ENGINE ROOM HARNESS
24J	V	TO ENGINE ROOM HARNESS
25J	L	TO ENGINE ROOM HARNESS
26J	BR	TO ENGINE ROOM HARNESS
27J	G	TO ENGINE ROOM HARNESS

28J	Y	TO ENGINE ROOM HARNESS
29J	L	TO ENGINE ROOM HARNESS
30J	V	TO ENGINE ROOM HARNESS
31J	–	TO ENGINE ROOM HARNESS
32J	–	TO ENGINE ROOM HARNESS
33J	R	TO ENGINE ROOM HARNESS
33J	Y	TO ENGINE ROOM HARNESS - (WITH DRIVER ASSISTNACE SYSTEM)
34J	L	TO ENGINE ROOM HARNESS
35J	BG	TO ENGINE ROOM HARNESS
36J	GR	TO ENGINE ROOM HARNESS
37J	Y	TO ENGINE ROOM HARNESS
38J	LA/BR	TO ENGINE ROOM HARNESS
39J	–	TO ENGINE ROOM HARNESS
40J	–	TO ENGINE ROOM HARNESS
41J	LA/R	TO ENGINE ROOM HARNESS
42J	W	TO ENGINE ROOM HARNESS
43J	L	TO ENGINE ROOM HARNESS
44J	B	TO ENGINE ROOM HARNESS
45J	SB	TO ENGINE ROOM HARNESS
46J	BR	TO ENGINE ROOM HARNESS
47J	W	TO ENGINE ROOM HARNESS
48J	R	TO ENGINE ROOM HARNESS
49J	SB	TO ENGINE ROOM HARNESS
50J	GR	TO ENGINE ROOM HARNESS
51J	W	TO ENGINE ROOM HARNESS
52J	R	TO ENGINE ROOM HARNESS
53J	BR	TO ENGINE ROOM HARNESS
54J	LG	TO ENGINE ROOM HARNESS
55J	LA/Y	TO ENGINE ROOM HARNESS
56J	LA/V	TO ENGINE ROOM HARNESS
57J	LA/R	TO ENGINE ROOM HARNESS
58J	W	TO ENGINE ROOM HARNESS
59J	BR	TO ENGINE ROOM HARNESS
60J	P	TO ENGINE ROOM HARNESS
61J	L	TO ENGINE ROOM HARNESS
62J	R	TO ENGINE ROOM HARNESS
63J	L	TO ENGINE ROOM HARNESS
64J	R	TO ENGINE ROOM HARNESS
65J	L	TO ENGINE ROOM HARNESS
66J	BG	TO ENGINE ROOM HARNESS
67J	–	TO ENGINE ROOM HARNESS
68J	–	TO ENGINE ROOM HARNESS
69J	G	TO ENGINE ROOM HARNESS
70J	L	TO ENGINE ROOM HARNESS
71J	–	TO ENGINE ROOM HARNESS
72J	–	TO ENGINE ROOM HARNESS
73J	–	TO ENGINE ROOM HARNESS
74J	–	TO ENGINE ROOM HARNESS
75J	–	TO ENGINE ROOM HARNESS
76J	–	TO ENGINE ROOM HARNESS
77J	–	TO ENGINE ROOM HARNESS

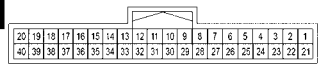
78J	–	TO ENGINE ROOM HARNESS
79J	SHIELD	TO ENGINE ROOM HARNESS
80J	B	TO ENGINE ROOM HARNESS
81J	W	TO ENGINE ROOM HARNESS
82J	–	TO ENGINE ROOM HARNESS
83J	–	TO ENGINE ROOM HARNESS
84J	–	TO ENGINE ROOM HARNESS
85J	–	TO ENGINE ROOM HARNESS
86J	–	TO ENGINE ROOM HARNESS
87J	–	TO ENGINE ROOM HARNESS
88J	–	TO ENGINE ROOM HARNESS
89J	–	TO ENGINE ROOM HARNESS
90J	–	TO ENGINE ROOM HARNESS
91J	–	TO ENGINE ROOM HARNESS
92J	Y	TO ENGINE ROOM HARNESS
93J	G	TO ENGINE ROOM HARNESS
94J	L	TO ENGINE ROOM HARNESS
95J	P	TO ENGINE ROOM HARNESS
96J	–	TO ENGINE ROOM HARNESS
97J	SB	TO ENGINE ROOM HARNESS
98J	P	TO ENGINE ROOM HARNESS
99J	LA/R	TO ENGINE ROOM HARNESS
100J	R	TO ENGINE ROOM HARNESS

AAMIA5206GB

CAN SYSTEM CONNECTORS - WITHOUT FORWARD EMERGENCY BRAKING

Connector No.	M35
Connector Name	TCU
Connector Type	TH40FB-NH
Connector Color	BLACK

H.S.

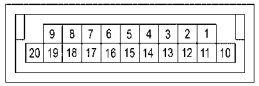


Terminal No.	Color of Wire	Signal Name
1	L	B+
2	–	–
3	–	–
4	–	–
5	Y	LED A
6	L	CAN-H
7	R	CAN-L
8	–	–
9	–	–
10	LG	IGN
11	SHIELD	MIC OUT GND
12	W	MIC OUT SIG
13	–	–
14	–	–
15	–	–
16	SHIELD	MIC GND
17	W	MIC SIG
18	B	MIC VCC
19	–	–
20	–	–
21	–	–
22	–	–
23	–	–
24	–	–
25	–	–
26	SB	M-CAN H
27	LG	M-CAN L
28	B	GND
29	B	GND
30	–	–
31	R	AUDIO HU OUT+
32	L	AUDIO HU OUT-
33	–	–
34	–	–
35	–	–
36	–	–
37	BG	ECALL SW
38	–	–
39	–	–
40	–	–

AAMIA5207GB

Connector No.	M43
Connector Name	JOINT CONNECTOR-M02
Connector Type	NH20FG-DC
Connector Color	GREEN

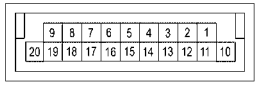
H.S.



Terminal No.	Color of Wire	Signal Name
1	–	–
2	–	–
3	L	CAN-H
4	L	CAN-H
5	L	CAN-H
6	–	–
7	L	CAN-H
8	L	CAN-H
9	L	CAN-H
10	–	–
11	–	–
12	–	–
13	–	–
14	G	CAN-L
15	G	CAN-L
16	G	CAN-L
17	–	–
18	P	CAN-L
19	P	CAN-L
20	P	CAN-L

Connector No.	M47
Connector Name	JOINT CONNECTOR-M04
Connector Type	NH20FG-DC
Connector Color	GREEN

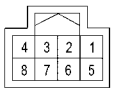
H.S.



Terminal No.	Color of Wire	Signal Name
1	–	–
2	SB	M-CAN H
3	SB	M-CAN H
4	SB	M-CAN H
5	SB	M-CAN H
6	L	CAN-H
7	L	CAN-H
8	L	CAN-H
9	L	CAN-H
10	–	–
11	–	–
12	–	–
13	LG	M-CAN L
14	LG	M-CAN L
15	LG	M-CAN L
16	LG	M-CAN L
17	R	CAN-L
18	R	CAN-L
19	V	CAN-L
20	V	CAN-L

Connector No.	M49
Connector Name	EPS CONTROL UNIT
Connector Type	TH08FW-NH
Connector Color	WHITE

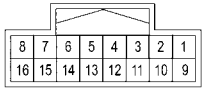
H.S.



Terminal No.	Color of Wire	Signal Name
1	R	CAN-L
2	L	CAN-H
3	–	–
4	SB	IG SIGNAL
5	–	–
6	–	–
7	–	–
8	–	–

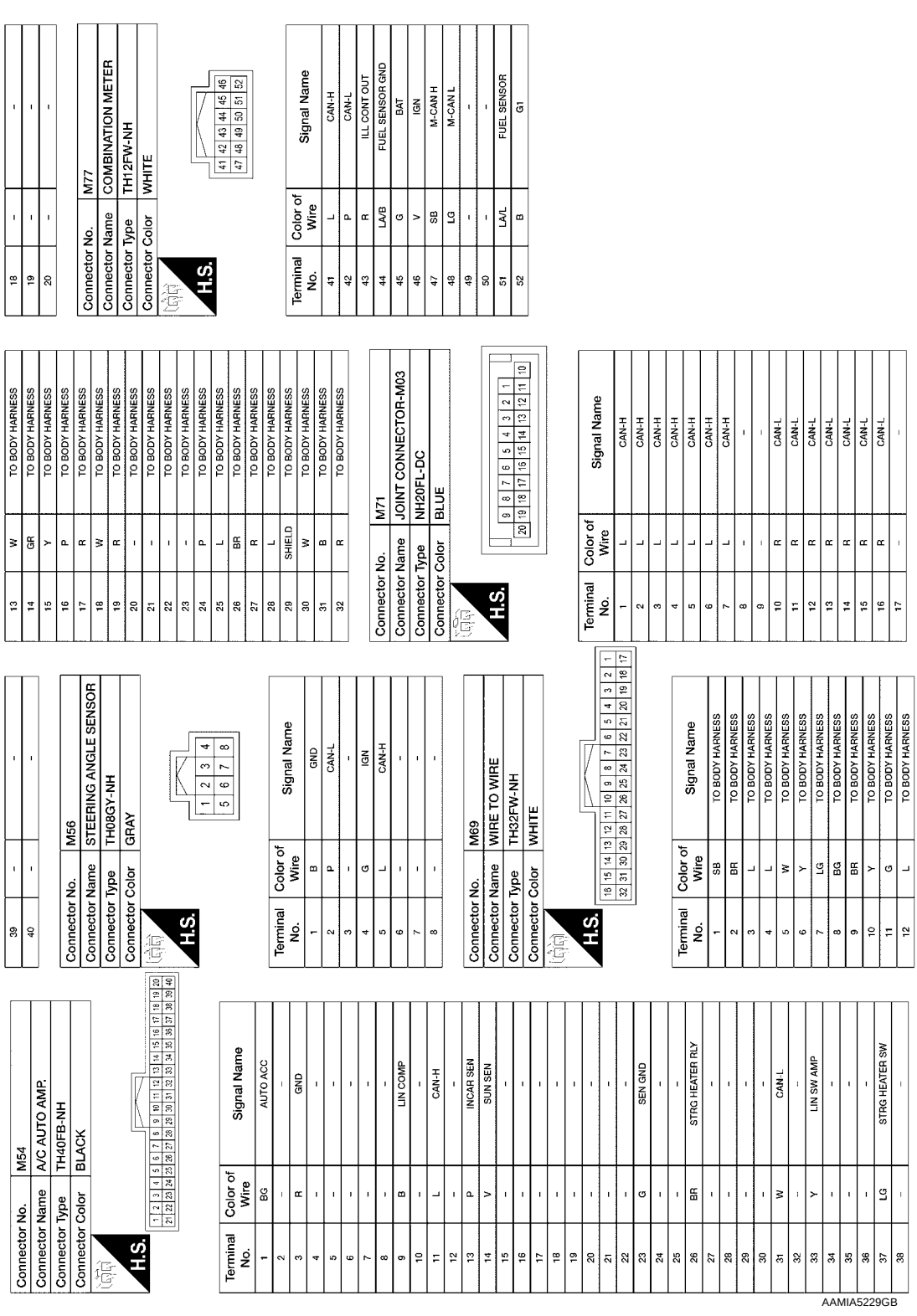
Connector No.	M52
Connector Name	WIRE TO WIRE
Connector Type	TH16FW-NH
Connector Color	WHITE

H.S.



Terminal No.	Color of Wire	Signal Name
1	W	TO BODY HARNESS
2	W	TO BODY HARNESS
3	R	TO BODY HARNESS
4	L	TO BODY HARNESS
5	L	TO BODY HARNESS
6	L	TO BODY HARNESS
7	L	TO BODY HARNESS
8	L	TO BODY HARNESS
9	BR	TO BODY HARNESS
10	BR	TO BODY HARNESS
11	–	TO BODY HARNESS
12	Y	TO BODY HARNESS
13	R	TO BODY HARNESS
14	R	TO BODY HARNESS
15	Y	TO BODY HARNESS
16	Y	TO BODY HARNESS

CAN SYSTEM CONNECTORS - WITHOUT FORWARD EMERGENCY BRAKING



CAN SYSTEM CONNECTORS - WITHOUT FORWARD EMERGENCY BRAKING

Connector No.	M96
Connector Name	CHASSIS CONTROL MODULE
Connector Type	TH24FW-NH
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
1	–	–
2	–	–
3	P	CAN-L
4	L	CAN-H
5	–	–
6	–	–
7	W	IC-CAN L
8	W	IC-CAN L
9	–	–
10	SB	IGN
11	L	IC-CAN H
12	B	GND
13	–	–
14	–	–
15	–	–
16	–	–
17	–	–
18	–	–
19	L	IC-CAN H
20	–	–
21	–	–
22	–	–
23	–	–
24	–	–

Connector No.	M108
Connector Name	AV CONTROL UNIT (WITH BOSE AUDIO SYSTEM)
Connector Type	NH18FW-CS2
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

Terminal No.	Color of Wire	Signal Name
1	BR	AMP ON
2	R	FR SP LH (+)
3	G	FR SP LH (-)
4	V	RR SP LH (+)
5	LG	RR SP LH (-)
6	–	–
7	W	ACC
8	L	CAN-H
9	V	ILL (+), LIGHT SW
10	B	PRE AMP SHIELD
11	R	FR SP RH (+)
12	W	FR SP RH (-)
13	L	RR SP RH (+)
14	Y	RR SP RH (-)
15	–	–
16	–	–
17	R	CAN-L
18	G	SPEED SIGNAL
19	L	BAT
20	B	GND

Connector No.	M112
Connector Name	AROUND VIEW MONITOR CONTROL UNIT
Connector Type	TH40FW-NH
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
1	–	–
2	–	–
3	SHIELD	VIDEO OUTPUT GND
4	G	VIDEO OUTPUT SIGNAL
5	V	FV POWER GND
6	L	FV POWER 6.2V
7	SHIELD	FV VIDEO GND
8	LG	FV VIDEO SIGNAL
9	L	SV1 POWER GND
10	B	SV1 POWER 6.2V
11	SHIELD	SV1 VIDEO GND
12	Y	SV1 VIDEO SIGNAL
13	Y	SV2 POWER GND
14	L	SV2 POWER 6.2V
15	SHIELD	SV2 VIDEO GND
16	G	SV2 VIDEO SIGNAL
17	B	RV POWER GND
18	R	RV POWER 6.2V
19	SHIELD	RV VIDEO GND
20	W	RV VIDEO SIGNAL
21	–	–
22	–	–
23	–	–
24	R	CAN-L (WITHOUT DRIVER ASSISTANCE SYSTEM)
24	Y	ITS CAN-L (WITH DRIVER ASSISTANCE SYSTEM)
25	–	–
26	L	CAN-H (WITHOUT DRIVER ASSISTANCE SYSTEM)
26	L	ITS CAN-H (WITH DRIVER ASSISTANCE SYSTEM)
27	–	–
28	–	–
29	–	–
30	–	–
31	–	–
32	–	–
33	–	–
34	–	–
35	–	–
36	–	–
37	–	–
38	–	–
39	B	GND
40	SB	IGN

Connector No.	M148
Connector Name	ADAS CONTROL UNIT 2
Connector Type	TH24FW-NH
Connector Color	WHITE

H.S.

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

Terminal No.	Color of Wire	Signal Name
1	BR	GND
2	L	ITS CAN-H
3	P	IGN
4	–	–
5	Y	ITS CAN-L
6	Y	3RD CAN-L
7	–	–
8	–	–
9	L	V-CAN-H
10	R	V-CAN-L
11	W	BSW SW
12	GR	SPOUT (+)
13	–	–
14	–	–
15	–	–
16	–	–
17	BR	BSW LED
18	L	3RD CAN-H
19	–	–
20	–	–
21	–	–
22	–	–
23	–	–
24	B	SPOUT (-)

AAMIA5230GB

CAN SYSTEM CONNECTORS - WITHOUT FORWARD EMERGENCY BRAKING

Connector No.	M150
Connector Name	JOINT CONNECTOR-M07
Connector Type	NH20FL-DC
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	CAN-H
2	L	CAN-H
3	L	CAN-H
4	L	CAN-H
5	–	–
6	Y	–
7	Y	–
8	Y	–
9	Y	–
10	–	–
11	Y	CAN-L
12	Y	CAN-L
13	W	CAN-L
14	Y	CAN-L
15	–	–
16	–	–
17	L	–
18	L	–
19	L	–
20	L	–

Connector No.	M156
Connector Name	WIRE TO WIRE
Connector Type	TH24FW-CS
Connector Color	WHITE

H.S.

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

Terminal No.	Color of Wire	Signal Name
1	B	TO ROOM LAMP HARNESS
2	W	TO ROOM LAMP HARNESS
3	SHIELD	TO ROOM LAMP HARNESS

4	R	TO ROOM LAMP HARNESS
5	–	TO ROOM LAMP HARNESS
6	Y	TO ROOM LAMP HARNESS
7	LG	TO ROOM LAMP HARNESS
8	L	TO ROOM LAMP HARNESS
9	R	TO ROOM LAMP HARNESS
10	–	TO ROOM LAMP HARNESS
11	–	TO ROOM LAMP HARNESS
12	–	TO ROOM LAMP HARNESS
13	SB	TO ROOM LAMP HARNESS
14	GR	TO ROOM LAMP HARNESS
15	SB	TO ROOM LAMP HARNESS
16	GR	TO ROOM LAMP HARNESS
17	V	TO ROOM LAMP HARNESS
18	G	TO ROOM LAMP HARNESS
19	SB	TO ROOM LAMP HARNESS
20	R	TO ROOM LAMP HARNESS
21	B	TO ROOM LAMP HARNESS
22	GR	TO ROOM LAMP HARNESS
23	–	TO ROOM LAMP HARNESS
24	–	TO ROOM LAMP HARNESS

Connector No.	R11
Connector Name	WIRE TO WIRE
Connector Type	TH24MW-NH
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
1	B	TO MAIN HARNESS
2	W	TO MAIN HARNESS
3	SHIELD	TO MAIN HARNESS
4	SB	TO MAIN HARNESS
5	–	TO MAIN HARNESS
6	LG	TO MAIN HARNESS
7	LG	TO MAIN HARNESS
8	–	TO MAIN HARNESS
9	–	TO MAIN HARNESS
10	–	TO MAIN HARNESS
11	–	TO MAIN HARNESS
12	–	TO MAIN HARNESS
13	SB	TO MAIN HARNESS
14	P	TO MAIN HARNESS
15	–	TO MAIN HARNESS
16	–	TO MAIN HARNESS

17	–	TO MAIN HARNESS
18	–	TO MAIN HARNESS
19	SB	TO MAIN HARNESS
20	R	TO MAIN HARNESS
21	B	TO MAIN HARNESS
22	L	TO MAIN HARNESS
23	–	TO MAIN HARNESS
24	–	TO MAIN HARNESS

Connector No.	R17
Connector Name	LANE CAMERA UNIT
Connector Type	MUB12FB
Connector Color	BLACK

H.S.

1	2	3	4
5	6	7	8	9	10	11	12

Terminal No.	Color of Wire	Signal Name
1	B	GROUND
2	–	–
3	LG	IGN
4	–	–
5	L	CAN-H
6	Y	CAN-L
7	–	–
8	–	–
9	–	–
10	–	–
11	–	–
12	–	–

Terminal No.	Color of Wire	Signal Name
1	B	GROUND
2	B	GROUND
3	B	GROUND

AAMIA6043GB

BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Interview Sheet

INFOID:0000000014622432

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

Vehicle CAN Communication Circuit

INFOID:0000000014922765

MAIN LINE

Malfunction area	Reference
Main line between IPDM E/R and combination meter	LAN-92, "Diagnosis Procedure"
Main line between combination meter and steering angle sensor	LAN-93, "Diagnosis Procedure"
Main line between steering angle sensor and automatic back door control module	LAN-94, "Diagnosis Procedure"
Main line between steering angle sensor and AWD control unit	LAN-95, "Diagnosis Procedure"
Main line between EPS control unit and ADAS control unit	LAN-96, "Diagnosis Procedure"

BRANCH LINE

Malfunction area	Reference
ECM branch line circuit (Vehicle CAN communication 1 circuit)	LAN-103, "Diagnosis Procedure"
ABS actuator and electric unit (control unit) branch line circuit	LAN-105, "Diagnosis Procedure"
HPCM branch line circuit (Vehicle CAN communication 1 circuit)	LAN-106, "Diagnosis Procedure"
IPDM E/R branch line circuit	LAN-108, "Diagnosis Procedure"
Combination meter branch line circuit	LAN-109, "Diagnosis Procedure"
3CH CAN gateway branch line circuit	LAN-110, "Diagnosis Procedure"
Air bag diagnosis sensor unit branch line circuit	LAN-111, "Diagnosis Procedure"
Chassis control module branch line circuit (Vehicle CAN communication 1 circuit)	LAN-112, "Diagnosis Procedure"
Steering angle sensor branch line circuit	LAN-114, "Diagnosis Procedure"
AWD control unit branch line circuit	LAN-115, "Diagnosis Procedure"
Driver seat control unit branch line circuit	LAN-116, "Diagnosis Procedure"
Automatic back door control module branch line circuit	LAN-117, "Diagnosis Procedure"
BCM branch line circuit	LAN-118, "Diagnosis Procedure"
Hydraulic brake booster unit branch line circuit	LAN-119, "Diagnosis Procedure"
EPS control unit branch line circuit	LAN-120, "Diagnosis Procedure"
A/C auto amp. branch line circuit	LAN-121, "Diagnosis Procedure"
ADAS control unit branch line circuit (Vehicle CAN communication 2 circuit)	LAN-122, "Diagnosis Procedure"
ADAS control unit 2 branch line circuit (Vehicle CAN communication 2 circuit)	LAN-130, "Diagnosis Procedure"
Approaching vehicle sound for pedestrians (VSP) control unit branch line circuit	LAN-125, "Diagnosis Procedure"

SHORT CIRCUIT

Malfunction area	Reference
Vehicle CAN communication 1 circuit	LAN-141, "Diagnosis Procedure"
Vehicle CAN communication 2 circuit	LAN-143, "Diagnosis Procedure"

ITS CAN Communication Circuit

INFOID:0000000014922766

MAIN LINE

Malfunction area	Reference
Main line between around view monitor control unit and lane camera unit	LAN-97, "Diagnosis Procedure"
Main line between side radar RH and around view monitor control unit	LAN-98, "Diagnosis Procedure"
Main line between around view monitor control unit and side radar RH	LAN-99, "Diagnosis Procedure"
Main line between side radar LH and side radar RH	LAN-100, "Diagnosis Procedure"
Main line between side radar RH and side radar LH	LAN-101, "Diagnosis Procedure"

BRANCH LINE

Malfunction area	Reference
Chassis control module branch line circuit (ITS CAN communication circuit)	LAN-113, "Diagnosis Procedure"
Distance sensor branch line circuit	LAN-126, "Diagnosis Procedure"
Around view monitor control unit branch line circuit	LAN-127, "Diagnosis Procedure"
Side radar RH branch line circuit	LAN-128, "Diagnosis Procedure"
Side radar LH branch line circuit	LAN-129, "Diagnosis Procedure"
ADAS control unit branch line circuit (ITS CAN communication circuit)	LAN-123, "Diagnosis Procedure"
ADAS control unit 2 branch line circuit (ITS CAN communication circuit)	LAN-131, "Diagnosis Procedure"
Lane camera unit branch line circuit	LAN-133, "Diagnosis Procedure"

SHORT CIRCUIT OR OPEN CIRCUIT

Malfunction area	Reference
ITS CAN communication circuit	LAN-145, "Diagnosis Procedure"

Chassis CAN Communication Circuit

INFOID:0000000014922767

BRANCH LINE

Malfunction area	Reference
ADAS control unit branch line circuit (Chassis CAN communication circuit)	LAN-124, "Diagnosis Procedure"
ADAS control unit 2 branch line circuit (Chassis CAN communication circuit)	LAN-132, "Diagnosis Procedure"
Lane camera unit branch line circuit	LAN-133, "Diagnosis Procedure"

SHORT CIRCUIT OR OPEN CIRCUIT

Malfunction area	Reference
Chassis CAN communication circuit	LAN-148, "Diagnosis Procedure"

IT CAN Communication Circuit

INFOID:0000000014922768

BRANCH LINE

Malfunction area	Reference
AV control unit branch line circuit	LAN-139, "Diagnosis Procedure"
TCU branch line circuit	LAN-140, "Diagnosis Procedure"

SHORT CIRCUIT OR OPEN CIRCUIT

Malfunction area	Reference
IT CAN communication circuit	LAN-150, "Diagnosis Procedure"

Diagnostic CAN Communication Circuit

INFOID:0000000014922769

BRANCH LINE

Malfunction area	Reference
Data link connector branch line circuit	LAN-138, "Diagnosis Procedure"

SHORT CIRCUIT OR OPEN CIRCUIT

Malfunction area	Reference
Diagnostic CAN communication circuit	LAN-152, "Diagnosis Procedure"

HEV system CAN Circuit

INFOID:0000000014922771

MAIN LINE

Malfunction area	Reference
Main line between HPCM and Li-ion battery	LAN-102, "Diagnosis Procedure"

BRANCH LINE

Malfunction area	Reference
ECM branch line circuit (HEV system CAN circuit)	LAN-104, "Diagnosis Procedure"
TCM branch line circuit	LAN-134, "Diagnosis Procedure"
Traction motor inverter branch line circuit	LAN-136, "Diagnosis Procedure"
HPCM branch line circuit (HEV system CAN circuit)	LAN-107, "Diagnosis Procedure"
Li-ion battery controller branch line circuit	LAN-137, "Diagnosis Procedure"

SHORT CIRCUIT OR OPEN CIRCUIT

Malfunction area	Reference
HEV system CAN circuit	LAN-154, "Diagnosis Procedure"

MAIN LINE BETWEEN IPDM-E AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000014922772

1.CHECK CONNECTOR

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

- Harness connector 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		60J	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)

1. Disconnect the connector of combination meter.
2. Check the continuity between the harness connector and the combination meter harness connector.

Harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	61J	M77	41	Existed
	60J		42	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 combination meter.
NO >> Repair the main line between the harness connector M31 and the combination meter.

MAIN LINE BETWEEN M&A AND STRG CIRCUIT

Diagnosis Procedure

INFOID:0000000014922773

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

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

Combination meter harness connector		Steering angle sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M77	41	M56	5	Existed
	42		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the steering angle sensor.
NO >> Repair the main line between the combination meter and the steering angle sensor.

MAIN LINE BETWEEN STRG AND PWBD CIRCUIT

Diagnosis Procedure

INFOID:0000000014922774

1.CHECK CONNECTOR

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

- Harness connector 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.

- Steering angle sensor
- Harness connectors M69 and B41

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

Steering angle sensor harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M56	5	M69	25	Existed
	2		24	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the steering angle sensor 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 steering angle sensor 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 STRG AND 4WD CIRCUIT

Diagnosis Procedure

INFOID:0000000014922775

1.CHECK CONNECTOR

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

- Harness connector 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.

- Steering angle sensor
- Harness connectors M69 and B41

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

Steering angle sensor harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M56	5	M69	25	Existed
	2		24	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the steering angle sensor 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 steering angle sensor and the AWD control unit.
NO >> Repair the main line between the harness connector B41 and the AWD control unit.

MAIN LINE BETWEEN EPS/DAST 3 AND ICC CIRCUIT

Diagnosis Procedure

INFOID:0000000014922776

1.CHECK CONNECTOR

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

- Harness connector 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.

- EPS control unit
- Harness connectors M69 and B41

2. Check the continuity between the EPS control unit harness connector and the harness connector.

EPS control unit harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M49	2	M69	28	Existed
	1		27	Existed

Is the inspection result normal?

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

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

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

Harness connector		ADAS control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	28	B4	1	Existed
	27		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the EPS control unit and the ADAS control unit.
NO >> Repair the main line between the harness connector B41 and the ADAS control unit.

MAIN LINE BETWEEN AVM AND LANE CIRCUIT

Diagnosis Procedure

INFOID:0000000014922777

1.CHECK CONNECTOR

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

- Harness connector B43
- Harness connector M52

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors M52 and B43.
2. Check the continuity between the harness connector terminals.

Harness connector			Continuity
Connector No.	Terminal No.		
B43	8	7	Existed
	16	15	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the around view monitor control unit and the harness connector B43.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the herness connectors M156 and R11.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M52	7	M156	8	Existed
	15		9	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 around view monitor control unit and the lane camera unit.
NO >> Repair the main line between the harness connector M52 and the lane camera unit.

MAIN LINE BETWEEN RDR-R AND AVM CIRCUIT

Diagnosis Procedure

INFOID:0000000014922779

1.CHECK CONNECTOR

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

- Harness connector B140
- Harness connector B49

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Side radar RH
- Harness connectors B140 and B49

2. Check the continuity between the side radar RH harness connector and the harness connector.

Side radar RH harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B105	6	B140	8	Existed
	7		9	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the side radar RH and the harness connector B140.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors B43 and M52.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B49	8	B43	8	Existed
	9		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 side radar RH and the around view monitor control unit.
NO >> Repair the main line between the harness connector B49 and the around view monitor control unit.

MAIN LINE BETWEEN AVM AND RDR-R CIRCUIT

Diagnosis Procedure

INFOID:0000000014922780

1.CHECK CONNECTOR

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

- Harness connector B49
- Harness connector B140

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Harness connectors M52 and B43
- Harness connectors B49 and B140

2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B43	8	B49	8	Existed
	16		9	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the harness connectors B43 and B49.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of side radar RH.
2. Check the continuity between the harness connector and the side radar RH harness connector.

Harness connector		Side radar RH harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B140	8	B105	6	Existed
	9		7	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 around view monitor control unit and the side radar RH.
NO >> Repair the main line between the harness connector B140 and the side radar RH.

MAIN LINE BETWEEN RDR-L AND RDR-R CIRCUIT

Diagnosis Procedure

INFOID:0000000014922781

1.CHECK CONNECTOR

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

- Harness connector B49
- Harness connector B140

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Side radar LH
- Harness connectors B49 and B140

2. Check the continuity between the side radar LH harness connector and the harness connector.

Side radar LH harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B35	6	B49	13	Existed
	7		14	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the side radar LH and the harness connector B49.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of side radar RH.
2. Check the continuity between the harness connector and the side radar RH harness connector.

Harness connector		Side radar RH harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B140	13	B105	6	Existed
	14		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar LH and the side radar RH.
NO >> Repair the main line between the harness connector B140 and the side radar RH.

MAIN LINE BETWEEN RDR-R AND RDR-L CIRCUIT

Diagnosis Procedure

INFOID:0000000014922782

1.CHECK CONNECTOR

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

- Harness connector B140
- Harness connector B49

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Side radar RH
- Harness connectors B140 and B49

2. Check the continuity between the side radar RH harness connector and the harness connector.

Side radar RH harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B105	6	B140	13	Existed
	7		14	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the side radar RH and the harness connector B140.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of side radar LH.
2. Check the continuity between the harness connector and the side radar LH harness connector.

Harness connector		Side radar LH harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B49	13	B35	6	Existed
	14		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar RH and the side radar LH.
NO >> Repair the main line between the harness connector B49 and the side radar LH.

MAIN LINE BETWEEN EV/HEV AND HV BAT CIRCUIT

Diagnosis Procedure

INFOID:0000000015194333

1.CHECK CONNECTOR

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

- Harness connector 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.

- HPCM
- Harness connectors E152 and M31

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

HPCM harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E130	97	E152	70J	Existed
	98		69J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the HPCM and the harness connector E152.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors M69 and B41.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	70J	M69	12	Existed
	69J		11	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the HPCM and the Li-ion battery.
NO >> Repair the main line between the harness connector M31 and the Li-ion battery.

ECM BRANCH LINE CIRCUIT (VEHICLE CAN COMMUNICATION 1 CIRCUIT)

Diagnosis Procedure

INFOID:0000000014622440

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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	124	123	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line (Vehicle CAN communication 1 circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to EC-184, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to EC-595, "Removal and Installation".
YES (Past error)>>Error was detected in the ECM branch line (Vehicle CAN communication 1 circuit side).
NO >> Repair the power supply and the ground circuit.

ECM BRANCH LINE CIRCUIT (HEV SYSTEM CAN CIRCUIT)

Diagnosis Procedure

INFOID:0000000014923973

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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	138	137	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line (HEV system CAN circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to EC-184, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to EC-595, "Removal and Installation".
YES (Past error)>>Error was detected in the ECM branch line (HEV system CAN circuit side).
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014622441

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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	19	30	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-169, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-204, "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.

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

Diagnosis Procedure

INFOID:0000000014922784

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

HPCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E130	84	83	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the HPCM branch line (Vehicle CAN communication 1 circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the HPCM. Refer to HBC-117, "HPCM : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the HPCM. Refer to HBC-335, "Removal and Installation".
YES (Past error)>>Error was detected in the HPCM branch line (Vehicle CAN communication 1 circuit side)
NO >> Repair the power supply and the ground circuit.

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

Diagnosis Procedure

INFOID:0000000014922785

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

HPCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E130	97	98	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Replace the HPCM branch line (HEV system CAN circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the HPCM. Refer to HBC-117, "HPCM : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the HPCM. Refer to HBC-335, "Removal and Installation".
YES (Past error)>>Error was detected in the HPCM branch line (HEV system CAN circuit side).
NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014622442

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
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-45, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-46, "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.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014622445

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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-62, "COMBINATION METER : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to MWI-81, "Removal and Installation".
YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

3CH CGW BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014922789

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 3CH CAN gateway 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 3CH CAN gateway.
2. Check the resistance between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M29	1	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the 3CH CAN gateway branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the 3CH CAN gateway. Refer to LAN-178, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the 3CH CAN gateway. Refer to LAN-179, "Removal and Installation".
YES (Past error)>>Error was detected in the 3CH CAN gateway branch line.
NG >> Repair the power supply and the ground circuit.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014622446

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 12V 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-35, "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 (VEHICLE CAN COMMUNICATION 1 CIRCUIT)

Diagnosis Procedure

INFOID:0000000014922790

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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 (Vehicle CAN communication 1 circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the chassis control module. Refer to DAS-523, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the chassis control module. Refer to DAS-529, "Removal and Installation".
YES (Past error)>>Error was detected in the chassis control module branch line (Vehicle CAN communication 1 circuit side).
NG >> Repair the power supply and the ground circuit.

CCM BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014922791

1.CHECK CONNECTOR

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

- Chassis control module
- Harness connector M69
- Harness connector B41

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	11	8	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the chassis control module branch line (ITS CAN communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the chassis control module. Refer to DAS-523, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the chassis control module. Refer to DAS-529, "Removal and Installation".
YES (Past error)>>Error was detected in the chassis control module branch line (ITS CAN communication circuit side).
NG >> Repair the power supply and the ground circuit.

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014622449

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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-63, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-208, "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.

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014622450

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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-62, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the AWD control unit. Refer to DLN-72, "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.

ADP BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014922792

1.CHECK CONNECTOR

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

- Driver seat control unit
- Harness connector B200
- Harness connector B57

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 driver seat control unit.
2. Check the resistance between the driver seat control unit harness connector terminals.

Driver seat control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B213	1	17	Approx. 54 – 66

Is the measurement value within the specification?

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

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the driver seat control unit. Refer to ADP-56, "DRIVER SEAT CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the driver seat control unit. Refer to ADP-102, "Removal and Installation".
YES (Past error)>>Error was detected in the driver seat control unit branch line.
NG >> Repair the power supply and the ground circuit.

PWBD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014622451

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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-204, "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-343, "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:0000000014622452

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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 BCS-66, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-73, "Removal and Installation".
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

BRAKE BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014922836

1.CHECK CONNECTOR

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

- Hydraulic brake booster unit
- BCM
- E152
- 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 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of BCM.
2. Disconnect the connector of hydraulic brake booster unit.
3. Check the resistance between the hydraulic brake booster unit harness connector terminals.

Hydraulic brake booster unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E35	9	10	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the hydraulic brake booster unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the hydraulic brake booster unit. Refer to BR-39, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the hydraulic brake booster unit. Refer to BR-65, "Removal and Installation".
YES (Past error)>>Error was detected in the hydraulic brake booster unit branch line.
NO >> Repair the power supply and the ground circuit.

EPS/DAST 3 BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014622448

1.CHECK CONNECTOR

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

- EPS 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of BCM.
2. Disconnect the connector of EPS control unit.
3. 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 4.
NO >> Repair the EPS control unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to STC-18, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to STC-39, "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.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014622455

1.CHECK CONNECTOR

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

- A/C auto amp.
- 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

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

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

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the A/C auto amp. branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the A/C auto amp. Refer to HAC-107, "A/C AUTO AMP. : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the A/C auto amp. Refer to HAC-120, "Removal and Installation".
YES (Past error)>>Error was detected in the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.

ICC BRANCH LINE CIRCUIT (VEHICLE CAN COMMUNICATION 2 CIRCUIT)

Diagnosis Procedure

INFOID:0000000014922794

1.CHECK CONNECTOR

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

- ADAS control unit
- 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 (Vehicle CAN communication circuit 2 side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

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

ADAS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B4	1	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the ADAS control unit branch line (Vehicle CAN communication 2 circuit side).

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-208, "ADAS CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-210, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (Vehicle CAN communication 2 circuit side).
NO >> Repair the power supply and the ground circuit.

ICC BRANCH LINE CIRCUIT (ITS CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000015194335

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of ADAS 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 ADAS control unit.
2. Check the resistance between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B4	6	7	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ADAS control unit branch line (ITS CAN communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-208, "ADAS CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-210, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (ITS CAN communication circuit side).
NO >> Repair the power supply and the ground circuit.

ICC BRANCH LINE CIRCUIT (CHASSIS CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014922795

1.CHECK CONNECTOR

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

- ADAS control unit
- Chassis control module

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

Chassis control module harness connector			Continuity
Connector No.	Terminal No.		
M96	19	11	Existed
	7	8	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (Chassis CAN communication circuit side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of chassis control module.
2. Disconnect the connector of ADAS control unit.
3. Check the resistance between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B4	8	9	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the ADAS control unit branch line (Chassis CAN communication circuit side).

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-208, "ADAS CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-210, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (Chassis CAN communication circuit side).
NO >> Repair the power supply and the ground circuit.

VSP BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014922833

1.CHECK CONNECTOR

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

- Approaching vehicle sound for pedestrians (VSP) control unit
- BCM
- 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 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of BCM.
2. Disconnect the connector of approaching vehicle sound for pedestrians (VSP) control unit.
3. Check the resistance between the approaching vehicle sound for pedestrians (VSP) control unit harness connector terminals.

Approaching vehicle sound for pedestrians (VSP) control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E154	6	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the approaching vehicle sound for pedestrians (VSP) control unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the approaching vehicle sound for pedestrians (VSP) control unit. Refer to VSP-32, "APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the approaching vehicle sound for pedestrians (VSP) control unit. Refer to VSP-35, "Removal and Installation".
YES (Past error)>>Error was detected in the approaching vehicle sound for pedestrians (VSP) control unit branch line.
NO >> Repair the power supply and the ground circuit.

LASER BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014622456

1.CHECK CONNECTOR

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

- Distance sensor
- Harness connector E34
- Harness connector B40

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

Distance sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E21	3	2	Approx. 54 – 66

Is the measurement value within the specification?

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

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the distance sensor. Refer to CCS-188, "ICC SENSOR : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the distance sensor. Refer to CCS-206, "Removal and Installation".
YES (Past error)>>Error was detected in the distance sensor branch line.
NO >> Repair the power supply and the ground circuit.

