

SECTION

LAN

LAN SYSTEM

A

B

C

CONTENTS

E

CAN FUNDAMENTAL			
PRECAUTION	5	PRECAUTION	21
PRECAUTIONS	5	PRECAUTIONS	21
Precautions for Trouble Diagnosis	5	Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"	21
Precautions for Harness Repair	5	Precautions for Removing of Battery Terminal	21
SYSTEM DESCRIPTION	6	Precautions for Trouble Diagnosis	21
SYSTEM	6	Precautions for Harness Repair	22
CAN COMMUNICATION SYSTEM	6	SYSTEM DESCRIPTION	23
CAN COMMUNICATION SYSTEM : System Description	6	COMPONENT PARTS	23
DIAG ON CAN	6	Component Parts Location	23
DIAG ON CAN : Description	6	SYSTEM	24
DIAG ON CAN : System Diagram	6	CAN COMMUNICATION SYSTEM	24
TROUBLE DIAGNOSIS	8	CAN COMMUNICATION SYSTEM : System Diagram	24
System Diagram	8	CAN COMMUNICATION SYSTEM : System Description	24
Condition of Error Detection	8	CAN COMMUNICATION SYSTEM : CAN Communication Control Circuit	26
Symptom When Error Occurs in CAN Communication System	9	CAN COMMUNICATION SYSTEM : CAN System Specification Chart	27
CAN Diagnosis with CONSULT	11	CAN COMMUNICATION SYSTEM : CAN Communication Signal Chart	28
Self-Diagnosis	12	WIRING DIAGRAM	32
CAN Diagnostic Support Monitor	12	CAN SYSTEM	32
How to Use CAN Communication Signal Chart	14	Wiring Diagram	32
BASIC INSPECTION	15	BASIC INSPECTION	38
DIAGNOSIS AND REPAIR WORKFLOW	15	DIAGNOSIS AND REPAIR WORKFLOW	38
Trouble Diagnosis Flow Chart	15	Interview Sheet	38
Trouble Diagnosis Procedure	15	DTC/CIRCUIT DIAGNOSIS	39
CAN		MALFUNCTION AREA CHART	39
HOW TO USE THIS MANUAL	20	Main Line	39
HOW TO USE THIS SECTION	20		
Caution	20		
Abbreviation List	20		

F

G

H

I

J

K

L

LAN

N

O

P

Branch Line	39
Short Circuit	39
MAIN LINE BETWEEN IPDM-E AND DLC CIRCUIT	40
Diagnosis Procedure	40
MAIN LINE BETWEEN DLC AND A-BAG CIRCUIT	41
Diagnosis Procedure	41
MAIN LINE BETWEEN DLC AND MDU CIRCUIT	42
Diagnosis Procedure	42
ECM BRANCH LINE CIRCUIT	43
Diagnosis Procedure	43
4WD BRANCH LINE CIRCUIT	44
Diagnosis Procedure	44
ABS BRANCH LINE CIRCUIT	45
Diagnosis Procedure	45
IPDM-E BRANCH LINE CIRCUIT	46
Diagnosis Procedure	46
TCM BRANCH LINE CIRCUIT	47
Diagnosis Procedure	47
DLC BRANCH LINE CIRCUIT	48
Diagnosis Procedure	48
EPS BRANCH LINE CIRCUIT	49
Diagnosis Procedure	49
M&A BRANCH LINE CIRCUIT	50
Diagnosis Procedure	50
STRG BRANCH LINE CIRCUIT	51
Diagnosis Procedure	51
A-BAG BRANCH LINE CIRCUIT	52
Diagnosis Procedure	52
HVAC BRANCH LINE CIRCUIT	53
Diagnosis Procedure	53
MDU BRANCH LINE CIRCUIT	54
Diagnosis Procedure	54
BCM BRANCH LINE CIRCUIT	55
Diagnosis Procedure	55
CAN COMMUNICATION CIRCUIT	56
Diagnosis Procedure	56
CAN SYSTEM (TYPE 1)	
DTC/CIRCUIT DIAGNOSIS	58
MAIN LINE BETWEEN IPDM-E AND DLC CIRCUIT	58
Diagnosis Procedure	58

MAIN LINE BETWEEN DLC AND A-BAG CIRCUIT	59
Diagnosis Procedure	59
ECM BRANCH LINE CIRCUIT	60
Diagnosis Procedure	60
ABS BRANCH LINE CIRCUIT	61
Diagnosis Procedure	61
IPDM-E BRANCH LINE CIRCUIT	62
Diagnosis Procedure	62
DLC BRANCH LINE CIRCUIT	63
Diagnosis Procedure	63
EPS BRANCH LINE CIRCUIT	64
Diagnosis Procedure	64
M&A BRANCH LINE CIRCUIT	65
Diagnosis Procedure	65
STRG BRANCH LINE CIRCUIT	66
Diagnosis Procedure	66
A-BAG BRANCH LINE CIRCUIT	67
Diagnosis Procedure	67
BCM BRANCH LINE CIRCUIT	68
Diagnosis Procedure	68
CAN COMMUNICATION CIRCUIT	69
Diagnosis Procedure	69
CAN SYSTEM (TYPE 2)	
DTC/CIRCUIT DIAGNOSIS	71
MAIN LINE BETWEEN IPDM-E AND DLC CIRCUIT	71
Diagnosis Procedure	71
MAIN LINE BETWEEN DLC AND MDU CIRCUIT	72
Diagnosis Procedure	72
ECM BRANCH LINE CIRCUIT	73
Diagnosis Procedure	73
ABS BRANCH LINE CIRCUIT	74
Diagnosis Procedure	74
IPDM-E BRANCH LINE CIRCUIT	75
Diagnosis Procedure	75
DLC BRANCH LINE CIRCUIT	76
Diagnosis Procedure	76
EPS BRANCH LINE CIRCUIT	77
Diagnosis Procedure	77
M&A BRANCH LINE CIRCUIT	78
Diagnosis Procedure	78