AVM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014622454

1.CHECK CONNECTOR

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

- Around view monitor control unit
- Harness connector M52
- Harness connector B43

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

-

Around view monitor control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M112	26	24	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the around view monitor control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the around view monitor control unit. Refer to AV-437, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the around view monitor control unit. Refer to AV-441, "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.

RDR-R BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014922796

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

Side radar RH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B105	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the side radar RH branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar RH. Refer to DAS-376, "SIDE RADAR RH : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the side radar RH. Refer to DAS-405, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar RH branch line.
NO >> Repair the power supply and the ground circuit.

RDR-L BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014922797

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

Side radar LH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B35	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the side radar LH branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar LH. Refer to DAS-376, "SIDE RADAR LH : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the side radar LH. Refer to DAS-405, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar LH branch line.
NO >> Repair the power supply and the ground circuit.

ICC 2 BRANCH LINE CIRCUIT (VEHICLE CAN COMMUNICATION 2 CIRCUIT)

Diagnosis Procedure

INFOID:0000000014922798

1.CHECK CONNECTOR

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

- ADAS control unit 2
- Harness connector M52
- Harness connector B43
- 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

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

ADAS control unit 2 harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M148	9	10	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the ADAS control unit 2 branch line (Vehicle CAN communication 2 circuit side).

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit 2. Refer to DAS-208, "ADAS CONTROL UNIT 2 : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit 2. Refer to DAS-212, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit 2 branch line (Vehicle CAN communication 2 circuit side).
NO >> Repair the power supply and the ground circuit.

ICC 2 BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014922799

1.CHECK CONNECTOR

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

- ADAS control unit 2
- Harness connector M52 (With forward emergency braking)
- Harness connector B43 (With forward emergency braking)

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 ADAS control unit 2.
2. Check the resistance between the ADAS control unit 2 harness connector terminals.

- With forward emergency braking

ADAS control unit 2 harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M148	9	10	Approx. 108 – 132

- Without forward emergency braking

ADAS control unit 2 harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M148	2	5	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ADAS control unit 2 branch line (ITS CAN communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit 2. Refer to DAS-208, "ADAS CONTROL UNIT 2 : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit 2. Refer to DAS-212, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit 2 branch line (ITS CAN communication circuit side).
NO >> Repair the power supply and the ground circuit.

ICC 2 BRANCH LINE CIRCUIT (CHASSIS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000014922800

1.CHECK CONNECTOR

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

- ADAS control unit 2
- Chassis control module

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

Chassis control module harness connector			Continuity
Connector No.	Terminal No.		
M96	19	11	Existed
	7	8	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (Chassis CAN communication circuit side). Refer to LAN-148, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of chassis control module.
2. Disconnect the connector of ADAS control unit 2.
3. Check the resistance between the ADAS control unit 2 harness connector terminals.

ADAS control unit 2 harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M148	2	5	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the ADAS control unit 2 branch line (Chassis communication circuit side).

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit 2. Refer to DAS-208, "ADAS CONTROL UNIT 2 : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit 2. Refer to DAS-212, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit 2 branch line (Chassis communication circuit side).
NO >> Repair the power supply and the ground circuit.

LANE BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014922801

1.CHECK CONNECTOR

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

- Lane camera unit
- Chassis control module (With forward emergency braking)
- Harness connector R11
- Harness connector M156

Is the inspection result normal?

YES >> GO TO 2. (With forward emergency braking)
YES >> GO TO 3. (Without forward emergency braking)
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of chassis control module.
2. Check the continuity between the chassis control module harness connector terminals.

Chassis control module harness connector			Continuity
Connector No.	Terminal No.		
M96	19	11	Existed
	7	8	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (Chassis CAN communication circuit side). Refer to LAN-148, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of chassis control module (With forward emergency braking).
2. Disconnect the connector of lane camera unit.
3. Check the resistance between the lane camera unit harness connector terminals.

-

Lane camera unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
R17	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the lane camera unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the lane camera unit. Refer to DAS-377, "LANE CAMERA UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the lane camera unit. Refer to DAS-410, "Removal and Installation".
YES (Past error)>>Error was detected in the lane camera unit branch line.
NO >> Repair the power supply and the ground circuit.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014622443

1.CHECK CONNECTOR

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

- 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-193, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the TCM. Refer to TM-213, "Removal and Installation".

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

INV/MC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014922834

1.CHECK CONNECTOR

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

- Traction motor inverter
- Harness connector F6
- Harness connector E4

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

Traction motor inverter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F36	27	35	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Replace the traction motor inverter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the traction motor inverter. Refer to TMS-68, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the traction motor inverter. Refer to TMS-132, "Removal and Installation".
YES (Past error)>>Error was detected in the traction motor inverter branch line.
NO >> Repair the power supply and the ground circuit.

HV BAT BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014922835

DANGER:

Since hybrid vehicles and electric vehicles contain a high voltage battery, there is the risk of electric shock, electric leakage, or similar accidents if the high voltage component and vehicle are handled incorrectly. Be sure to follow the correct work procedures when performing inspection and maintenance.

WARNING:

- **Be sure to remove the service plug in order to disconnect the high voltage circuits before performing inspection or maintenance of high voltage system harnesses and parts.**
- **The removed service plug must always be carried in a pocket of the responsible worker or placed in the tool box during the procedure to prevent the plug from being connected by mistake.**
- **Be sure to wear insulating protective equipment before beginning work on the high voltage system.**
- **Never allow workers other than the responsible person to touch the vehicle containing high voltage parts. To keep others from touching the high voltage parts, these parts must be covered with an insulating sheet except when using them.**
- **Refer to GI-28, "High Voltage Precautions".**

CAUTION:

Never bring the vehicle into the READY status with the service plug removed unless otherwise instructed in the Service Manual. A malfunction may occur if this is not observed.

1.CHECK CONNECTOR

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

- Li-ion battery
- Harness connector B41
- Harness connector M69

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

Li-ion battery harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B59	3	15	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Replace the Li-ion battery branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Li-ion battery. Refer to HBB-149, "LI-ION BATTERY CONTROLLER : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the Li-ion battery. Refer to HBB-155, "Removal and Installation".
YES (Past error)>>Error was detected in the Li-ion battery controller branch line.
NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014622444

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014622453

1.CHECK CONNECTOR

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

- AV control unit
- 3CH CAN gateway

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of 3CH CAN gateway.
2. Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	9	13	Existed
	10	14	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (IT CAN communication circuit side). Refer to LAN-150, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

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

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M108	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-315, "AV CONTROL UNIT : Diagnosis Procedure"
- Navigation without BOSE: AV-213, "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-352, "Removal and Installation"
- Navigation without BOSE: AV-239, "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.

TCU BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000014922825

1.CHECK CONNECTOR

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

- TCU
- 3CH CAN gateway

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of 3CH CAN gateway.
2. Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	9	13	Existed
	10	14	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (IT CAN communication circuit side). Refer to LAN-150, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of 3CH CAN gateway.
2. Disconnect the connector of TCU.
3. Check the resistance between the TCU harness connector terminals.

TCU harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M35	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the TCU branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCU. Refer to LAN-140, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the TCU. Refer to AV-531, "Removal and Installation".
YES (Past error)>>Error was detected in the TCU branch line.
NO >> Repair the power supply and the ground circuit.

VEHICLE CAN COMMUNICATION 1 CIRCUIT

Diagnosis Procedure

INFOID:0000000014922826

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect all the unit connectors on vehicle CAN communication 1 circuit.
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 3CH CAN gateway terminals.

3CH CAN gateway			Continuity
Connector No.	Terminal No.		
M29	1	2	Not 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)

Check the continuity between the 3CH CAN gateway and the ground.

3CH CAN gateway		Ground	Continuity
Connector No.	Terminal No.		
M29	1		Not existed
	2		Not existed

Is the inspection result normal?

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

4.CHECK ECM AND BCM TERMINATION CIRCUIT

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

ECM		Resistance (Ω)
Terminal No.		
124	123	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 12V battery cable from the negative terminal.
3. Disconnect one of the unit connectors of vehicle CAN communication 1 circuit.
   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.

VEHICLE CAN COMMUNICATION 2 CIRCUIT

Diagnosis Procedure

INFOID:0000000014922827

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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 vehicle CAN communication 2 circuit.
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 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 BCM.

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 12V battery cable from the negative terminal.
3. Disconnect one of the unit connectors of vehicle CAN communication 2 circuit.
   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.

ITS CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014922828

1.CHECK CAN DIAGNOSIS

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

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

YES >> GO TO 2.
NO >> Check and repair vehicle CAN communication 1 circuit and/or vehicle CAN communication 2 circuit.

2.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the ADAS control unit (With forward emergency braking) or the ADAS control unit 2 (Without forward emergency braking) for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

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

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.
- ADAS control unit (With forward emergency braking)
- ADAS control unit 2
- Chassis control module (Without forward emergency braking)
2. Check the continuity between the ADAS control unit harness connector and the ADAS control unit 2 harness connector (With forward emergency braking) or the ADAS control unit 2 harness connector and the chassis control module harness connector (Without forward emergency braking).

• With forward emergency braking

ADAS control unit harness connector		ADAS control unit 2 harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B4	6	M148	9	Existed
	7		10	Existed

• Without forward emergency braking

ADAS control unit 2 harness connector		Chassis control module harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M148	2	M96	11	Existed
	5		8	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the harness between the ADAS control unit and the ADAS control unit 2 (With forward emergency braking) or the ADAS control unit 2 and the chassis control module (Without forward emergency braking).

4.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

1. Disconnect all the unit connectors on ITS CAN communication circuit.
2. Check the continuity between the ADAS control unit harness connector terminals (With forward emergency braking) or the ADAS control unit 2 harness connector terminals (Without forward emergency braking).

• With forward emergency braking

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
B4	6	7	Not existed

• Without forward emergency braking

ADAS control unit 2 harness connector			Continuity
Connector No.	Terminal No.		
B148	2	5	Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause.

5.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the ADAS control unit harness connector and the ground (With forward emergency braking) or the ADAS control unit 2 harness connector and the ground (Without forward emergency braking).

• With forward emergency braking

ADAS control unit harness connector		Ground	Continuity
Connector No.	Terminal No.		
B4	6		Not existed
	7		Not existed

• Without forward emergency braking

ADAS control unit 2 harness connector		Ground	Continuity
Connector No.	Terminal No.		
B148	2		Not existed
	5		Not existed

Is the inspection result normal?

YES >> GO TO 6.
NO >> Check the harness and repair the root cause.

6.CHECK TERMINATION CIRCUIT

1. Remove the ADAS control unit and the ADAS control unit 2 (With forward emergency braking) or the ADAS control unit 2 and the chassis control module (Without forward emergency braking).
2. Check the resistance between the ADAS control unit terminals (With forward emergency braking) or the ADAS control unit 2 terminals (Without forward emergency braking).

- With forward emergency braking

ADAS control unit		Resistance (Ω)
Terminal No.		
6	7	Approx. 108 – 132

- Without forward emergency braking

ADAS control unit 2		Resistance (Ω)
Terminal No.		
2	5	Approx. 108 – 132

3. Check the resistance between the ADAS control unit 2 terminals (With forward emergency braking) or the chassis control module terminals (Without forward emergency braking).

- With forward emergency braking

ADAS control unit 2		Resistance (Ω)
Terminal No.		
9	10	Approx. 108 – 132

- Without forward emergency braking

Chassis control module		Resistance (Ω)
Terminal No.		
11	8	Approx. 108 – 132

Is the inspection result normal?

YES >> GO TO 7.
NO >> Replace the ADAS control unit and/or the ADAS control unit 2 (With forward emergency braking) or the ADAS control unit 2 and/or the chassis control module (Without forward emergency braking).

7.CHECK SYMPTOM

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

Inspection result

Reproduced>>GO TO 8.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

8.CHECK UNIT REPRODUCTION

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

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect one of the unit connectors of ITS CAN communication circuit.
   NOTE:
   ADAS control unit and ADAS control unit 2 (With forward emergency braking) or ADAS control unit 2 and chassis control module (Without forward emergency braking) 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.

CHASSIS CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014922829

1.CHECK CAN DIAGNOSIS

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

Are the vehicle CAN communication 1, the vehicle CAN communication 2 and the ITS CAN communication circuits normal?

YES >> GO TO 2.
NO >> Check and repair vehicle CAN communication 1 circuit, vehicle CAN communication 2 circuit and/or ITS CAN communication circuit.

2.CONNECTOR INSPECTION

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

Is the inspection result normal?

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

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of chassis control module.
2. Check the continuity between the chassis control module harness connector terminals.

Chassis control module harness connector			Continuity
Connector No.	Terminal No.		
M96	11	19	Existed
	8	7	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)

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

Chassis control module harness connector			Continuity
Connector No.	Terminal No.		
M96	11	8	Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause.

5.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the chassis control module and the ground.

Chassis control module harness connector		Ground	Continuity
Connector No.	Terminal No.		
M96	11		Not existed
	8		Not existed

Is the inspection result normal?

YES >> GO TO 6.

NO >> Check the harness and repair the root cause.

6.CHECK CHASSIS CONTROL MODULE TERMINATION CIRCUIT

1. Remove the chassis control module.
2. Check the resistance between the chassis control module terminals.

Chassis control module		Resistance (Ω)
Terminal No.		
11	8	Approx. 108 – 132
19	7	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 7.
NO >> Replace the chassis control module.

7.CHECK SYMPTOM

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

Inspection result

Reproduced>>GO TO 8.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

8.CHECK UNIT REPRODUCTION

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

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect one of the unit connectors of chassis communication circuit.
   NOTE:
   Chassis control module 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.

IT CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014922830

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect all the unit connectors on IT CAN communication circuit.
4. Check the terminals and connectors on IT CAN communication circuit 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 3CH CAN gateway.
2. Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	9	13	Existed
	10	14	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 IT CAN communication circuit.
2. Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	9	10	Not existed

Is the inspection result normal?

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

4.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the 3CH CAN gateway and the ground.

3CH CAN gateway harness connector		Ground	Continuity
Connector No.	Terminal No.		
M29	9		Not existed
	10		Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause.

5.CHECK 3CH CAN GATEWAY TERMINATION CIRCUIT

1. Remove the 3CH CAN gateway.
2. Check the resistance between the 3CH CAN gateway terminals.

3CH CAN gateway	Resistance (Ω)
Terminal No.	

9	10	Approx. 108 – 132
13	14	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Replace the 3CH CAN gateway.

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 12V battery cable from the negative terminal.
3. Disconnect one of the unit connectors of IT CAN communication circuit.
   NOTE:
   3CH CAN gateway 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.

DIAGNOSTIC CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000014922831

1.CONNECTOR INSPECTION

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

- Data link connector
- 3CH CAN gateway

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of 3CH CAN gateway.
2. Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	3	11	Existed
	4	12	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)

Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	3	4	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 3CH CAN gateway harness connector and the ground.

3CH CAN gateway harness connector		Ground	Continuity
Connector No.	Terminal No.		
M29	3		Not existed
	4		Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair or replace the root cause.

5.CHECK 3CH CAN GATEWAY TERMINATION CIRCUIT

1. Remove the 3CH CAN gateway.
2. Check the resistance between the 3CH CAN gateway terminals.

3CH CAN gateway	Resistance (Ω)
Terminal No.	

3	4	Approx. 108 – 132
11	12	Approx. 108 – 132

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the diagnostic CAN communication circuit.
NO >> Replace the 3CH CAN gateway.

HEV SYSTEM CAN CIRCUIT

Diagnosis Procedure

INFOID:0000000014922837

DANGER:

Since hybrid vehicles and electric vehicles contain a high voltage battery, there is the risk of electric shock, electric leakage, or similar accidents if the high voltage component and vehicle are handled incorrectly. Be sure to follow the correct work procedures when performing inspection and maintenance.

WARNING:

- **Be sure to remove the service plug in order to disconnect the high voltage circuits before performing inspection or maintenance of high voltage system harnesses and parts.**
- **The removed service plug must always be carried in a pocket of the responsible worker or placed in the tool box during the procedure to prevent the plug from being connected by mistake.**
- **Be sure to wear insulating protective equipment before beginning work on the high voltage system.**
- **Never allow workers other than the responsible person to touch the vehicle containing high voltage parts. To keep others from touching the high voltage parts, these parts must be covered with an insulating sheet except when using them.**
- **Refer to GI-28, "High Voltage Precautions".**

CAUTION:

Never bring the vehicle into the READY status with the service plug removed unless otherwise instructed in the Service Manual. A malfunction may occur if this is not observed.

1. CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect all the control unit connectors on HEV system CAN circuit.
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 (OPEN CIRCUIT)

1. Disconnect the following harness connectors.
- ECM
- Li-ion battery
2. Check the continuity between the ECM harness connector and the Li-ion battery harness connector.

ECM harness connector		Li-ion battery harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E16	138	B59	3	Existed
	137		15	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the harness between the ECM and the Li-ion battery.

3. CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

1. Disconnect all the unit connectors on HEV system CAN circuit.
2. Check the continuity between the ECM harness connector terminals.

ECM harness connector			Continuity
Connector No.	Terminal No.		
E16	138	137	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 ECM harness connector and the ground.

ECM harness connector		Ground	Continuity
Connector No.	Terminal No.		
E16	138		Not existed
	137		Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair or replace the root cause.

5.CHECK ECM AND LI-ION BATTERY CONTROLLER TERMINATION CIRCUIT

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

ECM		Resistance (Ω)
Terminal No.		
138	137	Approx. 108 – 132

3. Check the resistance between the Li-ion battery terminals.

Li-ion battery		Resistance (Ω)
Terminal No.		
3	15	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Replace the ECM and/or the Li-ion battery.

6.CHECK SYMPTOM

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

Inspection result

Reproduced>>GO TO 7.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

7.CHECK CONTROL UNIT REPRODUCTION

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

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect one of the control unit connectors of HEV system CAN circuit.
   NOTE:
   ECM and Li-ion battery controller have a termination circuit. Check other control units first.
4. Connect the 12V battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although control unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

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

PRECAUTION

PRECAUTIONS

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

INFOID:0000000015202520

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, it is recommended that all maintenance and repair be performed by an authorized NISSAN/INFINITI dealer.**
- **Improper repair, 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:

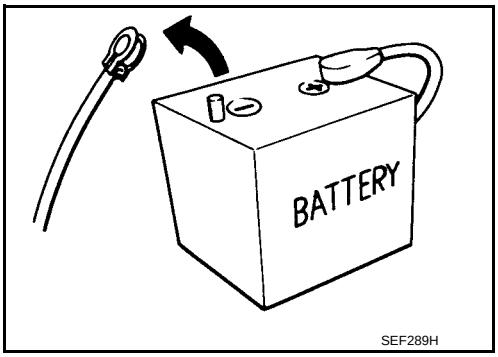
- **When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the Ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.**
- **When using air or electric power tools or hammers, always switch the Ignition OFF, disconnect the battery or batteries, and wait at least three minutes before performing any service.**

Precautions for Removing Battery Terminal

INFOID:0000000014769045

When disconnecting the battery terminal, pay attention to the following.

- Always use a 12V battery as power source.
- Never disconnect battery terminal while engine is running.
- When removing the 12V battery terminal, turn OFF the ignition switch and wait at least 30 seconds.
- For vehicles with the engine listed below, remove the battery terminal after a lapse of the specified time:



BR08DE	: 4 minutes	V9X engine	: 4 minutes
D4D engine	: 20 minutes	YD25DDTi	: 2 minutes
HR09DET	: 12 minutes	YS23DDT	: 4 minutes
HRA2DDT	: 12 minutes	YS23DDTT	: 4 minutes
K9K engine	: 4 minutes	ZD30DDTi	: 60 seconds
M9R engine	: 4 minutes	ZD30DDTT	: 60 seconds
R9M engine	: 4 minutes		

NOTE:
ECU may be active for several tens of seconds after the ignition switch is turned OFF. If the battery terminal is removed before ECU stops, then a DTC detection error or ECU data corruption may occur.

- After high-load driving, if the vehicle is equipped with the V9X engine, turn the ignition switch OFF and wait for at least 15 minutes to remove the battery terminal.

NOTE:

- Turbocharger cooling pump may operate in a few minutes after the ignition switch is turned OFF.
- Example of high-load driving
  - Driving for 30 minutes or more at 140 km/h (86 MPH) or more.
  - Driving for 30 minutes or more on a steep slope.

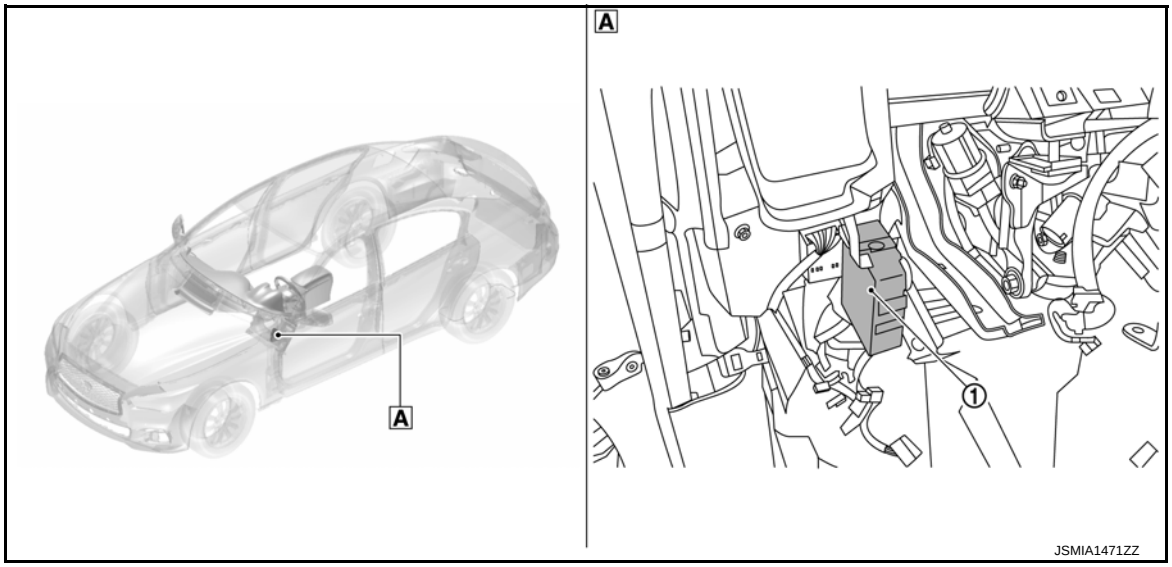
- For vehicles with the 2-batteries, be sure to connect the main battery and the sub battery before turning ON the ignition switch.
  NOTE:
  If the ignition switch is turned ON with any one of the terminals of main battery and sub battery disconnected, then DTC may be detected.
- After installing the 12V battery, always check "Self Diagnosis Result" of all ECUs and erase DTC.
  NOTE:
  The removal of 12V battery may cause a DTC detection error.

SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

INFOID:0000000014769046



① • 3CH CAN gateway*1
• 6CH CAN gateway*2

A Over the instrument lower panel

*1: 2.0L turbo gasoline engine models without automatic drive positioner, VR30DDTT without around view monitor system
*2: 2.0L turbo gasoline engine models with automatic drive positioner, VR30DDTT with around view monitor system

BCM (CAN gateway)

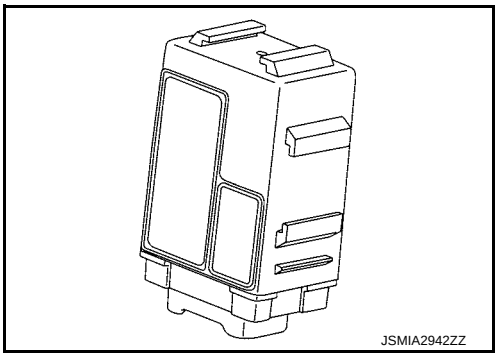
INFOID:0000000014918955

BCM is installed at behind the instrument panel (LH).
BCM transmitted necessary signal to each control unit through vehicle CAN communication 1 circuit and vehicle CAN communication 2 circuit for each system.

3CH CAN Gateway

INFOID:0000000014769047

3CH CAN gateway is installed at behind the glove box.



3CH CAN gateway transmitted necessary signal to each control unit through vehicle CAN communication 1 circuit, diagnostic CAN communication circuit and IT CAN communication circuit for each system.

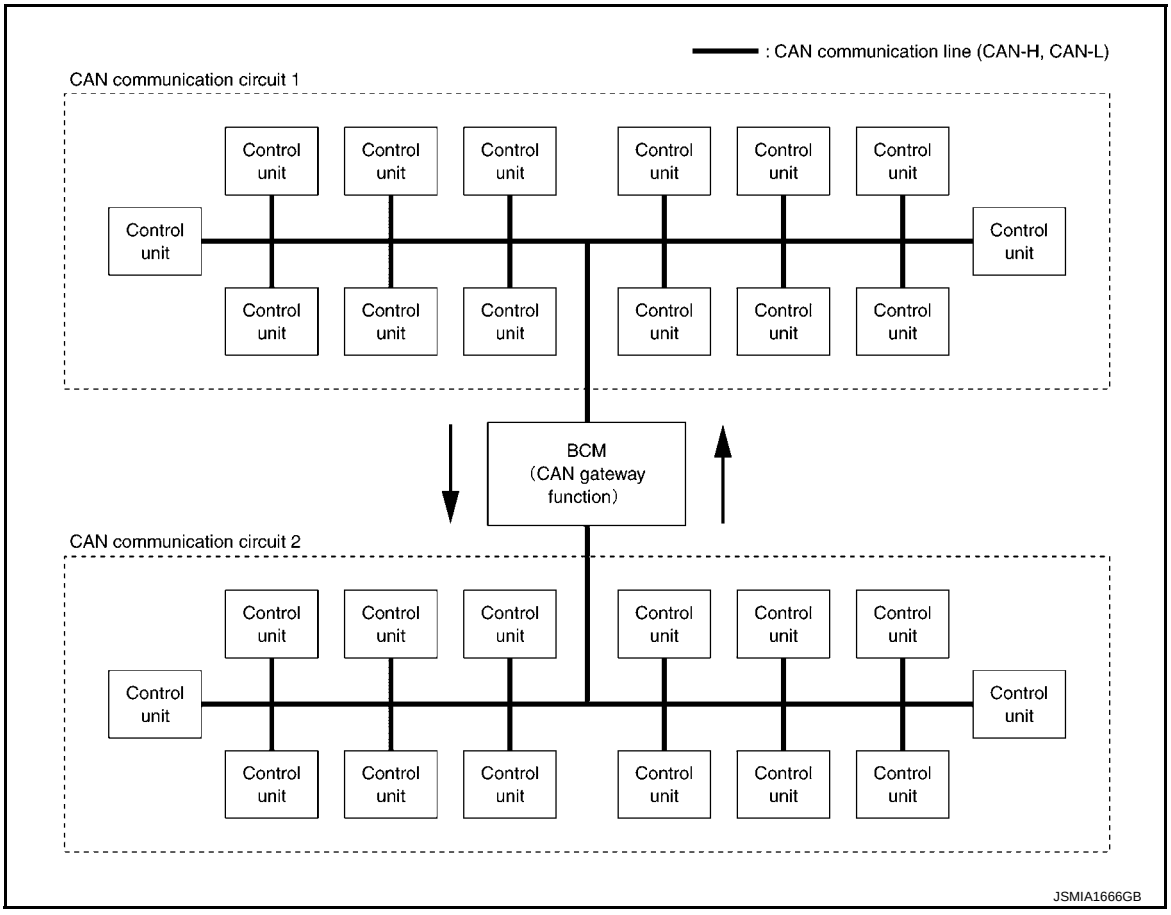
SYSTEM

BCM (CAN GATEWAY)

BCM (CAN GATEWAY) : System Description

INFOID:0000000014918956

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.

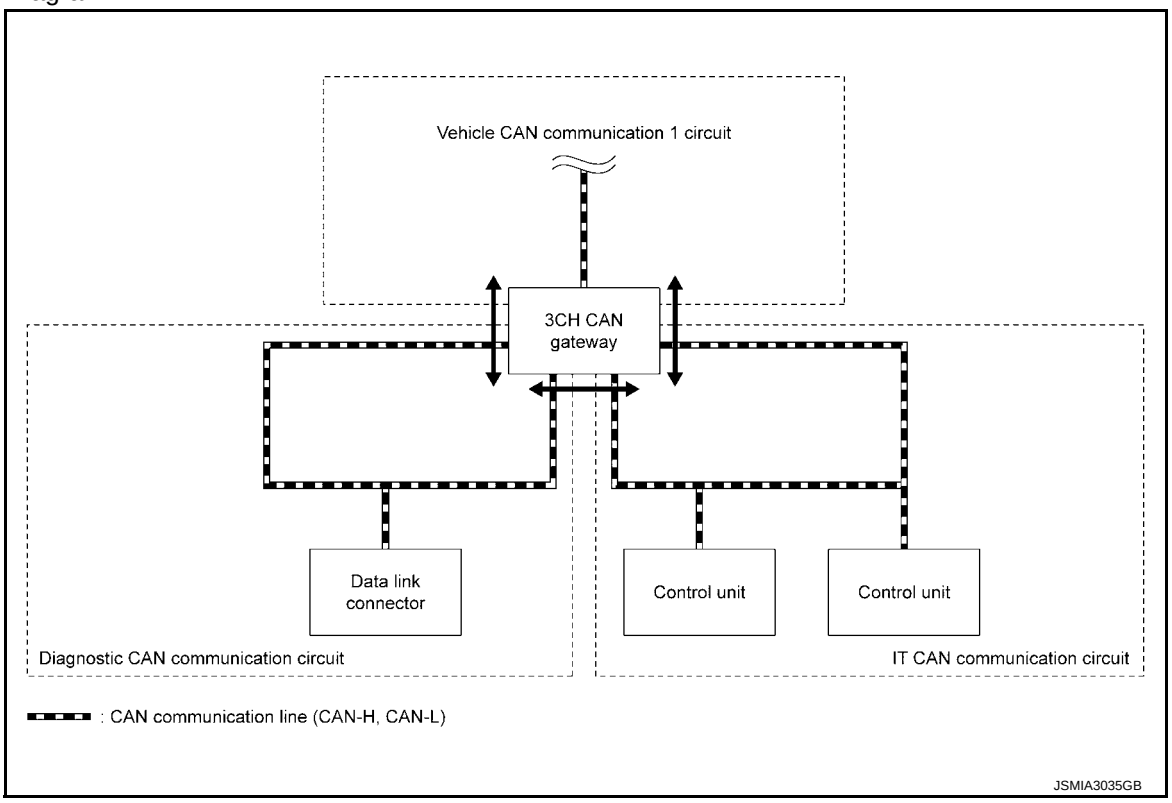
3CH CAN GATEWAY

3CH CAN GATEWAY : System Description

INFOID:0000000014769049

3CH CAN GATEWAY

System Diagram



System Description

- The 3CH CAN gateway system communicates between vehicle CAN communication 1 circuit, diagnostic CAN communication circuit and IT CAN communication circuit.
- This system selects and transmits only necessary information.

DIAGNOSIS SYSTEM (CAN GATEWAY)

BCM (CAN GATEWAY)

BCM (CAN GATEWAY) : CONSULT Function

INFOID:0000000014918957

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-163, "BCM (CAN GATEWAY) : 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.**

3CH CAN GATEWAY

3CH CAN GATEWAY : CONSULT Function

INFOID:0000000014769050

APPLICATION ITEM

CONSULT performs the following functions via CAN communication with 3CH CAN gateway.

Diagnosis mode	Function Description
Self Diagnostic Result	Displays the diagnosis results judged by 3CH CAN gateway.
CAN Diag Support Monitor	The results of transmit/receive diagnosis of CAN communication can be read.
ECU Identification	The 3CH CAN gateway part number is displayed.
Configuration	• Reads and saves the vehicle specification (Type ID). • Writes the vehicle specification (Type ID) when replacing 3CH CAN gateway.

SELF DIAGNOSTIC RESULT

Refer to LAN-164, "3CH CAN GATEWAY : DTC Index".

- When “CRNT” is displayed on “Self Diagnostic Result”
- The system is presently malfunctioning.
- When “PAST” is displayed on “Self Diagnostic 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
ODO/TRIP METER (km)	Displays the total mileage when a DTC detected.

CAN DIAG SUPPORT MONITOR

The results of transmit/receive diagnosis of CAN communication can be read.

ECU IDENTIFICATION

The part number of 3CH CAN gateway is displayed.

CONFIGURATION

Configuration includes functions as follows.

Function		Description
Read / Write Configuration	Before Replace ECU	• Reads the vehicle configuration (Type ID) of current 3CH CAN gateway. • Saves the read vehicle configuration (Type ID).
	After Replace ECU	Writes the vehicle configuration (Type ID) with saved data.
Manual Configuration		Writes the vehicle configuration (Type ID) with manual selection.

CAUTION:

Follow the instructions listed below. Failure to do this may cause malfunctions to the 3CH CAN gateway.:

- **When replacing 3CH CAN gateway, you must perform “Read / Write Configuration” or “Manual Configuration” with CONSULT.**
- **Complete the procedure of “Read / Write Configuration” or “Manual Configuration” in order.**
- **If 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 3CH CAN gateway.**

ECU DIAGNOSIS INFORMATION

CAN GATEWAY

BCM (CAN GATEWAY)

BCM (CAN GATEWAY) : Reference Value

INFOID:0000000014918958

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

BCM (CAN GATEWAY) : DTC Index

INFOID:0000000014918959

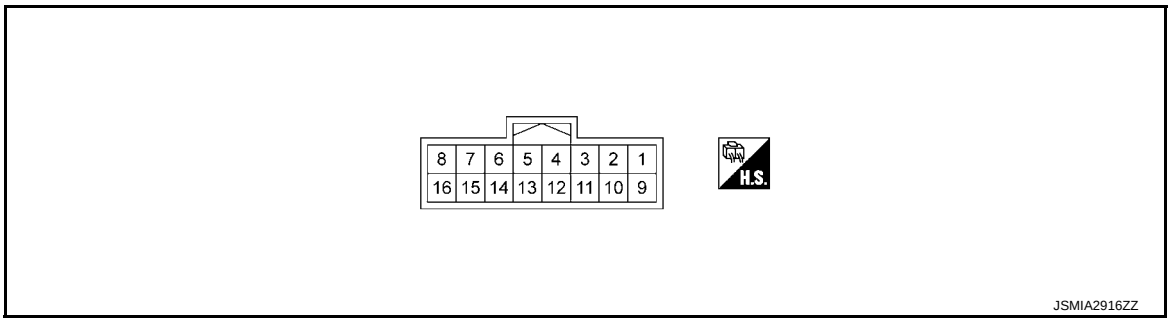
DTC	Reference
No DTC is detected. Further testing may be required.	—
B2600-46: CONFIG ERROR	LAN-172, "BCM (CAN GATEWAY) : DTC Description"
B2600-55: CONFIG ERROR	LAN-174, "DTC Description"

3CH CAN GATEWAY

3CH CAN GATEWAY : Reference Value

INFOID:0000000014769052

TERMINAL LAYOUT



PHYSICAL VALUES

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

Terminal No. (Wire color)		Description		Condition	Standard	Reference value
+	–	Signal name	Input/ Output			
3 (L)	—	Diagnostic CAN communication-H	Input/ Output	—	—	—
4 (P)	—	Diagnostic CAN communication-L	Input/ Output	—	—	—
5 (Y)	6 (B) 7 (B)	Ignition power supply	Input	Ignition switch ON	7 – 16 V	Battery voltage
8 (W)	6 (B) 7 (B)	Battery power supply	Input	Ignition switch OFF	6 – 16 V	Battery voltage
9 (L)	—	IT CAN communication-H	Input/ Output	—	—	—
10 (V)	—	IT CAN communication-L	Input/ Output	—	—	—
11 (L)	—	Diagnostic CAN communication-H	Input/ Output	—	—	—
12 (P)	—	Diagnostic CAN communication-L	Input/ Output	—	—	—
13 (L)	—	IT CAN communication-H	Input/ Output	—	—	—
14 (V)	—	IT CAN communication-L	Input/ Output	—	—	—
15* (L)	—	—	—	—	—	—
16* (G)	—	—	—	—	—	—

*: This harness is not used.

3CH CAN GATEWAY : DTC Inspection Priority Chart

INFOID:0000000014769053

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

Priority	DTC
1	• B2600-46: CONFIG ERROR [CALIB/PRMTER MEMORY ERROR] • U1010-49: CONTROL UNIT(CAN) [INTERNAL ELECTRONIC ERRPR] • U1321-55: CONFIG ERROR [NOT CONFIGURED]
2	U1000-01: CAN COMM CIRCUIT [ELECTRICAL MALFUNCTION]

3CH CAN GATEWAY : DTC Index

INFOID:0000000014769054

DTC	CONSULT display		Reference
—	No DTC is detected. Further testing may be required.		—
U1000-01	CAN COMM CIRCUIT	[ELECTRICAL MALFUNCTION]	LAN-175, "DTC Description"
U1010-49	CONTROL UNIT(CAN)	[INTERNAL ELECTRONIC ERROR]	LAN-176, "DTC Description"

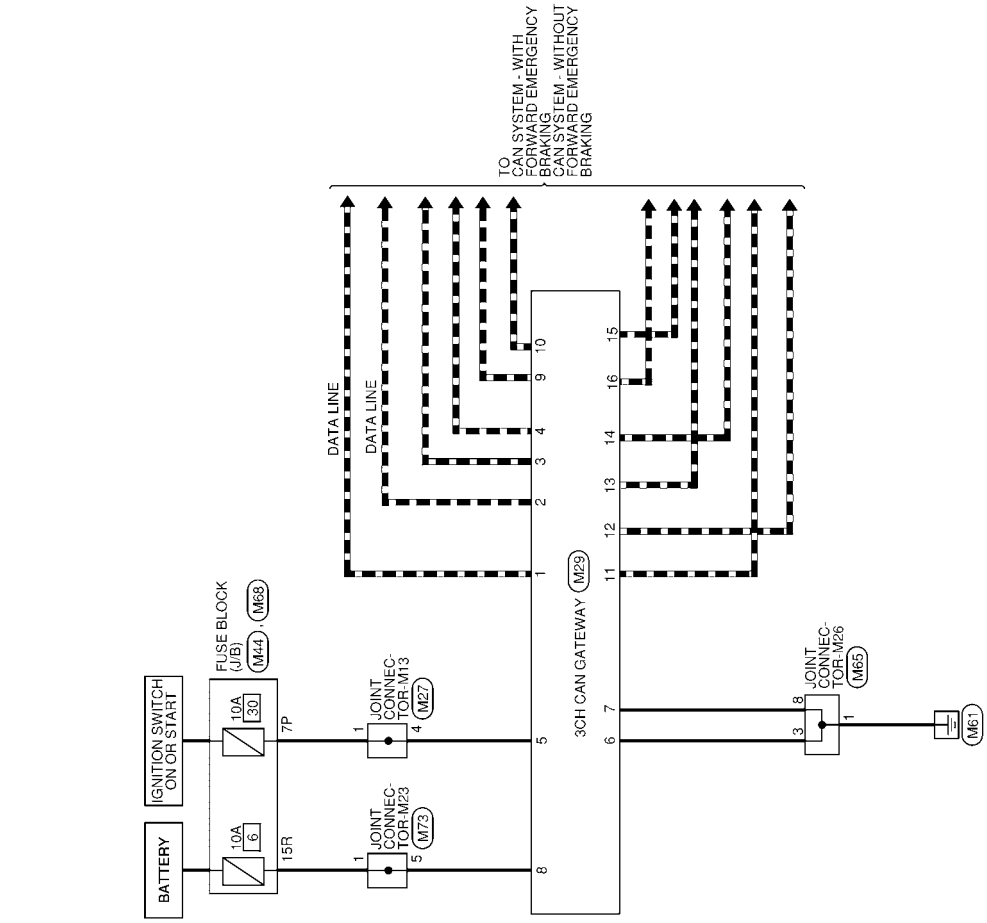
DTC	CONSULT display		Reference
U1321-55	CONFIG ERROR	[NOT CONFIGURAED]	LAN-177, "DTC Description"
B2600-46	CONFIG ERROR	[CALIB/PRMTER MEMORY ERROR]	LAN-172, "3CH CAN GATEWAY : DTC Description"

WIRING DIAGRAM

3CH CAN GATEWAY SYSTEM

Wiring Diagram

INFOID:0000000014769058



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CAN GATEWAY SYSTEM CONNECTORS

Connector No.	M27
Connector Name	JOINT CONNECTOR-M13
Connector Type	SAC08JW
Connector Color	WHITE

H.S.

8 7 6 5 4 3 2 1

Terminal No.	Color of Wire	Signal Name
1	SB	IGNITION
2	SB	IGNITION
3	SB	IGNITION
4	Y	IGNITION
5	SB	IGNITION
6	SB	IGNITION
7	SB	IGNITION
8	SB	IGNITION

Connector No.	M29
Connector Name	3CH CAN GATEWAY
Connector Type	TH16FW-NH
Connector Color	WHITE

H.S.

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

Terminal No.	Color of Wire	Signal Name
1	L	VEHICLE CAN COMMUNICATION 1-H
2	P	VEHICLE CAN COMMUNICATION 1-L
3	L	DIAGNOSTIC CAN COMMUNICATION-H
4	P	DIAGNOSTIC CAN COMMUNICATION-L
5	Y	IGNITION POWER SUPPLY
6	B	GROUND
7	B	GROUND
8	W	BATTERY POWER SUPPLY
9	L	IT CAN COMMUNICATION-H
10	V	IT CAN COMMUNICATION-L
11	L	DIAGNOSTIC CAN COMMUNICATION-H

12	P	DIAGNOSTIC CAN COMMUNICATION-L
13	L	IT CAN COMMUNICATION-H
14	V	IT CAN COMMUNICATION-L
15	L	-
16	G	-

Connector No.	M44
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS16FW-CS
Connector Color	WHITE

H.S.

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

Terminal No.	Color of Wire	Signal Name
1P	R	IGNITION
2P	G	IGNITION
3P	Y	IGNITION RELAY-2 CONTROL
4P	LG	REAR WINDOW DEFOGGER RELAY OUTPUT
5P	GR	REAR WINDOW DEFOGGER RELAY OUTPUT
6P	LA/R	REAR WINDOW DEFOGGER RELAY CONTROL
7P	Y	IGNITION
8P	V	IGNITION
9P	L	BATTERY
10P	LG	IGNITION
11P	-	-
12P	-	-
13P	G	BATTERY
14P	-	-
15P	L	BATTERY
16P	LA/W	FRONT BLOWER MOTOR RELAY CONTROL

Connector No.	M65
Connector Name	JOINT CONNECTOR-M26
Connector Type	SAC08JW
Connector Color	WHITE

H.S.

8 7 6 5 4 3 2 1

Terminal No.	Color of Wire	Signal Name
1	B	GROUND
2	B	GROUND
3	B	GROUND
4	B	GROUND
5	B	GROUND
6	B	GROUND
7	B	GROUND
8	B	GROUND

Connector No.	M68
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS16FBR-CS
Connector Color	BROWN

H.S.

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

Terminal No.	Color of Wire	Signal Name
1R	V	ILLUMINATION +
2R	G	IGNITION
3R	V	BATTERY
4R	-	-
5R	-	-
6R	LA/L	ACCESSORY
7R	LA/V	BATTERY
8R	-	-
9R	-	-
10R	GR	BATTERY
11R	-	-
12R	-	-
13R	-	-
14R	W	BATTERY
15R	W	BATTERY

16R	GR	ACCESSORY

Connector No.	M73
Connector Name	JOINT CONNECTOR-M23
Connector Type	SAC08JW
Connector Color	WHITE

H.S.

8 7 6 5 4 3 2 1

Terminal No.	Color of Wire	Signal Name
1	W	BATTERY
2	GR	BATTERY
3	W	BATTERY
4	W	BATTERY
5	W	BATTERY
6	W	BATTERY
7	W	BATTERY
8	W	BATTERY

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BASIC INSPECTION

ADDITIONAL SERVICE WHEN REPLACING CAN GATEWAY

3CH CAN GATEWAY

3CH CAN GATEWAY : Description

INFOID:0000000014769060

For work procedure, refer to LAN-168, "3CH CAN GATEWAY : Work Procedure".

BEFORE REPLACEMENT

When replacing 3CH CAN gateway, save or print current vehicle specification (Type ID) with CONSULT configuration before replacement.

NOTE:

If “Before Replace ECU” of “Read / Write Configuration” can not be used, use the “Manual Configuration” after replacing 3CH CAN gateway.

AFTER REPLACEMENT

CAUTION:

Follow the instructions listed below. Failure to do this may cause malfunctions to the 3CH CAN gateway.:

- **When replacing 3CH CAN gateway, you must perform “Read / Write Configuration” or “Manual Configuration” with CONSULT.**
- **Complete the procedure of “Read / Write Configuration” or “Manual Configuration” in order.**
- **If incorrect “Read / Write Configuration” or “Manual Configuration”, incidents might occur.**
- **Never perform “Read / Write Configuration” or “Manual Configuration” except for new 3CH CAN gateway.**

3CH CAN GATEWAY : Work Procedure

INFOID:0000000014769061

1. SAVING VEHICLE SPECIFICATION

CONSULT Configuration

Perform “Before Replace ECU” of “Read / Write Configuration” to save or print current vehicle specification (Type ID). Refer to LAN-169, "3CH CAN GATEWAY : Work Procedure (Before Replacement)".

NOTE:

If “Before Replace ECU” of “Read / Write Configuration” can not be used, use the “Manual Configuration” after replacing 3CH CAN gateway.

>> GO TO 2.

2. REPLACE 3CH CAN GATEWAY

Replace 3CH CAN gateway. Refer to LAN-179, "Removal and Installation".

>> GO TO 3.

3. WRITING VEHICLE SPECIFICATION

CONSULT Configuration

Perform “After Replace ECU” of “Read / Write Configuration” or “Manual Configuration” to write vehicle specification (Type ID). Refer to LAN-170, "3CH CAN GATEWAY : Work Procedure (After Replacement)".

>> 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

CONFIGURATION (CAN GATEWAY)

BCM (CAN GATEWAY)

BCM (CAN GATEWAY) : Work Procedure

INFOID:0000000014918960

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. Identify the correct model and configuration list. Refer to LAN-169, "BCM (CAN GATEWAY) : Configuration List".
   NOTE:
   If items are not displayed, go to step 4.
3. Confirm and/or change setting value for each item.
4. Touch “Next”.
5. Touch “OK”.
6. 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

BCM (CAN GATEWAY) : Configuration List

INFOID:0000000014918961

CAUTION:
Check vehicle specifications before servicing.

MANUAL SETTING ITEM		NOTE
Items	Setting value	
TELEMATICS	WITH ⇔ WITHOUT	• WITH: With telematics system • WITHOUT: Without telematics system

⇔: Items which confirm vehicle specifications.

3CH CAN GATEWAY

3CH CAN GATEWAY : Work Procedure (Before Replacement)

INFOID:0000000014769064

1.CHECKING TYPE ID (1)

1. Use FAST (service parts catalogue) to search 3CH CAN gateway of the applicable vehicle and find “Type ID”.
2. Print out “Type ID”.

>> GO TO 2.

2.CHECKING TYPE ID (2)

CONSULT Configuration
1. Select “Before Replace ECU” of “Read/Write Configuration”.
2. Check that “Type ID” is displayed on the CONSULT screen.

Is “Type ID” displayed?

YES >> GO TO 3.
NO >> WORK END (Use the “Manual Configuration” after replacing 3CH CAN gateway.)

3.VERIFYING TYPE ID (1)

CONSULT Configuration
Compare a “Type ID” displayed on the CONSULT screen with the one searched by using FAST (service parts catalogue) to check that these “Type ID” agree with each other.
NOTE:
For the “Type ID” searched by using FAST (service parts catalog), use the last five digits of the “Type ID”.

>> GO TO 4.

4.SAVING TYPE ID

CONSULT Configuration
Save “Type ID” on CONSULT.

>> WORK END

3CH CAN GATEWAY : Work Procedure (After Replacement)

INFOID:0000000014769065

CAUTION:
- **Use “Manual Configuration” only when “TYPE ID” of CAN gateway cannot be read.**
- **If an error occurs during configuration, start over from the beginning.**

1.CHECKING THAT “TYPE ID” IS SAVED ON CONSULT

Check that “TYPE ID” is saved on CONSULT.

Is “TYPE ID” saved on CONSULT?

YES >> GO TO 2.
NO >> GO TO 3.

2.WRITING (AUTOMATIC WRITING)

CONSULT Configuration
1. Select “After Replace ECU” of “Re/programming, Configuration” or that of “Read / Write Configuration”.
2. Select the “Type ID” agreeing with the one stored on CONSULT and the one searched by using FAST (service parts catalogue).
   NOTE:
   For the “Type ID” searched by using FAST (service parts catalog), use the last five digits of the “Type ID”.
3. Write the “Type ID” into the 3CH CAN gateway.

>> GO TO 4.

3.WRITING (MANUAL WRITING)

CONSULT Configuration
1. Select “Manual Configuration”.
2. Select the “Type ID” agreeing with the one stored on CONSULT and the one searched by using FAST (service parts catalogue).
   NOTE:

For the “Type ID” searched by using FAST (service parts catalog), use the last five digits of the “Type ID”.

3. Write the “Type ID” into the 3CH CAN gateway.

>> GO TO 4.

4. VERIFYING TYPE ID (2)

Compare “Type ID” written into the 3CH CAN gateway with the one searched by using FAST (service parts catalogue) to check that these “Type ID” agree with each other.

NOTE:
For the “Type ID” searched by using FAST (service parts catalog), use the last five digits of the “Type ID”.

>> GO TO 5.

5. PERFORM SELF-DIAGNOSIS RESULT

1. Erase “self-diagnosis result” with CONSULT.
2. Turn the ignition switch OFF.
3. Turn the ignition switch ON and wait for 2 seconds or more.
4. Perform “All DTC reading” with CONSULT.

Is displayed any DTC for CAN communication circuit?

YES >> Repair the CAN communication circuit.
NO >> WORK END

DTC/CIRCUIT DIAGNOSIS

B2600-46 CONFIG ERROR

BCM (CAN GATEWAY)

BCM (CAN GATEWAY) : DTC Description

INFOID:0000000014918962

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-172, "BCM (CAN GATEWAY) : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

BCM (CAN GATEWAY) : Diagnosis Procedure

INFOID:0000000014918963

1.PERFORM DTC CONFIRMATION PROCEDURE AGAIN

1. Turn ignition switch ON.
2. Erase DTC.
3. Perform DTC confirmation procedure again. Refer to LAN-172, "BCM (CAN GATEWAY) : DTC Description".
4. Check DTC.

Is DTC B2600-46 detected again?

YES >> Replace BCM. Refer to BCS-73, "Removal and Installation".
NO >> INSPECTION END

3CH CAN GATEWAY

3CH CAN GATEWAY : DTC Description

INFOID:0000000014769068

DTC DETECTION LOGIC

DTC	Trouble diagnosis (Trouble diagnosis contents)		Detecting condition
B2600-46	CONFIG ERROR (Configuration error)	[CALIB/PRMTER MEMORY ERROR]	When errors are detected in the configuration data stored in the 3CH CAN gateway.

POSSIBLE CAUSE

3CH CAN gateway

FAIL-SAFE

Transmission and reception of the signal between vehicle CAN communication 1 circuit, IT CAN communication circuit and diagnostic CAN communication circuit 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 “3ch CAN GATEWAY” using CONSULT.
3. Check DTC.

Is DTC B2600-46 detected?

YES >> Proceed to LAN-173, "3CH CAN GATEWAY : Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

3CH CAN GATEWAY : Diagnosis Procedure

INFOID:0000000014769069

1.PERFORM CONFIGURATION OF 3CH CAN GATEWAY

Perform 3CH CAN gateway Configuration. Refer to LAN-168, "3CH CAN GATEWAY : Description".

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE AGAIN

1. Turn ignition switch ON.
2. Perform DTC confirmation procedure again. Refer to LAN-172, "3CH CAN GATEWAY : DTC Description".
3. Check DTC.

Is DTC B2600-46 displayed?

YES >> Replace 3CH CAN gateway. Refer to LAN-179, "Removal and Installation".
NO >> INSPECTION END

B2600-55 CONFIG ERROR

DTC Description

INFOID:0000000014918964

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-174, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000014918965

1.PERFORM CONFIGURATION OF CAN GATEWAY

Perform CAN gateway configuration. Refer to LAN-169, "BCM (CAN GATEWAY) : 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-174, "DTC Description".
3. Check DTC.

Is DTC B2600-55 detected again?

YES >> Replace BCM. Refer to BCS-73, "Removal and Installation".
NO >> INSPECTION END

U1000-01 CAN COMM CIRCUIT

DTC Description

INFOID:0000000014769072

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 independently). In CAN communication, control units are connected with 2 communication lines (CAN-H, CAN-L) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.
CAN Communication Signal Chart. Refer to LAN-44, "CAN COMMUNICATION SYSTEM : CAN Communication Signal Chart".

DTC DETECTION LOGIC

DTC	Trouble diagnosis (Trouble diagnosis contents)		Detecting condition
U1000-01	CAN COMM CIRCUIT (CAN communication circuit)	[ELECTRICAL MALFUNCTION]	When 3CH CAN gateway cannot communicate CAN communication signal continuously for 2 seconds or more.

POSSIBLE CAUSE

CAN communication system

FAIL-SAFE

Only the CAN signal transmission of control unit which cannot communicate cannot be transmitted

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 “3ch CAN GATEWAY” using CONSULT.
3. Check DTC.

Is DTC U1000-01 detected?

YES >> Proceed to LAN-175, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000014769073

1.PERFORM DTC CONFIRMATION PROCEDURE AGAIN

1. Turn ignition switch ON.
2. Erase DTC.
3. Perform DTC confirmation procedure again. Refer to LAN-175, "DTC Description".
4. Check DTC.

Is DTC U1000-01 displayed?

YES >> Perform trouble diagnosis procedure for CAN communication system. Refer to LAN-26, "Trouble Diagnosis Flow Chart".
NO >> INSPECTION END

U1010-49 CONTROL UNIT(CAN)

DTC Description

INFOID:0000000014769076

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 independently). In CAN communication, control units are connected with 2 communication lines (CAN-H, CAN-L) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.
CAN Communication Signal Chart. Refer to LAN-44, "CAN COMMUNICATION SYSTEM : CAN Communication Signal Chart".

DTC DETECTION LOGIC

DTC	Trouble diagnosis (Trouble diagnosis contents)		Detecting condition
U1010-49	CONTROL UNIT (CAN) [Control unit (CAN)]	[INTERNAL ELECTRONIC ERROR]	When an error is detected during the initial diagnosis for CAN controller of 3CH CAN gateway.

POSSIBLE CAUSE

3CH CAN gateway

FAIL-SAFE

Transmission and reception of the signal between vehicle CAN communication 1 circuit, IT CAN communication circuit and diagnostic CAN communication circuit 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 “3ch CAN GATEWAY” using CONSULT.
3. Check DTC.

Is DTC U1010-49 detected?

YES >> Proceed to LAN-176, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000014769077

1.PERFORM DTC CONFIRMATION PROCEDURE AGAIN

1. Turn ignition switch ON.
2. Erase DTC.
3. Perform DTC confirmation procedure again. Refer to LAN-176, "DTC Description".
4. Check DTC.

Is DTC U1010-49 displayed?

YES >> Replace 3CH CAN gateway. Refer to LAN-179, "Removal and Installation".
NO >> INSPECTION END

U1321-55 CONFIG ERROR

DTC Description

INFOID:0000000014769080

DTC DETECTION LOGIC

DTC	Trouble diagnosis (Trouble diagnosis contents)		Detecting condition
U1321-55	CONFIG ERROR (Configuration error)	[NOT CONFIGURED]	When no data stored in the 3CH CAN gateway.

POSSIBLE CAUSE

- Configuration is incomplete
- 3CH CAN gateway

FAIL-SAFE

Transmission and reception of the signal between vehicle CAN communication 1 circuit, IT CAN communication circuit and diagnostic CAN communication circuit 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 “3ch CAN GATEWAY” using CONSULT.
3. Check DTC.

Is DTC U1321-55 detected?

YES >> Proceed to LAN-177, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: GI-54, "Intermittent Incident".
NO-2 >> Confirmation after repair: INSPECTION END

Diagnosis Procedure

INFOID:0000000014769081

1.PERFORM CONFIGURATION OF 3CH CAN GATEWAY

Perform 3CH CAN gateway Configuration. Refer to LAN-168, "3CH CAN GATEWAY : Description".

>> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE AGAIN

1. Turn ignition switch ON.
2. Perform DTC confirmation procedure again. Refer to LAN-177, "DTC Description".
3. Check DTC.

Is DTC U1321-55 displayed?

YES >> Replace 3CH CAN gateway. Refer to LAN-179, "Removal and Installation".
NO >> INSPECTION END

POWER SUPPLY AND GROUND CIRCUIT

Diagnosis Procedure

INFOID:0000000014769084

1.CHECK FUSE

Check that the following fuse are not blown.

Signal name	Fuse No.
Battery power supply	6
Ignition power supply	30

Is the fuse blown (open)?

YES >> Replace the blown fuse after repairing the affected circuit if a fuse is blown.
NO >> GO TO 2.

2.CHECK POWER SUPPLY CIRCUIT

1. Turn the ignition switch OFF.
2. Disconnect the connector of 3CH CAN gateway.
3. Check voltage between 3CH CAN gateway harness connector and ground.

Terminals			Condition	Voltage (Standard)	Voltage (Reference value)
(+)		(–)			
3CH CAN gateway		Ground	Ignition switch		
Connector	Terminal				
M29	8		OFF	6 – 16 V	Battery voltage
	5		ON	7 – 16 V	Battery voltage

Is the measurement value normal?

YES >> GO TO 3.
NO >> Repair harness or connector.

3.CHECK GROUND CIRCUIT

Check continuity between 3CH CAN gateway harness connector and ground.

3CH CAN gateway		Ground	Continuity
Connector	Terminal		
M29	6		Existed
	7		

Does continuity exist?

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

REMOVAL AND INSTALLATION

3CH CAN GATEWAY

Removal and Installation

INFOID:0000000014769086

NOTE:
Before replacing 3CH CAN gateway, perform “Before Replace ECU” of “Read / Write Configuration” to save or print current vehicle specification (Type ID). Refer to LAN-168, "3CH CAN GATEWAY : Description".

REMOVAL

1. Remove instrument lower panel LH. Refer to IP-22, "Removal and Installation".
2. Disconnect 3CH CAN gateway connector.
3. Remove mounting screw to remove 3CH CAN gateway.

INSTALLATION

Install in the reverse order of removal.

CAUTION:
To prevent malfunction, be sure to perform “After Replace ECU” of “Read / Write Configuration” or “Manual Configuration” when replacing 3CH CAN gateway. Refer to LAN-168, "3CH CAN GATEWAY : Description".

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN IPDM-E AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000015202522

1.CHECK CONNECTOR

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

- Harness connector 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		60J	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)

1. Disconnect the connector of combination meter.
2. Check the continuity between the harness connector and the combination meter harness connector.

Harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	61J	M77	41	Existed
	60J		42	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 combination meter.
NO >> Repair the main line between the harness connector M31 and the combination meter.

MAIN LINE BETWEEN M&A AND STRG CIRCUIT

Diagnosis Procedure

INFOID:0000000015202524

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

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

Combination meter harness connector		Steering angle sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M77	41	M56	5	Existed
	42		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the steering angle sensor.
NO >> Repair the main line between the combination meter and the steering angle sensor.

MAIN LINE BETWEEN EV/HEV AND HV BAT CIRCUIT

Diagnosis Procedure

INFOID:0000000015202525

1.CHECK CONNECTOR

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

- Harness connector 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.

- HPCM
- Harness connectors E152 and M31

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

HPCM harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E130	97	E152	70J	Existed
	98		69J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the HPCM and the harness connector E152.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors M69 and B41.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	70J	M69	12	Existed
	69J		11	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the HPCM and the Li-ion battery.
NO >> Repair the main line between the harness connector M31 and the Li-ion battery.

ECM BRANCH LINE CIRCUIT (VEHICLE CAN COMMUNICATION 1 CIRCUIT)

Diagnosis Procedure

INFOID:0000000015202526

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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	124	123	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line (Vehicle CAN communication 1 circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to EC-184, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to EC-595, "Removal and Installation".
YES (Past error)>>Error was detected in the ECM branch line (Vehicle CAN communication 1 circuit side).
NO >> Repair the power supply and the ground circuit.

ECM BRANCH LINE CIRCUIT (HEV SYSTEM CAN CIRCUIT)

Diagnosis Procedure

INFOID:0000000015202527

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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	138	137	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line (HEV system CAN circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to EC-184, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to EC-595, "Removal and Installation".
YES (Past error)>>Error was detected in the ECM branch line (HEV system CAN circuit side).
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202528

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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	19	30	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-169, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-204, "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.

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

Diagnosis Procedure

INFOID:0000000015202529

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

HPCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E130	84	83	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the HPCM branch line (Vehicle CAN communication 1 circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the HPCM. Refer to HBC-117, "HPCM : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the HPCM. Refer to HBC-335, "Removal and Installation".
YES (Past error)>>Error was detected in the HPCM branch line (Vehicle CAN communication 1 circuit side)
NO >> Repair the power supply and the ground circuit.

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

Diagnosis Procedure

INFOID:0000000015202530

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

HPCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E130	97	98	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Replace the HPCM branch line (HEV system CAN circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the HPCM. Refer to HBC-117, "HPCM : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the HPCM. Refer to HBC-335, "Removal and Installation".
YES (Past error)>>Error was detected in the HPCM branch line (HEV system CAN circuit side).
NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202531

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
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-45, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-46, "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.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202532

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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-62, "COMBINATION METER : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to MWI-81, "Removal and Installation".
YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

3CH CGW BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202533

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 3CH CAN gateway 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 3CH CAN gateway.
2. Check the resistance between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M29	1	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the 3CH CAN gateway branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the 3CH CAN gateway. Refer to LAN-178, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the 3CH CAN gateway. Refer to LAN-179, "Removal and Installation".
YES (Past error)>>Error was detected in the 3CH CAN gateway branch line.
NG >> Repair the power supply and the ground circuit.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202534

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 12V 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-35, "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 (VEHICLE CAN COMMUNICATION 1 CIRCUIT)

Diagnosis Procedure

INFOID:0000000015202535

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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 (Vehicle CAN communication 1 circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the chassis control module. Refer to DAS-523, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the chassis control module. Refer to DAS-529, "Removal and Installation".
YES (Past error)>>Error was detected in the chassis control module branch line (Vehicle CAN communication 1 circuit side).
NG >> Repair the power supply and the ground circuit.

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202629

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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-63, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-208, "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.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202630

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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 BCS-66, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-73, "Removal and Installation".
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

BRAKE BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202631

1.CHECK CONNECTOR

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

- Hydraulic brake booster unit
- BCM
- E152
- 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 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of BCM.
2. Disconnect the connector of hydraulic brake booster unit.
3. Check the resistance between the hydraulic brake booster unit harness connector terminals.

Hydraulic brake booster unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E35	9	10	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the hydraulic brake booster unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the hydraulic brake booster unit. Refer to BR-39, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the hydraulic brake booster unit. Refer to BR-65, "Removal and Installation".
YES (Past error)>>Error was detected in the hydraulic brake booster unit branch line.
NO >> Repair the power supply and the ground circuit.

EPS/DAST 3 BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202632

1.CHECK CONNECTOR

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

- EPS 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of BCM.
2. Disconnect the connector of EPS control unit.
3. 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 4.
NO >> Repair the EPS control unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to STC-18, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to STC-39, "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.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202633

1.CHECK CONNECTOR

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

- A/C auto amp.
- 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

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

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

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the A/C auto amp. branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the A/C auto amp. Refer to HAC-107, "A/C AUTO AMP. : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the A/C auto amp. Refer to HAC-120, "Removal and Installation".
YES (Past error)>>Error was detected in the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.

VSP BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202634

1.CHECK CONNECTOR

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

- Approaching vehicle sound for pedestrians (VSP) control unit
- BCM
- 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 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of BCM.
2. Disconnect the connector of approaching vehicle sound for pedestrians (VSP) control unit.
3. Check the resistance between the approaching vehicle sound for pedestrians (VSP) control unit harness connector terminals.

Approaching vehicle sound for pedestrians (VSP) control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E154	6	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the approaching vehicle sound for pedestrians (VSP) control unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the approaching vehicle sound for pedestrians (VSP) control unit. Refer to VSP-32, "APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the approaching vehicle sound for pedestrians (VSP) control unit. Refer to VSP-35, "Removal and Installation".
YES (Past error)>>Error was detected in the approaching vehicle sound for pedestrians (VSP) control unit branch line.
NO >> Repair the power supply and the ground circuit.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202635

1.CHECK CONNECTOR

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

- 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-193, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the TCM. Refer to TM-213, "Removal and Installation".

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

INV/MC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202636

1.CHECK CONNECTOR

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

- Traction motor inverter
- Harness connector F6
- Harness connector E4

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

Traction motor inverter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F36	27	35	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Replace the traction motor inverter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the traction motor inverter. Refer to TMS-68, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the traction motor inverter. Refer to TMS-132, "Removal and Installation".
YES (Past error)>>Error was detected in the traction motor inverter branch line.
NO >> Repair the power supply and the ground circuit.

HV BAT BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202637

DANGER:

Since hybrid vehicles and electric vehicles contain a high voltage battery, there is the risk of electric shock, electric leakage, or similar accidents if the high voltage component and vehicle are handled incorrectly. Be sure to follow the correct work procedures when performing inspection and maintenance.

WARNING:

- **Be sure to remove the service plug in order to disconnect the high voltage circuits before performing inspection or maintenance of high voltage system harnesses and parts.**
- **The removed service plug must always be carried in a pocket of the responsible worker or placed in the tool box during the procedure to prevent the plug from being connected by mistake.**
- **Be sure to wear insulating protective equipment before beginning work on the high voltage system.**
- **Never allow workers other than the responsible person to touch the vehicle containing high voltage parts. To keep others from touching the high voltage parts, these parts must be covered with an insulating sheet except when using them.**
- **Refer to GI-28, "High Voltage Precautions".**

CAUTION:

Never bring the vehicle into the READY status with the service plug removed unless otherwise instructed in the Service Manual. A malfunction may occur if this is not observed.

1. CHECK CONNECTOR

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

- Li-ion battery
- Harness connector B41
- Harness connector M69

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

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

Li-ion battery harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B59	3	15	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Replace the Li-ion battery branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Li-ion battery. Refer to HBB-149, "LI-ION BATTERY CONTROLLER : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the Li-ion battery. Refer to HBB-155, "Removal and Installation".
YES (Past error)>>Error was detected in the Li-ion battery controller branch line.
NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202638

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.

VEHICLE CAN COMMUNICATION 1 CIRCUIT

Diagnosis Procedure

INFOID:0000000015202639

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect all the unit connectors on vehicle CAN communication 1 circuit.
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 3CH CAN gateway terminals.

3CH CAN gateway			Continuity
Connector No.	Terminal No.		
M29	1	2	Not 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)

Check the continuity between the 3CH CAN gateway and the ground.

3CH CAN gateway		Ground	Continuity
Connector No.	Terminal No.		
M29	1		Not existed
	2		Not existed

Is the inspection result normal?

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

4.CHECK ECM AND BCM TERMINATION CIRCUIT

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

ECM		Resistance (Ω)
Terminal No.		
124	123	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 12V battery cable from the negative terminal.
3. Disconnect one of the unit connectors of vehicle CAN communication 1 circuit.
   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.

VEHICLE CAN COMMUNICATION 2 CIRCUIT

Diagnosis Procedure

INFOID:0000000015202648

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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 vehicle CAN communication 2 circuit.
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 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 BCM.

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 12V battery cable from the negative terminal.
3. Disconnect one of the unit connectors of vehicle CAN communication 2 circuit.
   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.

DIAGNOSTIC CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000015202649

1.CONNECTOR INSPECTION

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

- Data link connector
- 3CH CAN gateway

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of 3CH CAN gateway.
2. Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	3	11	Existed
	4	12	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)

Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	3	4	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 3CH CAN gateway harness connector and the ground.

3CH CAN gateway harness connector		Ground	Continuity
Connector No.	Terminal No.		
M29	3		Not existed
	4		Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair or replace the root cause.

5.CHECK 3CH CAN GATEWAY TERMINATION CIRCUIT

1. Remove the 3CH CAN gateway.
2. Check the resistance between the 3CH CAN gateway terminals.

3CH CAN gateway	Resistance (Ω)
Terminal No.	

3	4	Approx. 108 – 132
11	12	Approx. 108 – 132

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the diagnostic CAN communication circuit.
NO >> Replace the 3CH CAN gateway.

HEV SYSTEM CAN CIRCUIT

Diagnosis Procedure

INFOID:0000000015202650

DANGER:

Since hybrid vehicles and electric vehicles contain a high voltage battery, there is the risk of electric shock, electric leakage, or similar accidents if the high voltage component and vehicle are handled incorrectly. Be sure to follow the correct work procedures when performing inspection and maintenance.

WARNING:

- **Be sure to remove the service plug in order to disconnect the high voltage circuits before performing inspection or maintenance of high voltage system harnesses and parts.**
- **The removed service plug must always be carried in a pocket of the responsible worker or placed in the tool box during the procedure to prevent the plug from being connected by mistake.**
- **Be sure to wear insulating protective equipment before beginning work on the high voltage system.**
- **Never allow workers other than the responsible person to touch the vehicle containing high voltage parts. To keep others from touching the high voltage parts, these parts must be covered with an insulating sheet except when using them.**
- **Refer to GI-28, "High Voltage Precautions".**

CAUTION:

Never bring the vehicle into the READY status with the service plug removed unless otherwise instructed in the Service Manual. A malfunction may occur if this is not observed.

1. CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect all the control unit connectors on HEV system CAN circuit.
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 (OPEN CIRCUIT)

1. Disconnect the following harness connectors.
- ECM
- Li-ion battery
2. Check the continuity between the ECM harness connector and the Li-ion battery harness connector.

ECM harness connector		Li-ion battery harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E16	138	B59	3	Existed
	137		15	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the harness between the ECM and the Li-ion battery.

3. CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

1. Disconnect all the unit connectors on HEV system CAN circuit.
2. Check the continuity between the ECM harness connector terminals.

ECM harness connector			Continuity
Connector No.	Terminal No.		
E16	138	137	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 ECM harness connector and the ground.

ECM harness connector		Ground	Continuity
Connector No.	Terminal No.		
E16	138		Not existed
	137		Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair or replace the root cause.

5.CHECK ECM AND LI-ION BATTERY CONTROLLER TERMINATION CIRCUIT

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

ECM		Resistance (Ω)
Terminal No.		
138	137	Approx. 108 – 132

3. Check the resistance between the Li-ion battery terminals.

Li-ion battery		Resistance (Ω)
Terminal No.		
3	15	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Replace the ECM and/or the Li-ion battery.

6.CHECK SYMPTOM

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

Inspection result

Reproduced>>GO TO 7.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

7.CHECK CONTROL UNIT REPRODUCTION

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

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect one of the control unit connectors of HEV system CAN circuit.
   NOTE:
   ECM and Li-ion battery controller have a termination circuit. Check other control units first.
4. Connect the 12V battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although control unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

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

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN IPDM-E AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000015202651

1.CHECK CONNECTOR

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

- Harness connector 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		60J	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)

1. Disconnect the connector of combination meter.
2. Check the continuity between the harness connector and the combination meter harness connector.

Harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	61J	M77	41	Existed
	60J		42	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 combination meter.
NO >> Repair the main line between the harness connector M31 and the combination meter.

MAIN LINE BETWEEN M&A AND STRG CIRCUIT

Diagnosis Procedure

INFOID:0000000015202652

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Combination meter
- Steering angle sensor

4. Check the continuity between the combination meter harness connector and the steering angle sensor harness connector.

Combination meter harness connector		Steering angle sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M77	41	M56	5	Existed
	42		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the steering angle sensor.
NO >> Repair the main line between the combination meter and the steering angle sensor.

MAIN LINE BETWEEN RDR-L AND RDR-R CIRCUIT

Diagnosis Procedure

INFOID:0000000015202653

1.CHECK CONNECTOR

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

- Harness connector B49
- Harness connector B140

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Side radar LH
- Harness connectors B49 and B140

2. Check the continuity between the side radar LH harness connector and the harness connector.

Side radar LH harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B35	6	B49	13	Existed
	7		14	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the side radar LH and the harness connector B49.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of side radar RH.
2. Check the continuity between the harness connector and the side radar RH harness connector.

Harness connector		Side radar RH harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B140	13	B105	6	Existed
	14		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar LH and the side radar RH.
NO >> Repair the main line between the harness connector B140 and the side radar RH.

MAIN LINE BETWEEN EV/HEV AND HV BAT CIRCUIT

Diagnosis Procedure

INFOID:0000000015202655

1.CHECK CONNECTOR

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

- Harness connector 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.

- HPCM
- Harness connectors E152 and M31

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

HPCM harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E130	97	E152	70J	Existed
	98		69J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the HPCM and the harness connector E152.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors M69 and B41.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	70J	M69	12	Existed
	69J		11	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the HPCM and the Li-ion battery.
NO >> Repair the main line between the harness connector M31 and the Li-ion battery.

ECM BRANCH LINE CIRCUIT (VEHICLE CAN COMMUNICATION 1 CIRCUIT)

Diagnosis Procedure

INFOID:0000000015202667

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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	124	123	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line (Vehicle CAN communication 1 circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to EC-184, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to EC-595, "Removal and Installation".
YES (Past error)>>Error was detected in the ECM branch line (Vehicle CAN communication 1 circuit side).
NO >> Repair the power supply and the ground circuit.

ECM BRANCH LINE CIRCUIT (HEV SYSTEM CAN CIRCUIT)

Diagnosis Procedure

INFOID:0000000015202682

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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	138	137	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line (HEV system CAN circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to EC-184, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to EC-595, "Removal and Installation".
YES (Past error)>>Error was detected in the ECM branch line (HEV system CAN circuit side).
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202683

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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	19	30	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-169, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-204, "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.

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

Diagnosis Procedure

INFOID:0000000015202690

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

HPCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E130	84	83	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the HPCM branch line (Vehicle CAN communication 1 circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the HPCM. Refer to HBC-117, "HPCM : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the HPCM. Refer to HBC-335, "Removal and Installation".
YES (Past error)>>Error was detected in the HPCM branch line (Vehicle CAN communication 1 circuit side)
NO >> Repair the power supply and the ground circuit.

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

Diagnosis Procedure

INFOID:0000000015202691

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

HPCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E130	97	98	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Replace the HPCM branch line (HEV system CAN circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the HPCM. Refer to HBC-117, "HPCM : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the HPCM. Refer to HBC-335, "Removal and Installation".
YES (Past error)>>Error was detected in the HPCM branch line (HEV system CAN circuit side).
NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202737

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
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-45, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-46, "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.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202738

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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-62, "COMBINATION METER : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to MWI-81, "Removal and Installation".
YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

3CH CGW BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202692

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 3CH CAN gateway 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 3CH CAN gateway.
2. Check the resistance between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M29	1	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the 3CH CAN gateway branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the 3CH CAN gateway. Refer to LAN-178, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the 3CH CAN gateway. Refer to LAN-179, "Removal and Installation".
YES (Past error)>>Error was detected in the 3CH CAN gateway branch line.
NG >> Repair the power supply and the ground circuit.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202693

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 12V 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-35, "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 (VEHICLE CAN COMMUNICATION 1 CIRCUIT)

Diagnosis Procedure

INFOID:0000000015202695

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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 (Vehicle CAN communication 1 circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the chassis control module. Refer to DAS-523, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the chassis control module. Refer to DAS-529, "Removal and Installation".
YES (Past error)>>Error was detected in the chassis control module branch line (Vehicle CAN communication 1 circuit side).
NG >> Repair the power supply and the ground circuit.

CCM BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000015202696

1.CHECK CONNECTOR

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

- Chassis control module
- Harness connector M69
- Harness connector B41

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	11	8	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the chassis control module branch line (ITS CAN communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the chassis control module. Refer to DAS-523, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the chassis control module. Refer to DAS-529, "Removal and Installation".
YES (Past error)>>Error was detected in the chassis control module branch line (ITS CAN commumication circuit side).
NG >> Repair the power supply and the ground circuit.

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202697

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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-63, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-208, "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.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202698

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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 BCS-66, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-73, "Removal and Installation".
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

BRAKE BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202701

1.CHECK CONNECTOR

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

- Hydraulic brake booster unit
- BCM
- E152
- 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 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of BCM.
2. Disconnect the connector of hydraulic brake booster unit.
3. Check the resistance between the hydraulic brake booster unit harness connector terminals.

Hydraulic brake booster unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E35	9	10	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the hydraulic brake booster unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the hydraulic brake booster unit. Refer to BR-39, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the hydraulic brake booster unit. Refer to BR-65, "Removal and Installation".
YES (Past error)>>Error was detected in the hydraulic brake booster unit branch line.
NO >> Repair the power supply and the ground circuit.

EPS/DAST 3 BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202702

1.CHECK CONNECTOR

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

- EPS 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of BCM.
2. Disconnect the connector of EPS control unit.
3. 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 4.
NO >> Repair the EPS control unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to STC-18, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to STC-39, "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.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202703

1.CHECK CONNECTOR

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

- A/C auto amp.
- 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

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

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

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the A/C auto amp. branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the A/C auto amp. Refer to HAC-107, "A/C AUTO AMP. : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the A/C auto amp. Refer to HAC-120, "Removal and Installation".
YES (Past error)>>Error was detected in the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.

VSP BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202704

1.CHECK CONNECTOR

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

- Approaching vehicle sound for pedestrians (VSP) control unit
- BCM
- 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 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of BCM.
2. Disconnect the connector of approaching vehicle sound for pedestrians (VSP) control unit.
3. Check the resistance between the approaching vehicle sound for pedestrians (VSP) control unit harness connector terminals.

Approaching vehicle sound for pedestrians (VSP) control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E154	6	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the approaching vehicle sound for pedestrians (VSP) control unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the approaching vehicle sound for pedestrians (VSP) control unit. Refer to VSP-32, "APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the approaching vehicle sound for pedestrians (VSP) control unit. Refer to VSP-35, "Removal and Installation".
YES (Past error)>>Error was detected in the approaching vehicle sound for pedestrians (VSP) control unit branch line.
NO >> Repair the power supply and the ground circuit.

RDR-R BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202705

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

Side radar RH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B105	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the side radar RH branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar RH. Refer to DAS-376, "SIDE RADAR RH : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the side radar RH. Refer to DAS-405, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar RH branch line.
NO >> Repair the power supply and the ground circuit.

RDR-L BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202706

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

Side radar LH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B35	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the side radar LH branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar LH. Refer to DAS-376, "SIDE RADAR LH : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the side radar LH. Refer to DAS-405, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar LH branch line.
NO >> Repair the power supply and the ground circuit.