STRG BRANCH LINE CIRCUIT	79	DTC/CIRCUIT DIAGNOSIS	100	A
Diagnosis Procedure	79	MAIN LINE BETWEEN IPDM-E AND DLC		
A-BAG BRANCH LINE CIRCUIT	80	CIRCUIT	100	B
Diagnosis Procedure	80	Diagnosis Procedure	100	
HVAC BRANCH LINE CIRCUIT	81	MAIN LINE BETWEEN DLC AND MDU CIR-		C
Diagnosis Procedure	81	CUIT	101	
MDU BRANCH LINE CIRCUIT	82	Diagnosis Procedure	101	
Diagnosis Procedure	82	ECM BRANCH LINE CIRCUIT	102	D
BCM BRANCH LINE CIRCUIT	83	Diagnosis Procedure	102	
Diagnosis Procedure	83	ABS BRANCH LINE CIRCUIT	103	E
CAN COMMUNICATION CIRCUIT	84	Diagnosis Procedure	103	
Diagnosis Procedure	84	IPDM-E BRANCH LINE CIRCUIT	104	F
CAN SYSTEM (TYPE 3)		Diagnosis Procedure	104	
DTC/CIRCUIT DIAGNOSIS	86	TCM BRANCH LINE CIRCUIT	105	G
MAIN LINE BETWEEN IPDM-E AND DLC		Diagnosis Procedure	105	
CIRCUIT	86	DLC BRANCH LINE CIRCUIT	106	H
Diagnosis Procedure	86	Diagnosis Procedure	106	
MAIN LINE BETWEEN DLC AND A-BAG CIR-		EPS BRANCH LINE CIRCUIT	107	I
CUIT	87	Diagnosis Procedure	107	
Diagnosis Procedure	87	M&A BRANCH LINE CIRCUIT	108	J
ECM BRANCH LINE CIRCUIT	88	Diagnosis Procedure	108	
Diagnosis Procedure	88	STRG BRANCH LINE CIRCUIT	109	K
ABS BRANCH LINE CIRCUIT	89	Diagnosis Procedure	109	
Diagnosis Procedure	89	A-BAG BRANCH LINE CIRCUIT	110	L
IPDM-E BRANCH LINE CIRCUIT	90	Diagnosis Procedure	110	
Diagnosis Procedure	90	HVAC BRANCH LINE CIRCUIT	111	
TCM BRANCH LINE CIRCUIT	91	Diagnosis Procedure	111	
Diagnosis Procedure	91	MDU BRANCH LINE CIRCUIT	112	
DLC BRANCH LINE CIRCUIT	92	Diagnosis Procedure	112	
Diagnosis Procedure	92	BCM BRANCH LINE CIRCUIT	113	LAN
EPS BRANCH LINE CIRCUIT	93	Diagnosis Procedure	113	
Diagnosis Procedure	93	CAN COMMUNICATION CIRCUIT	114	N
M&A BRANCH LINE CIRCUIT	94	Diagnosis Procedure	114	
Diagnosis Procedure	94	CAN SYSTEM (TYPE 5)		O
STRG BRANCH LINE CIRCUIT	95	DTC/CIRCUIT DIAGNOSIS	116	
Diagnosis Procedure	95	MAIN LINE BETWEEN IPDM-E AND DLC		P
A-BAG BRANCH LINE CIRCUIT	96	CIRCUIT	116	
Diagnosis Procedure	96	Diagnosis Procedure	116	
BCM BRANCH LINE CIRCUIT	97	MAIN LINE BETWEEN DLC AND A-BAG CIR-		
Diagnosis Procedure	97	CUIT	117	
CAN COMMUNICATION CIRCUIT	98	Diagnosis Procedure	117	
Diagnosis Procedure	98	ECM BRANCH LINE CIRCUIT	118	
CAN SYSTEM (TYPE 4)		Diagnosis Procedure	118	

4WD BRANCH LINE CIRCUIT	119	ECM BRANCH LINE CIRCUIT	133
Diagnosis Procedure	119	Diagnosis Procedure	133
ABS BRANCH LINE CIRCUIT	120	4WD BRANCH LINE CIRCUIT	134
Diagnosis Procedure	120	Diagnosis Procedure	134
IPDM-E BRANCH LINE CIRCUIT	121	ABS BRANCH LINE CIRCUIT	135
Diagnosis Procedure	121	Diagnosis Procedure	135
TCM BRANCH LINE CIRCUIT	122	IPDM-E BRANCH LINE CIRCUIT	136
Diagnosis Procedure	122	Diagnosis Procedure	136
DLC BRANCH LINE CIRCUIT	123	TCM BRANCH LINE CIRCUIT	137
Diagnosis Procedure	123	Diagnosis Procedure	137
EPS BRANCH LINE CIRCUIT	124	DLC BRANCH LINE CIRCUIT	138
Diagnosis Procedure	124	Diagnosis Procedure	138
M&A BRANCH LINE CIRCUIT	125	EPS BRANCH LINE CIRCUIT	139
Diagnosis Procedure	125	Diagnosis Procedure	139
STRG BRANCH LINE CIRCUIT	126	M&A BRANCH LINE CIRCUIT	140
Diagnosis Procedure	126	Diagnosis Procedure	140
A-BAG BRANCH LINE CIRCUIT	127	STRG BRANCH LINE CIRCUIT	141
Diagnosis Procedure	127	Diagnosis Procedure	141
BCM BRANCH LINE CIRCUIT	128	A-BAG BRANCH LINE CIRCUIT	142
Diagnosis Procedure	128	Diagnosis Procedure	142
CAN COMMUNICATION CIRCUIT	129	HVAC BRANCH LINE CIRCUIT	143
Diagnosis Procedure	129	Diagnosis Procedure	143
CAN SYSTEM (TYPE 6)			
DTC/CIRCUIT DIAGNOSIS	131	MDU BRANCH LINE CIRCUIT	144
		Diagnosis Procedure	144
MAIN LINE BETWEEN IPDM-E AND DLC		BCM BRANCH LINE CIRCUIT	145
CIRCUIT	131	Diagnosis Procedure	145
Diagnosis Procedure	131	CAN COMMUNICATION CIRCUIT	146
MAIN LINE BETWEEN DLC AND MDU CIR-		Diagnosis Procedure	146
CUIT	132		
Diagnosis Procedure	132		

PRECAUTION

PRECAUTIONS

Precautions for Trouble Diagnosis

INFOID:000000009749851

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.