ICC 2 BRANCH LINE CIRCUIT (VEHICLE CAN COMMUNICATION 2 CIRCUIT)

Diagnosis Procedure

INFOID:0000000015202707

1.CHECK CONNECTOR

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

- ADAS control unit 2
- Harness connector M52
- Harness connector B43
- 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-634, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

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

ADAS control unit 2 harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M148	9	10	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the ADAS control unit 2 branch line (Vehicle CAN communication 2 circuit side).

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit 2. Refer to DAS-208, "ADAS CONTROL UNIT 2 : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit 2. Refer to DAS-212, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit 2 branch line (Vehicle CAN communication 2 circuit side).
NO >> Repair the power supply and the ground circuit.

ICC 2 BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000015202710

1.CHECK CONNECTOR

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

- ADAS control unit 2
- Harness connector M52 (With forward emergency braking)
- Harness connector B43 (With forward emergency braking)

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 ADAS control unit 2.
2. Check the resistance between the ADAS control unit 2 harness connector terminals.

- With forward emergency braking

ADAS control unit 2 harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M148	9	10	Approx. 108 – 132

- Without forward emergency braking

ADAS control unit 2 harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M148	2	5	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ADAS control unit 2 branch line (ITS CAN communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit 2. Refer to DAS-208, "ADAS CONTROL UNIT 2 : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit 2. Refer to DAS-212, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit 2 branch line (ITS CAN communication circuit side).
NO >> Repair the power supply and the ground circuit.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202711

1.CHECK CONNECTOR

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

- 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-193, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the TCM. Refer to TM-213, "Removal and Installation".

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

INV/MC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202712

1.CHECK CONNECTOR

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

- Traction motor inverter
- Harness connector F6
- Harness connector E4

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

Traction motor inverter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F36	27	35	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Replace the traction motor inverter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the traction motor inverter. Refer to TMS-68, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the traction motor inverter. Refer to TMS-132, "Removal and Installation".
YES (Past error)>>Error was detected in the traction motor inverter branch line.
NO >> Repair the power supply and the ground circuit.

HV BAT BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202713

DANGER:

Since hybrid vehicles and electric vehicles contain a high voltage battery, there is the risk of electric shock, electric leakage, or similar accidents if the high voltage component and vehicle are handled incorrectly. Be sure to follow the correct work procedures when performing inspection and maintenance.

WARNING:

- **Be sure to remove the service plug in order to disconnect the high voltage circuits before performing inspection or maintenance of high voltage system harnesses and parts.**
- **The removed service plug must always be carried in a pocket of the responsible worker or placed in the tool box during the procedure to prevent the plug from being connected by mistake.**
- **Be sure to wear insulating protective equipment before beginning work on the high voltage system.**
- **Never allow workers other than the responsible person to touch the vehicle containing high voltage parts. To keep others from touching the high voltage parts, these parts must be covered with an insulating sheet except when using them.**
- **Refer to GI-28, "High Voltage Precautions".**

CAUTION:

Never bring the vehicle into the READY status with the service plug removed unless otherwise instructed in the Service Manual. A malfunction may occur if this is not observed.

1. CHECK CONNECTOR

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

- Li-ion battery
- Harness connector B41
- Harness connector M69

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

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

Li-ion battery harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B59	3	15	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Replace the Li-ion battery branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Li-ion battery. Refer to HBB-149, "LI-ION BATTERY CONTROLLER : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the Li-ion battery. Refer to HBB-155, "Removal and Installation".
YES (Past error)>>Error was detected in the Li-ion battery controller branch line.
NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202714

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.

VEHICLE CAN COMMUNICATION 1 CIRCUIT

Diagnosis Procedure

INFOID:0000000015202716

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect all the unit connectors on vehicle CAN communication 1 circuit.
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 3CH CAN gateway terminals.

3CH CAN gateway			Continuity
Connector No.	Terminal No.		
M29	1	2	Not 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)

Check the continuity between the 3CH CAN gateway and the ground.

3CH CAN gateway		Ground	Continuity
Connector No.	Terminal No.		
M29	1		Not existed
	2		Not existed

Is the inspection result normal?

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

4.CHECK ECM AND BCM TERMINATION CIRCUIT

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

ECM		Resistance (Ω)
Terminal No.		
124	123	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 12V battery cable from the negative terminal.
3. Disconnect one of the unit connectors of vehicle CAN communication 1 circuit.
   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.

VEHICLE CAN COMMUNICATION 2 CIRCUIT

Diagnosis Procedure

INFOID:0000000015202717

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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 vehicle CAN communication 2 circuit.
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 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 BCM.

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 12V battery cable from the negative terminal.
3. Disconnect one of the unit connectors of vehicle CAN communication 2 circuit.
   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.

ITS CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000015202718

1.CHECK CAN DIAGNOSIS

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

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

YES >> GO TO 2.
NO >> Check and repair vehicle CAN communication 1 circuit and/or vehicle CAN communication 2 circuit.

2.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the ADAS control unit (With forward emergency braking) or the ADAS control unit 2 (Without forward emergency braking) for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

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

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.
- ADAS control unit (With forward emergency braking)
- ADAS control unit 2
- Chassis control module (Without forward emergency braking)
2. Check the continuity between the ADAS control unit harness connector and the ADAS control unit 2 harness connector (With forward emergency braking) or the ADAS control unit 2 harness connector and the chassis control module harness connector (Without forward emergency braking).

• With forward emergency braking

ADAS control unit harness connector		ADAS control unit 2 harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B4	6	M148	9	Existed
	7		10	Existed

• Without forward emergency braking

ADAS control unit 2 harness connector		Chassis control module harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M148	2	M96	11	Existed
	5		8	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the harness between the ADAS control unit and the ADAS control unit 2 (With forward emergency braking) or the ADAS control unit 2 and the chassis control module (Without forward emergency braking).

4.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

1. Disconnect all the unit connectors on ITS CAN communication circuit.
2. Check the continuity between the ADAS control unit harness connector terminals (With forward emergency braking) or the ADAS control unit 2 harness connector terminals (Without forward emergency braking).

• With forward emergency braking

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
B4	6	7	Not existed

- Without forward emergency braking

ADAS control unit 2 harness connector			Continuity
Connector No.	Terminal No.		
B148	2	5	Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause.

5. CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the ADAS control unit harness connector and the ground (With forward emergency braking) or the ADAS control unit 2 harness connector and the ground (Without forward emergency braking).

- With forward emergency braking

ADAS control unit harness connector		Ground	Continuity
Connector No.	Terminal No.		
B4	6		Not existed
	7		Not existed

- Without forward emergency braking

ADAS control unit 2 harness connector		Ground	Continuity
Connector No.	Terminal No.		
B148	2		Not existed
	5		Not existed

Is the inspection result normal?

YES >> GO TO 6.
NO >> Check the harness and repair the root cause.

6. CHECK TERMINATION CIRCUIT

1. Remove the ADAS control unit and the ADAS control unit 2 (With forward emergency braking) or the ADAS control unit 2 and the chassis control module (Without forward emergency braking).
2. Check the resistance between the ADAS control unit terminals (With forward emergency braking) or the ADAS control unit 2 terminals (Without forward emergency braking).

- With forward emergency braking

ADAS control unit		Resistance (Ω)
Terminal No.		
6	7	Approx. 108 – 132

- Without forward emergency braking

ADAS control unit 2		Resistance (Ω)
Terminal No.		
2	5	Approx. 108 – 132

3. Check the resistance between the ADAS control unit 2 terminals (With forward emergency braking) or the chassis control module terminals (Without forward emergency braking).

- With forward emergency braking

ADAS control unit 2		Resistance (Ω)
Terminal No.		
9	10	Approx. 108 – 132

- Without forward emergency braking

Chassis control module		Resistance (Ω)
Terminal No.		
11	8	Approx. 108 – 132

Is the inspection result normal?

YES >> GO TO 7.
NO >> Replace the ADAS control unit and/or the ADAS control unit 2 (With forward emergency braking) or the ADAS control unit 2 and/or the chassis control module (Without forward emergency braking).

7.CHECK SYMPTOM

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

Inspection result

Reproduced>>GO TO 8.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

8.CHECK UNIT REPRODUCTION

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

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect one of the unit connectors of ITS CAN communication circuit.
   NOTE:
   ADAS control unit and ADAS control unit 2 (With forward emergency braking) or ADAS control unit 2 and chassis control module (Without forward emergency braking) 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.

DIAGNOSTIC CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000015202720

1.CONNECTOR INSPECTION

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

- Data link connector
- 3CH CAN gateway

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of 3CH CAN gateway.
2. Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	3	11	Existed
	4	12	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)

Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	3	4	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 3CH CAN gateway harness connector and the ground.

3CH CAN gateway harness connector		Ground	Continuity
Connector No.	Terminal No.		
M29	3		Not existed
	4		Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair or replace the root cause.

5.CHECK 3CH CAN GATEWAY TERMINATION CIRCUIT

1. Remove the 3CH CAN gateway.
2. Check the resistance between the 3CH CAN gateway terminals.

3CH CAN gateway	Resistance (Ω)
Terminal No.	

3	4	Approx. 108 – 132
11	12	Approx. 108 – 132

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the diagnostic CAN communication circuit.
NO >> Replace the 3CH CAN gateway.

HEV SYSTEM CAN CIRCUIT

Diagnosis Procedure

INFOID:0000000015202721

DANGER:

Since hybrid vehicles and electric vehicles contain a high voltage battery, there is the risk of electric shock, electric leakage, or similar accidents if the high voltage component and vehicle are handled incorrectly. Be sure to follow the correct work procedures when performing inspection and maintenance.

WARNING:

- **Be sure to remove the service plug in order to disconnect the high voltage circuits before performing inspection or maintenance of high voltage system harnesses and parts.**
- **The removed service plug must always be carried in a pocket of the responsible worker or placed in the tool box during the procedure to prevent the plug from being connected by mistake.**
- **Be sure to wear insulating protective equipment before beginning work on the high voltage system.**
- **Never allow workers other than the responsible person to touch the vehicle containing high voltage parts. To keep others from touching the high voltage parts, these parts must be covered with an insulating sheet except when using them.**
- **Refer to GI-28, "High Voltage Precautions".**

CAUTION:

Never bring the vehicle into the READY status with the service plug removed unless otherwise instructed in the Service Manual. A malfunction may occur if this is not observed.

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect all the control unit connectors on HEV system CAN circuit.
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 (OPEN CIRCUIT)

1. Disconnect the following harness connectors.
- ECM
- Li-ion battery
2. Check the continuity between the ECM harness connector and the Li-ion battery harness connector.

ECM harness connector		Li-ion battery harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E16	138	B59	3	Existed
	137		15	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the harness between the ECM and the Li-ion battery.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

1. Disconnect all the unit connectors on HEV system CAN circuit.
2. Check the continuity between the ECM harness connector terminals.

ECM harness connector			Continuity
Connector No.	Terminal No.		
E16	138	137	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 ECM harness connector and the ground.

ECM harness connector		Ground	Continuity
Connector No.	Terminal No.		
E16	138		Not existed
	137		Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair or replace the root cause.

5.CHECK ECM AND LI-ION BATTERY CONTROLLER TERMINATION CIRCUIT

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

ECM		Resistance (Ω)
Terminal No.		
138	137	Approx. 108 – 132

3. Check the resistance between the Li-ion battery terminals.

Li-ion battery		Resistance (Ω)
Terminal No.		
3	15	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Replace the ECM and/or the Li-ion battery.

6.CHECK SYMPTOM

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

Inspection result

Reproduced>>GO TO 7.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

7.CHECK CONTROL UNIT REPRODUCTION

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

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect one of the control unit connectors of HEV system CAN circuit.
   NOTE:
   ECM and Li-ion battery controller have a termination circuit. Check other control units first.
4. Connect the 12V battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although control unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

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

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN IPDM-E AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000015202723

1.CHECK CONNECTOR

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

- Harness connector 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		60J	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)

1. Disconnect the connector of combination meter.
2. Check the continuity between the harness connector and the combination meter harness connector.

Harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	61J	M77	41	Existed
	60J		42	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 combination meter.
NO >> Repair the main line between the harness connector M31 and the combination meter.

MAIN LINE BETWEEN M&A AND STRG CIRCUIT

Diagnosis Procedure

INFOID:0000000015202724

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Combination meter
- Steering angle sensor

4. Check the continuity between the combination meter harness connector and the steering angle sensor harness connector.

Combination meter harness connector		Steering angle sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M77	41	M56	5	Existed
	42		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the steering angle sensor.
NO >> Repair the main line between the combination meter and the steering angle sensor.

MAIN LINE BETWEEN STRG AND PWBD CIRCUIT

Diagnosis Procedure

INFOID:0000000015202725

1.CHECK CONNECTOR

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

- Harness connector 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.

- Steering angle sensor
- Harness connectors M69 and B41

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

Steering angle sensor harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M56	5	M69	25	Existed
	2		24	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the steering angle sensor 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 steering angle sensor 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 RDR-R AND AVM CIRCUIT

Diagnosis Procedure

INFOID:0000000015202728

1.CHECK CONNECTOR

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

- Harness connector B140
- Harness connector B49

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Side radar RH
- Harness connectors B140 and B49

2. Check the continuity between the side radar RH harness connector and the harness connector.

Side radar RH harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B105	6	B140	8	Existed
	7		9	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the side radar RH and the harness connector B140.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors B43 and M52.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B49	8	B43	8	Existed
	9		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 side radar RH and the around view monitor control unit.
NO >> Repair the main line between the harness connector B49 and the around view monitor control unit.

MAIN LINE BETWEEN RDR-L AND RDR-R CIRCUIT

Diagnosis Procedure

INFOID:0000000015202729

1.CHECK CONNECTOR

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

- Harness connector B49
- Harness connector B140

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Side radar LH
- Harness connectors B49 and B140

2. Check the continuity between the side radar LH harness connector and the harness connector.

Side radar LH harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B35	6	B49	13	Existed
	7		14	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the side radar LH and the harness connector B49.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of side radar RH.
2. Check the continuity between the harness connector and the side radar RH harness connector.

Harness connector		Side radar RH harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B140	13	B105	6	Existed
	14		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar LH and the side radar RH.
NO >> Repair the main line between the harness connector B140 and the side radar RH.

MAIN LINE BETWEEN EV/HEV AND HV BAT CIRCUIT

Diagnosis Procedure

INFOID:0000000015202730

1.CHECK CONNECTOR

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

- Harness connector 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.

- HPCM
- Harness connectors E152 and M31

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

HPCM harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E130	97	E152	70J	Existed
	98		69J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the HPCM and the harness connector E152.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors M69 and B41.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	70J	M69	12	Existed
	69J		11	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the HPCM and the Li-ion battery.
NO >> Repair the main line between the harness connector M31 and the Li-ion battery.

ECM BRANCH LINE CIRCUIT (VEHICLE CAN COMMUNICATION 1 CIRCUIT)

Diagnosis Procedure

INFOID:0000000015202731

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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	124	123	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line (Vehicle CAN communication 1 circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to EC-184, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to EC-595, "Removal and Installation".
YES (Past error)>>Error was detected in the ECM branch line (Vehicle CAN communication 1 circuit side).
NO >> Repair the power supply and the ground circuit.

ECM BRANCH LINE CIRCUIT (HEV SYSTEM CAN CIRCUIT)

Diagnosis Procedure

INFOID:0000000015202732

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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	138	137	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line (HEV system CAN circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to EC-184, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to EC-595, "Removal and Installation".
YES (Past error)>>Error was detected in the ECM branch line (HEV system CAN circuit side).
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202734

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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	19	30	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-169, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-204, "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.

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

Diagnosis Procedure

INFOID:0000000015202735

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

HPCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E130	84	83	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the HPCM branch line (Vehicle CAN communication 1 circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the HPCM. Refer to HBC-117, "HPCM : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the HPCM. Refer to HBC-335, "Removal and Installation".
YES (Past error)>>Error was detected in the HPCM branch line (Vehicle CAN communication 1 circuit side)
NO >> Repair the power supply and the ground circuit.

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

Diagnosis Procedure

INFOID:0000000015202736

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

HPCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E130	97	98	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Replace the HPCM branch line (HEV system CAN circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the HPCM. Refer to HBC-117, "HPCM : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the HPCM. Refer to HBC-335, "Removal and Installation".
YES (Past error)>>Error was detected in the HPCM branch line (HEV system CAN circuit side).
NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202740

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
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-45, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-46, "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.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202741

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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-62, "COMBINATION METER : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to MWI-81, "Removal and Installation".
YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

3CH CGW BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202742

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 3CH CAN gateway 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 3CH CAN gateway.
2. Check the resistance between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M29	1	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the 3CH CAN gateway branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the 3CH CAN gateway. Refer to LAN-178, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the 3CH CAN gateway. Refer to LAN-179, "Removal and Installation".
YES (Past error)>>Error was detected in the 3CH CAN gateway branch line.
NG >> Repair the power supply and the ground circuit.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202744

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 12V 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-35, "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 (VEHICLE CAN COMMUNICATION 1 CIRCUIT)

Diagnosis Procedure

INFOID:0000000015202746

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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 (Vehicle CAN communication 1 circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the chassis control module. Refer to DAS-523, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the chassis control module. Refer to DAS-529, "Removal and Installation".
YES (Past error)>>Error was detected in the chassis control module branch line (Vehicle CAN communication 1 circuit side).
NG >> Repair the power supply and the ground circuit.

CCM BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000015202748

1.CHECK CONNECTOR

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

- Chassis control module
- Harness connector M69
- Harness connector B41

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	11	8	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the chassis control module branch line (ITS CAN communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the chassis control module. Refer to DAS-523, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the chassis control module. Refer to DAS-529, "Removal and Installation".
YES (Past error)>>Error was detected in the chassis control module branch line (ITS CAN commumication circuit side).
NG >> Repair the power supply and the ground circuit.

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202749

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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-63, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-208, "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.

PWBD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202750

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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-204, "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-343, "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:0000000015202751

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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 BCS-66, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-73, "Removal and Installation".
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

BRAKE BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202753

1.CHECK CONNECTOR

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

- Hydraulic brake booster unit
- BCM
- E152
- 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 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of BCM.
2. Disconnect the connector of hydraulic brake booster unit.
3. Check the resistance between the hydraulic brake booster unit harness connector terminals.

Hydraulic brake booster unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E35	9	10	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the hydraulic brake booster unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the hydraulic brake booster unit. Refer to BR-39, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the hydraulic brake booster unit. Refer to BR-65, "Removal and Installation".
YES (Past error)>>Error was detected in the hydraulic brake booster unit branch line.
NO >> Repair the power supply and the ground circuit.

EPS/DAST 3 BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202754

1.CHECK CONNECTOR

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

- EPS 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of BCM.
2. Disconnect the connector of EPS control unit.
3. 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 4.
NO >> Repair the EPS control unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to STC-18, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to STC-39, "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.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202755

1.CHECK CONNECTOR

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

- A/C auto amp.
- 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

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

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

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the A/C auto amp. branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the A/C auto amp. Refer to HAC-107, "A/C AUTO AMP. : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the A/C auto amp. Refer to HAC-120, "Removal and Installation".
YES (Past error)>>Error was detected in the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.

VSP BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202756

1.CHECK CONNECTOR

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

- Approaching vehicle sound for pedestrians (VSP) control unit
- BCM
- 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 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of BCM.
2. Disconnect the connector of approaching vehicle sound for pedestrians (VSP) control unit.
3. Check the resistance between the approaching vehicle sound for pedestrians (VSP) control unit harness connector terminals.

Approaching vehicle sound for pedestrians (VSP) control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E154	6	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the approaching vehicle sound for pedestrians (VSP) control unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the approaching vehicle sound for pedestrians (VSP) control unit. Refer to VSP-32, "APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the approaching vehicle sound for pedestrians (VSP) control unit. Refer to VSP-35, "Removal and Installation".
YES (Past error)>>Error was detected in the approaching vehicle sound for pedestrians (VSP) control unit branch line.
NO >> Repair the power supply and the ground circuit.

AVM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202757

1.CHECK CONNECTOR

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

- Around view monitor control unit
- Harness connector M52
- Harness connector B43

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

-

Around view monitor control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M112	26	24	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the around view monitor control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the around view monitor control unit. Refer to AV-437, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the around view monitor control unit. Refer to AV-441, "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.

RDR-R BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202758

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

Side radar RH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B105	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the side radar RH branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar RH. Refer to DAS-376, "SIDE RADAR RH : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the side radar RH. Refer to DAS-405, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar RH branch line.
NO >> Repair the power supply and the ground circuit.

RDR-L BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202759

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

Side radar LH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B35	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the side radar LH branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar LH. Refer to DAS-376, "SIDE RADAR LH : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the side radar LH. Refer to DAS-405, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar LH branch line.
NO >> Repair the power supply and the ground circuit.

ICC 2 BRANCH LINE CIRCUIT (VEHICLE CAN COMMUNICATION 2 CIRCUIT)

Diagnosis Procedure

INFOID:0000000015202760

1.CHECK CONNECTOR

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

- ADAS control unit 2
- Harness connector M52
- Harness connector B43
- 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-634, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

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

ADAS control unit 2 harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M148	9	10	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the ADAS control unit 2 branch line (Vehicle CAN communication 2 circuit side).

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit 2. Refer to DAS-208, "ADAS CONTROL UNIT 2 : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit 2. Refer to DAS-212, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit 2 branch line (Vehicle CAN communication 2 circuit side).
NO >> Repair the power supply and the ground circuit.

ICC 2 BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000015202761

1.CHECK CONNECTOR

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

- ADAS control unit 2
- Harness connector M52 (With forward emergency braking)
- Harness connector B43 (With forward emergency braking)

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 ADAS control unit 2.
2. Check the resistance between the ADAS control unit 2 harness connector terminals.

- With forward emergency braking

ADAS control unit 2 harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M148	9	10	Approx. 108 – 132

- Without forward emergency braking

ADAS control unit 2 harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M148	2	5	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ADAS control unit 2 branch line (ITS CAN communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit 2. Refer to DAS-208, "ADAS CONTROL UNIT 2 : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit 2. Refer to DAS-212, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit 2 branch line (ITS CAN communication circuit side).
NO >> Repair the power supply and the ground circuit.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202762

1.CHECK CONNECTOR

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

- 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-193, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the TCM. Refer to TM-213, "Removal and Installation".

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

INV/MC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202763

1.CHECK CONNECTOR

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

- Traction motor inverter
- Harness connector F6
- Harness connector E4

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

Traction motor inverter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F36	27	35	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Replace the traction motor inverter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the traction motor inverter. Refer to TMS-68, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the traction motor inverter. Refer to TMS-132, "Removal and Installation".
YES (Past error)>>Error was detected in the traction motor inverter branch line.
NO >> Repair the power supply and the ground circuit.

HV BAT BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202764

DANGER:

Since hybrid vehicles and electric vehicles contain a high voltage battery, there is the risk of electric shock, electric leakage, or similar accidents if the high voltage component and vehicle are handled incorrectly. Be sure to follow the correct work procedures when performing inspection and maintenance.

WARNING:

- **Be sure to remove the service plug in order to disconnect the high voltage circuits before performing inspection or maintenance of high voltage system harnesses and parts.**
- **The removed service plug must always be carried in a pocket of the responsible worker or placed in the tool box during the procedure to prevent the plug from being connected by mistake.**
- **Be sure to wear insulating protective equipment before beginning work on the high voltage system.**
- **Never allow workers other than the responsible person to touch the vehicle containing high voltage parts. To keep others from touching the high voltage parts, these parts must be covered with an insulating sheet except when using them.**
- **Refer to GI-28, "High Voltage Precautions".**

CAUTION:

Never bring the vehicle into the READY status with the service plug removed unless otherwise instructed in the Service Manual. A malfunction may occur if this is not observed.

1.CHECK CONNECTOR

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

- Li-ion battery
- Harness connector B41
- Harness connector M69

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

Li-ion battery harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B59	3	15	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Replace the Li-ion battery branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Li-ion battery. Refer to HBB-149, "LI-ION BATTERY CONTROLLER : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the Li-ion battery. Refer to HBB-155, "Removal and Installation".
YES (Past error)>>Error was detected in the Li-ion battery controller branch line.
NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202765

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202766

1.CHECK CONNECTOR

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

- AV control unit
- 3CH CAN gateway

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of 3CH CAN gateway.
2. Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	9	13	Existed
	10	14	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (IT CAN communication circuit side). Refer to LAN-150, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

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

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M108	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-315, "AV CONTROL UNIT : Diagnosis Procedure"
- Navigation without BOSE: AV-213, "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-352, "Removal and Installation"
- Navigation without BOSE: AV-239, "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.

VEHICLE CAN COMMUNICATION 1 CIRCUIT

Diagnosis Procedure

INFOID:0000000015202767

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect all the unit connectors on vehicle CAN communication 1 circuit.
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 3CH CAN gateway terminals.

3CH CAN gateway			Continuity
Connector No.	Terminal No.		
M29	1	2	Not 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)

Check the continuity between the 3CH CAN gateway and the ground.

3CH CAN gateway		Ground	Continuity
Connector No.	Terminal No.		
M29	1		Not existed
	2		Not existed

Is the inspection result normal?

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

4.CHECK ECM AND BCM TERMINATION CIRCUIT

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

ECM		Resistance (Ω)
Terminal No.		
124	123	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 12V battery cable from the negative terminal.
3. Disconnect one of the unit connectors of vehicle CAN communication 1 circuit.
   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.

VEHICLE CAN COMMUNICATION 2 CIRCUIT

Diagnosis Procedure

INFOID:0000000015202768

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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 vehicle CAN communication 2 circuit.
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 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 BCM.

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 12V battery cable from the negative terminal.
3. Disconnect one of the unit connectors of vehicle CAN communication 2 circuit.
   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.

ITS CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000015202769

1.CHECK CAN DIAGNOSIS

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

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

YES >> GO TO 2.
NO >> Check and repair vehicle CAN communication 1 circuit and/or vehicle CAN communication 2 circuit.

2.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the ADAS control unit (With forward emergency braking) or the ADAS control unit 2 (Without forward emergency braking) for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

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

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.
- ADAS control unit (With forward emergency braking)
- ADAS control unit 2
- Chassis control module (Without forward emergency braking)
2. Check the continuity between the ADAS control unit harness connector and the ADAS control unit 2 harness connector (With forward emergency braking) or the ADAS control unit 2 harness connector and the chassis control module harness connector (Without forward emergency braking).

• With forward emergency braking

ADAS control unit harness connector		ADAS control unit 2 harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B4	6	M148	9	Existed
	7		10	Existed

• Without forward emergency braking

ADAS control unit 2 harness connector		Chassis control module harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M148	2	M96	11	Existed
	5		8	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the harness between the ADAS control unit and the ADAS control unit 2 (With forward emergency braking) or the ADAS control unit 2 and the chassis control module (Without forward emergency braking).

4.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

1. Disconnect all the unit connectors on ITS CAN communication circuit.
2. Check the continuity between the ADAS control unit harness connector terminals (With forward emergency braking) or the ADAS control unit 2 harness connector terminals (Without forward emergency braking).

• With forward emergency braking

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
B4	6	7	Not existed

• Without forward emergency braking

ADAS control unit 2 harness connector			Continuity
Connector No.	Terminal No.		
B148	2	5	Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause.

5. CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the ADAS control unit harness connector and the ground (With forward emergency braking) or the ADAS control unit 2 harness connector and the ground (Without forward emergency braking).

• With forward emergency braking

ADAS control unit harness connector		Ground	Continuity
Connector No.	Terminal No.		
B4	6		Not existed
	7		Not existed

• Without forward emergency braking

ADAS control unit 2 harness connector		Ground	Continuity
Connector No.	Terminal No.		
B148	2		Not existed
	5		Not existed

Is the inspection result normal?

YES >> GO TO 6.
NO >> Check the harness and repair the root cause.

6. CHECK TERMINATION CIRCUIT

1. Remove the ADAS control unit and the ADAS control unit 2 (With forward emergency braking) or the ADAS control unit 2 and the chassis control module (Without forward emergency braking).
2. Check the resistance between the ADAS control unit terminals (With forward emergency braking) or the ADAS control unit 2 terminals (Without forward emergency braking).

- With forward emergency braking

ADAS control unit		Resistance (Ω)
Terminal No.		
6	7	Approx. 108 – 132

- Without forward emergency braking

ADAS control unit 2		Resistance (Ω)
Terminal No.		
2	5	Approx. 108 – 132

3. Check the resistance between the ADAS control unit 2 terminals (With forward emergency braking) or the chassis control module terminals (Without forward emergency braking).

- With forward emergency braking

ADAS control unit 2		Resistance (Ω)
Terminal No.		
9	10	Approx. 108 – 132

- Without forward emergency braking

Chassis control module		Resistance (Ω)
Terminal No.		
11	8	Approx. 108 – 132

Is the inspection result normal?

YES >> GO TO 7.
NO >> Replace the ADAS control unit and/or the ADAS control unit 2 (With forward emergency braking) or the ADAS control unit 2 and/or the chassis control module (Without forward emergency braking).

7.CHECK SYMPTOM

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

Inspection result

Reproduced>>GO TO 8.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

8.CHECK UNIT REPRODUCTION

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

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect one of the unit connectors of ITS CAN communication circuit.
   NOTE:
   ADAS control unit and ADAS control unit 2 (With forward emergency braking) or ADAS control unit 2 and chassis control module (Without forward emergency braking) 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.

IT CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000015202770

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect all the unit connectors on IT CAN communication circuit.
4. Check the terminals and connectors on IT CAN communication circuit 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 3CH CAN gateway.
2. Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	9	13	Existed
	10	14	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 IT CAN communication circuit.
2. Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	9	10	Not existed

Is the inspection result normal?

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

4.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the 3CH CAN gateway and the ground.

3CH CAN gateway harness connector		Ground	Continuity
Connector No.	Terminal No.		
M29	9		Not existed
	10		Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause.

5.CHECK 3CH CAN GATEWAY TERMINATION CIRCUIT

1. Remove the 3CH CAN gateway.
2. Check the resistance between the 3CH CAN gateway terminals.

3CH CAN gateway	Resistance (Ω)
Terminal No.	

9	10	Approx. 108 – 132
13	14	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Replace the 3CH CAN gateway.

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 12V battery cable from the negative terminal.
3. Disconnect one of the unit connectors of IT CAN communication circuit.
   NOTE:
   3CH CAN gateway 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.

DIAGNOSTIC CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000015202771

1.CONNECTOR INSPECTION

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

- Data link connector
- 3CH CAN gateway

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of 3CH CAN gateway.
2. Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	3	11	Existed
	4	12	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)

Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	3	4	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 3CH CAN gateway harness connector and the ground.

3CH CAN gateway harness connector		Ground	Continuity
Connector No.	Terminal No.		
M29	3		Not existed
	4		Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair or replace the root cause.

5.CHECK 3CH CAN GATEWAY TERMINATION CIRCUIT

1. Remove the 3CH CAN gateway.
2. Check the resistance between the 3CH CAN gateway terminals.

3CH CAN gateway	Resistance (Ω)
Terminal No.	

3	4	Approx. 108 – 132
11	12	Approx. 108 – 132

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the diagnostic CAN communication circuit.
NO >> Replace the 3CH CAN gateway.

HEV SYSTEM CAN CIRCUIT

Diagnosis Procedure

INFOID:0000000015202772

DANGER:

Since hybrid vehicles and electric vehicles contain a high voltage battery, there is the risk of electric shock, electric leakage, or similar accidents if the high voltage component and vehicle are handled incorrectly. Be sure to follow the correct work procedures when performing inspection and maintenance.

WARNING:

- **Be sure to remove the service plug in order to disconnect the high voltage circuits before performing inspection or maintenance of high voltage system harnesses and parts.**
- **The removed service plug must always be carried in a pocket of the responsible worker or placed in the tool box during the procedure to prevent the plug from being connected by mistake.**
- **Be sure to wear insulating protective equipment before beginning work on the high voltage system.**
- **Never allow workers other than the responsible person to touch the vehicle containing high voltage parts. To keep others from touching the high voltage parts, these parts must be covered with an insulating sheet except when using them.**
- **Refer to GI-28, "High Voltage Precautions".**

CAUTION:

Never bring the vehicle into the READY status with the service plug removed unless otherwise instructed in the Service Manual. A malfunction may occur if this is not observed.

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect all the control unit connectors on HEV system CAN circuit.
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 (OPEN CIRCUIT)

1. Disconnect the following harness connectors.
- ECM
- Li-ion battery
2. Check the continuity between the ECM harness connector and the Li-ion battery harness connector.

ECM harness connector		Li-ion battery harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E16	138	B59	3	Existed
	137		15	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the harness between the ECM and the Li-ion battery.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

1. Disconnect all the unit connectors on HEV system CAN circuit.
2. Check the continuity between the ECM harness connector terminals.

ECM harness connector			Continuity
Connector No.	Terminal No.		
E16	138	137	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 ECM harness connector and the ground.

ECM harness connector		Ground	Continuity
Connector No.	Terminal No.		
E16	138		Not existed
	137		Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair or replace the root cause.

5.CHECK ECM AND LI-ION BATTERY CONTROLLER TERMINATION CIRCUIT

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

ECM		Resistance (Ω)
Terminal No.		
138	137	Approx. 108 – 132

3. Check the resistance between the Li-ion battery terminals.

Li-ion battery		Resistance (Ω)
Terminal No.		
3	15	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Replace the ECM and/or the Li-ion battery.

6.CHECK SYMPTOM

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

Inspection result

Reproduced>>GO TO 7.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

7.CHECK CONTROL UNIT REPRODUCTION

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

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect one of the control unit connectors of HEV system CAN circuit.
   NOTE:
   ECM and Li-ion battery controller have a termination circuit. Check other control units first.
4. Connect the 12V battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although control unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

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

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN IPDM-E AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000015202775

1.CHECK CONNECTOR

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

- Harness connector 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		60J	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)

1. Disconnect the connector of combination meter.
2. Check the continuity between the harness connector and the combination meter harness connector.

Harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	61J	M77	41	Existed
	60J		42	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 combination meter.
NO >> Repair the main line between the harness connector M31 and the combination meter.

MAIN LINE BETWEEN M&A AND STRG CIRCUIT

Diagnosis Procedure

INFOID:0000000015202776

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Combination meter
- Steering angle sensor

4. Check the continuity between the combination meter harness connector and the steering angle sensor harness connector.

Combination meter harness connector		Steering angle sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M77	41	M56	5	Existed
	42		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the steering angle sensor.
NO >> Repair the main line between the combination meter and the steering angle sensor.

MAIN LINE BETWEEN STRG AND PWBD CIRCUIT

Diagnosis Procedure

INFOID:0000000015202777

1.CHECK CONNECTOR

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

- Harness connector 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.

- Steering angle sensor
- Harness connectors M69 and B41

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

Steering angle sensor harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M56	5	M69	25	Existed
	2		24	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the steering angle sensor 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 steering angle sensor 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 AVM AND LANE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202778

1.CHECK CONNECTOR

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

- Harness connector B43
- Harness connector M52

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors M52 and B43.
2. Check the continuity between the harness connector terminals.

Harness connector			Continuity
Connector No.	Terminal No.		
B43	8	7	Existed
	16	15	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the around view monitor control unit and the harness connector B43.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the herness connectors M156 and R11.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M52	7	M156	8	Existed
	15		9	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 around view monitor control unit and the lane camera unit.
NO >> Repair the main line between the harness connector M52 and the lane camera unit.

MAIN LINE BETWEEN RDR-R AND AVM CIRCUIT

Diagnosis Procedure

INFOID:0000000015202784

1.CHECK CONNECTOR

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

- Harness connector B140
- Harness connector B49

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Side radar RH
- Harness connectors B140 and B49

2. Check the continuity between the side radar RH harness connector and the harness connector.

Side radar RH harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B105	6	B140	8	Existed
	7		9	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the side radar RH and the harness connector B140.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors B43 and M52.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B49	8	B43	8	Existed
	9		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 side radar RH and the around view monitor control unit.
NO >> Repair the main line between the harness connector B49 and the around view monitor control unit.

MAIN LINE BETWEEN RDR-L AND RDR-R CIRCUIT

Diagnosis Procedure

INFOID:0000000015202804

1.CHECK CONNECTOR

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

- Harness connector B49
- Harness connector B140

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Side radar LH
- Harness connectors B49 and B140

2. Check the continuity between the side radar LH harness connector and the harness connector.

Side radar LH harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B35	6	B49	13	Existed
	7		14	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the side radar LH and the harness connector B49.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of side radar RH.
2. Check the continuity between the harness connector and the side radar RH harness connector.

Harness connector		Side radar RH harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B140	13	B105	6	Existed
	14		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar LH and the side radar RH.
NO >> Repair the main line between the harness connector B140 and the side radar RH.

MAIN LINE BETWEEN EV/HEV AND HV BAT CIRCUIT

Diagnosis Procedure

INFOID:0000000015202805

1.CHECK CONNECTOR

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

- Harness connector 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.

- HPCM
- Harness connectors E152 and M31

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

HPCM harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E130	97	E152	70J	Existed
	98		69J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the HPCM and the harness connector E152.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors M69 and B41.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	70J	M69	12	Existed
	69J		11	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the HPCM and the Li-ion battery.
NO >> Repair the main line between the harness connector M31 and the Li-ion battery.

ECM BRANCH LINE CIRCUIT (VEHICLE CAN COMMUNICATION 1 CIRCUIT)

Diagnosis Procedure

INFOID:0000000015202806

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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	124	123	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line (Vehicle CAN communication 1 circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to EC-184, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to EC-595, "Removal and Installation".
YES (Past error)>>Error was detected in the ECM branch line (Vehicle CAN communication 1 circuit side).
NO >> Repair the power supply and the ground circuit.

ECM BRANCH LINE CIRCUIT (HEV SYSTEM CAN CIRCUIT)

Diagnosis Procedure

INFOID:0000000015202807

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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	138	137	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line (HEV system CAN circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to EC-184, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to EC-595, "Removal and Installation".
YES (Past error)>>Error was detected in the ECM branch line (HEV system CAN circuit side).
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202808

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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	19	30	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-169, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-204, "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.

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

Diagnosis Procedure

INFOID:0000000015202809

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

HPCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E130	84	83	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the HPCM branch line (Vehicle CAN communication 1 circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the HPCM. Refer to HBC-117, "HPCM : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the HPCM. Refer to HBC-335, "Removal and Installation".
YES (Past error)>>Error was detected in the HPCM branch line (Vehicle CAN communication 1 circuit side)
NO >> Repair the power supply and the ground circuit.

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

Diagnosis Procedure

INFOID:0000000015202811

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

HPCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E130	97	98	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Replace the HPCM branch line (HEV system CAN circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the HPCM. Refer to HBC-117, "HPCM : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the HPCM. Refer to HBC-335, "Removal and Installation".
YES (Past error)>>Error was detected in the HPCM branch line (HEV system CAN circuit side).
NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202812

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
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-45, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-46, "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.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202813

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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-62, "COMBINATION METER : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to MWI-81, "Removal and Installation".
YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

3CH CGW BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202814

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 3CH CAN gateway 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 3CH CAN gateway.
2. Check the resistance between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M29	1	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the 3CH CAN gateway branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the 3CH CAN gateway. Refer to LAN-178, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the 3CH CAN gateway. Refer to LAN-179, "Removal and Installation".
YES (Past error)>>Error was detected in the 3CH CAN gateway branch line.
NG >> Repair the power supply and the ground circuit.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202815

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 12V 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-35, "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 (VEHICLE CAN COMMUNICATION 1 CIRCUIT)

Diagnosis Procedure

INFOID:0000000015202816

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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 (Vehicle CAN communication 1 circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the chassis control module. Refer to DAS-523, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the chassis control module. Refer to DAS-529, "Removal and Installation".
YES (Past error)>>Error was detected in the chassis control module branch line (Vehicle CAN communication 1 circuit side).
NG >> Repair the power supply and the ground circuit.