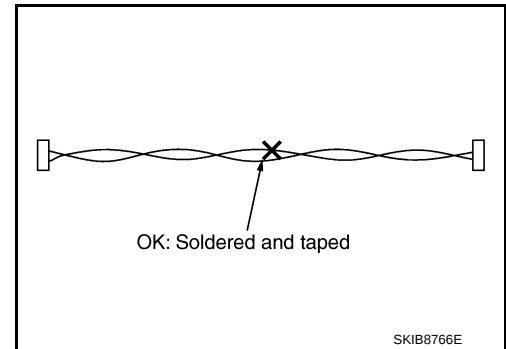
Precautions for Harness Repair

INFOID:000000009749852

- Solder the repaired area and wrap tape around the soldered area.

NOTE:

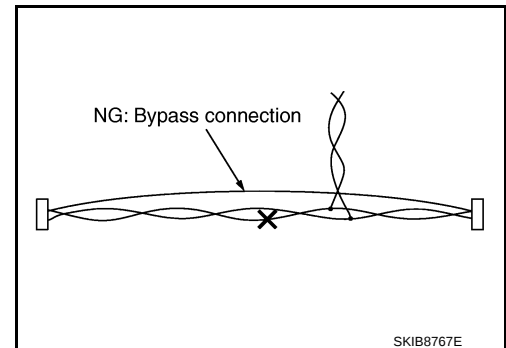
A fray of twisted lines must be within 110 mm (4.33 in).



- Bypass connection is never allowed at the repaired area.

NOTE:

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



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

SYSTEM DESCRIPTION

SYSTEM

CAN COMMUNICATION SYSTEM

CAN COMMUNICATION SYSTEM : System Description

INFOID:000000009749853

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

DIAG ON CAN

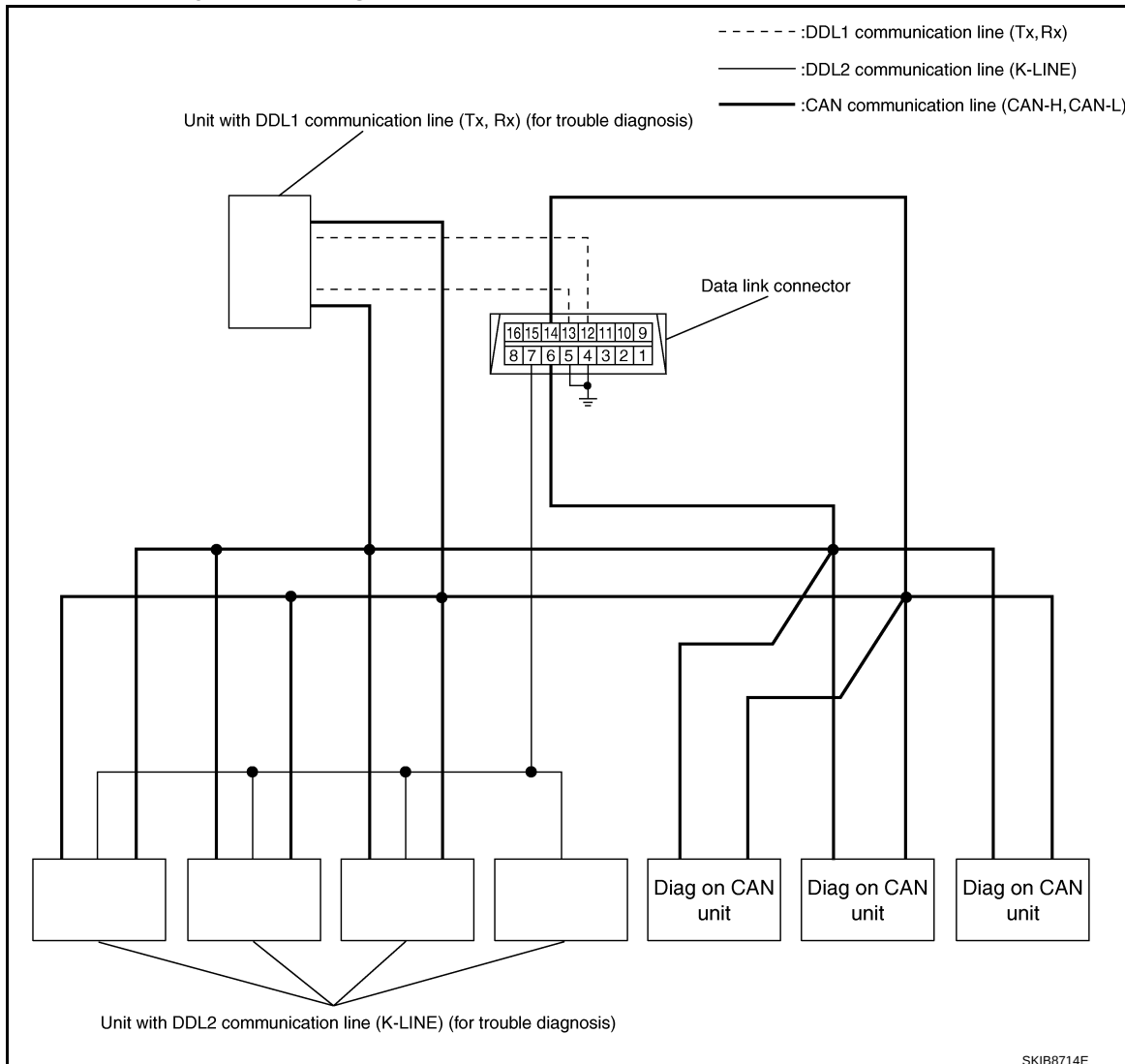
DIAG ON CAN : Description

INFOID:000000009749854

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

DIAG ON CAN : System Diagram

INFOID:000000009749855



SYSTEM

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

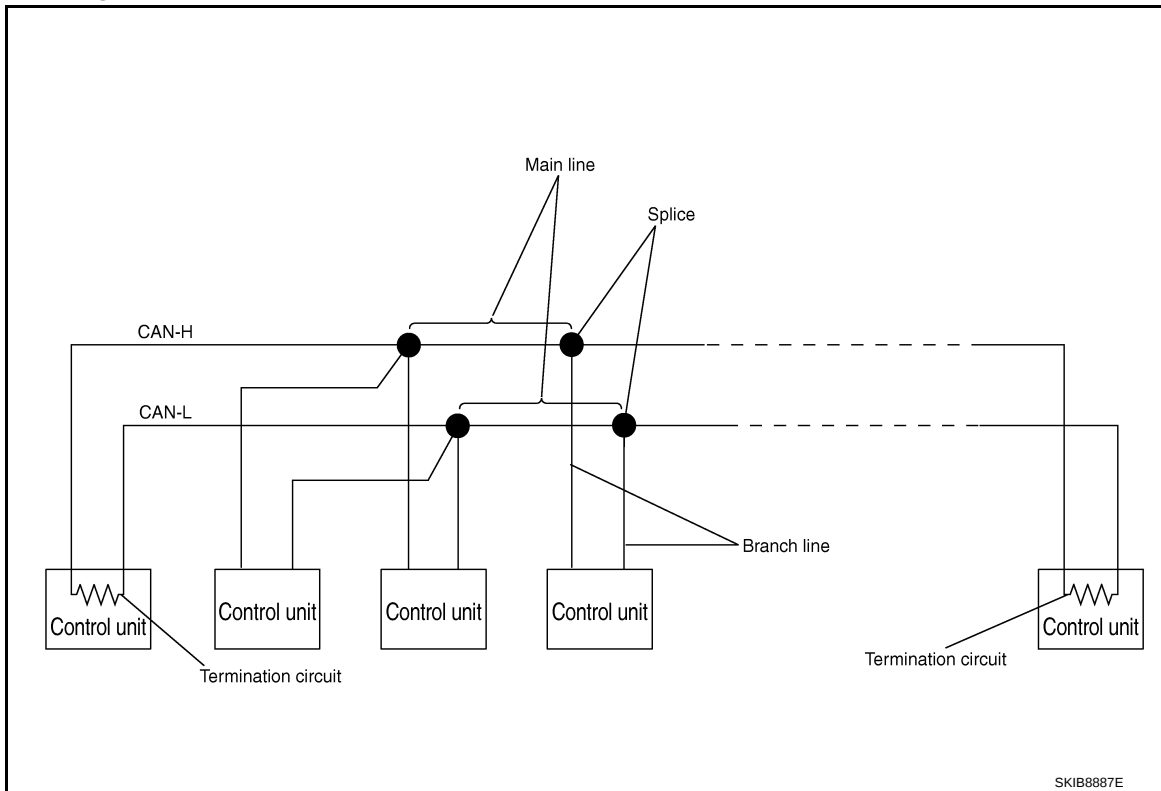
A
B
C
D
E
F
G
H
I
J
K
L
N
O
P

LAN

TROUBLE DIAGNOSIS

System Diagram

INFOID:000000009749856



SKIB8887E

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

Condition of Error Detection

INFOID:000000009749857

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:

TROUBLE DIAGNOSIS

< SYSTEM DESCRIPTION >

[CAN FUNDAMENTAL]

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:000000009749858

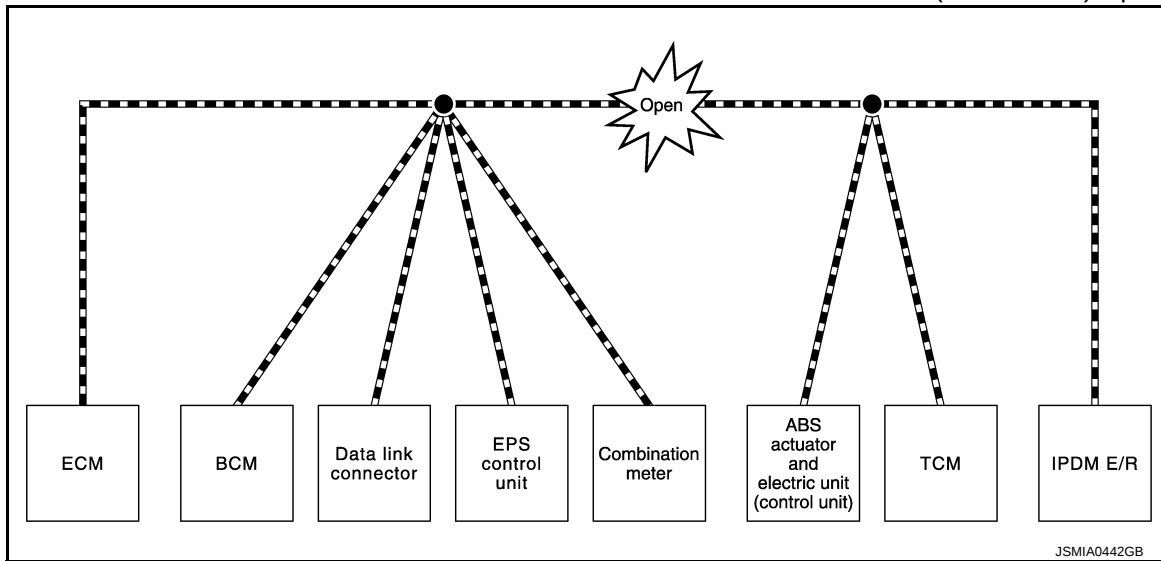
In CAN communication system, multiple units mutually transmit and receive signals. Each unit cannot transmit and receive signals if any error occurs on CAN communication line. Under this condition, multiple control units related to the root cause malfunction or go into fail-safe mode.