CCM BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000015202817

1.CHECK CONNECTOR

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

- Chassis control module
- Harness connector M69
- Harness connector B41

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	11	8	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the chassis control module branch line (ITS CAN communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the chassis control module. Refer to DAS-523, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the chassis control module. Refer to DAS-529, "Removal and Installation".
YES (Past error)>>Error was detected in the chassis control module branch line (ITS CAN commumication circuit side).
NG >> Repair the power supply and the ground circuit.

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202823

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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-63, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-208, "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.

ADP BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202824

1.CHECK CONNECTOR

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

- Driver seat control unit
- Harness connector B200
- Harness connector B57

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 driver seat control unit.
2. Check the resistance between the driver seat control unit harness connector terminals.

Driver seat control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B213	1	17	Approx. 54 – 66

Is the measurement value within the specification?

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

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the driver seat control unit. Refer to ADP-56, "DRIVER SEAT CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the driver seat control unit. Refer to ADP-102, "Removal and Installation".
YES (Past error)>>Error was detected in the driver seat control unit branch line.
NG >> Repair the power supply and the ground circuit.

PWBD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202825

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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-204, "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-343, "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:0000000015202826

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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 BCS-66, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-73, "Removal and Installation".
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

BRAKE BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202827

1.CHECK CONNECTOR

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

- Hydraulic brake booster unit
- BCM
- E152
- 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 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of BCM.
2. Disconnect the connector of hydraulic brake booster unit.
3. Check the resistance between the hydraulic brake booster unit harness connector terminals.

Hydraulic brake booster unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E35	9	10	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the hydraulic brake booster unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the hydraulic brake booster unit. Refer to BR-39, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the hydraulic brake booster unit. Refer to BR-65, "Removal and Installation".
YES (Past error)>>Error was detected in the hydraulic brake booster unit branch line.
NO >> Repair the power supply and the ground circuit.

EPS/DAST 3 BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202829

1.CHECK CONNECTOR

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

- EPS 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of BCM.
2. Disconnect the connector of EPS control unit.
3. 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 4.
NO >> Repair the EPS control unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to STC-18, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to STC-39, "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.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202830

1.CHECK CONNECTOR

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

- A/C auto amp.
- 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

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

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

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the A/C auto amp. branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the A/C auto amp. Refer to HAC-107, "A/C AUTO AMP. : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the A/C auto amp. Refer to HAC-120, "Removal and Installation".
YES (Past error)>>Error was detected in the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.

VSP BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202831

1.CHECK CONNECTOR

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

- Approaching vehicle sound for pedestrians (VSP) control unit
- BCM
- 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 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of BCM.
2. Disconnect the connector of approaching vehicle sound for pedestrians (VSP) control unit.
3. Check the resistance between the approaching vehicle sound for pedestrians (VSP) control unit harness connector terminals.

Approaching vehicle sound for pedestrians (VSP) control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E154	6	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the approaching vehicle sound for pedestrians (VSP) control unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the approaching vehicle sound for pedestrians (VSP) control unit. Refer to VSP-32, "APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the approaching vehicle sound for pedestrians (VSP) control unit. Refer to VSP-35, "Removal and Installation".
YES (Past error)>>Error was detected in the approaching vehicle sound for pedestrians (VSP) control unit branch line.
NO >> Repair the power supply and the ground circuit.

AVM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202832

1.CHECK CONNECTOR

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

- Around view monitor control unit
- Harness connector M52
- Harness connector B43

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

-

Around view monitor control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M112	26	24	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the around view monitor control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the around view monitor control unit. Refer to AV-437, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the around view monitor control unit. Refer to AV-441, "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.

RDR-R BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202833

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

Side radar RH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B105	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the side radar RH branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar RH. Refer to DAS-376, "SIDE RADAR RH : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the side radar RH. Refer to DAS-405, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar RH branch line.
NO >> Repair the power supply and the ground circuit.

RDR-L BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202834

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

Side radar LH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B35	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the side radar LH branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar LH. Refer to DAS-376, "SIDE RADAR LH : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the side radar LH. Refer to DAS-405, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar LH branch line.
NO >> Repair the power supply and the ground circuit.

ICC 2 BRANCH LINE CIRCUIT (VEHICLE CAN COMMUNICATION 2 CIRCUIT)

Diagnosis Procedure

INFOID:0000000015202835

1.CHECK CONNECTOR

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

- ADAS control unit 2
- Harness connector M52
- Harness connector B43
- 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-634, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

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

ADAS control unit 2 harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M148	9	10	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the ADAS control unit 2 branch line (Vehicle CAN communication 2 circuit side).

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit 2. Refer to DAS-208, "ADAS CONTROL UNIT 2 : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit 2. Refer to DAS-212, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit 2 branch line (Vehicle CAN communication 2 circuit side).
NO >> Repair the power supply and the ground circuit.

ICC 2 BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000015202837

1.CHECK CONNECTOR

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

- ADAS control unit 2
- Harness connector M52 (With forward emergency braking)
- Harness connector B43 (With forward emergency braking)

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 ADAS control unit 2.
2. Check the resistance between the ADAS control unit 2 harness connector terminals.

- With forward emergency braking

ADAS control unit 2 harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M148	9	10	Approx. 108 – 132

- Without forward emergency braking

ADAS control unit 2 harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M148	2	5	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ADAS control unit 2 branch line (ITS CAN communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit 2. Refer to DAS-208, "ADAS CONTROL UNIT 2 : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit 2. Refer to DAS-212, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit 2 branch line (ITS CAN communication circuit side).
NO >> Repair the power supply and the ground circuit.

LANE BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202838

1.CHECK CONNECTOR

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

- Lane camera unit
- Chassis control module (With forward emergency braking)
- Harness connector R11
- Harness connector M156

Is the inspection result normal?

YES >> GO TO 2. (With forward emergency braking)
YES >> GO TO 3. (Without forward emergency braking)
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of chassis control module.
2. Check the continuity between the chassis control module harness connector terminals.

Chassis control module harness connector			Continuity
Connector No.	Terminal No.		
M96	19	11	Existed
	7	8	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (Chassis CAN communication circuit side). Refer to LAN-639, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of chassis control module (With forward emergency braking).
2. Disconnect the connector of lane camera unit.
3. Check the resistance between the lane camera unit harness connector terminals.

-

Lane camera unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
R17	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the lane camera unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the lane camera unit. Refer to DAS-377, "LANE CAMERA UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the lane camera unit. Refer to DAS-410, "Removal and Installation".
YES (Past error)>>Error was detected in the lane camera unit branch line.
NO >> Repair the power supply and the ground circuit.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202839

1.CHECK CONNECTOR

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

- 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-193, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the TCM. Refer to TM-213, "Removal and Installation".

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

INV/MC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202840

1.CHECK CONNECTOR

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

- Traction motor inverter
- Harness connector F6
- Harness connector E4

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

Traction motor inverter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F36	27	35	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Replace the traction motor inverter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the traction motor inverter. Refer to TMS-68, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the traction motor inverter. Refer to TMS-132, "Removal and Installation".
YES (Past error)>>Error was detected in the traction motor inverter branch line.
NO >> Repair the power supply and the ground circuit.

HV BAT BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202842

DANGER:

Since hybrid vehicles and electric vehicles contain a high voltage battery, there is the risk of electric shock, electric leakage, or similar accidents if the high voltage component and vehicle are handled incorrectly. Be sure to follow the correct work procedures when performing inspection and maintenance.

WARNING:

- **Be sure to remove the service plug in order to disconnect the high voltage circuits before performing inspection or maintenance of high voltage system harnesses and parts.**
- **The removed service plug must always be carried in a pocket of the responsible worker or placed in the tool box during the procedure to prevent the plug from being connected by mistake.**
- **Be sure to wear insulating protective equipment before beginning work on the high voltage system.**
- **Never allow workers other than the responsible person to touch the vehicle containing high voltage parts. To keep others from touching the high voltage parts, these parts must be covered with an insulating sheet except when using them.**
- **Refer to GI-28, "High Voltage Precautions".**

CAUTION:

Never bring the vehicle into the READY status with the service plug removed unless otherwise instructed in the Service Manual. A malfunction may occur if this is not observed.

1.CHECK CONNECTOR

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

- Li-ion battery
- Harness connector B41
- Harness connector M69

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

Li-ion battery harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B59	3	15	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Replace the Li-ion battery branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Li-ion battery. Refer to HBB-149, "LI-ION BATTERY CONTROLLER : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the Li-ion battery. Refer to HBB-155, "Removal and Installation".
YES (Past error)>>Error was detected in the Li-ion battery controller branch line.
NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202843

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202844

1.CHECK CONNECTOR

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

- AV control unit
- 3CH CAN gateway

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of 3CH CAN gateway.
2. Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	9	13	Existed
	10	14	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (IT CAN communication circuit side). Refer to LAN-150, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

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

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M108	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-315, "AV CONTROL UNIT : Diagnosis Procedure"
- Navigation without BOSE: AV-213, "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-352, "Removal and Installation"
- Navigation without BOSE: AV-239, "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.

TCU BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202845

1.CHECK CONNECTOR

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

- TCU
- 3CH CAN gateway

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of 3CH CAN gateway.
2. Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	9	13	Existed
	10	14	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (IT CAN communication circuit side). Refer to LAN-150, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of 3CH CAN gateway.
2. Disconnect the connector of TCU.
3. Check the resistance between the TCU harness connector terminals.

TCU harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M35	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the TCU branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCU. Refer to LAN-140, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the TCU. Refer to AV-531, "Removal and Installation".
YES (Past error)>>Error was detected in the TCU branch line.
NO >> Repair the power supply and the ground circuit.

VEHICLE CAN COMMUNICATION 1 CIRCUIT

Diagnosis Procedure

INFOID:0000000015202846

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect all the unit connectors on vehicle CAN communication 1 circuit.
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 3CH CAN gateway terminals.

3CH CAN gateway			Continuity
Connector No.	Terminal No.		
M29	1	2	Not 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)

Check the continuity between the 3CH CAN gateway and the ground.

3CH CAN gateway		Ground	Continuity
Connector No.	Terminal No.		
M29	1		Not existed
	2		Not existed

Is the inspection result normal?

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

4.CHECK ECM AND BCM TERMINATION CIRCUIT

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

ECM		Resistance (Ω)
Terminal No.		
124	123	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 12V battery cable from the negative terminal.
3. Disconnect one of the unit connectors of vehicle CAN communication 1 circuit.
   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.

VEHICLE CAN COMMUNICATION 2 CIRCUIT

Diagnosis Procedure

INFOID:0000000015202847

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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 vehicle CAN communication 2 circuit.
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 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 BCM.

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 12V battery cable from the negative terminal.
3. Disconnect one of the unit connectors of vehicle CAN communication 2 circuit.
   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.

ITS CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000015202848

1.CHECK CAN DIAGNOSIS

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

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

YES >> GO TO 2.
NO >> Check and repair vehicle CAN communication 1 circuit and/or vehicle CAN communication 2 circuit.

2.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the ADAS control unit (With forward emergency braking) or the ADAS control unit 2 (Without forward emergency braking) for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

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

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.
- ADAS control unit (With forward emergency braking)
- ADAS control unit 2
- Chassis control module (Without forward emergency braking)
2. Check the continuity between the ADAS control unit harness connector and the ADAS control unit 2 harness connector (With forward emergency braking) or the ADAS control unit 2 harness connector and the chassis control module harness connector (Without forward emergency braking).

• With forward emergency braking

ADAS control unit harness connector		ADAS control unit 2 harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B4	6	M148	9	Existed
	7		10	Existed

• Without forward emergency braking

ADAS control unit 2 harness connector		Chassis control module harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M148	2	M96	11	Existed
	5		8	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the harness between the ADAS control unit and the ADAS control unit 2 (With forward emergency braking) or the ADAS control unit 2 and the chassis control module (Without forward emergency braking).

4.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

1. Disconnect all the unit connectors on ITS CAN communication circuit.
2. Check the continuity between the ADAS control unit harness connector terminals (With forward emergency braking) or the ADAS control unit 2 harness connector terminals (Without forward emergency braking).

• With forward emergency braking

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
B4	6	7	Not existed

- Without forward emergency braking

ADAS control unit 2 harness connector			Continuity
Connector No.	Terminal No.		
B148	2	5	Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause.

5. CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the ADAS control unit harness connector and the ground (With forward emergency braking) or the ADAS control unit 2 harness connector and the ground (Without forward emergency braking).

- With forward emergency braking

ADAS control unit harness connector		Ground	Continuity
Connector No.	Terminal No.		
B4	6		Not existed
	7		Not existed

- Without forward emergency braking

ADAS control unit 2 harness connector		Ground	Continuity
Connector No.	Terminal No.		
B148	2		Not existed
	5		Not existed

Is the inspection result normal?

YES >> GO TO 6.
NO >> Check the harness and repair the root cause.

6. CHECK TERMINATION CIRCUIT

1. Remove the ADAS control unit and the ADAS control unit 2 (With forward emergency braking) or the ADAS control unit 2 and the chassis control module (Without forward emergency braking).
2. Check the resistance between the ADAS control unit terminals (With forward emergency braking) or the ADAS control unit 2 terminals (Without forward emergency braking).

- With forward emergency braking

ADAS control unit		Resistance (Ω)
Terminal No.		
6	7	Approx. 108 – 132

- Without forward emergency braking

ADAS control unit 2		Resistance (Ω)
Terminal No.		
2	5	Approx. 108 – 132

3. Check the resistance between the ADAS control unit 2 terminals (With forward emergency braking) or the chassis control module terminals (Without forward emergency braking).

- With forward emergency braking

ADAS control unit 2		Resistance (Ω)
Terminal No.		
9	10	Approx. 108 – 132

- Without forward emergency braking

Chassis control module		Resistance (Ω)
Terminal No.		
11	8	Approx. 108 – 132

Is the inspection result normal?

YES >> GO TO 7.
NO >> Replace the ADAS control unit and/or the ADAS control unit 2 (With forward emergency braking) or the ADAS control unit 2 and/or the chassis control module (Without forward emergency braking).

7.CHECK SYMPTOM

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

Inspection result

Reproduced>>GO TO 8.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

8.CHECK UNIT REPRODUCTION

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

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect one of the unit connectors of ITS CAN communication circuit.
   NOTE:
   ADAS control unit and ADAS control unit 2 (With forward emergency braking) or ADAS control unit 2 and chassis control module (Without forward emergency braking) 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.

IT CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000015202849

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect all the unit connectors on IT CAN communication circuit.
4. Check the terminals and connectors on IT CAN communication circuit 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 3CH CAN gateway.
2. Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	9	13	Existed
	10	14	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 IT CAN communication circuit.
2. Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	9	10	Not existed

Is the inspection result normal?

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

4.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the 3CH CAN gateway and the ground.

3CH CAN gateway harness connector		Ground	Continuity
Connector No.	Terminal No.		
M29	9		Not existed
	10		Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause.

5.CHECK 3CH CAN GATEWAY TERMINATION CIRCUIT

1. Remove the 3CH CAN gateway.
2. Check the resistance between the 3CH CAN gateway terminals.

3CH CAN gateway	Resistance (Ω)
Terminal No.	

9	10	Approx. 108 – 132
13	14	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Replace the 3CH CAN gateway.

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 12V battery cable from the negative terminal.
3. Disconnect one of the unit connectors of IT CAN communication circuit.
   NOTE:
   3CH CAN gateway 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.

DIAGNOSTIC CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000015202850

1.CONNECTOR INSPECTION

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

- Data link connector
- 3CH CAN gateway

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of 3CH CAN gateway.
2. Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	3	11	Existed
	4	12	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)

Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	3	4	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 3CH CAN gateway harness connector and the ground.

3CH CAN gateway harness connector		Ground	Continuity
Connector No.	Terminal No.		
M29	3		Not existed
	4		Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair or replace the root cause.

5.CHECK 3CH CAN GATEWAY TERMINATION CIRCUIT

1. Remove the 3CH CAN gateway.
2. Check the resistance between the 3CH CAN gateway terminals.

3CH CAN gateway	Resistance (Ω)
Terminal No.	

3	4	Approx. 108 – 132
11	12	Approx. 108 – 132

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the diagnostic CAN communication circuit.
NO >> Replace the 3CH CAN gateway.

HEV SYSTEM CAN CIRCUIT

Diagnosis Procedure

INFOID:0000000015202851

DANGER:

Since hybrid vehicles and electric vehicles contain a high voltage battery, there is the risk of electric shock, electric leakage, or similar accidents if the high voltage component and vehicle are handled incorrectly. Be sure to follow the correct work procedures when performing inspection and maintenance.

WARNING:

- **Be sure to remove the service plug in order to disconnect the high voltage circuits before performing inspection or maintenance of high voltage system harnesses and parts.**
- **The removed service plug must always be carried in a pocket of the responsible worker or placed in the tool box during the procedure to prevent the plug from being connected by mistake.**
- **Be sure to wear insulating protective equipment before beginning work on the high voltage system.**
- **Never allow workers other than the responsible person to touch the vehicle containing high voltage parts. To keep others from touching the high voltage parts, these parts must be covered with an insulating sheet except when using them.**
- **Refer to GI-28, "High Voltage Precautions".**

CAUTION:

Never bring the vehicle into the READY status with the service plug removed unless otherwise instructed in the Service Manual. A malfunction may occur if this is not observed.

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect all the control unit connectors on HEV system CAN circuit.
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 (OPEN CIRCUIT)

1. Disconnect the following harness connectors.
- ECM
- Li-ion battery
2. Check the continuity between the ECM harness connector and the Li-ion battery harness connector.

ECM harness connector		Li-ion battery harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E16	138	B59	3	Existed
	137		15	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the harness between the ECM and the Li-ion battery.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

1. Disconnect all the unit connectors on HEV system CAN circuit.
2. Check the continuity between the ECM harness connector terminals.

ECM harness connector			Continuity
Connector No.	Terminal No.		
E16	138	137	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 ECM harness connector and the ground.

ECM harness connector		Ground	Continuity
Connector No.	Terminal No.		
E16	138		Not existed
	137		Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair or replace the root cause.

5.CHECK ECM AND LI-ION BATTERY CONTROLLER TERMINATION CIRCUIT

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

ECM		Resistance (Ω)
Terminal No.		
138	137	Approx. 108 – 132

3. Check the resistance between the Li-ion battery terminals.

Li-ion battery		Resistance (Ω)
Terminal No.		
3	15	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Replace the ECM and/or the Li-ion battery.

6.CHECK SYMPTOM

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

Inspection result

Reproduced>>GO TO 7.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

7.CHECK CONTROL UNIT REPRODUCTION

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

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect one of the control unit connectors of HEV system CAN circuit.
   NOTE:
   ECM and Li-ion battery controller have a termination circuit. Check other control units first.
4. Connect the 12V battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although control unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

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

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN IPDM-E AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000015202852

1.CHECK CONNECTOR

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

- Harness connector 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		60J	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)

1. Disconnect the connector of combination meter.
2. Check the continuity between the harness connector and the combination meter harness connector.

Harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	61J	M77	41	Existed
	60J		42	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 combination meter.
NO >> Repair the main line between the harness connector M31 and the combination meter.

MAIN LINE BETWEEN M&A AND STRG CIRCUIT

Diagnosis Procedure

INFOID:0000000015202853

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Combination meter
- Steering angle sensor

4. Check the continuity between the combination meter harness connector and the steering angle sensor harness connector.

Combination meter harness connector		Steering angle sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M77	41	M56	5	Existed
	42		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the steering angle sensor.
NO >> Repair the main line between the combination meter and the steering angle sensor.

MAIN LINE BETWEEN STRG AND PWBD CIRCUIT

Diagnosis Procedure

INFOID:0000000015202854

1.CHECK CONNECTOR

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

- Harness connector 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.

- Steering angle sensor
- Harness connectors M69 and B41

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

Steering angle sensor harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M56	5	M69	25	Existed
	2		24	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the steering angle sensor 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 steering angle sensor 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 EPS/DAST 3 AND ICC CIRCUIT

Diagnosis Procedure

INFOID:0000000015202855

1.CHECK CONNECTOR

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

- Harness connector 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.

- EPS control unit
- Harness connectors M69 and B41

2. Check the continuity between the EPS control unit harness connector and the harness connector.

EPS control unit harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M49	2	M69	28	Existed
	1		27	Existed

Is the inspection result normal?

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

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

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

Harness connector		ADAS control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	28	B4	1	Existed
	27		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the EPS control unit and the ADAS control unit.
NO >> Repair the main line between the harness connector B41 and the ADAS control unit.

MAIN LINE BETWEEN AVM AND RDR-R CIRCUIT

Diagnosis Procedure

INFOID:0000000015202856

1.CHECK CONNECTOR

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

- Harness connector B49
- Harness connector B140

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Harness connectors M52 and B43
- Harness connectors B49 and B140

2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B43	8	B49	8	Existed
	16		9	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the harness connectors B43 and B49.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of side radar RH.
2. Check the continuity between the harness connector and the side radar RH harness connector.

Harness connector		Side radar RH harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B140	8	B105	6	Existed
	9		7	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 around view monitor control unit and the side radar RH.
NO >> Repair the main line between the harness connector B140 and the side radar RH.

MAIN LINE BETWEEN RDR-R AND RDR-L CIRCUIT

Diagnosis Procedure

INFOID:0000000015202857

1.CHECK CONNECTOR

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

- Harness connector B140
- Harness connector B49

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Side radar RH
- Harness connectors B140 and B49

2. Check the continuity between the side radar RH harness connector and the harness connector.

Side radar RH harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B105	6	B140	13	Existed
	7		14	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the side radar RH and the harness connector B140.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of side radar LH.
2. Check the continuity between the harness connector and the side radar LH harness connector.

Harness connector		Side radar LH harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B49	13	B35	6	Existed
	14		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar RH and the side radar LH.
NO >> Repair the main line between the harness connector B49 and the side radar LH.

MAIN LINE BETWEEN EV/HEV AND HV BAT CIRCUIT

Diagnosis Procedure

INFOID:0000000015202858

1.CHECK CONNECTOR

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

- Harness connector 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.

- HPCM
- Harness connectors E152 and M31

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

HPCM harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E130	97	E152	70J	Existed
	98		69J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the HPCM and the harness connector E152.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors M69 and B41.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	70J	M69	12	Existed
	69J		11	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the HPCM and the Li-ion battery.
NO >> Repair the main line between the harness connector M31 and the Li-ion battery.

ECM BRANCH LINE CIRCUIT (VEHICLE CAN COMMUNICATION 1 CIRCUIT)

Diagnosis Procedure

INFOID:0000000015202859

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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	124	123	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line (Vehicle CAN communication 1 circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to EC-184, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to EC-595, "Removal and Installation".
YES (Past error)>>Error was detected in the ECM branch line (Vehicle CAN communication 1 circuit side).
NO >> Repair the power supply and the ground circuit.

ECM BRANCH LINE CIRCUIT (HEV SYSTEM CAN CIRCUIT)

Diagnosis Procedure

INFOID:0000000015202860

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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	138	137	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line (HEV system CAN circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to EC-184, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to EC-595, "Removal and Installation".
YES (Past error)>>Error was detected in the ECM branch line (HEV system CAN circuit side).
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202861

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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	19	30	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-169, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-204, "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.

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

Diagnosis Procedure

INFOID:0000000015202862

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

HPCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E130	84	83	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the HPCM branch line (Vehicle CAN communication 1 circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the HPCM. Refer to HBC-117, "HPCM : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the HPCM. Refer to HBC-335, "Removal and Installation".
YES (Past error)>>Error was detected in the HPCM branch line (Vehicle CAN communication 1 circuit side)
NO >> Repair the power supply and the ground circuit.

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

Diagnosis Procedure

INFOID:0000000015202863

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

HPCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E130	97	98	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Replace the HPCM branch line (HEV system CAN circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the HPCM. Refer to HBC-117, "HPCM : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the HPCM. Refer to HBC-335, "Removal and Installation".
YES (Past error)>>Error was detected in the HPCM branch line (HEV system CAN circuit side).
NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202864

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
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-45, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-46, "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.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202866

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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-62, "COMBINATION METER : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to MWI-81, "Removal and Installation".
YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

3CH CGW BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202867

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 3CH CAN gateway 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 3CH CAN gateway.
2. Check the resistance between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M29	1	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the 3CH CAN gateway branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the 3CH CAN gateway. Refer to LAN-178, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the 3CH CAN gateway. Refer to LAN-179, "Removal and Installation".
YES (Past error)>>Error was detected in the 3CH CAN gateway branch line.
NG >> Repair the power supply and the ground circuit.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202868

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 12V 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-35, "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 (VEHICLE CAN COMMUNICATION 1 CIRCUIT)

Diagnosis Procedure

INFOID:0000000015202869

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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 (Vehicle CAN communication 1 circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the chassis control module. Refer to DAS-523, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the chassis control module. Refer to DAS-529, "Removal and Installation".
YES (Past error)>>Error was detected in the chassis control module branch line (Vehicle CAN communication 1 circuit side).
NG >> Repair the power supply and the ground circuit.

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202871

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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-63, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-208, "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.

ADP BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202873

1.CHECK CONNECTOR

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

- Driver seat control unit
- Harness connector B200
- Harness connector B57

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 driver seat control unit.
2. Check the resistance between the driver seat control unit harness connector terminals.

Driver seat control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B213	1	17	Approx. 54 – 66

Is the measurement value within the specification?

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

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the driver seat control unit. Refer to ADP-56, "DRIVER SEAT CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the driver seat control unit. Refer to ADP-102, "Removal and Installation".
YES (Past error)>>Error was detected in the driver seat control unit branch line.
NG >> Repair the power supply and the ground circuit.

PWBD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202874

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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-204, "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-343, "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:0000000015202875

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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 BCS-66, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-73, "Removal and Installation".
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

BRAKE BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202878

1.CHECK CONNECTOR

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

- Hydraulic brake booster unit
- BCM
- E152
- 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 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of BCM.
2. Disconnect the connector of hydraulic brake booster unit.
3. Check the resistance between the hydraulic brake booster unit harness connector terminals.

Hydraulic brake booster unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E35	9	10	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the hydraulic brake booster unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the hydraulic brake booster unit. Refer to BR-39, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the hydraulic brake booster unit. Refer to BR-65, "Removal and Installation".
YES (Past error)>>Error was detected in the hydraulic brake booster unit branch line.
NO >> Repair the power supply and the ground circuit.

EPS/DAST 3 BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202879

1.CHECK CONNECTOR

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

- EPS 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of BCM.
2. Disconnect the connector of EPS control unit.
3. 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 4.
NO >> Repair the EPS control unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to STC-18, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to STC-39, "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.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202880

1.CHECK CONNECTOR

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

- A/C auto amp.
- 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

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

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

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the A/C auto amp. branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the A/C auto amp. Refer to HAC-107, "A/C AUTO AMP. : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the A/C auto amp. Refer to HAC-120, "Removal and Installation".
YES (Past error)>>Error was detected in the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.

ICC BRANCH LINE CIRCUIT (VEHICLE CAN COMMUNICATION 2 CIRCUIT)

Diagnosis Procedure

INFOID:0000000015202882

1.CHECK CONNECTOR

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

- ADAS control unit
- 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 (Vehicle CAN communication circuit 2 side). Refer to LAN-634, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

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

ADAS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B4	1	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the ADAS control unit branch line (Vehicle CAN communication 2 circuit side).

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-208, "ADAS CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-210, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (Vehicle CAN communication 2 circuit side).
NO >> Repair the power supply and the ground circuit.

ICC BRANCH LINE CIRCUIT (ITS CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000015202884

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of ADAS 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 ADAS control unit.
2. Check the resistance between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B4	6	7	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ADAS control unit branch line (ITS CAN communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-208, "ADAS CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-210, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (ITS CAN communication circuit side).
NO >> Repair the power supply and the ground circuit.

ICC BRANCH LINE CIRCUIT (CHASSIS CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000015202885

1.CHECK CONNECTOR

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

- ADAS control unit
- Chassis control module

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

Chassis control module harness connector			Continuity
Connector No.	Terminal No.		
M96	19	11	Existed
	7	8	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (Chassis CAN communication circuit side). Refer to LAN-634, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of chassis control module.
2. Disconnect the connector of ADAS control unit.
3. Check the resistance between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B4	8	9	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the ADAS control unit branch line (Chassis CAN communication circuit side).

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-208, "ADAS CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-210, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (Chassis CAN communication circuit side).
NO >> Repair the power supply and the ground circuit.

VSP BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202886

1.CHECK CONNECTOR

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

- Approaching vehicle sound for pedestrians (VSP) control unit
- BCM
- 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 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of BCM.
2. Disconnect the connector of approaching vehicle sound for pedestrians (VSP) control unit.
3. Check the resistance between the approaching vehicle sound for pedestrians (VSP) control unit harness connector terminals.

Approaching vehicle sound for pedestrians (VSP) control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E154	6	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the approaching vehicle sound for pedestrians (VSP) control unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the approaching vehicle sound for pedestrians (VSP) control unit. Refer to VSP-32, "APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the approaching vehicle sound for pedestrians (VSP) control unit. Refer to VSP-35, "Removal and Installation".
YES (Past error)>>Error was detected in the approaching vehicle sound for pedestrians (VSP) control unit branch line.
NO >> Repair the power supply and the ground circuit.

LASER BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202887

1.CHECK CONNECTOR

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

- Distance sensor
- Harness connector E34
- Harness connector B40

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

Distance sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E21	3	2	Approx. 54 – 66

Is the measurement value within the specification?

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

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the distance sensor. Refer to CCS-188, "ICC SENSOR : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the distance sensor. Refer to CCS-206, "Removal and Installation".
YES (Past error)>>Error was detected in the distance sensor branch line.
NO >> Repair the power supply and the ground circuit.

AVM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202888

1.CHECK CONNECTOR

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

- Around view monitor control unit
- Harness connector M52
- Harness connector B43

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

-

Around view monitor control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M112	26	24	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the around view monitor control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the around view monitor control unit. Refer to AV-437, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the around view monitor control unit. Refer to AV-441, "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.

RDR-R BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202889

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

Side radar RH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B105	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the side radar RH branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar RH. Refer to DAS-376, "SIDE RADAR RH : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the side radar RH. Refer to DAS-405, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar RH branch line.
NO >> Repair the power supply and the ground circuit.

RDR-L BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202890

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

Side radar LH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B35	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the side radar LH branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar LH. Refer to DAS-376, "SIDE RADAR LH : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the side radar LH. Refer to DAS-405, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar LH branch line.
NO >> Repair the power supply and the ground circuit.

ICC 2 BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000015202892

1.CHECK CONNECTOR

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

- ADAS control unit 2
- Harness connector M52 (With forward emergency braking)
- Harness connector B43 (With forward emergency braking)

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 ADAS control unit 2.
2. Check the resistance between the ADAS control unit 2 harness connector terminals.

- With forward emergency braking

ADAS control unit 2 harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M148	9	10	Approx. 108 – 132

- Without forward emergency braking

ADAS control unit 2 harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M148	2	5	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ADAS control unit 2 branch line (ITS CAN communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit 2. Refer to DAS-208, "ADAS CONTROL UNIT 2 : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit 2. Refer to DAS-212, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit 2 branch line (ITS CAN communication circuit side).
NO >> Repair the power supply and the ground circuit.

ICC 2 BRANCH LINE CIRCUIT (CHASSIS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000015202894

1.CHECK CONNECTOR

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

- ADAS control unit 2
- Chassis control module

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

Chassis control module harness connector			Continuity
Connector No.	Terminal No.		
M96	19	11	Existed
	7	8	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (Chassis CAN communication circuit side). Refer to LAN-639, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of chassis control module.
2. Disconnect the connector of ADAS control unit 2.
3. Check the resistance between the ADAS control unit 2 harness connector terminals.

ADAS control unit 2 harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M148	2	5	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the ADAS control unit 2 branch line (Chassis communication circuit side).

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit 2. Refer to DAS-208, "ADAS CONTROL UNIT 2 : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit 2. Refer to DAS-212, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit 2 branch line (Chassis communication circuit side).
NO >> Repair the power supply and the ground circuit.

LANE BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202897

1.CHECK CONNECTOR

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

- Lane camera unit
- Chassis control module (With forward emergency braking)
- Harness connector R11
- Harness connector M156

Is the inspection result normal?

YES >> GO TO 2. (With forward emergency braking)
YES >> GO TO 3. (Without forward emergency braking)
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of chassis control module.
2. Check the continuity between the chassis control module harness connector terminals.

Chassis control module harness connector			Continuity
Connector No.	Terminal No.		
M96	19	11	Existed
	7	8	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (Chassis CAN communication circuit side). Refer to LAN-639, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of chassis control module (With forward emergency braking).
2. Disconnect the connector of lane camera unit.
3. Check the resistance between the lane camera unit harness connector terminals.

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Lane camera unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
R17	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the lane camera unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the lane camera unit. Refer to DAS-377, "LANE CAMERA UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the lane camera unit. Refer to DAS-410, "Removal and Installation".
YES (Past error)>>Error was detected in the lane camera unit branch line.
NO >> Repair the power supply and the ground circuit.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202898

1.CHECK CONNECTOR

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

- 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-193, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the TCM. Refer to TM-213, "Removal and Installation".

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

INV/MC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202899

1.CHECK CONNECTOR

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

- Traction motor inverter
- Harness connector F6
- Harness connector E4

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

Traction motor inverter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F36	27	35	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Replace the traction motor inverter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the traction motor inverter. Refer to TMS-68, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the traction motor inverter. Refer to TMS-132, "Removal and Installation".
YES (Past error)>>Error was detected in the traction motor inverter branch line.
NO >> Repair the power supply and the ground circuit.

HV BAT BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202900

DANGER:

Since hybrid vehicles and electric vehicles contain a high voltage battery, there is the risk of electric shock, electric leakage, or similar accidents if the high voltage component and vehicle are handled incorrectly. Be sure to follow the correct work procedures when performing inspection and maintenance.

WARNING:

- **Be sure to remove the service plug in order to disconnect the high voltage circuits before performing inspection or maintenance of high voltage system harnesses and parts.**
- **The removed service plug must always be carried in a pocket of the responsible worker or placed in the tool box during the procedure to prevent the plug from being connected by mistake.**
- **Be sure to wear insulating protective equipment before beginning work on the high voltage system.**
- **Never allow workers other than the responsible person to touch the vehicle containing high voltage parts. To keep others from touching the high voltage parts, these parts must be covered with an insulating sheet except when using them.**
- **Refer to GI-28, "High Voltage Precautions".**

CAUTION:

Never bring the vehicle into the READY status with the service plug removed unless otherwise instructed in the Service Manual. A malfunction may occur if this is not observed.

1.CHECK CONNECTOR

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

- Li-ion battery
- Harness connector B41
- Harness connector M69

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

Li-ion battery harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B59	3	15	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Replace the Li-ion battery branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Li-ion battery. Refer to HBB-149, "LI-ION BATTERY CONTROLLER : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the Li-ion battery. Refer to HBB-155, "Removal and Installation".
YES (Past error)>>Error was detected in the Li-ion battery controller branch line.
NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202902

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202903

1.CHECK CONNECTOR

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

- AV control unit
- 3CH CAN gateway

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of 3CH CAN gateway.
2. Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	9	13	Existed
	10	14	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (IT CAN communication circuit side). Refer to LAN-150, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

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

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M108	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-315, "AV CONTROL UNIT : Diagnosis Procedure"
- Navigation without BOSE: AV-213, "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-352, "Removal and Installation"
- Navigation without BOSE: AV-239, "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.

TCU BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202904

1.CHECK CONNECTOR

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

- TCU
- 3CH CAN gateway

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of 3CH CAN gateway.
2. Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	9	13	Existed
	10	14	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (IT CAN communication circuit side). Refer to LAN-150, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of 3CH CAN gateway.
2. Disconnect the connector of TCU.
3. Check the resistance between the TCU harness connector terminals.

TCU harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M35	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the TCU branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCU. Refer to LAN-140, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the TCU. Refer to AV-531, "Removal and Installation".
YES (Past error)>>Error was detected in the TCU branch line.
NO >> Repair the power supply and the ground circuit.

VEHICLE CAN COMMUNICATION 1 CIRCUIT

Diagnosis Procedure

INFOID:0000000015202905

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect all the unit connectors on vehicle CAN communication 1 circuit.
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 3CH CAN gateway terminals.

3CH CAN gateway			Continuity
Connector No.	Terminal No.		
M29	1	2	Not 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)

Check the continuity between the 3CH CAN gateway and the ground.

3CH CAN gateway		Ground	Continuity
Connector No.	Terminal No.		
M29	1		Not existed
	2		Not existed

Is the inspection result normal?

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

4.CHECK ECM AND BCM TERMINATION CIRCUIT

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

ECM		Resistance (Ω)
Terminal No.		
124	123	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 12V battery cable from the negative terminal.
3. Disconnect one of the unit connectors of vehicle CAN communication 1 circuit.
   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.

VEHICLE CAN COMMUNICATION 2 CIRCUIT

Diagnosis Procedure

INFOID:0000000015202906

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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 vehicle CAN communication 2 circuit.
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 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 BCM.

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 12V battery cable from the negative terminal.
3. Disconnect one of the unit connectors of vehicle CAN communication 2 circuit.
   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.

ITS CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000015202907

1.CHECK CAN DIAGNOSIS

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

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

YES >> GO TO 2.
NO >> Check and repair vehicle CAN communication 1 circuit and/or vehicle CAN communication 2 circuit.

2.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the ADAS control unit (With forward emergency braking) or the ADAS control unit 2 (Without forward emergency braking) for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

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

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.
- ADAS control unit (With forward emergency braking)
- ADAS control unit 2
- Chassis control module (Without forward emergency braking)
2. Check the continuity between the ADAS control unit harness connector and the ADAS control unit 2 harness connector (With forward emergency braking) or the ADAS control unit 2 harness connector and the chassis control module harness connector (Without forward emergency braking).

• With forward emergency braking

ADAS control unit harness connector		ADAS control unit 2 harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B4	6	M148	9	Existed
	7		10	Existed

• Without forward emergency braking

ADAS control unit 2 harness connector		Chassis control module harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M148	2	M96	11	Existed
	5		8	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the harness between the ADAS control unit and the ADAS control unit 2 (With forward emergency braking) or the ADAS control unit 2 and the chassis control module (Without forward emergency braking).

4.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

1. Disconnect all the unit connectors on ITS CAN communication circuit.
2. Check the continuity between the ADAS control unit harness connector terminals (With forward emergency braking) or the ADAS control unit 2 harness connector terminals (Without forward emergency braking).

• With forward emergency braking

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
B4	6	7	Not existed

• Without forward emergency braking

ADAS control unit 2 harness connector			Continuity
Connector No.	Terminal No.		
B148	2	5	Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause.

5. CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the ADAS control unit harness connector and the ground (With forward emergency braking) or the ADAS control unit 2 harness connector and the ground (Without forward emergency braking).

• With forward emergency braking

ADAS control unit harness connector		Ground	Continuity
Connector No.	Terminal No.		
B4	6		Not existed
	7		Not existed

• Without forward emergency braking

ADAS control unit 2 harness connector		Ground	Continuity
Connector No.	Terminal No.		
B148	2		Not existed
	5		Not existed

Is the inspection result normal?