ERROR EXAMPLE

NOTE:

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

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



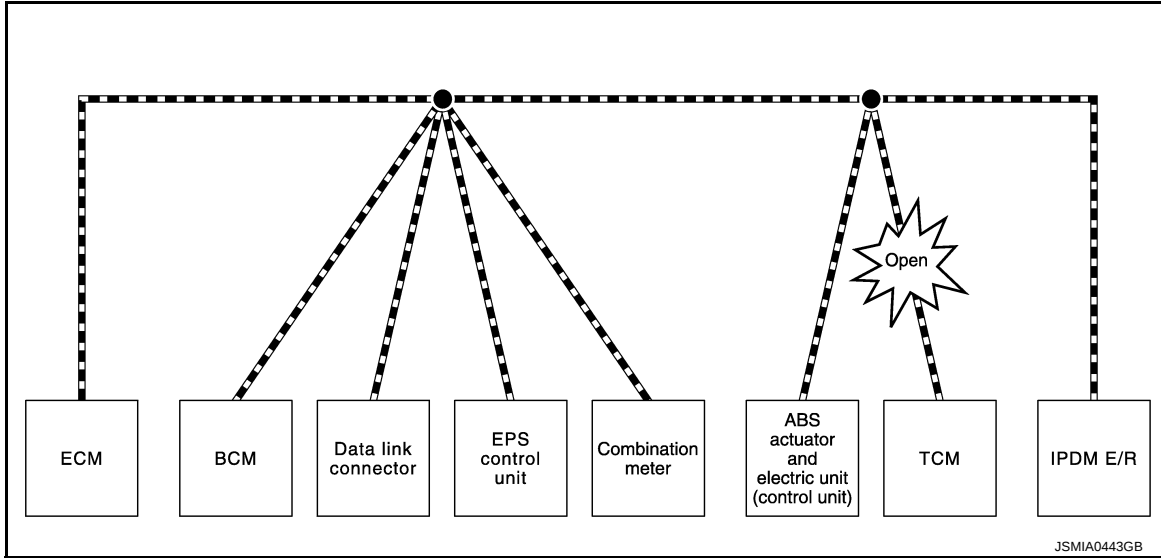
Unit name	Major symptom
ECM	Engine torque limiting is affected, and shift harshness increases.
BCM	- Reverse warning chime does not sound. - The front wiper moves under continuous operation mode even though the front wiper switch being in the intermittent position.
EPS control unit	The steering effort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

TROUBLE DIAGNOSIS

< SYSTEM DESCRIPTION >

[CAN FUNDAMENTAL]

Example: TCM Branch Line Open Circuit



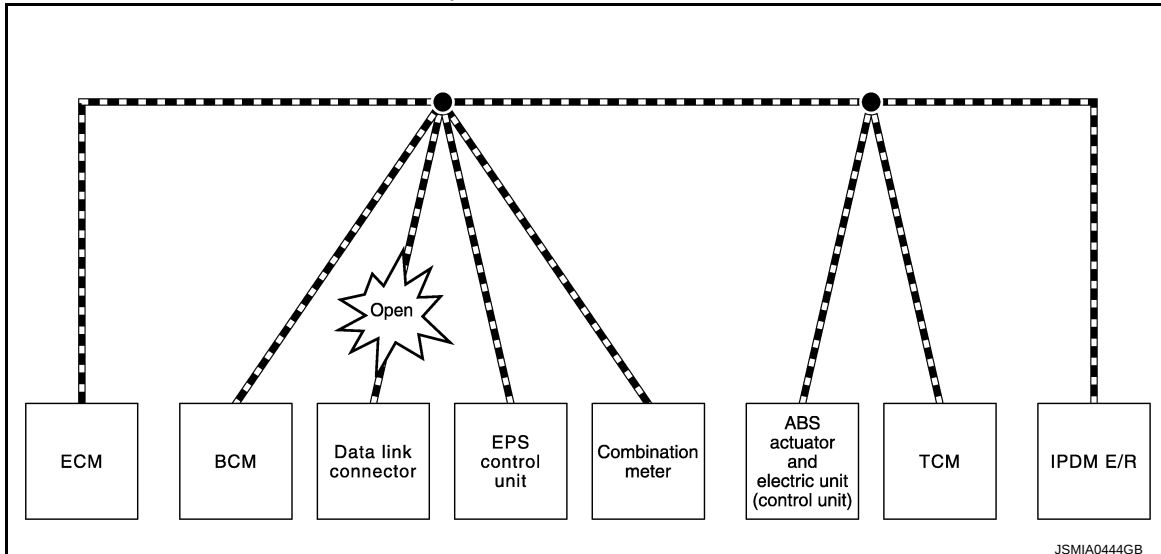
Unit name	Major symptom
ECM	Engine torque limiting is affected, and shift harshness increases.
BCM	Reverse warning chime does not sound.
EPS control unit	Normal operation.
Combination meter	- Shift position indicator and O/D OFF indicator turn OFF. - Warning lamps turn ON.
ABS actuator and electric unit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

NOTE:

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

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

Example: Data Link Connector Branch Line Open Circuit



TROUBLE DIAGNOSIS

< SYSTEM DESCRIPTION >

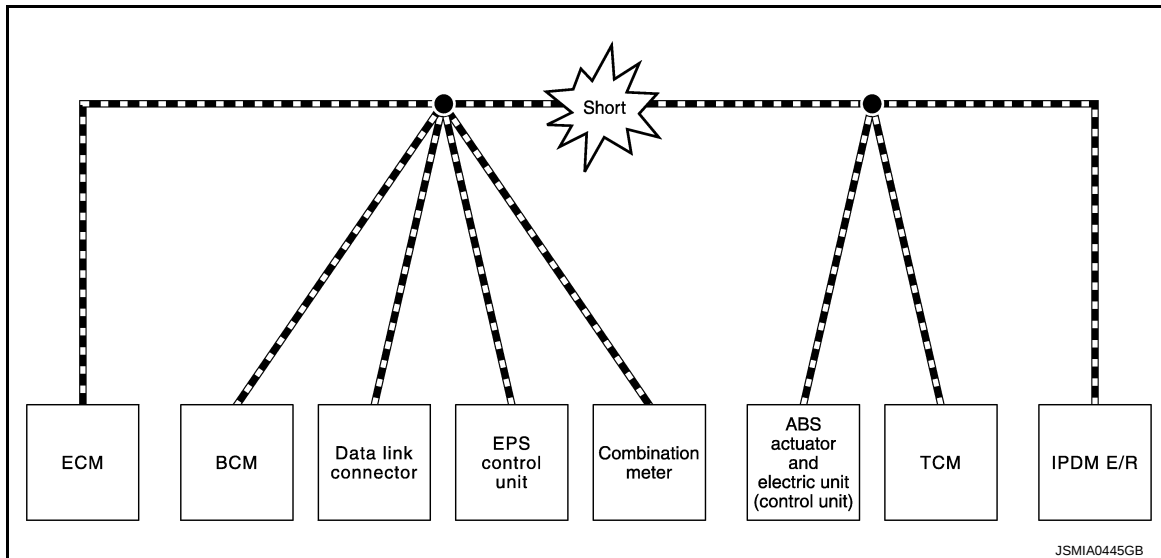
[CAN FUNDAMENTAL]

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

NOTE:

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

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



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

CAN Diagnosis with CONSULT

INFOID:000000009749859

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

TROUBLE DIAGNOSIS

[CAN FUNDAMENTAL]

< SYSTEM DESCRIPTION >

- Response to the system call
- Control unit diagnosis information
- Self-diagnosis
- CAN diagnostic support monitor

Self-Diagnosis

INFOID:000000009749860

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:000000009749861

MONITOR ITEM (CONSULT)

Example: CAN DIAG SUPPORT MNTR indication

Without PAST			With PAST		
BCM			ENGINE		
MONITOR ITEM	PRESENT	PAST	MONITOR ITEM	PRESENT	PAST
INITIAL DIAG	OK	-	TRANSMIT DIAG	OK	OK
TRANSMIT DIAG	OK	-	VDC/TCS/ABS	OK	5
ECM	OK	-	METER/M&A	Not diagnosed	-
METER/M&A	OK	-	BCM/SEC	OK	OK
TCM	OK	-	ICC	Not diagnosed	-
IPDM E/R	OK	-	HVAC	Not diagnosed	-
I-KEY	OK	-	TCM	OK	OK
			EPS	OK	OK
			IPDM E/R	OK	5
			e4WD	Not diagnosed	-
			AWD/4WD	Not diagnosed	-

JSMIA0964GB

Without PAST

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

TROUBLE DIAGNOSIS

< SYSTEM DESCRIPTION >

[CAN FUNDAMENTAL]

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

With PAST

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

LAN

TROUBLE DIAGNOSIS

< SYSTEM DESCRIPTION >

[CAN FUNDAMENTAL]

How to Use CAN Communication Signal Chart

INFOID:000000009749862

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.

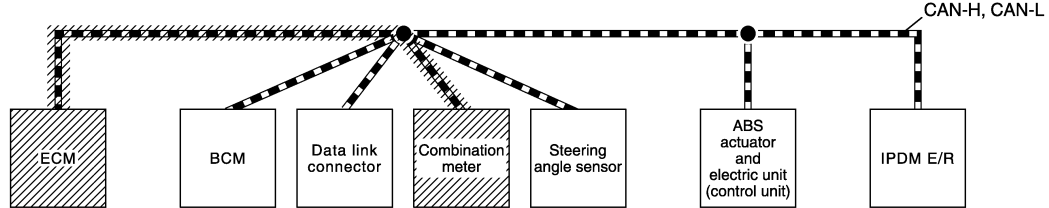
Example: Tachometer does not move even though the engine rotates.

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 (Combination meter).

It indicates that an error occurs between ECM and Combination meter (Shaded area).