YES >> GO TO 6.
NO >> Check the harness and repair the root cause.

6. CHECK TERMINATION CIRCUIT

1. Remove the ADAS control unit and the ADAS control unit 2 (With forward emergency braking) or the ADAS control unit 2 and the chassis control module (Without forward emergency braking).
2. Check the resistance between the ADAS control unit terminals (With forward emergency braking) or the ADAS control unit 2 terminals (Without forward emergency braking).

- With forward emergency braking

ADAS control unit		Resistance (Ω)
Terminal No.		
6	7	Approx. 108 – 132

- Without forward emergency braking

ADAS control unit 2		Resistance (Ω)
Terminal No.		
2	5	Approx. 108 – 132

3. Check the resistance between the ADAS control unit 2 terminals (With forward emergency braking) or the chassis control module terminals (Without forward emergency braking).

- With forward emergency braking

ADAS control unit 2		Resistance (Ω)
Terminal No.		
9	10	Approx. 108 – 132

- Without forward emergency braking

Chassis control module		Resistance (Ω)
Terminal No.		
11	8	Approx. 108 – 132

Is the inspection result normal?

YES >> GO TO 7.
NO >> Replace the ADAS control unit and/or the ADAS control unit 2 (With forward emergency braking) or the ADAS control unit 2 and/or the chassis control module (Without forward emergency braking).

7.CHECK SYMPTOM

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

Inspection result

Reproduced>>GO TO 8.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

8.CHECK UNIT REPRODUCTION

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

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect one of the unit connectors of ITS CAN communication circuit.
   NOTE:
   ADAS control unit and ADAS control unit 2 (With forward emergency braking) or ADAS control unit 2 and chassis control module (Without forward emergency braking) 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.

CHASSIS CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000015202908

1.CHECK CAN DIAGNOSIS

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

Are the vehicle CAN communication 1, the vehicle CAN communication 2 and the ITS CAN communication circuits normal?

YES >> GO TO 2.
NO >> Check and repair vehicle CAN communication 1 circuit, vehicle CAN communication 2 circuit and/or ITS CAN communication circuit.

2.CONNECTOR INSPECTION

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

Is the inspection result normal?

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

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of chassis control module.
2. Check the continuity between the chassis control module harness connector terminals.

Chassis control module harness connector			Continuity
Connector No.	Terminal No.		
M96	11	19	Existed
	8	7	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)

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

Chassis control module harness connector			Continuity
Connector No.	Terminal No.		
M96	11	8	Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause.

5.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the chassis control module and the ground.

Chassis control module harness connector		Ground	Continuity
Connector No.	Terminal No.		
M96	11		Not existed
	8		Not existed

Is the inspection result normal?

YES >> GO TO 6.

NO >> Check the harness and repair the root cause.

6.CHECK CHASSIS CONTROL MODULE TERMINATION CIRCUIT

1. Remove the chassis control module.
2. Check the resistance between the chassis control module terminals.

Chassis control module		Resistance (Ω)
Terminal No.		
11	8	Approx. 108 – 132
19	7	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 7.
NO >> Replace the chassis control module.

7.CHECK SYMPTOM

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

Inspection result

Reproduced>>GO TO 8.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

8.CHECK UNIT REPRODUCTION

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

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect one of the unit connectors of chassis communication circuit.
   NOTE:
   Chassis control module 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.

IT CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000015202909

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect all the unit connectors on IT CAN communication circuit.
4. Check the terminals and connectors on IT CAN communication circuit 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 3CH CAN gateway.
2. Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	9	13	Existed
	10	14	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 IT CAN communication circuit.
2. Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	9	10	Not existed

Is the inspection result normal?

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

4.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the 3CH CAN gateway and the ground.

3CH CAN gateway harness connector		Ground	Continuity
Connector No.	Terminal No.		
M29	9		Not existed
	10		Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause.

5.CHECK 3CH CAN GATEWAY TERMINATION CIRCUIT

1. Remove the 3CH CAN gateway.
2. Check the resistance between the 3CH CAN gateway terminals.

3CH CAN gateway	Resistance (Ω)
Terminal No.	

9	10	Approx. 108 – 132
13	14	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Replace the 3CH CAN gateway.

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 12V battery cable from the negative terminal.
3. Disconnect one of the unit connectors of IT CAN communication circuit.
   NOTE:
   3CH CAN gateway 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.

DIAGNOSTIC CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000015202910

1.CONNECTOR INSPECTION

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

- Data link connector
- 3CH CAN gateway

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of 3CH CAN gateway.
2. Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	3	11	Existed
	4	12	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)

Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	3	4	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 3CH CAN gateway harness connector and the ground.

3CH CAN gateway harness connector		Ground	Continuity
Connector No.	Terminal No.		
M29	3		Not existed
	4		Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair or replace the root cause.

5.CHECK 3CH CAN GATEWAY TERMINATION CIRCUIT

1. Remove the 3CH CAN gateway.
2. Check the resistance between the 3CH CAN gateway terminals.

3CH CAN gateway	Resistance (Ω)
Terminal No.	

3	4	Approx. 108 – 132
11	12	Approx. 108 – 132

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the diagnostic CAN communication circuit.
NO >> Replace the 3CH CAN gateway.

HEV SYSTEM CAN CIRCUIT

Diagnosis Procedure

INFOID:0000000015202911

DANGER:

Since hybrid vehicles and electric vehicles contain a high voltage battery, there is the risk of electric shock, electric leakage, or similar accidents if the high voltage component and vehicle are handled incorrectly. Be sure to follow the correct work procedures when performing inspection and maintenance.

WARNING:

- **Be sure to remove the service plug in order to disconnect the high voltage circuits before performing inspection or maintenance of high voltage system harnesses and parts.**
- **The removed service plug must always be carried in a pocket of the responsible worker or placed in the tool box during the procedure to prevent the plug from being connected by mistake.**
- **Be sure to wear insulating protective equipment before beginning work on the high voltage system.**
- **Never allow workers other than the responsible person to touch the vehicle containing high voltage parts. To keep others from touching the high voltage parts, these parts must be covered with an insulating sheet except when using them.**
- **Refer to GI-28, "High Voltage Precautions".**

CAUTION:

Never bring the vehicle into the READY status with the service plug removed unless otherwise instructed in the Service Manual. A malfunction may occur if this is not observed.

1. CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect all the control unit connectors on HEV system CAN circuit.
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 (OPEN CIRCUIT)

1. Disconnect the following harness connectors.
- ECM
- Li-ion battery
2. Check the continuity between the ECM harness connector and the Li-ion battery harness connector.

ECM harness connector		Li-ion battery harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E16	138	B59	3	Existed
	137		15	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the harness between the ECM and the Li-ion battery.

3. CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

1. Disconnect all the unit connectors on HEV system CAN circuit.
2. Check the continuity between the ECM harness connector terminals.

ECM harness connector			Continuity
Connector No.	Terminal No.		
E16	138	137	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 ECM harness connector and the ground.

ECM harness connector		Ground	Continuity
Connector No.	Terminal No.		
E16	138		Not existed
	137		Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair or replace the root cause.

5.CHECK ECM AND LI-ION BATTERY CONTROLLER TERMINATION CIRCUIT

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

ECM		Resistance (Ω)
Terminal No.		
138	137	Approx. 108 – 132

3. Check the resistance between the Li-ion battery terminals.

Li-ion battery		Resistance (Ω)
Terminal No.		
3	15	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Replace the ECM and/or the Li-ion battery.

6.CHECK SYMPTOM

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

Inspection result

Reproduced>>GO TO 7.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

7.CHECK CONTROL UNIT REPRODUCTION

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

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect one of the control unit connectors of HEV system CAN circuit.
   NOTE:
   ECM and Li-ion battery controller have a termination circuit. Check other control units first.
4. Connect the 12V battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although control unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

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

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN IPDM-E AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000015202912

1.CHECK CONNECTOR

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

- Harness connector 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		60J	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)

1. Disconnect the connector of combination meter.
2. Check the continuity between the harness connector and the combination meter harness connector.

Harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	61J	M77	41	Existed
	60J		42	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 combination meter.
NO >> Repair the main line between the harness connector M31 and the combination meter.

MAIN LINE BETWEEN M&A AND STRG CIRCUIT

Diagnosis Procedure

INFOID:0000000015202913

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

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

Combination meter harness connector		Steering angle sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M77	41	M56	5	Existed
	42		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the steering angle sensor.
NO >> Repair the main line between the combination meter and the steering angle sensor.

MAIN LINE BETWEEN STRG AND 4WD CIRCUIT

Diagnosis Procedure

INFOID:0000000015202914

1.CHECK CONNECTOR

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

- Harness connector 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.

- Steering angle sensor
- Harness connectors M69 and B41

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

Steering angle sensor harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M56	5	M69	25	Existed
	2		24	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the steering angle sensor 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 steering angle sensor and the AWD control unit.
NO >> Repair the main line between the harness connector B41 and the AWD control unit.

MAIN LINE BETWEEN EV/HEV AND HV BAT CIRCUIT

Diagnosis Procedure

INFOID:0000000015202930

1.CHECK CONNECTOR

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

- Harness connector 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.

- HPCM
- Harness connectors E152 and M31

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

HPCM harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E130	97	E152	70J	Existed
	98		69J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the HPCM and the harness connector E152.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors M69 and B41.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	70J	M69	12	Existed
	69J		11	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the HPCM and the Li-ion battery.
NO >> Repair the main line between the harness connector M31 and the Li-ion battery.

ECM BRANCH LINE CIRCUIT (VEHICLE CAN COMMUNICATION 1 CIRCUIT)

Diagnosis Procedure

INFOID:0000000015202931

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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	124	123	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line (Vehicle CAN communication 1 circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to EC-184, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to EC-595, "Removal and Installation".
YES (Past error)>>Error was detected in the ECM branch line (Vehicle CAN communication 1 circuit side).
NO >> Repair the power supply and the ground circuit.

ECM BRANCH LINE CIRCUIT (HEV SYSTEM CAN CIRCUIT)

Diagnosis Procedure

INFOID:0000000015202932

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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	138	137	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line (HEV system CAN circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to EC-184, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to EC-595, "Removal and Installation".
YES (Past error)>>Error was detected in the ECM branch line (HEV system CAN circuit side).
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202933

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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	19	30	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-169, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-204, "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.

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

Diagnosis Procedure

INFOID:0000000015202934

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

HPCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E130	84	83	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the HPCM branch line (Vehicle CAN communication 1 circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the HPCM. Refer to HBC-117, "HPCM : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the HPCM. Refer to HBC-335, "Removal and Installation".
YES (Past error)>>Error was detected in the HPCM branch line (Vehicle CAN communication 1 circuit side)
NO >> Repair the power supply and the ground circuit.

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

Diagnosis Procedure

INFOID:0000000015202935

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

HPCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E130	97	98	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Replace the HPCM branch line (HEV system CAN circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the HPCM. Refer to HBC-117, "HPCM : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the HPCM. Refer to HBC-335, "Removal and Installation".
YES (Past error)>>Error was detected in the HPCM branch line (HEV system CAN circuit side).
NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202936

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
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-45, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-46, "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.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202937

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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-62, "COMBINATION METER : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to MWI-81, "Removal and Installation".
YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

3CH CGW BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202938

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 3CH CAN gateway 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 3CH CAN gateway.
2. Check the resistance between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M29	1	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the 3CH CAN gateway branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the 3CH CAN gateway. Refer to LAN-178, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the 3CH CAN gateway. Refer to LAN-179, "Removal and Installation".
YES (Past error)>>Error was detected in the 3CH CAN gateway branch line.
NG >> Repair the power supply and the ground circuit.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202939

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 12V 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-35, "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 (VEHICLE CAN COMMUNICATION 1 CIRCUIT)

Diagnosis Procedure

INFOID:0000000015202940

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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 (Vehicle CAN communication 1 circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the chassis control module. Refer to DAS-523, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the chassis control module. Refer to DAS-529, "Removal and Installation".
YES (Past error)>>Error was detected in the chassis control module branch line (Vehicle CAN communication 1 circuit side).
NG >> Repair the power supply and the ground circuit.

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202942

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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-63, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-208, "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.

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202943

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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-62, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the AWD control unit. Refer to DLN-72, "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:0000000015202944

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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 BCS-66, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-73, "Removal and Installation".
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

BRAKE BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202945

1.CHECK CONNECTOR

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

- Hydraulic brake booster unit
- BCM
- E152
- 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 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of BCM.
2. Disconnect the connector of hydraulic brake booster unit.
3. Check the resistance between the hydraulic brake booster unit harness connector terminals.

Hydraulic brake booster unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E35	9	10	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the hydraulic brake booster unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the hydraulic brake booster unit. Refer to BR-39, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the hydraulic brake booster unit. Refer to BR-65, "Removal and Installation".
YES (Past error)>>Error was detected in the hydraulic brake booster unit branch line.
NO >> Repair the power supply and the ground circuit.

EPS/DAST 3 BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202946

1.CHECK CONNECTOR

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

- EPS 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of BCM.
2. Disconnect the connector of EPS control unit.
3. 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 4.
NO >> Repair the EPS control unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to STC-18, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to STC-39, "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.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202947

1.CHECK CONNECTOR

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

- A/C auto amp.
- 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

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

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

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the A/C auto amp. branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the A/C auto amp. Refer to HAC-107, "A/C AUTO AMP. : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the A/C auto amp. Refer to HAC-120, "Removal and Installation".
YES (Past error)>>Error was detected in the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.

VSP BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202949

1.CHECK CONNECTOR

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

- Approaching vehicle sound for pedestrians (VSP) control unit
- BCM
- 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 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of BCM.
2. Disconnect the connector of approaching vehicle sound for pedestrians (VSP) control unit.
3. Check the resistance between the approaching vehicle sound for pedestrians (VSP) control unit harness connector terminals.

Approaching vehicle sound for pedestrians (VSP) control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E154	6	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the approaching vehicle sound for pedestrians (VSP) control unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the approaching vehicle sound for pedestrians (VSP) control unit. Refer to VSP-32, "APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the approaching vehicle sound for pedestrians (VSP) control unit. Refer to VSP-35, "Removal and Installation".
YES (Past error)>>Error was detected in the approaching vehicle sound for pedestrians (VSP) control unit branch line.
NO >> Repair the power supply and the ground circuit.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202950

1.CHECK CONNECTOR

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

- 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-193, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the TCM. Refer to TM-213, "Removal and Installation".

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

INV/MC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202951

1.CHECK CONNECTOR

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

- Traction motor inverter
- Harness connector F6
- Harness connector E4

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

Traction motor inverter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F36	27	35	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Replace the traction motor inverter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the traction motor inverter. Refer to TMS-68, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the traction motor inverter. Refer to TMS-132, "Removal and Installation".
YES (Past error)>>Error was detected in the traction motor inverter branch line.
NO >> Repair the power supply and the ground circuit.

HV BAT BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202953

DANGER:

Since hybrid vehicles and electric vehicles contain a high voltage battery, there is the risk of electric shock, electric leakage, or similar accidents if the high voltage component and vehicle are handled incorrectly. Be sure to follow the correct work procedures when performing inspection and maintenance.

WARNING:

- **Be sure to remove the service plug in order to disconnect the high voltage circuits before performing inspection or maintenance of high voltage system harnesses and parts.**
- **The removed service plug must always be carried in a pocket of the responsible worker or placed in the tool box during the procedure to prevent the plug from being connected by mistake.**
- **Be sure to wear insulating protective equipment before beginning work on the high voltage system.**
- **Never allow workers other than the responsible person to touch the vehicle containing high voltage parts. To keep others from touching the high voltage parts, these parts must be covered with an insulating sheet except when using them.**
- **Refer to GI-28, "High Voltage Precautions".**

CAUTION:

Never bring the vehicle into the READY status with the service plug removed unless otherwise instructed in the Service Manual. A malfunction may occur if this is not observed.

1. CHECK CONNECTOR

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

- Li-ion battery
- Harness connector B41
- Harness connector M69

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

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

Li-ion battery harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B59	3	15	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Replace the Li-ion battery branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Li-ion battery. Refer to HBB-149, "LI-ION BATTERY CONTROLLER : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the Li-ion battery. Refer to HBB-155, "Removal and Installation".
YES (Past error)>>Error was detected in the Li-ion battery controller branch line.
NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202954

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.

VEHICLE CAN COMMUNICATION 1 CIRCUIT

Diagnosis Procedure

INFOID:0000000015202955

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect all the unit connectors on vehicle CAN communication 1 circuit.
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 3CH CAN gateway terminals.

3CH CAN gateway			Continuity
Connector No.	Terminal No.		
M29	1	2	Not 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)

Check the continuity between the 3CH CAN gateway and the ground.

3CH CAN gateway		Ground	Continuity
Connector No.	Terminal No.		
M29	1		Not existed
	2		Not existed

Is the inspection result normal?

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

4.CHECK ECM AND BCM TERMINATION CIRCUIT

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

ECM		Resistance (Ω)
Terminal No.		
124	123	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 12V battery cable from the negative terminal.
3. Disconnect one of the unit connectors of vehicle CAN communication 1 circuit.
   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.

VEHICLE CAN COMMUNICATION 2 CIRCUIT

Diagnosis Procedure

INFOID:0000000015202956

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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 vehicle CAN communication 2 circuit.
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 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 BCM.

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 12V battery cable from the negative terminal.
3. Disconnect one of the unit connectors of vehicle CAN communication 2 circuit.
   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.

DIAGNOSTIC CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000015202957

1.CONNECTOR INSPECTION

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

- Data link connector
- 3CH CAN gateway

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of 3CH CAN gateway.
2. Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	3	11	Existed
	4	12	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)

Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	3	4	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 3CH CAN gateway harness connector and the ground.

3CH CAN gateway harness connector		Ground	Continuity
Connector No.	Terminal No.		
M29	3		Not existed
	4		Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair or replace the root cause.

5.CHECK 3CH CAN GATEWAY TERMINATION CIRCUIT

1. Remove the 3CH CAN gateway.
2. Check the resistance between the 3CH CAN gateway terminals.

3CH CAN gateway	Resistance (Ω)
Terminal No.	

3	4	Approx. 108 – 132
11	12	Approx. 108 – 132

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the diagnostic CAN communication circuit.
NO >> Replace the 3CH CAN gateway.

HEV SYSTEM CAN CIRCUIT

Diagnosis Procedure

INFOID:0000000015202965

DANGER:

Since hybrid vehicles and electric vehicles contain a high voltage battery, there is the risk of electric shock, electric leakage, or similar accidents if the high voltage component and vehicle are handled incorrectly. Be sure to follow the correct work procedures when performing inspection and maintenance.

WARNING:

- **Be sure to remove the service plug in order to disconnect the high voltage circuits before performing inspection or maintenance of high voltage system harnesses and parts.**
- **The removed service plug must always be carried in a pocket of the responsible worker or placed in the tool box during the procedure to prevent the plug from being connected by mistake.**
- **Be sure to wear insulating protective equipment before beginning work on the high voltage system.**
- **Never allow workers other than the responsible person to touch the vehicle containing high voltage parts. To keep others from touching the high voltage parts, these parts must be covered with an insulating sheet except when using them.**
- **Refer to GI-28, "High Voltage Precautions".**

CAUTION:

Never bring the vehicle into the READY status with the service plug removed unless otherwise instructed in the Service Manual. A malfunction may occur if this is not observed.

1. CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect all the control unit connectors on HEV system CAN circuit.
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 (OPEN CIRCUIT)

1. Disconnect the following harness connectors.
- ECM
- Li-ion battery
2. Check the continuity between the ECM harness connector and the Li-ion battery harness connector.

ECM harness connector		Li-ion battery harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E16	138	B59	3	Existed
	137		15	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the harness between the ECM and the Li-ion battery.

3. CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

1. Disconnect all the unit connectors on HEV system CAN circuit.
2. Check the continuity between the ECM harness connector terminals.

ECM harness connector			Continuity
Connector No.	Terminal No.		
E16	138	137	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 ECM harness connector and the ground.

ECM harness connector		Ground	Continuity
Connector No.	Terminal No.		
E16	138		Not existed
	137		Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair or replace the root cause.

5.CHECK ECM AND LI-ION BATTERY CONTROLLER TERMINATION CIRCUIT

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

ECM		Resistance (Ω)
Terminal No.		
138	137	Approx. 108 – 132

3. Check the resistance between the Li-ion battery terminals.

Li-ion battery		Resistance (Ω)
Terminal No.		
3	15	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Replace the ECM and/or the Li-ion battery.

6.CHECK SYMPTOM

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

Inspection result

Reproduced>>GO TO 7.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

7.CHECK CONTROL UNIT REPRODUCTION

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

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect one of the control unit connectors of HEV system CAN circuit.
   NOTE:
   ECM and Li-ion battery controller have a termination circuit. Check other control units first.
4. Connect the 12V battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although control unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

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

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN IPDM-E AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000015202968

1.CHECK CONNECTOR

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

- Harness connector 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		60J	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)

1. Disconnect the connector of combination meter.
2. Check the continuity between the harness connector and the combination meter harness connector.

Harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	61J	M77	41	Existed
	60J		42	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 combination meter.
NO >> Repair the main line between the harness connector M31 and the combination meter.

MAIN LINE BETWEEN M&A AND STRG CIRCUIT

Diagnosis Procedure

INFOID:0000000015202969

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Combination meter
- Steering angle sensor

4. Check the continuity between the combination meter harness connector and the steering angle sensor harness connector.

Combination meter harness connector		Steering angle sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M77	41	M56	5	Existed
	42		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the steering angle sensor.
NO >> Repair the main line between the combination meter and the steering angle sensor.

MAIN LINE BETWEEN STRG AND 4WD CIRCUIT

Diagnosis Procedure

INFOID:0000000015202970

1.CHECK CONNECTOR

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

- Harness connector 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.

- Steering angle sensor
- Harness connectors M69 and B41

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

Steering angle sensor harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M56	5	M69	25	Existed
	2		24	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the steering angle sensor 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 steering angle sensor and the AWD control unit.
NO >> Repair the main line between the harness connector B41 and the AWD control unit.

MAIN LINE BETWEEN RDR-L AND RDR-R CIRCUIT

Diagnosis Procedure

INFOID:0000000015202973

1.CHECK CONNECTOR

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

- Harness connector B49
- Harness connector B140

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Side radar LH
- Harness connectors B49 and B140

2. Check the continuity between the side radar LH harness connector and the harness connector.

Side radar LH harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B35	6	B49	13	Existed
	7		14	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the side radar LH and the harness connector B49.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of side radar RH.
2. Check the continuity between the harness connector and the side radar RH harness connector.

Harness connector		Side radar RH harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B140	13	B105	6	Existed
	14		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar LH and the side radar RH.
NO >> Repair the main line between the harness connector B140 and the side radar RH.

MAIN LINE BETWEEN EV/HEV AND HV BAT CIRCUIT

Diagnosis Procedure

INFOID:0000000015202974

1.CHECK CONNECTOR

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

- Harness connector 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.

- HPCM
- Harness connectors E152 and M31

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

HPCM harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E130	97	E152	70J	Existed
	98		69J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the HPCM and the harness connector E152.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors M69 and B41.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	70J	M69	12	Existed
	69J		11	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the HPCM and the Li-ion battery.
NO >> Repair the main line between the harness connector M31 and the Li-ion battery.

ECM BRANCH LINE CIRCUIT (VEHICLE CAN COMMUNICATION 1 CIRCUIT)

Diagnosis Procedure

INFOID:0000000015202975

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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	124	123	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line (Vehicle CAN communication 1 circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to EC-184, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to EC-595, "Removal and Installation".
YES (Past error)>>Error was detected in the ECM branch line (Vehicle CAN communication 1 circuit side).
NO >> Repair the power supply and the ground circuit.

ECM BRANCH LINE CIRCUIT (HEV SYSTEM CAN CIRCUIT)

Diagnosis Procedure

INFOID:0000000015202976

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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	138	137	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line (HEV system CAN circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to EC-184, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to EC-595, "Removal and Installation".
YES (Past error)>>Error was detected in the ECM branch line (HEV system CAN circuit side).
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202977

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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	19	30	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-169, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-204, "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.

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

Diagnosis Procedure

INFOID:0000000015202978

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

HPCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E130	84	83	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the HPCM branch line (Vehicle CAN communication 1 circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the HPCM. Refer to HBC-117, "HPCM : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the HPCM. Refer to HBC-335, "Removal and Installation".
YES (Past error)>>Error was detected in the HPCM branch line (Vehicle CAN communication 1 circuit side)
NO >> Repair the power supply and the ground circuit.

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

Diagnosis Procedure

INFOID:0000000015202979

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

HPCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E130	97	98	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Replace the HPCM branch line (HEV system CAN circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the HPCM. Refer to HBC-117, "HPCM : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the HPCM. Refer to HBC-335, "Removal and Installation".
YES (Past error)>>Error was detected in the HPCM branch line (HEV system CAN circuit side).
NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202980

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
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-45, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-46, "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.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202981

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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-62, "COMBINATION METER : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to MWI-81, "Removal and Installation".
YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

3CH CGW BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202983

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 3CH CAN gateway 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 3CH CAN gateway.
2. Check the resistance between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M29	1	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the 3CH CAN gateway branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the 3CH CAN gateway. Refer to LAN-178, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the 3CH CAN gateway. Refer to LAN-179, "Removal and Installation".
YES (Past error)>>Error was detected in the 3CH CAN gateway branch line.
NG >> Repair the power supply and the ground circuit.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202984

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 12V 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-35, "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 (VEHICLE CAN COMMUNICATION 1 CIRCUIT)

Diagnosis Procedure

INFOID:0000000015202985

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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 (Vehicle CAN communication 1 circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the chassis control module. Refer to DAS-523, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the chassis control module. Refer to DAS-529, "Removal and Installation".
YES (Past error)>>Error was detected in the chassis control module branch line (Vehicle CAN communication 1 circuit side).
NG >> Repair the power supply and the ground circuit.

CCM BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000015202986

1.CHECK CONNECTOR

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

- Chassis control module
- Harness connector M69
- Harness connector B41

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	11	8	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the chassis control module branch line (ITS CAN communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the chassis control module. Refer to DAS-523, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the chassis control module. Refer to DAS-529, "Removal and Installation".
YES (Past error)>>Error was detected in the chassis control module branch line (ITS CAN commumication circuit side).
NG >> Repair the power supply and the ground circuit.

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202987

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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-63, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-208, "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.

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202988

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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-62, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the AWD control unit. Refer to DLN-72, "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:0000000015202989

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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 BCS-66, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-73, "Removal and Installation".
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

BRAKE BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202990

1.CHECK CONNECTOR

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

- Hydraulic brake booster unit
- BCM
- E152
- 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 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of BCM.
2. Disconnect the connector of hydraulic brake booster unit.
3. Check the resistance between the hydraulic brake booster unit harness connector terminals.

Hydraulic brake booster unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E35	9	10	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the hydraulic brake booster unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the hydraulic brake booster unit. Refer to BR-39, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the hydraulic brake booster unit. Refer to BR-65, "Removal and Installation".
YES (Past error)>>Error was detected in the hydraulic brake booster unit branch line.
NO >> Repair the power supply and the ground circuit.

EPS/DAST 3 BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202991

1.CHECK CONNECTOR

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

- EPS 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of BCM.
2. Disconnect the connector of EPS control unit.
3. 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 4.
NO >> Repair the EPS control unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to STC-18, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to STC-39, "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.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202992

1.CHECK CONNECTOR

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

- A/C auto amp.
- 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

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

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

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the A/C auto amp. branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the A/C auto amp. Refer to HAC-107, "A/C AUTO AMP. : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the A/C auto amp. Refer to HAC-120, "Removal and Installation".
YES (Past error)>>Error was detected in the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.

VSP BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202993

1.CHECK CONNECTOR

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

- Approaching vehicle sound for pedestrians (VSP) control unit
- BCM
- 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 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of BCM.
2. Disconnect the connector of approaching vehicle sound for pedestrians (VSP) control unit.
3. Check the resistance between the approaching vehicle sound for pedestrians (VSP) control unit harness connector terminals.

Approaching vehicle sound for pedestrians (VSP) control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E154	6	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the approaching vehicle sound for pedestrians (VSP) control unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the approaching vehicle sound for pedestrians (VSP) control unit. Refer to VSP-32, "APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the approaching vehicle sound for pedestrians (VSP) control unit. Refer to VSP-35, "Removal and Installation".
YES (Past error)>>Error was detected in the approaching vehicle sound for pedestrians (VSP) control unit branch line.
NO >> Repair the power supply and the ground circuit.

RDR-R BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202994

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

Side radar RH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B105	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the side radar RH branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar RH. Refer to DAS-376, "SIDE RADAR RH : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the side radar RH. Refer to DAS-405, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar RH branch line.
NO >> Repair the power supply and the ground circuit.

RDR-L BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202995

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

Side radar LH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B35	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the side radar LH branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar LH. Refer to DAS-376, "SIDE RADAR LH : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the side radar LH. Refer to DAS-405, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar LH branch line.
NO >> Repair the power supply and the ground circuit.

ICC 2 BRANCH LINE CIRCUIT (VEHICLE CAN COMMUNICATION 2 CIRCUIT)

Diagnosis Procedure

INFOID:0000000015202996

1.CHECK CONNECTOR

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

- ADAS control unit 2
- Harness connector M52
- Harness connector B43
- 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-634, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

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

ADAS control unit 2 harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M148	9	10	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the ADAS control unit 2 branch line (Vehicle CAN communication 2 circuit side).

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit 2. Refer to DAS-208, "ADAS CONTROL UNIT 2 : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit 2. Refer to DAS-212, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit 2 branch line (Vehicle CAN communication 2 circuit side).
NO >> Repair the power supply and the ground circuit.

ICC 2 BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000015202997

1.CHECK CONNECTOR

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

- ADAS control unit 2
- Harness connector M52 (With forward emergency braking)
- Harness connector B43 (With forward emergency braking)

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 ADAS control unit 2.
2. Check the resistance between the ADAS control unit 2 harness connector terminals.

- With forward emergency braking

ADAS control unit 2 harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M148	9	10	Approx. 108 – 132

- Without forward emergency braking

ADAS control unit 2 harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M148	2	5	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ADAS control unit 2 branch line (ITS CAN communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit 2. Refer to DAS-208, "ADAS CONTROL UNIT 2 : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit 2. Refer to DAS-212, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit 2 branch line (ITS CAN communication circuit side).
NO >> Repair the power supply and the ground circuit.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202998

1.CHECK CONNECTOR

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

- 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-193, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the TCM. Refer to TM-213, "Removal and Installation".

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

INV/MC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015202999

1.CHECK CONNECTOR

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

- Traction motor inverter
- Harness connector F6
- Harness connector E4

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

Traction motor inverter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F36	27	35	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Replace the traction motor inverter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the traction motor inverter. Refer to TMS-68, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the traction motor inverter. Refer to TMS-132, "Removal and Installation".
YES (Past error)>>Error was detected in the traction motor inverter branch line.
NO >> Repair the power supply and the ground circuit.

HV BAT BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203000

DANGER:

Since hybrid vehicles and electric vehicles contain a high voltage battery, there is the risk of electric shock, electric leakage, or similar accidents if the high voltage component and vehicle are handled incorrectly. Be sure to follow the correct work procedures when performing inspection and maintenance.

WARNING:

- **Be sure to remove the service plug in order to disconnect the high voltage circuits before performing inspection or maintenance of high voltage system harnesses and parts.**
- **The removed service plug must always be carried in a pocket of the responsible worker or placed in the tool box during the procedure to prevent the plug from being connected by mistake.**
- **Be sure to wear insulating protective equipment before beginning work on the high voltage system.**
- **Never allow workers other than the responsible person to touch the vehicle containing high voltage parts. To keep others from touching the high voltage parts, these parts must be covered with an insulating sheet except when using them.**
- **Refer to GI-28, "High Voltage Precautions".**

CAUTION:

Never bring the vehicle into the READY status with the service plug removed unless otherwise instructed in the Service Manual. A malfunction may occur if this is not observed.

1. CHECK CONNECTOR

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

- Li-ion battery
- Harness connector B41
- Harness connector M69

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

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

Li-ion battery harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B59	3	15	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Replace the Li-ion battery branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Li-ion battery. Refer to HBB-149, "LI-ION BATTERY CONTROLLER : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the Li-ion battery. Refer to HBB-155, "Removal and Installation".
YES (Past error)>>Error was detected in the Li-ion battery controller branch line.
NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203001

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.

VEHICLE CAN COMMUNICATION 1 CIRCUIT

Diagnosis Procedure

INFOID:0000000015203002

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect all the unit connectors on vehicle CAN communication 1 circuit.
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 3CH CAN gateway terminals.

3CH CAN gateway			Continuity
Connector No.	Terminal No.		
M29	1	2	Not 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)

Check the continuity between the 3CH CAN gateway and the ground.

3CH CAN gateway		Ground	Continuity
Connector No.	Terminal No.		
M29	1		Not existed
	2		Not existed

Is the inspection result normal?

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

4.CHECK ECM AND BCM TERMINATION CIRCUIT

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

ECM		Resistance (Ω)
Terminal No.		
124	123	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 12V battery cable from the negative terminal.
3. Disconnect one of the unit connectors of vehicle CAN communication 1 circuit.
   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.

VEHICLE CAN COMMUNICATION 2 CIRCUIT

Diagnosis Procedure

INFOID:0000000015203003

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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 vehicle CAN communication 2 circuit.
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 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 BCM.

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 12V battery cable from the negative terminal.
3. Disconnect one of the unit connectors of vehicle CAN communication 2 circuit.
   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.

ITS CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000015203004

1.CHECK CAN DIAGNOSIS

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

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

YES >> GO TO 2.
NO >> Check and repair vehicle CAN communication 1 circuit and/or vehicle CAN communication 2 circuit.

2.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the ADAS control unit (With forward emergency braking) or the ADAS control unit 2 (Without forward emergency braking) for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

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

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.
- ADAS control unit (With forward emergency braking)
- ADAS control unit 2
- Chassis control module (Without forward emergency braking)
2. Check the continuity between the ADAS control unit harness connector and the ADAS control unit 2 harness connector (With forward emergency braking) or the ADAS control unit 2 harness connector and the chassis control module harness connector (Without forward emergency braking).

• With forward emergency braking

ADAS control unit harness connector		ADAS control unit 2 harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B4	6	M148	9	Existed
	7		10	Existed

• Without forward emergency braking

ADAS control unit 2 harness connector		Chassis control module harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M148	2	M96	11	Existed
	5		8	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the harness between the ADAS control unit and the ADAS control unit 2 (With forward emergency braking) or the ADAS control unit 2 and the chassis control module (Without forward emergency braking).

4.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

1. Disconnect all the unit connectors on ITS CAN communication circuit.
2. Check the continuity between the ADAS control unit harness connector terminals (With forward emergency braking) or the ADAS control unit 2 harness connector terminals (Without forward emergency braking).

• With forward emergency braking

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
B4	6	7	Not existed

• Without forward emergency braking

ADAS control unit 2 harness connector			Continuity
Connector No.	Terminal No.		
B148	2	5	Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause.

5. CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the ADAS control unit harness connector and the ground (With forward emergency braking) or the ADAS control unit 2 harness connector and the ground (Without forward emergency braking).

• With forward emergency braking

ADAS control unit harness connector		Ground	Continuity
Connector No.	Terminal No.		
B4	6		Not existed
	7		Not existed

• Without forward emergency braking

ADAS control unit 2 harness connector		Ground	Continuity
Connector No.	Terminal No.		
B148	2		Not existed
	5		Not existed

Is the inspection result normal?

YES >> GO TO 6.
NO >> Check the harness and repair the root cause.

6. CHECK TERMINATION CIRCUIT

1. Remove the ADAS control unit and the ADAS control unit 2 (With forward emergency braking) or the ADAS control unit 2 and the chassis control module (Without forward emergency braking).
2. Check the resistance between the ADAS control unit terminals (With forward emergency braking) or the ADAS control unit 2 terminals (Without forward emergency braking).

- With forward emergency braking

ADAS control unit		Resistance (Ω)
Terminal No.		
6	7	Approx. 108 – 132

- Without forward emergency braking

ADAS control unit 2		Resistance (Ω)
Terminal No.		
2	5	Approx. 108 – 132

3. Check the resistance between the ADAS control unit 2 terminals (With forward emergency braking) or the chassis control module terminals (Without forward emergency braking).

- With forward emergency braking

ADAS control unit 2		Resistance (Ω)
Terminal No.		
9	10	Approx. 108 – 132

- Without forward emergency braking

Chassis control module		Resistance (Ω)
Terminal No.		
11	8	Approx. 108 – 132

Is the inspection result normal?

YES >> GO TO 7.
NO >> Replace the ADAS control unit and/or the ADAS control unit 2 (With forward emergency braking) or the ADAS control unit 2 and/or the chassis control module (Without forward emergency braking).

7.CHECK SYMPTOM

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

Inspection result

Reproduced>>GO TO 8.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

8.CHECK UNIT REPRODUCTION

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

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect one of the unit connectors of ITS CAN communication circuit.
   NOTE:
   ADAS control unit and ADAS control unit 2 (With forward emergency braking) or ADAS control unit 2 and chassis control module (Without forward emergency braking) 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.

DIAGNOSTIC CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000015203005

1.CONNECTOR INSPECTION

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

- Data link connector
- 3CH CAN gateway

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of 3CH CAN gateway.
2. Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	3	11	Existed
	4	12	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)

Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	3	4	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 3CH CAN gateway harness connector and the ground.

3CH CAN gateway harness connector		Ground	Continuity
Connector No.	Terminal No.		
M29	3		Not existed
	4		Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair or replace the root cause.

5.CHECK 3CH CAN GATEWAY TERMINATION CIRCUIT

1. Remove the 3CH CAN gateway.
2. Check the resistance between the 3CH CAN gateway terminals.

3CH CAN gateway	Resistance (Ω)
Terminal No.	

3	4	Approx. 108 – 132
11	12	Approx. 108 – 132

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the diagnostic CAN communication circuit.
NO >> Replace the 3CH CAN gateway.

HEV SYSTEM CAN CIRCUIT

Diagnosis Procedure

INFOID:0000000015203006

DANGER:

Since hybrid vehicles and electric vehicles contain a high voltage battery, there is the risk of electric shock, electric leakage, or similar accidents if the high voltage component and vehicle are handled incorrectly. Be sure to follow the correct work procedures when performing inspection and maintenance.

WARNING:

- **Be sure to remove the service plug in order to disconnect the high voltage circuits before performing inspection or maintenance of high voltage system harnesses and parts.**
- **The removed service plug must always be carried in a pocket of the responsible worker or placed in the tool box during the procedure to prevent the plug from being connected by mistake.**
- **Be sure to wear insulating protective equipment before beginning work on the high voltage system.**
- **Never allow workers other than the responsible person to touch the vehicle containing high voltage parts. To keep others from touching the high voltage parts, these parts must be covered with an insulating sheet except when using them.**
- **Refer to GI-28, "High Voltage Precautions".**

CAUTION:

Never bring the vehicle into the READY status with the service plug removed unless otherwise instructed in the Service Manual. A malfunction may occur if this is not observed.

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect all the control unit connectors on HEV system CAN circuit.
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 (OPEN CIRCUIT)

1. Disconnect the following harness connectors.
- ECM
- Li-ion battery
2. Check the continuity between the ECM harness connector and the Li-ion battery harness connector.

ECM harness connector		Li-ion battery harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E16	138	B59	3	Existed
	137		15	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the harness between the ECM and the Li-ion battery.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

1. Disconnect all the unit connectors on HEV system CAN circuit.
2. Check the continuity between the ECM harness connector terminals.

ECM harness connector			Continuity
Connector No.	Terminal No.		
E16	138	137	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 ECM harness connector and the ground.

ECM harness connector		Ground	Continuity
Connector No.	Terminal No.		
E16	138		Not existed
	137		Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair or replace the root cause.

5.CHECK ECM AND LI-ION BATTERY CONTROLLER TERMINATION CIRCUIT

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

ECM		Resistance (Ω)
Terminal No.		
138	137	Approx. 108 – 132

3. Check the resistance between the Li-ion battery terminals.

Li-ion battery		Resistance (Ω)
Terminal No.		
3	15	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Replace the ECM and/or the Li-ion battery.

6.CHECK SYMPTOM

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

Inspection result

Reproduced>>GO TO 7.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

7.CHECK CONTROL UNIT REPRODUCTION

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

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect one of the control unit connectors of HEV system CAN circuit.
   NOTE:
   ECM and Li-ion battery controller have a termination circuit. Check other control units first.
4. Connect the 12V battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although control unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

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

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN IPDM-E AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000015203007

1.CHECK CONNECTOR

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

- Harness connector 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		60J	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)

1. Disconnect the connector of combination meter.
2. Check the continuity between the harness connector and the combination meter harness connector.

Harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	61J	M77	41	Existed
	60J		42	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 combination meter.
NO >> Repair the main line between the harness connector M31 and the combination meter.

MAIN LINE BETWEEN M&A AND STRG CIRCUIT

Diagnosis Procedure

INFOID:0000000015203008

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Combination meter
- Steering angle sensor

4. Check the continuity between the combination meter harness connector and the steering angle sensor harness connector.

Combination meter harness connector		Steering angle sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M77	41	M56	5	Existed
	42		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the steering angle sensor.
NO >> Repair the main line between the combination meter and the steering angle sensor.

MAIN LINE BETWEEN STRG AND 4WD CIRCUIT

Diagnosis Procedure

INFOID:0000000015203009

1.CHECK CONNECTOR

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

- Harness connector 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.

- Steering angle sensor
- Harness connectors M69 and B41

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

Steering angle sensor harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M56	5	M69	25	Existed
	2		24	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the steering angle sensor 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 steering angle sensor and the AWD control unit.
NO >> Repair the main line between the harness connector B41 and the AWD control unit.

MAIN LINE BETWEEN RDR-R AND AVM CIRCUIT

Diagnosis Procedure

INFOID:0000000015203011

1.CHECK CONNECTOR

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

- Harness connector B140
- Harness connector B49

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Side radar RH
- Harness connectors B140 and B49

2. Check the continuity between the side radar RH harness connector and the harness connector.

Side radar RH harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B105	6	B140	8	Existed
	7		9	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the side radar RH and the harness connector B140.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors B43 and M52.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B49	8	B43	8	Existed
	9		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 side radar RH and the around view monitor control unit.
NO >> Repair the main line between the harness connector B49 and the around view monitor control unit.

MAIN LINE BETWEEN RDR-L AND RDR-R CIRCUIT

Diagnosis Procedure

INFOID:0000000015203012

1.CHECK CONNECTOR

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

- Harness connector B49
- Harness connector B140

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Side radar LH
- Harness connectors B49 and B140

2. Check the continuity between the side radar LH harness connector and the harness connector.

Side radar LH harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B35	6	B49	13	Existed
	7		14	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the side radar LH and the harness connector B49.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of side radar RH.
2. Check the continuity between the harness connector and the side radar RH harness connector.

Harness connector		Side radar RH harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B140	13	B105	6	Existed
	14		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar LH and the side radar RH.
NO >> Repair the main line between the harness connector B140 and the side radar RH.

MAIN LINE BETWEEN EV/HEV AND HV BAT CIRCUIT

Diagnosis Procedure

INFOID:0000000015203013

1.CHECK CONNECTOR

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

- Harness connector 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.

- HPCM
- Harness connectors E152 and M31

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

HPCM harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E130	97	E152	70J	Existed
	98		69J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the HPCM and the harness connector E152.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors M69 and B41.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	70J	M69	12	Existed
	69J		11	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the HPCM and the Li-ion battery.
NO >> Repair the main line between the harness connector M31 and the Li-ion battery.

ECM BRANCH LINE CIRCUIT (VEHICLE CAN COMMUNICATION 1 CIRCUIT)

Diagnosis Procedure

INFOID:0000000015203014

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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	124	123	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line (Vehicle CAN communication 1 circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to EC-184, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to EC-595, "Removal and Installation".
YES (Past error)>>Error was detected in the ECM branch line (Vehicle CAN communication 1 circuit side).
NO >> Repair the power supply and the ground circuit.

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

Diagnosis Procedure

INFOID:0000000015203015

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

HPCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E130	97	98	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Replace the HPCM branch line (HEV system CAN circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the HPCM. Refer to HBC-117, "HPCM : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the HPCM. Refer to HBC-335, "Removal and Installation".
YES (Past error)>>Error was detected in the HPCM branch line (HEV system CAN circuit side).
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203016

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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	19	30	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-169, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-204, "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.

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

Diagnosis Procedure

INFOID:0000000015203017

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

HPCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E130	84	83	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the HPCM branch line (Vehicle CAN communication 1 circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the HPCM. Refer to HBC-117, "HPCM : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the HPCM. Refer to HBC-335, "Removal and Installation".
YES (Past error)>>Error was detected in the HPCM branch line (Vehicle CAN communication 1 circuit side)
NO >> Repair the power supply and the ground circuit.

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

Diagnosis Procedure

INFOID:0000000015203018

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

HPCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E130	97	98	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Replace the HPCM branch line (HEV system CAN circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the HPCM. Refer to HBC-117, "HPCM : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the HPCM. Refer to HBC-335, "Removal and Installation".
YES (Past error)>>Error was detected in the HPCM branch line (HEV system CAN circuit side).
NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203019

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
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-45, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-46, "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.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203020

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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-62, "COMBINATION METER : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to MWI-81, "Removal and Installation".
YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

3CH CGW BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203021

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 3CH CAN gateway 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 3CH CAN gateway.
2. Check the resistance between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M29	1	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the 3CH CAN gateway branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the 3CH CAN gateway. Refer to LAN-178, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the 3CH CAN gateway. Refer to LAN-179, "Removal and Installation".
YES (Past error)>>Error was detected in the 3CH CAN gateway branch line.
NG >> Repair the power supply and the ground circuit.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203022

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 12V 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-35, "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 (VEHICLE CAN COMMUNICATION 1 CIRCUIT)

Diagnosis Procedure

INFOID:0000000015203023

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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 (Vehicle CAN communication 1 circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the chassis control module. Refer to DAS-523, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the chassis control module. Refer to DAS-529, "Removal and Installation".
YES (Past error)>>Error was detected in the chassis control module branch line (Vehicle CAN communication 1 circuit side).
NG >> Repair the power supply and the ground circuit.

CCM BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000015203024

1.CHECK CONNECTOR

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

- Chassis control module
- Harness connector M69
- Harness connector B41

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	11	8	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the chassis control module branch line (ITS CAN communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the chassis control module. Refer to DAS-523, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the chassis control module. Refer to DAS-529, "Removal and Installation".
YES (Past error)>>Error was detected in the chassis control module branch line (ITS CAN commumication circuit side).
NG >> Repair the power supply and the ground circuit.

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203025

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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-63, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-208, "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.

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203026

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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-62, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the AWD control unit. Refer to DLN-72, "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:0000000015203027

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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-204, "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-343, "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:0000000015203028

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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 BCS-66, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-73, "Removal and Installation".
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

BRAKE BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203029

1.CHECK CONNECTOR

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

- Hydraulic brake booster unit
- BCM
- E152
- 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 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of BCM.
2. Disconnect the connector of hydraulic brake booster unit.
3. Check the resistance between the hydraulic brake booster unit harness connector terminals.

Hydraulic brake booster unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E35	9	10	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the hydraulic brake booster unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the hydraulic brake booster unit. Refer to BR-39, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the hydraulic brake booster unit. Refer to BR-65, "Removal and Installation".
YES (Past error)>>Error was detected in the hydraulic brake booster unit branch line.
NO >> Repair the power supply and the ground circuit.

EPS/DAST 3 BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203030

1.CHECK CONNECTOR

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

- EPS 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of BCM.
2. Disconnect the connector of EPS control unit.
3. 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 4.
NO >> Repair the EPS control unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to STC-18, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to STC-39, "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.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203031

1.CHECK CONNECTOR

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

- A/C auto amp.
- 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

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

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

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the A/C auto amp. branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the A/C auto amp. Refer to HAC-107, "A/C AUTO AMP. : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the A/C auto amp. Refer to HAC-120, "Removal and Installation".
YES (Past error)>>Error was detected in the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.

VSP BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203032

1.CHECK CONNECTOR

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

- Approaching vehicle sound for pedestrians (VSP) control unit
- BCM
- 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 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of BCM.
2. Disconnect the connector of approaching vehicle sound for pedestrians (VSP) control unit.
3. Check the resistance between the approaching vehicle sound for pedestrians (VSP) control unit harness connector terminals.

Approaching vehicle sound for pedestrians (VSP) control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E154	6	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the approaching vehicle sound for pedestrians (VSP) control unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the approaching vehicle sound for pedestrians (VSP) control unit. Refer to VSP-32, "APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the approaching vehicle sound for pedestrians (VSP) control unit. Refer to VSP-35, "Removal and Installation".
YES (Past error)>>Error was detected in the approaching vehicle sound for pedestrians (VSP) control unit branch line.
NO >> Repair the power supply and the ground circuit.

AVM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203033

1.CHECK CONNECTOR

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

- Around view monitor control unit
- Harness connector M52
- Harness connector B43

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

-

Around view monitor control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M112	26	24	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the around view monitor control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the around view monitor control unit. Refer to AV-437, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the around view monitor control unit. Refer to AV-441, "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.

RDR-R BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203036

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

Side radar RH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B105	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the side radar RH branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar RH. Refer to DAS-376, "SIDE RADAR RH : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the side radar RH. Refer to DAS-405, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar RH branch line.
NO >> Repair the power supply and the ground circuit.

RDR-L BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203037

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

Side radar LH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B35	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the side radar LH branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar LH. Refer to DAS-376, "SIDE RADAR LH : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the side radar LH. Refer to DAS-405, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar LH branch line.
NO >> Repair the power supply and the ground circuit.

ICC 2 BRANCH LINE CIRCUIT (VEHICLE CAN COMMUNICATION 2 CIRCUIT)

Diagnosis Procedure

INFOID:0000000015203038

1.CHECK CONNECTOR

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

- ADAS control unit 2
- Harness connector M52
- Harness connector B43
- 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-634, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

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

ADAS control unit 2 harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M148	9	10	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the ADAS control unit 2 branch line (Vehicle CAN communication 2 circuit side).

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit 2. Refer to DAS-208, "ADAS CONTROL UNIT 2 : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit 2. Refer to DAS-212, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit 2 branch line (Vehicle CAN communication 2 circuit side).
NO >> Repair the power supply and the ground circuit.

ICC 2 BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000015203039

1.CHECK CONNECTOR

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

- ADAS control unit 2
- Harness connector M52 (With forward emergency braking)
- Harness connector B43 (With forward emergency braking)

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 ADAS control unit 2.
2. Check the resistance between the ADAS control unit 2 harness connector terminals.

- With forward emergency braking

ADAS control unit 2 harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M148	9	10	Approx. 108 – 132

- Without forward emergency braking

ADAS control unit 2 harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M148	2	5	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ADAS control unit 2 branch line (ITS CAN communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit 2. Refer to DAS-208, "ADAS CONTROL UNIT 2 : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit 2. Refer to DAS-212, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit 2 branch line (ITS CAN communication circuit side).
NO >> Repair the power supply and the ground circuit.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203040

1.CHECK CONNECTOR

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

- 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-193, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the TCM. Refer to TM-213, "Removal and Installation".

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

INV/MC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203041

1.CHECK CONNECTOR

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

- Traction motor inverter
- Harness connector F6
- Harness connector E4

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

Traction motor inverter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F36	27	35	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Replace the traction motor inverter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the traction motor inverter. Refer to TMS-68, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the traction motor inverter. Refer to TMS-132, "Removal and Installation".
YES (Past error)>>Error was detected in the traction motor inverter branch line.
NO >> Repair the power supply and the ground circuit.

HV BAT BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203042

DANGER:

Since hybrid vehicles and electric vehicles contain a high voltage battery, there is the risk of electric shock, electric leakage, or similar accidents if the high voltage component and vehicle are handled incorrectly. Be sure to follow the correct work procedures when performing inspection and maintenance.

WARNING:

- **Be sure to remove the service plug in order to disconnect the high voltage circuits before performing inspection or maintenance of high voltage system harnesses and parts.**
- **The removed service plug must always be carried in a pocket of the responsible worker or placed in the tool box during the procedure to prevent the plug from being connected by mistake.**
- **Be sure to wear insulating protective equipment before beginning work on the high voltage system.**
- **Never allow workers other than the responsible person to touch the vehicle containing high voltage parts. To keep others from touching the high voltage parts, these parts must be covered with an insulating sheet except when using them.**
- **Refer to GI-28, "High Voltage Precautions".**

CAUTION:

Never bring the vehicle into the READY status with the service plug removed unless otherwise instructed in the Service Manual. A malfunction may occur if this is not observed.

1. CHECK CONNECTOR

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

- Li-ion battery
- Harness connector B41
- Harness connector M69

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

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

Li-ion battery harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B59	3	15	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Replace the Li-ion battery branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Li-ion battery. Refer to HBB-149, "LI-ION BATTERY CONTROLLER : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the Li-ion battery. Refer to HBB-155, "Removal and Installation".
YES (Past error)>>Error was detected in the Li-ion battery controller branch line.
NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203043

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203044

1.CHECK CONNECTOR

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

- AV control unit
- 3CH CAN gateway

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of 3CH CAN gateway.
2. Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	9	13	Existed
	10	14	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (IT CAN communication circuit side). Refer to LAN-150, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

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

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M108	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-315, "AV CONTROL UNIT : Diagnosis Procedure"
- Navigation without BOSE: AV-213, "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-352, "Removal and Installation"
- Navigation without BOSE: AV-239, "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.

VEHICLE CAN COMMUNICATION 1 CIRCUIT

Diagnosis Procedure

INFOID:0000000015203045

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect all the unit connectors on vehicle CAN communication 1 circuit.
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 3CH CAN gateway terminals.

3CH CAN gateway			Continuity
Connector No.	Terminal No.		
M29	1	2	Not 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)

Check the continuity between the 3CH CAN gateway and the ground.

3CH CAN gateway		Ground	Continuity
Connector No.	Terminal No.		
M29	1		Not existed
	2		Not existed

Is the inspection result normal?

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

4.CHECK ECM AND BCM TERMINATION CIRCUIT

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

ECM		Resistance (Ω)
Terminal No.		
124	123	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 12V battery cable from the negative terminal.
3. Disconnect one of the unit connectors of vehicle CAN communication 1 circuit.
   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.

VEHICLE CAN COMMUNICATION 2 CIRCUIT

Diagnosis Procedure

INFOID:0000000015203046

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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 vehicle CAN communication 2 circuit.
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 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 BCM.

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 12V battery cable from the negative terminal.
3. Disconnect one of the unit connectors of vehicle CAN communication 2 circuit.
   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.

ITS CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000015203047

1.CHECK CAN DIAGNOSIS

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

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

YES >> GO TO 2.
NO >> Check and repair vehicle CAN communication 1 circuit and/or vehicle CAN communication 2 circuit.

2.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the ADAS control unit (With forward emergency braking) or the ADAS control unit 2 (Without forward emergency braking) for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

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

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.
- ADAS control unit (With forward emergency braking)
- ADAS control unit 2
- Chassis control module (Without forward emergency braking)
2. Check the continuity between the ADAS control unit harness connector and the ADAS control unit 2 harness connector (With forward emergency braking) or the ADAS control unit 2 harness connector and the chassis control module harness connector (Without forward emergency braking).

• With forward emergency braking

ADAS control unit harness connector		ADAS control unit 2 harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B4	6	M148	9	Existed
	7		10	Existed

• Without forward emergency braking

ADAS control unit 2 harness connector		Chassis control module harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M148	2	M96	11	Existed
	5		8	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the harness between the ADAS control unit and the ADAS control unit 2 (With forward emergency braking) or the ADAS control unit 2 and the chassis control module (Without forward emergency braking).

4.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

1. Disconnect all the unit connectors on ITS CAN communication circuit.
2. Check the continuity between the ADAS control unit harness connector terminals (With forward emergency braking) or the ADAS control unit 2 harness connector terminals (Without forward emergency braking).

• With forward emergency braking

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
B4	6	7	Not existed

• Without forward emergency braking

ADAS control unit 2 harness connector			Continuity
Connector No.	Terminal No.		
B148	2	5	Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause.

5. CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the ADAS control unit harness connector and the ground (With forward emergency braking) or the ADAS control unit 2 harness connector and the ground (Without forward emergency braking).

• With forward emergency braking

ADAS control unit harness connector		Ground	Continuity
Connector No.	Terminal No.		
B4	6		Not existed
	7		Not existed

• Without forward emergency braking

ADAS control unit 2 harness connector		Ground	Continuity
Connector No.	Terminal No.		
B148	2		Not existed
	5		Not existed

Is the inspection result normal?

YES >> GO TO 6.
NO >> Check the harness and repair the root cause.

6. CHECK TERMINATION CIRCUIT

1. Remove the ADAS control unit and the ADAS control unit 2 (With forward emergency braking) or the ADAS control unit 2 and the chassis control module (Without forward emergency braking).
2. Check the resistance between the ADAS control unit terminals (With forward emergency braking) or the ADAS control unit 2 terminals (Without forward emergency braking).

- With forward emergency braking

ADAS control unit		Resistance (Ω)
Terminal No.		
6	7	Approx. 108 – 132

- Without forward emergency braking

ADAS control unit 2		Resistance (Ω)
Terminal No.		
2	5	Approx. 108 – 132

3. Check the resistance between the ADAS control unit 2 terminals (With forward emergency braking) or the chassis control module terminals (Without forward emergency braking).

- With forward emergency braking

ADAS control unit 2		Resistance (Ω)
Terminal No.		
9	10	Approx. 108 – 132

- Without forward emergency braking

Chassis control module		Resistance (Ω)
Terminal No.		
11	8	Approx. 108 – 132

Is the inspection result normal?

YES >> GO TO 7.
NO >> Replace the ADAS control unit and/or the ADAS control unit 2 (With forward emergency braking) or the ADAS control unit 2 and/or the chassis control module (Without forward emergency braking).

7.CHECK SYMPTOM

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

Inspection result

Reproduced>>GO TO 8.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

8.CHECK UNIT REPRODUCTION

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

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect one of the unit connectors of ITS CAN communication circuit.
   NOTE:
   ADAS control unit and ADAS control unit 2 (With forward emergency braking) or ADAS control unit 2 and chassis control module (Without forward emergency braking) 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.

IT CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000015203048

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect all the unit connectors on IT CAN communication circuit.
4. Check the terminals and connectors on IT CAN communication circuit 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 3CH CAN gateway.
2. Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	9	13	Existed
	10	14	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 IT CAN communication circuit.
2. Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	9	10	Not existed

Is the inspection result normal?

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

4.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the 3CH CAN gateway and the ground.

3CH CAN gateway harness connector		Ground	Continuity
Connector No.	Terminal No.		
M29	9		Not existed
	10		Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause.

5.CHECK 3CH CAN GATEWAY TERMINATION CIRCUIT

1. Remove the 3CH CAN gateway.
2. Check the resistance between the 3CH CAN gateway terminals.

3CH CAN gateway	Resistance (Ω)
Terminal No.	

9	10	Approx. 108 – 132
13	14	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Replace the 3CH CAN gateway.

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 12V battery cable from the negative terminal.
3. Disconnect one of the unit connectors of IT CAN communication circuit.
   NOTE:
   3CH CAN gateway 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.

DIAGNOSTIC CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000015203049

1.CONNECTOR INSPECTION

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

- Data link connector
- 3CH CAN gateway

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of 3CH CAN gateway.
2. Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	3	11	Existed
	4	12	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)

Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	3	4	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 3CH CAN gateway harness connector and the ground.

3CH CAN gateway harness connector		Ground	Continuity
Connector No.	Terminal No.		
M29	3		Not existed
	4		Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair or replace the root cause.

5.CHECK 3CH CAN GATEWAY TERMINATION CIRCUIT

1. Remove the 3CH CAN gateway.
2. Check the resistance between the 3CH CAN gateway terminals.

3CH CAN gateway	Resistance (Ω)
Terminal No.	

3	4	Approx. 108 – 132
11	12	Approx. 108 – 132

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the diagnostic CAN communication circuit.
NO >> Replace the 3CH CAN gateway.

HEV SYSTEM CAN CIRCUIT

Diagnosis Procedure

INFOID:0000000015203050

DANGER:

Since hybrid vehicles and electric vehicles contain a high voltage battery, there is the risk of electric shock, electric leakage, or similar accidents if the high voltage component and vehicle are handled incorrectly. Be sure to follow the correct work procedures when performing inspection and maintenance.

WARNING:

- **Be sure to remove the service plug in order to disconnect the high voltage circuits before performing inspection or maintenance of high voltage system harnesses and parts.**
- **The removed service plug must always be carried in a pocket of the responsible worker or placed in the tool box during the procedure to prevent the plug from being connected by mistake.**
- **Be sure to wear insulating protective equipment before beginning work on the high voltage system.**
- **Never allow workers other than the responsible person to touch the vehicle containing high voltage parts. To keep others from touching the high voltage parts, these parts must be covered with an insulating sheet except when using them.**
- **Refer to GI-28, "High Voltage Precautions".**

CAUTION:

Never bring the vehicle into the READY status with the service plug removed unless otherwise instructed in the Service Manual. A malfunction may occur if this is not observed.

1. CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect all the control unit connectors on HEV system CAN circuit.
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 (OPEN CIRCUIT)

1. Disconnect the following harness connectors.
- ECM
- Li-ion battery
2. Check the continuity between the ECM harness connector and the Li-ion battery harness connector.

ECM harness connector		Li-ion battery harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E16	138	B59	3	Existed
	137		15	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the harness between the ECM and the Li-ion battery.

3. CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

1. Disconnect all the unit connectors on HEV system CAN circuit.
2. Check the continuity between the ECM harness connector terminals.

ECM harness connector			Continuity
Connector No.	Terminal No.		
E16	138	137	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 ECM harness connector and the ground.

ECM harness connector		Ground	Continuity
Connector No.	Terminal No.		
E16	138		Not existed
	137		Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair or replace the root cause.

5.CHECK ECM AND LI-ION BATTERY CONTROLLER TERMINATION CIRCUIT

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

ECM		Resistance (Ω)
Terminal No.		
138	137	Approx. 108 – 132

3. Check the resistance between the Li-ion battery terminals.

Li-ion battery		Resistance (Ω)
Terminal No.		
3	15	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Replace the ECM and/or the Li-ion battery.

6.CHECK SYMPTOM

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

Inspection result

Reproduced>>GO TO 7.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

7.CHECK CONTROL UNIT REPRODUCTION

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

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect one of the control unit connectors of HEV system CAN circuit.
   NOTE:
   ECM and Li-ion battery controller have a termination circuit. Check other control units first.
4. Connect the 12V battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although control unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

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

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN IPDM-E AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000015203051

1.CHECK CONNECTOR

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

- Harness connector 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		60J	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)

1. Disconnect the connector of combination meter.
2. Check the continuity between the harness connector and the combination meter harness connector.

Harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	61J	M77	41	Existed
	60J		42	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 combination meter.
NO >> Repair the main line between the harness connector M31 and the combination meter.

MAIN LINE BETWEEN M&A AND STRG CIRCUIT

Diagnosis Procedure

INFOID:0000000015203052

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

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

Combination meter harness connector		Steering angle sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M77	41	M56	5	Existed
	42		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the steering angle sensor.
NO >> Repair the main line between the combination meter and the steering angle sensor.

MAIN LINE BETWEEN STRG AND 4WD CIRCUIT

Diagnosis Procedure

INFOID:0000000015203053

1.CHECK CONNECTOR

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

- Harness connector 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.

- Steering angle sensor
- Harness connectors M69 and B41

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

Steering angle sensor harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M56	5	M69	25	Existed
	2		24	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the steering angle sensor 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 steering angle sensor and the AWD control unit.
NO >> Repair the main line between the harness connector B41 and the AWD control unit.

MAIN LINE BETWEEN AVM AND LANE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203054

1.CHECK CONNECTOR

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

- Harness connector B43
- Harness connector M52

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors M52 and B43.
2. Check the continuity between the harness connector terminals.

Harness connector			Continuity
Connector No.	Terminal No.		
B43	8	7	Existed
	16	15	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the around view monitor control unit and the harness connector B43.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the herness connectors M156 and R11.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M52	7	M156	8	Existed
	15		9	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 around view monitor control unit and the lane camera unit.
NO >> Repair the main line between the harness connector M52 and the lane camera unit.

MAIN LINE BETWEEN RDR-R AND AVM CIRCUIT

Diagnosis Procedure

INFOID:0000000015203055

1.CHECK CONNECTOR

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

- Harness connector B140
- Harness connector B49

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Side radar RH
- Harness connectors B140 and B49

2. Check the continuity between the side radar RH harness connector and the harness connector.

Side radar RH harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B105	6	B140	8	Existed
	7		9	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the side radar RH and the harness connector B140.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors B43 and M52.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B49	8	B43	8	Existed
	9		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 side radar RH and the around view monitor control unit.
NO >> Repair the main line between the harness connector B49 and the around view monitor control unit.

MAIN LINE BETWEEN RDR-L AND RDR-R CIRCUIT

Diagnosis Procedure

INFOID:0000000015203056

1.CHECK CONNECTOR

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

- Harness connector B49
- Harness connector B140

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Side radar LH
- Harness connectors B49 and B140

2. Check the continuity between the side radar LH harness connector and the harness connector.

Side radar LH harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B35	6	B49	13	Existed
	7		14	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the side radar LH and the harness connector B49.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of side radar RH.
2. Check the continuity between the harness connector and the side radar RH harness connector.

Harness connector		Side radar RH harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B140	13	B105	6	Existed
	14		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar LH and the side radar RH.
NO >> Repair the main line between the harness connector B140 and the side radar RH.

MAIN LINE BETWEEN EV/HEV AND HV BAT CIRCUIT

Diagnosis Procedure

INFOID:0000000015203057

1.CHECK CONNECTOR

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

- Harness connector 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.

- HPCM
- Harness connectors E152 and M31

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

HPCM harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E130	97	E152	70J	Existed
	98		69J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the HPCM and the harness connector E152.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors M69 and B41.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	70J	M69	12	Existed
	69J		11	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the HPCM and the Li-ion battery.
NO >> Repair the main line between the harness connector M31 and the Li-ion battery.

ECM BRANCH LINE CIRCUIT (VEHICLE CAN COMMUNICATION 1 CIRCUIT)

Diagnosis Procedure

INFOID:0000000015203058

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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	124	123	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line (Vehicle CAN communication 1 circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to EC-184, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to EC-595, "Removal and Installation".
YES (Past error)>>Error was detected in the ECM branch line (Vehicle CAN communication 1 circuit side).
NO >> Repair the power supply and the ground circuit.

ECM BRANCH LINE CIRCUIT (HEV SYSTEM CAN CIRCUIT)

Diagnosis Procedure

INFOID:0000000015203059

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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	138	137	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line (HEV system CAN circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to EC-184, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to EC-595, "Removal and Installation".
YES (Past error)>>Error was detected in the ECM branch line (HEV system CAN circuit side).
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203060

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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	19	30	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-169, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-204, "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.

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

Diagnosis Procedure

INFOID:0000000015203061

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

HPCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E130	84	83	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the HPCM branch line (Vehicle CAN communication 1 circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the HPCM. Refer to HBC-117, "HPCM : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the HPCM. Refer to HBC-335, "Removal and Installation".
YES (Past error)>>Error was detected in the HPCM branch line (Vehicle CAN communication 1 circuit side)
NO >> Repair the power supply and the ground circuit.

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

Diagnosis Procedure

INFOID:0000000015203062

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

HPCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E130	97	98	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Replace the HPCM branch line (HEV system CAN circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the HPCM. Refer to HBC-117, "HPCM : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the HPCM. Refer to HBC-335, "Removal and Installation".
YES (Past error)>>Error was detected in the HPCM branch line (HEV system CAN circuit side).
NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203063

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
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-45, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-46, "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.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203064

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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-62, "COMBINATION METER : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to MWI-81, "Removal and Installation".
YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

3CH CGW BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203065

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 3CH CAN gateway 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 3CH CAN gateway.
2. Check the resistance between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M29	1	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the 3CH CAN gateway branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the 3CH CAN gateway. Refer to LAN-178, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the 3CH CAN gateway. Refer to LAN-179, "Removal and Installation".
YES (Past error)>>Error was detected in the 3CH CAN gateway branch line.
NG >> Repair the power supply and the ground circuit.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203066

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 12V 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-35, "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 (VEHICLE CAN COMMUNICATION 1 CIRCUIT)

Diagnosis Procedure

INFOID:0000000015203067

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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 (Vehicle CAN communication 1 circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the chassis control module. Refer to DAS-523, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the chassis control module. Refer to DAS-529, "Removal and Installation".
YES (Past error)>>Error was detected in the chassis control module branch line (Vehicle CAN communication 1 circuit side).
NG >> Repair the power supply and the ground circuit.

CCM BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000015203068

1.CHECK CONNECTOR

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

- Chassis control module
- Harness connector M69
- Harness connector B41

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	11	8	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the chassis control module branch line (ITS CAN communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the chassis control module. Refer to DAS-523, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the chassis control module. Refer to DAS-529, "Removal and Installation".
YES (Past error)>>Error was detected in the chassis control module branch line (ITS CAN commumication circuit side).
NG >> Repair the power supply and the ground circuit.

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203069

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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-63, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-208, "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.

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203070

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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-62, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the AWD control unit. Refer to DLN-72, "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.

ADP BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203071

1.CHECK CONNECTOR

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

- Driver seat control unit
- Harness connector B200
- Harness connector B57

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 driver seat control unit.
2. Check the resistance between the driver seat control unit harness connector terminals.

Driver seat control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B213	1	17	Approx. 54 – 66

Is the measurement value within the specification?

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

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the driver seat control unit. Refer to ADP-56, "DRIVER SEAT CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the driver seat control unit. Refer to ADP-102, "Removal and Installation".
YES (Past error)>>Error was detected in the driver seat control unit branch line.
NG >> Repair the power supply and the ground circuit.

PWBD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203072

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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-204, "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-343, "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:0000000015203073

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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 BCS-66, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-73, "Removal and Installation".
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

BRAKE BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203074

1.CHECK CONNECTOR

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

- Hydraulic brake booster unit
- BCM
- E152
- 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 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of BCM.
2. Disconnect the connector of hydraulic brake booster unit.
3. Check the resistance between the hydraulic brake booster unit harness connector terminals.

Hydraulic brake booster unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E35	9	10	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the hydraulic brake booster unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the hydraulic brake booster unit. Refer to BR-39, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the hydraulic brake booster unit. Refer to BR-65, "Removal and Installation".
YES (Past error)>>Error was detected in the hydraulic brake booster unit branch line.
NO >> Repair the power supply and the ground circuit.

EPS/DAST 3 BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203075

1.CHECK CONNECTOR

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

- EPS 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of BCM.
2. Disconnect the connector of EPS control unit.
3. 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 4.
NO >> Repair the EPS control unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to STC-18, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to STC-39, "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.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203081

1.CHECK CONNECTOR

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

- A/C auto amp.
- 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

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

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

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the A/C auto amp. branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the A/C auto amp. Refer to HAC-107, "A/C AUTO AMP. : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the A/C auto amp. Refer to HAC-120, "Removal and Installation".
YES (Past error)>>Error was detected in the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.

VSP BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203082

1.CHECK CONNECTOR

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

- Approaching vehicle sound for pedestrians (VSP) control unit
- BCM
- 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 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of BCM.
2. Disconnect the connector of approaching vehicle sound for pedestrians (VSP) control unit.
3. Check the resistance between the approaching vehicle sound for pedestrians (VSP) control unit harness connector terminals.

Approaching vehicle sound for pedestrians (VSP) control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E154	6	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the approaching vehicle sound for pedestrians (VSP) control unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the approaching vehicle sound for pedestrians (VSP) control unit. Refer to VSP-32, "APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the approaching vehicle sound for pedestrians (VSP) control unit. Refer to VSP-35, "Removal and Installation".
YES (Past error)>>Error was detected in the approaching vehicle sound for pedestrians (VSP) control unit branch line.
NO >> Repair the power supply and the ground circuit.

AVM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203091

1.CHECK CONNECTOR

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

- Around view monitor control unit
- Harness connector M52
- Harness connector B43

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

-

Around view monitor control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M112	26	24	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the around view monitor control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the around view monitor control unit. Refer to AV-437, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the around view monitor control unit. Refer to AV-441, "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.

RDR-R BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203092

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

Side radar RH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B105	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the side radar RH branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar RH. Refer to DAS-376, "SIDE RADAR RH : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the side radar RH. Refer to DAS-405, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar RH branch line.
NO >> Repair the power supply and the ground circuit.

RDR-L BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203093

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

Side radar LH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B35	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the side radar LH branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar LH. Refer to DAS-376, "SIDE RADAR LH : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the side radar LH. Refer to DAS-405, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar LH branch line.
NO >> Repair the power supply and the ground circuit.

ICC 2 BRANCH LINE CIRCUIT (VEHICLE CAN COMMUNICATION 2 CIRCUIT)

Diagnosis Procedure

INFOID:0000000015203094

1.CHECK CONNECTOR

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

- ADAS control unit 2
- Harness connector M52
- Harness connector B43
- 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-634, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

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

ADAS control unit 2 harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M148	9	10	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the ADAS control unit 2 branch line (Vehicle CAN communication 2 circuit side).

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit 2. Refer to DAS-208, "ADAS CONTROL UNIT 2 : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit 2. Refer to DAS-212, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit 2 branch line (Vehicle CAN communication 2 circuit side).
NO >> Repair the power supply and the ground circuit.

ICC 2 BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000015203095

1.CHECK CONNECTOR

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

- ADAS control unit 2
- Harness connector M52 (With forward emergency braking)
- Harness connector B43 (With forward emergency braking)

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 ADAS control unit 2.
2. Check the resistance between the ADAS control unit 2 harness connector terminals.

- With forward emergency braking

ADAS control unit 2 harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M148	9	10	Approx. 108 – 132

- Without forward emergency braking

ADAS control unit 2 harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M148	2	5	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ADAS control unit 2 branch line (ITS CAN communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit 2. Refer to DAS-208, "ADAS CONTROL UNIT 2 : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit 2. Refer to DAS-212, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit 2 branch line (ITS CAN communication circuit side).
NO >> Repair the power supply and the ground circuit.

LANE BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203096

1.CHECK CONNECTOR

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

- Lane camera unit
- Chassis control module (With forward emergency braking)
- Harness connector R11
- Harness connector M156

Is the inspection result normal?

YES >> GO TO 2. (With forward emergency braking)
YES >> GO TO 3. (Without forward emergency braking)
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of chassis control module.
2. Check the continuity between the chassis control module harness connector terminals.

Chassis control module harness connector			Continuity
Connector No.	Terminal No.		
M96	19	11	Existed
	7	8	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (Chassis CAN communication circuit side). Refer to LAN-639, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of chassis control module (With forward emergency braking).
2. Disconnect the connector of lane camera unit.
3. Check the resistance between the lane camera unit harness connector terminals.

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Lane camera unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
R17	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the lane camera unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the lane camera unit. Refer to DAS-377, "LANE CAMERA UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the lane camera unit. Refer to DAS-410, "Removal and Installation".
YES (Past error)>>Error was detected in the lane camera unit branch line.
NO >> Repair the power supply and the ground circuit.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203097

1.CHECK CONNECTOR

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

- 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-193, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the TCM. Refer to TM-213, "Removal and Installation".

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

INV/MC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203098

1.CHECK CONNECTOR

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

- Traction motor inverter
- Harness connector F6
- Harness connector E4

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

Traction motor inverter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F36	27	35	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Replace the traction motor inverter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the traction motor inverter. Refer to TMS-68, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the traction motor inverter. Refer to TMS-132, "Removal and Installation".
YES (Past error)>>Error was detected in the traction motor inverter branch line.
NO >> Repair the power supply and the ground circuit.

HV BAT BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203099

DANGER:

Since hybrid vehicles and electric vehicles contain a high voltage battery, there is the risk of electric shock, electric leakage, or similar accidents if the high voltage component and vehicle are handled incorrectly. Be sure to follow the correct work procedures when performing inspection and maintenance.

WARNING:

- **Be sure to remove the service plug in order to disconnect the high voltage circuits before performing inspection or maintenance of high voltage system harnesses and parts.**
- **The removed service plug must always be carried in a pocket of the responsible worker or placed in the tool box during the procedure to prevent the plug from being connected by mistake.**
- **Be sure to wear insulating protective equipment before beginning work on the high voltage system.**
- **Never allow workers other than the responsible person to touch the vehicle containing high voltage parts. To keep others from touching the high voltage parts, these parts must be covered with an insulating sheet except when using them.**
- **Refer to GI-28, "High Voltage Precautions".**

CAUTION:

Never bring the vehicle into the READY status with the service plug removed unless otherwise instructed in the Service Manual. A malfunction may occur if this is not observed.

1. CHECK CONNECTOR

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

- Li-ion battery
- Harness connector B41
- Harness connector M69

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

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

Li-ion battery harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B59	3	15	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Replace the Li-ion battery branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Li-ion battery. Refer to HBB-149, "LI-ION BATTERY CONTROLLER : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the Li-ion battery. Refer to HBB-155, "Removal and Installation".
YES (Past error)>>Error was detected in the Li-ion battery controller branch line.
NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203100

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203101

1.CHECK CONNECTOR

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

- AV control unit
- 3CH CAN gateway

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of 3CH CAN gateway.
2. Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	9	13	Existed
	10	14	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (IT CAN communication circuit side). Refer to LAN-150, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

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

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M108	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-315, "AV CONTROL UNIT : Diagnosis Procedure"
- Navigation without BOSE: AV-213, "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-352, "Removal and Installation"
- Navigation without BOSE: AV-239, "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.

TCU BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203102

1.CHECK CONNECTOR

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

- TCU
- 3CH CAN gateway

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of 3CH CAN gateway.
2. Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	9	13	Existed
	10	14	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (IT CAN communication circuit side). Refer to LAN-150, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of 3CH CAN gateway.
2. Disconnect the connector of TCU.
3. Check the resistance between the TCU harness connector terminals.

TCU harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M35	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the TCU branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCU. Refer to LAN-140, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the TCU. Refer to AV-531, "Removal and Installation".
YES (Past error)>>Error was detected in the TCU branch line.
NO >> Repair the power supply and the ground circuit.

VEHICLE CAN COMMUNICATION 1 CIRCUIT

Diagnosis Procedure

INFOID:0000000015203103

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect all the unit connectors on vehicle CAN communication 1 circuit.
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 3CH CAN gateway terminals.

3CH CAN gateway			Continuity
Connector No.	Terminal No.		
M29	1	2	Not 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)

Check the continuity between the 3CH CAN gateway and the ground.

3CH CAN gateway		Ground	Continuity
Connector No.	Terminal No.		
M29	1		Not existed
	2		Not existed

Is the inspection result normal?

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

4.CHECK ECM AND BCM TERMINATION CIRCUIT

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

ECM		Resistance (Ω)
Terminal No.		
124	123	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 12V battery cable from the negative terminal.
3. Disconnect one of the unit connectors of vehicle CAN communication 1 circuit.
   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.

VEHICLE CAN COMMUNICATION 2 CIRCUIT

Diagnosis Procedure

INFOID:0000000015203104

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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 vehicle CAN communication 2 circuit.
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 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 BCM.

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 12V battery cable from the negative terminal.
3. Disconnect one of the unit connectors of vehicle CAN communication 2 circuit.
   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.

ITS CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000015203105

1.CHECK CAN DIAGNOSIS

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

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

YES >> GO TO 2.
NO >> Check and repair vehicle CAN communication 1 circuit and/or vehicle CAN communication 2 circuit.

2.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the ADAS control unit (With forward emergency braking) or the ADAS control unit 2 (Without forward emergency braking) for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

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

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.
- ADAS control unit (With forward emergency braking)
- ADAS control unit 2
- Chassis control module (Without forward emergency braking)
2. Check the continuity between the ADAS control unit harness connector and the ADAS control unit 2 harness connector (With forward emergency braking) or the ADAS control unit 2 harness connector and the chassis control module harness connector (Without forward emergency braking).

• With forward emergency braking

ADAS control unit harness connector		ADAS control unit 2 harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B4	6	M148	9	Existed
	7		10	Existed

• Without forward emergency braking

ADAS control unit 2 harness connector		Chassis control module harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M148	2	M96	11	Existed
	5		8	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the harness between the ADAS control unit and the ADAS control unit 2 (With forward emergency braking) or the ADAS control unit 2 and the chassis control module (Without forward emergency braking).

4.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

1. Disconnect all the unit connectors on ITS CAN communication circuit.
2. Check the continuity between the ADAS control unit harness connector terminals (With forward emergency braking) or the ADAS control unit 2 harness connector terminals (Without forward emergency braking).

• With forward emergency braking

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
B4	6	7	Not existed

• Without forward emergency braking

ADAS control unit 2 harness connector			Continuity
Connector No.	Terminal No.		
B148	2	5	Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause.

5. CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the ADAS control unit harness connector and the ground (With forward emergency braking) or the ADAS control unit 2 harness connector and the ground (Without forward emergency braking).

• With forward emergency braking

ADAS control unit harness connector		Ground	Continuity
Connector No.	Terminal No.		
B4	6		Not existed
	7		Not existed

• Without forward emergency braking

ADAS control unit 2 harness connector		Ground	Continuity
Connector No.	Terminal No.		
B148	2		Not existed
	5		Not existed

Is the inspection result normal?

YES >> GO TO 6.
NO >> Check the harness and repair the root cause.

6. CHECK TERMINATION CIRCUIT

1. Remove the ADAS control unit and the ADAS control unit 2 (With forward emergency braking) or the ADAS control unit 2 and the chassis control module (Without forward emergency braking).
2. Check the resistance between the ADAS control unit terminals (With forward emergency braking) or the ADAS control unit 2 terminals (Without forward emergency braking).

- With forward emergency braking

ADAS control unit		Resistance (Ω)
Terminal No.		
6	7	Approx. 108 – 132

- Without forward emergency braking

ADAS control unit 2		Resistance (Ω)
Terminal No.		
2	5	Approx. 108 – 132

3. Check the resistance between the ADAS control unit 2 terminals (With forward emergency braking) or the chassis control module terminals (Without forward emergency braking).

- With forward emergency braking

ADAS control unit 2		Resistance (Ω)
Terminal No.		
9	10	Approx. 108 – 132

- Without forward emergency braking

Chassis control module		Resistance (Ω)
Terminal No.		
11	8	Approx. 108 – 132

Is the inspection result normal?

YES >> GO TO 7.
NO >> Replace the ADAS control unit and/or the ADAS control unit 2 (With forward emergency braking) or the ADAS control unit 2 and/or the chassis control module (Without forward emergency braking).

7.CHECK SYMPTOM

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

Inspection result

Reproduced>>GO TO 8.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

8.CHECK UNIT REPRODUCTION

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

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect one of the unit connectors of ITS CAN communication circuit.
   NOTE:
   ADAS control unit and ADAS control unit 2 (With forward emergency braking) or ADAS control unit 2 and chassis control module (Without forward emergency braking) 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.

IT CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000015203106

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect all the unit connectors on IT CAN communication circuit.
4. Check the terminals and connectors on IT CAN communication circuit 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 3CH CAN gateway.
2. Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	9	13	Existed
	10	14	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 IT CAN communication circuit.
2. Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	9	10	Not existed

Is the inspection result normal?

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

4.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the 3CH CAN gateway and the ground.

3CH CAN gateway harness connector		Ground	Continuity
Connector No.	Terminal No.		
M29	9		Not existed
	10		Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause.

5.CHECK 3CH CAN GATEWAY TERMINATION CIRCUIT

1. Remove the 3CH CAN gateway.
2. Check the resistance between the 3CH CAN gateway terminals.

3CH CAN gateway	Resistance (Ω)
Terminal No.	

9	10	Approx. 108 – 132
13	14	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Replace the 3CH CAN gateway.

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 12V battery cable from the negative terminal.
3. Disconnect one of the unit connectors of IT CAN communication circuit.
   NOTE:
   3CH CAN gateway 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.

DIAGNOSTIC CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000015203107

1.CONNECTOR INSPECTION

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

- Data link connector
- 3CH CAN gateway

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of 3CH CAN gateway.
2. Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	3	11	Existed
	4	12	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)

Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	3	4	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 3CH CAN gateway harness connector and the ground.

3CH CAN gateway harness connector		Ground	Continuity
Connector No.	Terminal No.		
M29	3		Not existed
	4		Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair or replace the root cause.

5.CHECK 3CH CAN GATEWAY TERMINATION CIRCUIT

1. Remove the 3CH CAN gateway.
2. Check the resistance between the 3CH CAN gateway terminals.

3CH CAN gateway	Resistance (Ω)
Terminal No.	

3	4	Approx. 108 – 132
11	12	Approx. 108 – 132

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the diagnostic CAN communication circuit.
NO >> Replace the 3CH CAN gateway.

HEV SYSTEM CAN CIRCUIT

Diagnosis Procedure

INFOID:0000000015203108

DANGER:

Since hybrid vehicles and electric vehicles contain a high voltage battery, there is the risk of electric shock, electric leakage, or similar accidents if the high voltage component and vehicle are handled incorrectly. Be sure to follow the correct work procedures when performing inspection and maintenance.

WARNING:

- **Be sure to remove the service plug in order to disconnect the high voltage circuits before performing inspection or maintenance of high voltage system harnesses and parts.**
- **The removed service plug must always be carried in a pocket of the responsible worker or placed in the tool box during the procedure to prevent the plug from being connected by mistake.**
- **Be sure to wear insulating protective equipment before beginning work on the high voltage system.**
- **Never allow workers other than the responsible person to touch the vehicle containing high voltage parts. To keep others from touching the high voltage parts, these parts must be covered with an insulating sheet except when using them.**
- **Refer to GI-28, "High Voltage Precautions".**

CAUTION:

Never bring the vehicle into the READY status with the service plug removed unless otherwise instructed in the Service Manual. A malfunction may occur if this is not observed.

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect all the control unit connectors on HEV system CAN circuit.
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 (OPEN CIRCUIT)

1. Disconnect the following harness connectors.
- ECM
- Li-ion battery
2. Check the continuity between the ECM harness connector and the Li-ion battery harness connector.

ECM harness connector		Li-ion battery harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E16	138	B59	3	Existed
	137		15	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the harness between the ECM and the Li-ion battery.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

1. Disconnect all the unit connectors on HEV system CAN circuit.
2. Check the continuity between the ECM harness connector terminals.

ECM harness connector			Continuity
Connector No.	Terminal No.		
E16	138	137	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 ECM harness connector and the ground.

ECM harness connector		Ground	Continuity
Connector No.	Terminal No.		
E16	138		Not existed
	137		Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair or replace the root cause.

5.CHECK ECM AND LI-ION BATTERY CONTROLLER TERMINATION CIRCUIT

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

ECM		Resistance (Ω)
Terminal No.		
138	137	Approx. 108 – 132

3. Check the resistance between the Li-ion battery terminals.

Li-ion battery		Resistance (Ω)
Terminal No.		
3	15	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Replace the ECM and/or the Li-ion battery.

6.CHECK SYMPTOM

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

Inspection result

Reproduced>>GO TO 7.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

7.CHECK CONTROL UNIT REPRODUCTION

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

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect one of the control unit connectors of HEV system CAN circuit.
   NOTE:
   ECM and Li-ion battery controller have a termination circuit. Check other control units first.
4. Connect the 12V battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although control unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

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

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN IPDM-E AND M&A CIRCUIT

Diagnosis Procedure

INFOID:0000000015203109

1.CHECK CONNECTOR

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

- Harness connector 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		60J	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)

1. Disconnect the connector of combination meter.
2. Check the continuity between the harness connector and the combination meter harness connector.

Harness connector		Combination meter harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	61J	M77	41	Existed
	60J		42	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 combination meter.
NO >> Repair the main line between the harness connector M31 and the combination meter.

MAIN LINE BETWEEN M&A AND STRG CIRCUIT

Diagnosis Procedure

INFOID:0000000015203110

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect the following harness connectors.

- ECM
- Combination meter
- Steering angle sensor

4. Check the continuity between the combination meter harness connector and the steering angle sensor harness connector.

Combination meter harness connector		Steering angle sensor harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M77	41	M56	5	Existed
	42		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the combination meter and the steering angle sensor.
NO >> Repair the main line between the combination meter and the steering angle sensor.

MAIN LINE BETWEEN STRG AND 4WD CIRCUIT

Diagnosis Procedure

INFOID:0000000015203112

1.CHECK CONNECTOR

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

- Harness connector 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.

- Steering angle sensor
- Harness connectors M69 and B41

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

Steering angle sensor harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M56	5	M69	25	Existed
	2		24	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the steering angle sensor 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 steering angle sensor and the AWD control unit.
NO >> Repair the main line between the harness connector B41 and the AWD control unit.

MAIN LINE BETWEEN EPS/DAST 3 AND ICC CIRCUIT

Diagnosis Procedure

INFOID:0000000015203113

1.CHECK CONNECTOR

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

- Harness connector 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.

- EPS control unit
- Harness connectors M69 and B41

2. Check the continuity between the EPS control unit harness connector and the harness connector.

EPS control unit harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M49	2	M69	28	Existed
	1		27	Existed

Is the inspection result normal?

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

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

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

Harness connector		ADAS control unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B41	28	B4	1	Existed
	27		2	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the EPS control unit and the ADAS control unit.
NO >> Repair the main line between the harness connector B41 and the ADAS control unit.

MAIN LINE BETWEEN AVM AND RDR-R CIRCUIT

Diagnosis Procedure

INFOID:0000000015203114

1.CHECK CONNECTOR

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

- Harness connector B49
- Harness connector B140

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Harness connectors M52 and B43
- Harness connectors B49 and B140

2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B43	8	B49	8	Existed
	16		9	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the harness connectors B43 and B49.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of side radar RH.
2. Check the continuity between the harness connector and the side radar RH harness connector.

Harness connector		Side radar RH harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B140	8	B105	6	Existed
	9		7	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 around view monitor control unit and the side radar RH.
NO >> Repair the main line between the harness connector B140 and the side radar RH.

MAIN LINE BETWEEN RDR-R AND RDR-L CIRCUIT

Diagnosis Procedure

INFOID:0000000015203115

1.CHECK CONNECTOR

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

- Harness connector B140
- Harness connector B49

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.

- Side radar RH
- Harness connectors B140 and B49

2. Check the continuity between the side radar RH harness connector and the harness connector.

Side radar RH harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B105	6	B140	13	Existed
	7		14	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the side radar RH and the harness connector B140.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of side radar LH.
2. Check the continuity between the harness connector and the side radar LH harness connector.

Harness connector		Side radar LH harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B49	13	B35	6	Existed
	14		7	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the side radar RH and the side radar LH.
NO >> Repair the main line between the harness connector B49 and the side radar LH.

MAIN LINE BETWEEN EV/HEV AND HV BAT CIRCUIT

Diagnosis Procedure

INFOID:0000000015203116

1.CHECK CONNECTOR

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

- Harness connector 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.

- HPCM
- Harness connectors E152 and M31

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

HPCM harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E130	97	E152	70J	Existed
	98		69J	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the main line between the HPCM and the harness connector E152.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the harness connectors M69 and B41.
2. Check the continuity between the harness connectors.

Harness connector		Harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M31	70J	M69	12	Existed
	69J		11	Existed

Is the inspection result normal?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the main line between the HPCM and the Li-ion battery.
NO >> Repair the main line between the harness connector M31 and the Li-ion battery.

ECM BRANCH LINE CIRCUIT (VEHICLE CAN COMMUNICATION 1 CIRCUIT)

Diagnosis Procedure

INFOID:0000000015203117

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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	124	123	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line (Vehicle CAN communication 1 circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to EC-184, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to EC-595, "Removal and Installation".
YES (Past error)>>Error was detected in the ECM branch line (Vehicle CAN communication 1 circuit side).
NO >> Repair the power supply and the ground circuit.

ECM BRANCH LINE CIRCUIT (HEV SYSTEM CAN CIRCUIT)

Diagnosis Procedure

INFOID:0000000015203118

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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	138	137	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ECM branch line (HEV system CAN circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to EC-184, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to EC-595, "Removal and Installation".
YES (Past error)>>Error was detected in the ECM branch line (HEV system CAN circuit side).
NO >> Repair the power supply and the ground circuit.

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203119

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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	19	30	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-169, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to BRC-204, "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.

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

Diagnosis Procedure

INFOID:0000000015203120

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

HPCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E130	84	83	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the HPCM branch line (Vehicle CAN communication 1 circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the HPCM. Refer to HBC-117, "HPCM : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the HPCM. Refer to HBC-335, "Removal and Installation".
YES (Past error)>>Error was detected in the HPCM branch line (Vehicle CAN communication 1 circuit side)
NO >> Repair the power supply and the ground circuit.

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

Diagnosis Procedure

INFOID:0000000015203121

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

HPCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E130	97	98	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Replace the HPCM branch line (HEV system CAN circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the HPCM. Refer to HBC-117, "HPCM : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the HPCM. Refer to HBC-335, "Removal and Installation".
YES (Past error)>>Error was detected in the HPCM branch line (HEV system CAN circuit side).
NO >> Repair the power supply and the ground circuit.

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203122

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
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-45, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to PCS-46, "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.

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203123

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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-62, "COMBINATION METER : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the combination meter. Refer to MWI-81, "Removal and Installation".
YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

3CH CGW BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203124

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 3CH CAN gateway 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 3CH CAN gateway.
2. Check the resistance between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M29	1	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the 3CH CAN gateway branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the 3CH CAN gateway. Refer to LAN-178, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the 3CH CAN gateway. Refer to LAN-179, "Removal and Installation".
YES (Past error)>>Error was detected in the 3CH CAN gateway branch line.
NG >> Repair the power supply and the ground circuit.

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203125

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 12V 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-35, "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 (VEHICLE CAN COMMUNICATION 1 CIRCUIT)

Diagnosis Procedure

INFOID:0000000015203126

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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 (Vehicle CAN communication 1 circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the chassis control module. Refer to DAS-523, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the chassis control module. Refer to DAS-529, "Removal and Installation".
YES (Past error)>>Error was detected in the chassis control module branch line (Vehicle CAN communication 1 circuit side).
NG >> Repair the power supply and the ground circuit.

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203127

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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-63, "Wiring Diagram".

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to BRC-208, "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.

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203128

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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-62, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the AWD control unit. Refer to DLN-72, "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.

ADP BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203129

1.CHECK CONNECTOR

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

- Driver seat control unit
- Harness connector B200
- Harness connector B57

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 driver seat control unit.
2. Check the resistance between the driver seat control unit harness connector terminals.

Driver seat control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B213	1	17	Approx. 54 – 66

Is the measurement value within the specification?

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

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the driver seat control unit. Refer to ADP-56, "DRIVER SEAT CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the driver seat control unit. Refer to ADP-102, "Removal and Installation".
YES (Past error)>>Error was detected in the driver seat control unit branch line.
NG >> Repair the power supply and the ground circuit.

PWBD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203130

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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-204, "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-343, "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:0000000015203131

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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 BCS-66, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the BCM. Refer to BCS-73, "Removal and Installation".
YES (Past error)>>Error was detected in the BCM branch line.
NO >> Repair the power supply and the ground circuit.

BRAKE BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203132

1.CHECK CONNECTOR

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

- Hydraulic brake booster unit
- BCM
- E152
- 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 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of BCM.
2. Disconnect the connector of hydraulic brake booster unit.
3. Check the resistance between the hydraulic brake booster unit harness connector terminals.

Hydraulic brake booster unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E35	9	10	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the hydraulic brake booster unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the hydraulic brake booster unit. Refer to BR-39, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the hydraulic brake booster unit. Refer to BR-65, "Removal and Installation".
YES (Past error)>>Error was detected in the hydraulic brake booster unit branch line.
NO >> Repair the power supply and the ground circuit.

EPS/DAST 3 BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203133

1.CHECK CONNECTOR

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

- EPS 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of BCM.
2. Disconnect the connector of EPS control unit.
3. 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 4.
NO >> Repair the EPS control unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the EPS control unit. Refer to STC-18, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to STC-39, "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.

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203134

1.CHECK CONNECTOR

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

- A/C auto amp.
- 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

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

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

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the A/C auto amp. branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the A/C auto amp. Refer to HAC-107, "A/C AUTO AMP. : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the A/C auto amp. Refer to HAC-120, "Removal and Installation".
YES (Past error)>>Error was detected in the A/C auto amp. branch line.
NO >> Repair the power supply and the ground circuit.

ICC BRANCH LINE CIRCUIT (VEHICLE CAN COMMUNICATION 2 CIRCUIT)

Diagnosis Procedure

INFOID:0000000015203135

1.CHECK CONNECTOR

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

- ADAS control unit
- 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 (Vehicle CAN communication circuit 2 side). Refer to LAN-634, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

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

ADAS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B4	1	2	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the ADAS control unit branch line (Vehicle CAN communication 2 circuit side).

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-208, "ADAS CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-210, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (Vehicle CAN communication 2 circuit side).
NO >> Repair the power supply and the ground circuit.

ICC BRANCH LINE CIRCUIT (ITS CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000015203136

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of ADAS 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 ADAS control unit.
2. Check the resistance between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B4	6	7	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ADAS control unit branch line (ITS CAN communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-208, "ADAS CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-210, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (ITS CAN communication circuit side).
NO >> Repair the power supply and the ground circuit.

ICC BRANCH LINE CIRCUIT (CHASSIS CAN COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000015203137

1.CHECK CONNECTOR

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

- ADAS control unit
- Chassis control module

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

Chassis control module harness connector			Continuity
Connector No.	Terminal No.		
M96	19	11	Existed
	7	8	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (Chassis CAN communication circuit side). Refer to LAN-634, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of chassis control module.
2. Disconnect the connector of ADAS control unit.
3. Check the resistance between the ADAS control unit harness connector terminals.

ADAS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B4	8	9	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the ADAS control unit branch line (Chassis CAN communication circuit side).

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit. Refer to DAS-208, "ADAS CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit. Refer to DAS-210, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit branch line (Chassis CAN communication circuit side).
NO >> Repair the power supply and the ground circuit.

VSP BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203138

1.CHECK CONNECTOR

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

- Approaching vehicle sound for pedestrians (VSP) control unit
- BCM
- 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 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 (Vehicle CAN communication 2 circuit side). Refer to LAN-143, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of BCM.
2. Disconnect the connector of approaching vehicle sound for pedestrians (VSP) control unit.
3. Check the resistance between the approaching vehicle sound for pedestrians (VSP) control unit harness connector terminals.

Approaching vehicle sound for pedestrians (VSP) control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E154	6	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the approaching vehicle sound for pedestrians (VSP) control unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the approaching vehicle sound for pedestrians (VSP) control unit. Refer to VSP-32, "APPROACHING VEHICLE SOUND FOR PEDESTRIANS (VSP) CONTROL UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the approaching vehicle sound for pedestrians (VSP) control unit. Refer to VSP-35, "Removal and Installation".
YES (Past error)>>Error was detected in the approaching vehicle sound for pedestrians (VSP) control unit branch line.
NO >> Repair the power supply and the ground circuit.

LASER BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203139

1.CHECK CONNECTOR

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

- Distance sensor
- Harness connector E34
- Harness connector B40

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

Distance sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E21	3	2	Approx. 54 – 66

Is the measurement value within the specification?

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

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the distance sensor. Refer to CCS-188, "ICC SENSOR : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the distance sensor. Refer to CCS-206, "Removal and Installation".
YES (Past error)>>Error was detected in the distance sensor branch line.
NO >> Repair the power supply and the ground circuit.

AVM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203140

1.CHECK CONNECTOR

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

- Around view monitor control unit
- Harness connector M52
- Harness connector B43

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

-

Around view monitor control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M112	26	24	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the around view monitor control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the around view monitor control unit. Refer to AV-437, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the around view monitor control unit. Refer to AV-441, "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.

RDR-R BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203141

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

Side radar RH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B105	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the side radar RH branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar RH. Refer to DAS-376, "SIDE RADAR RH : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the side radar RH. Refer to DAS-405, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar RH branch line.
NO >> Repair the power supply and the ground circuit.

RDR-L BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203142

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

Side radar LH harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B35	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the side radar LH branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the side radar LH. Refer to DAS-376, "SIDE RADAR LH : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the side radar LH. Refer to DAS-405, "Removal and Installation".
YES (Past error)>>Error was detected in the side radar LH branch line.
NO >> Repair the power supply and the ground circuit.

ICC 2 BRANCH LINE CIRCUIT (ITS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000015203143

1.CHECK CONNECTOR

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

- ADAS control unit 2
- Harness connector M52 (With forward emergency braking)
- Harness connector B43 (With forward emergency braking)

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 ADAS control unit 2.
2. Check the resistance between the ADAS control unit 2 harness connector terminals.

- With forward emergency braking

ADAS control unit 2 harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M148	9	10	Approx. 108 – 132

- Without forward emergency braking

ADAS control unit 2 harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M148	2	5	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Repair the ADAS control unit 2 branch line (ITS CAN communication circuit side).

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit 2. Refer to DAS-208, "ADAS CONTROL UNIT 2 : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit 2. Refer to DAS-212, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit 2 branch line (ITS CAN communication circuit side).
NO >> Repair the power supply and the ground circuit.

ICC 2 BRANCH LINE CIRCUIT (CHASSIS COMMUNICATION CIRCUIT)

Diagnosis Procedure

INFOID:0000000015203144

1.CHECK CONNECTOR

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

- ADAS control unit 2
- Chassis control module

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

Chassis control module harness connector			Continuity
Connector No.	Terminal No.		
M96	19	11	Existed
	7	8	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (Chassis CAN communication circuit side). Refer to LAN-639, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of chassis control module.
2. Disconnect the connector of ADAS control unit 2.
3. Check the resistance between the ADAS control unit 2 harness connector terminals.

ADAS control unit 2 harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M148	2	5	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the ADAS control unit 2 branch line (Chassis communication circuit side).

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ADAS control unit 2. Refer to DAS-208, "ADAS CONTROL UNIT 2 : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the ADAS control unit 2. Refer to DAS-212, "Removal and Installation".
YES (Past error)>>Error was detected in the ADAS control unit 2 branch line (Chassis communication circuit side).
NO >> Repair the power supply and the ground circuit.

LANE BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203145

1.CHECK CONNECTOR

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

- Lane camera unit
- Chassis control module (With forward emergency braking)
- Harness connector R11
- Harness connector M156

Is the inspection result normal?

YES >> GO TO 2. (With forward emergency braking)
YES >> GO TO 3. (Without forward emergency braking)
NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of chassis control module.
2. Check the continuity between the chassis control module harness connector terminals.

Chassis control module harness connector			Continuity
Connector No.	Terminal No.		
M96	19	11	Existed
	7	8	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (Chassis CAN communication circuit side). Refer to LAN-639, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of chassis control module (With forward emergency braking).
2. Disconnect the connector of lane camera unit.
3. Check the resistance between the lane camera unit harness connector terminals.

-

Lane camera unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
R17	5	6	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the lane camera unit branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the lane camera unit. Refer to DAS-377, "LANE CAMERA UNIT : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the lane camera unit. Refer to DAS-410, "Removal and Installation".
YES (Past error)>>Error was detected in the lane camera unit branch line.
NO >> Repair the power supply and the ground circuit.

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203146

1.CHECK CONNECTOR

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

- 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-193, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the TCM. Refer to TM-213, "Removal and Installation".

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

INV/MC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203147

1.CHECK CONNECTOR

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

- Traction motor inverter
- Harness connector F6
- Harness connector E4

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

Traction motor inverter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F36	27	35	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Replace the traction motor inverter branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the traction motor inverter. Refer to TMS-68, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the traction motor inverter. Refer to TMS-132, "Removal and Installation".
YES (Past error)>>Error was detected in the traction motor inverter branch line.
NO >> Repair the power supply and the ground circuit.

HV BAT BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203148

DANGER:

Since hybrid vehicles and electric vehicles contain a high voltage battery, there is the risk of electric shock, electric leakage, or similar accidents if the high voltage component and vehicle are handled incorrectly. Be sure to follow the correct work procedures when performing inspection and maintenance.

WARNING:

- **Be sure to remove the service plug in order to disconnect the high voltage circuits before performing inspection or maintenance of high voltage system harnesses and parts.**
- **The removed service plug must always be carried in a pocket of the responsible worker or placed in the tool box during the procedure to prevent the plug from being connected by mistake.**
- **Be sure to wear insulating protective equipment before beginning work on the high voltage system.**
- **Never allow workers other than the responsible person to touch the vehicle containing high voltage parts. To keep others from touching the high voltage parts, these parts must be covered with an insulating sheet except when using them.**
- **Refer to GI-28, "High Voltage Precautions".**

CAUTION:

Never bring the vehicle into the READY status with the service plug removed unless otherwise instructed in the Service Manual. A malfunction may occur if this is not observed.

1. CHECK CONNECTOR

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

- Li-ion battery
- Harness connector B41
- Harness connector M69

Is the inspection result normal?

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

2. CHECK HARNESS FOR OPEN CIRCUIT

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

Li-ion battery harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B59	3	15	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.
NO >> Replace the Li-ion battery branch line.

3. CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the Li-ion battery. Refer to HBB-149, "LI-ION BATTERY CONTROLLER : Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the Li-ion battery. Refer to HBB-155, "Removal and Installation".
YES (Past error)>>Error was detected in the Li-ion battery controller branch line.
NO >> Repair the power supply and the ground circuit.

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203149

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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.

AV BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203150

1.CHECK CONNECTOR

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

- AV control unit
- 3CH CAN gateway

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of 3CH CAN gateway.
2. Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	9	13	Existed
	10	14	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (IT CAN communication circuit side). Refer to LAN-150, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

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

AV control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M108	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-315, "AV CONTROL UNIT : Diagnosis Procedure"
- Navigation without BOSE: AV-213, "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-352, "Removal and Installation"
- Navigation without BOSE: AV-239, "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.

TCU BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000015203151

1.CHECK CONNECTOR

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

- TCU
- 3CH CAN gateway

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of 3CH CAN gateway.
2. Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	9	13	Existed
	10	14	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check the harness and repair the root cause (IT CAN communication circuit side). Refer to LAN-150, "Diagnosis Procedure".

3.CHECK HARNESS FOR OPEN CIRCUIT

1. Connect the connector of 3CH CAN gateway.
2. Disconnect the connector of TCU.
3. Check the resistance between the TCU harness connector terminals.

TCU harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M35	6	7	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 4.
NO >> Repair the TCU branch line.

4.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCU. Refer to LAN-140, "Diagnosis Procedure".

Is the inspection result normal?

YES (Present error)>>Replace the TCU. Refer to AV-531, "Removal and Installation".
YES (Past error)>>Error was detected in the TCU branch line.
NO >> Repair the power supply and the ground circuit.

VEHICLE CAN COMMUNICATION 1 CIRCUIT

Diagnosis Procedure

INFOID:0000000015203153

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect all the unit connectors on vehicle CAN communication 1 circuit.
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 3CH CAN gateway terminals.

3CH CAN gateway			Continuity
Connector No.	Terminal No.		
M29	1	2	Not 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)

Check the continuity between the 3CH CAN gateway and the ground.

3CH CAN gateway		Ground	Continuity
Connector No.	Terminal No.		
M29	1		Not existed
	2		Not existed

Is the inspection result normal?

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

4.CHECK ECM AND BCM TERMINATION CIRCUIT

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

ECM		Resistance (Ω)
Terminal No.		
124	123	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 12V battery cable from the negative terminal.
3. Disconnect one of the unit connectors of vehicle CAN communication 1 circuit.
   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.

VEHICLE CAN COMMUNICATION 2 CIRCUIT

Diagnosis Procedure

INFOID:0000000015203154

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the 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 vehicle CAN communication 2 circuit.
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 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 BCM.

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 12V battery cable from the negative terminal.
3. Disconnect one of the unit connectors of vehicle CAN communication 2 circuit.
   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.

ITS CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000015203155

1.CHECK CAN DIAGNOSIS

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

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

YES >> GO TO 2.
NO >> Check and repair vehicle CAN communication 1 circuit and/or vehicle CAN communication 2 circuit.

2.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Check the terminals and connectors of the ADAS control unit (With forward emergency braking) or the ADAS control unit 2 (Without forward emergency braking) for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

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

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the following harness connectors.
- ADAS control unit (With forward emergency braking)
- ADAS control unit 2
- Chassis control module (Without forward emergency braking)
2. Check the continuity between the ADAS control unit harness connector and the ADAS control unit 2 harness connector (With forward emergency braking) or the ADAS control unit 2 harness connector and the chassis control module harness connector (Without forward emergency braking).

• With forward emergency braking

ADAS control unit harness connector		ADAS control unit 2 harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
B4	6	M148	9	Existed
	7		10	Existed

• Without forward emergency braking

ADAS control unit 2 harness connector		Chassis control module harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M148	2	M96	11	Existed
	5		8	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair the harness between the ADAS control unit and the ADAS control unit 2 (With forward emergency braking) or the ADAS control unit 2 and the chassis control module (Without forward emergency braking).

4.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

1. Disconnect all the unit connectors on ITS CAN communication circuit.
2. Check the continuity between the ADAS control unit harness connector terminals (With forward emergency braking) or the ADAS control unit 2 harness connector terminals (Without forward emergency braking).

• With forward emergency braking

ADAS control unit harness connector			Continuity
Connector No.	Terminal No.		
B4	6	7	Not existed

- Without forward emergency braking

ADAS control unit 2 harness connector			Continuity
Connector No.	Terminal No.		
B148	2	5	Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause.

5. CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the ADAS control unit harness connector and the ground (With forward emergency braking) or the ADAS control unit 2 harness connector and the ground (Without forward emergency braking).

- With forward emergency braking

ADAS control unit harness connector		Ground	Continuity
Connector No.	Terminal No.		
B4	6		Not existed
	7		Not existed

- Without forward emergency braking

ADAS control unit 2 harness connector		Ground	Continuity
Connector No.	Terminal No.		
B148	2		Not existed
	5		Not existed

Is the inspection result normal?

YES >> GO TO 6.
NO >> Check the harness and repair the root cause.

6. CHECK TERMINATION CIRCUIT

1. Remove the ADAS control unit and the ADAS control unit 2 (With forward emergency braking) or the ADAS control unit 2 and the chassis control module (Without forward emergency braking).
2. Check the resistance between the ADAS control unit terminals (With forward emergency braking) or the ADAS control unit 2 terminals (Without forward emergency braking).

- With forward emergency braking

ADAS control unit		Resistance (Ω)
Terminal No.		
6	7	Approx. 108 – 132

- Without forward emergency braking

ADAS control unit 2		Resistance (Ω)
Terminal No.		
2	5	Approx. 108 – 132

3. Check the resistance between the ADAS control unit 2 terminals (With forward emergency braking) or the chassis control module terminals (Without forward emergency braking).

- With forward emergency braking

ADAS control unit 2		Resistance (Ω)
Terminal No.		
9	10	Approx. 108 – 132

- Without forward emergency braking

Chassis control module		Resistance (Ω)
Terminal No.		
11	8	Approx. 108 – 132

Is the inspection result normal?

YES >> GO TO 7.
NO >> Replace the ADAS control unit and/or the ADAS control unit 2 (With forward emergency braking) or the ADAS control unit 2 and/or the chassis control module (Without forward emergency braking).

7.CHECK SYMPTOM

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

Inspection result

Reproduced>>GO TO 8.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

8.CHECK UNIT REPRODUCTION

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

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect one of the unit connectors of ITS CAN communication circuit.
   NOTE:
   ADAS control unit and ADAS control unit 2 (With forward emergency braking) or ADAS control unit 2 and chassis control module (Without forward emergency braking) 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.

CHASSIS CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000015203156

1.CHECK CAN DIAGNOSIS

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

Are the vehicle CAN communication 1, the vehicle CAN communication 2 and the ITS CAN communication circuits normal?

YES >> GO TO 2.
NO >> Check and repair vehicle CAN communication 1 circuit, vehicle CAN communication 2 circuit and/or ITS CAN communication circuit.

2.CONNECTOR INSPECTION

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

Is the inspection result normal?

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

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of chassis control module.
2. Check the continuity between the chassis control module harness connector terminals.

Chassis control module harness connector			Continuity
Connector No.	Terminal No.		
M96	11	19	Existed
	8	7	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)

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

Chassis control module harness connector			Continuity
Connector No.	Terminal No.		
M96	11	8	Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause.

5.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the chassis control module and the ground.

Chassis control module harness connector		Ground	Continuity
Connector No.	Terminal No.		
M96	11		Not existed
	8		Not existed

Is the inspection result normal?

YES >> GO TO 6.

NO >> Check the harness and repair the root cause.

6.CHECK CHASSIS CONTROL MODULE TERMINATION CIRCUIT

1. Remove the chassis control module.
2. Check the resistance between the chassis control module terminals.

Chassis control module		Resistance (Ω)
Terminal No.		
11	8	Approx. 108 – 132
19	7	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 7.
NO >> Replace the chassis control module.

7.CHECK SYMPTOM

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

Inspection result

Reproduced>>GO TO 8.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

8.CHECK UNIT REPRODUCTION

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

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect one of the unit connectors of chassis communication circuit.
   NOTE:
   Chassis control module 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.

IT CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000015203157

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect all the unit connectors on IT CAN communication circuit.
4. Check the terminals and connectors on IT CAN communication circuit 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 3CH CAN gateway.
2. Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	9	13	Existed
	10	14	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 IT CAN communication circuit.
2. Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	9	10	Not existed

Is the inspection result normal?

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

4.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the 3CH CAN gateway and the ground.

3CH CAN gateway harness connector		Ground	Continuity
Connector No.	Terminal No.		
M29	9		Not existed
	10		Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair the root cause.

5.CHECK 3CH CAN GATEWAY TERMINATION CIRCUIT

1. Remove the 3CH CAN gateway.
2. Check the resistance between the 3CH CAN gateway terminals.

3CH CAN gateway	Resistance (Ω)
Terminal No.	

9	10	Approx. 108 – 132
13	14	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Replace the 3CH CAN gateway.

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 12V battery cable from the negative terminal.
3. Disconnect one of the unit connectors of IT CAN communication circuit.
   NOTE:
   3CH CAN gateway 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.

DIAGNOSTIC CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:0000000015203158

1.CONNECTOR INSPECTION

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

- Data link connector
- 3CH CAN gateway

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Disconnect the connector of 3CH CAN gateway.
2. Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	3	11	Existed
	4	12	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)

Check the continuity between the 3CH CAN gateway harness connector terminals.

3CH CAN gateway harness connector			Continuity
Connector No.	Terminal No.		
M29	3	4	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 3CH CAN gateway harness connector and the ground.

3CH CAN gateway harness connector		Ground	Continuity
Connector No.	Terminal No.		
M29	3		Not existed
	4		Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair or replace the root cause.

5.CHECK 3CH CAN GATEWAY TERMINATION CIRCUIT

1. Remove the 3CH CAN gateway.
2. Check the resistance between the 3CH CAN gateway terminals.

3CH CAN gateway	Resistance (Ω)
Terminal No.	

3	4	Approx. 108 – 132
11	12	Approx. 108 – 132

Is the measurement value within the specification?

YES (Present error)>>Check CAN system type decision again.
YES (Past error)>>Error was detected in the diagnostic CAN communication circuit.
NO >> Replace the 3CH CAN gateway.

HEV SYSTEM CAN CIRCUIT

Diagnosis Procedure

INFOID:0000000015203159

DANGER:

Since hybrid vehicles and electric vehicles contain a high voltage battery, there is the risk of electric shock, electric leakage, or similar accidents if the high voltage component and vehicle are handled incorrectly. Be sure to follow the correct work procedures when performing inspection and maintenance.

WARNING:

- **Be sure to remove the service plug in order to disconnect the high voltage circuits before performing inspection or maintenance of high voltage system harnesses and parts.**
- **The removed service plug must always be carried in a pocket of the responsible worker or placed in the tool box during the procedure to prevent the plug from being connected by mistake.**
- **Be sure to wear insulating protective equipment before beginning work on the high voltage system.**
- **Never allow workers other than the responsible person to touch the vehicle containing high voltage parts. To keep others from touching the high voltage parts, these parts must be covered with an insulating sheet except when using them.**
- **Refer to GI-28, "High Voltage Precautions".**

CAUTION:

Never bring the vehicle into the READY status with the service plug removed unless otherwise instructed in the Service Manual. A malfunction may occur if this is not observed.

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect all the control unit connectors on HEV system CAN circuit.
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 (OPEN CIRCUIT)

1. Disconnect the following harness connectors.
- ECM
- Li-ion battery
2. Check the continuity between the ECM harness connector and the Li-ion battery harness connector.

ECM harness connector		Li-ion battery harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
E16	138	B59	3	Existed
	137		15	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair the harness between the ECM and the Li-ion battery.

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

1. Disconnect all the unit connectors on HEV system CAN circuit.
2. Check the continuity between the ECM harness connector terminals.

ECM harness connector			Continuity
Connector No.	Terminal No.		
E16	138	137	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 ECM harness connector and the ground.

ECM harness connector		Ground	Continuity
Connector No.	Terminal No.		
E16	138		Not existed
	137		Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check the harness and repair or replace the root cause.

5.CHECK ECM AND LI-ION BATTERY CONTROLLER TERMINATION CIRCUIT

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

ECM		Resistance (Ω)
Terminal No.		
138	137	Approx. 108 – 132

3. Check the resistance between the Li-ion battery terminals.

Li-ion battery		Resistance (Ω)
Terminal No.		
3	15	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 6.
NO >> Replace the ECM and/or the Li-ion battery.

6.CHECK SYMPTOM

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

Inspection result

Reproduced>>GO TO 7.
Non-reproduced>>Start the diagnosis again. Follow the trouble diagnosis procedure when past error is detected.

7.CHECK CONTROL UNIT REPRODUCTION

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

1. Turn the ignition switch OFF.
2. Disconnect the 12V battery cable from the negative terminal.
3. Disconnect one of the control unit connectors of HEV system CAN circuit.
   NOTE:
   ECM and Li-ion battery controller have a termination circuit. Check other control units first.
4. Connect the 12V battery cable to the negative terminal. Check if the symptoms described in the “Symptom (Results from interview with customer)” are reproduced.
   NOTE:
   Although control unit-related error symptoms occur, do not confuse them with other symptoms.

Inspection result

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