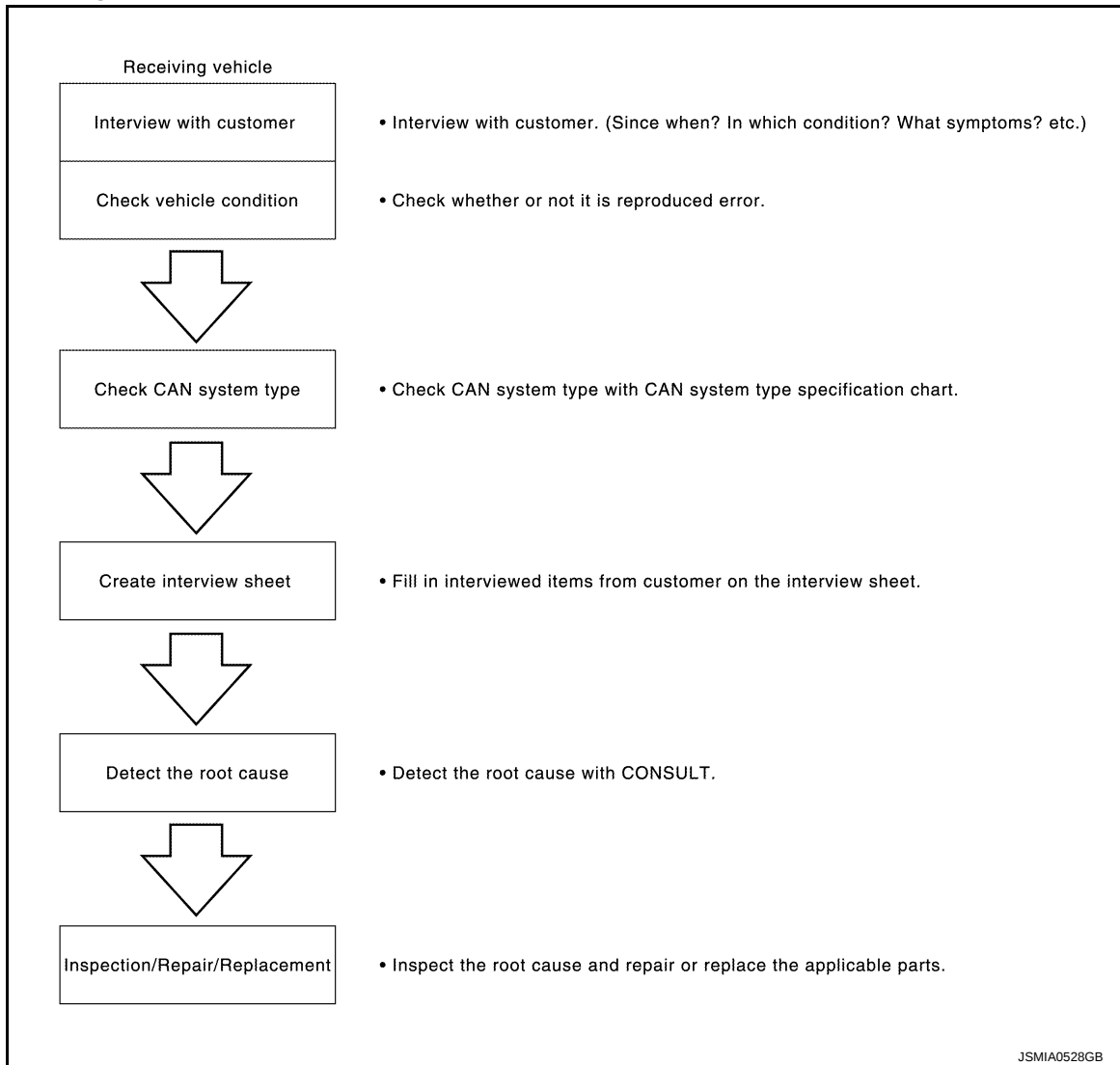
JSMIA0446GB

BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Trouble Diagnosis Flow Chart

INFOID:000000009749863



Trouble Diagnosis Procedure

INFOID:000000009749864

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:

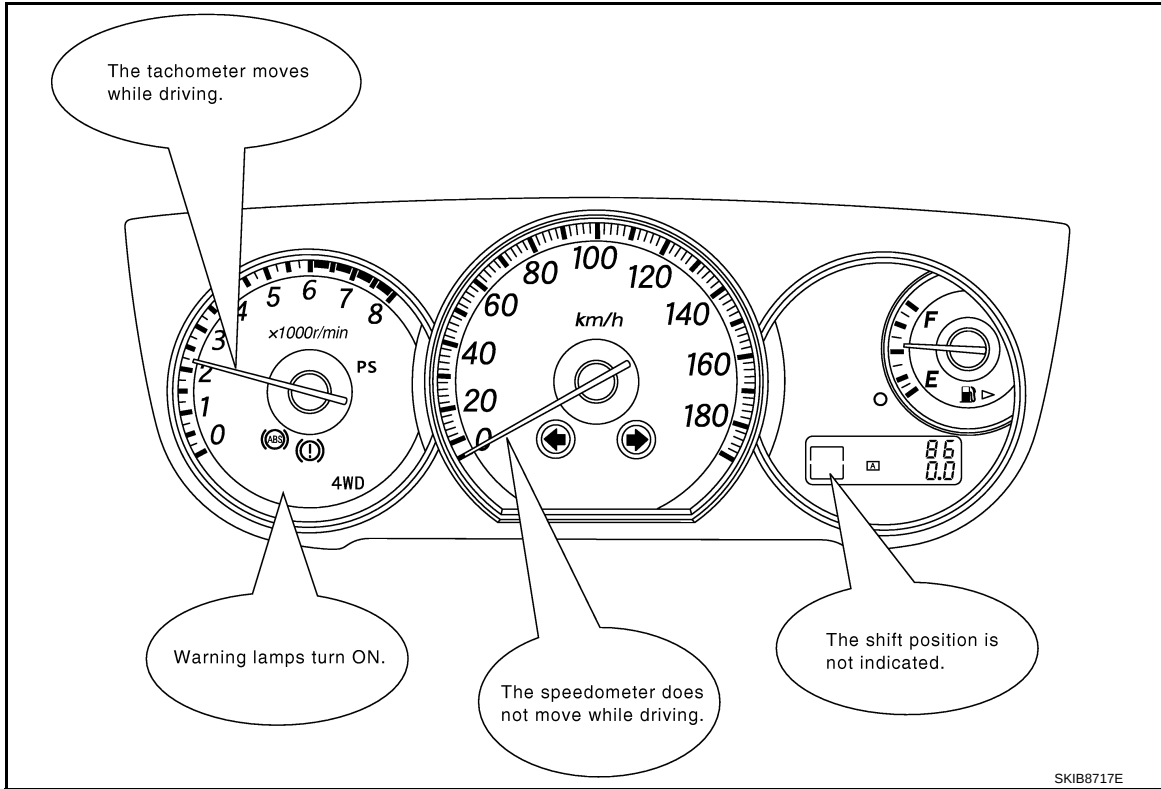
- Check normal units as well as error symptoms.
- Example: Circuit between ECM and the combination meter is judged normal if the customer indicates tachometer functions normally.
- When a CAN communication system error is present, multiple control units may malfunction or go into fail-safe mode.

DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

[CAN FUNDAMENTAL]

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



INSPECTION OF VEHICLE CONDITION

Check whether the symptom is reproduced or not.

NOTE:

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

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

Determine CAN system type based on vehicle equipment.

NOTE:

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

CAN System Type Specification Chart (Style A)

NOTE:

DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

[CAN FUNDAMENTAL]

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		X		X		X
CAN system type	1	2	3	4	5	6
CAN communication signal chart	XX-XX. "TYPE 1/TYPE 2"		XX-XX. "TYPE 3/TYPE 4"		XX-XX. "TYPE 5/TYPE 6"	

X : Applicable

Check the vehicle equipment with the vehicle identification number plate.

Check the vehicle equipment.

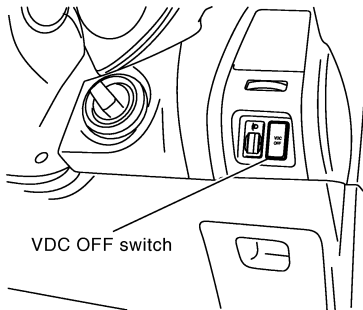
The number indicates the CAN system type of the vehicle.

VEHICLE EQUIPMENT IDENTIFICATION INFORMATION

NOTE:

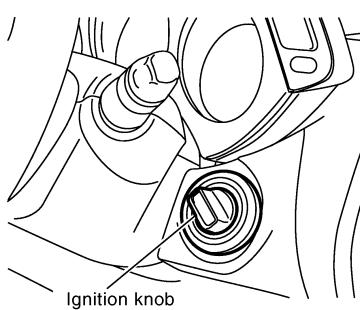
Check CAN system type from the vehicle shape and equipment.

With VDC



VDC OFF switch

With Intelligent Key system



Ignition knob

In the above example,
• Checking VDC OFF switch leads to judge whether or not VDC is equipped.

• Checking the ignition knob leads to judge whether or not Intelligent Key system is equipped.

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

JSMIA0017GB

CAN System Type Specification Chart (Style B)

NOTE:

LAN

[CAN FUNDAMENTAL]

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

DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

[CAN FUNDAMENTAL]

Interview Sheet (Example)

CAN Communication System Diagnosis Interview Sheet	
Date received: 3, Feb. 2006	
Type: DBA-KG11	VIN No.: KG11-005040
Model: BDRARGZ397EDA-E-J-	
First registration: 10, Jan. 2001	Mileage: 62,140
CAN system type: Type 19	
Symptom (Results from interview with customer)	
• Headlamps suddenly turn ON while driving the vehicle. • The engine does not restart after stopping the vehicle and turning the ignition switch OFF. • The cooling fan continues rotating while turning the ignition switch ON.	
Condition at inspection	
Error Symptom: Present / Past	
The engine does not start. While turning the ignition switch ON, • The headlamps (Lo) turn ON, and the cooling fan continues rotating. • The interior lamp does not turn ON.	

JSMIA0019GB

DETECT THE ROOT CAUSE

CAN diagnosis function of CONSULT detects the root cause.

A
B
C
D
E
F
G
H
I
J
K
L
N
O
P

LAN

HOW TO USE THIS MANUAL

HOW TO USE THIS SECTION

Caution

INFOID:000000009749865

- This section describes information peculiar to a vehicle and inspection procedures.
- For trouble diagnosis procedure, refer to [LAN-15, "Trouble Diagnosis Procedure"](#).

Abbreviation List

INFOID:000000009749866

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

Abbreviation	Unit name
4WD	AWD control module
A-BAG	Air bag diagnosis sensor unit
ABS	ABS actuator and electric unit (control unit)
BCM	BCM
DLC	Data link connector
ECM	ECM
EPS	EPS control unit
HVAC	A/C auto amp.
IPDM-E	IPDM E/R
M&A	Combination meter
MDU	Multi display unit
STRG	Steering angle sensor
TCM	TCM

PRECAUTION

PRECAUTIONS

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

INFOID:000000009749867

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

WARNING:

Always observe the following items for preventing accidental activation.

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

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

WARNING:

Always observe the following items for preventing accidental activation.

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

Precautions for Removing of Battery Terminal

INFOID:0000000010199438

- When removing the 12V battery terminal, turn OFF the ignition switch and wait at least 30 seconds.

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.

- For vehicles with the 2-batteries, be sure to connect the main battery and the sub battery before turning ON the ignition switch.

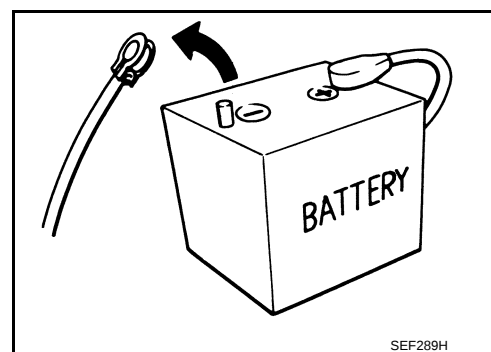
NOTE:

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.



Precautions for Trouble Diagnosis

INFOID:000000009749868

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.

PRECAUTIONS

< PRECAUTION >

[CAN]

- Turn the ignition switch OFF and disconnect the battery cable from the negative terminal when checking the harness.

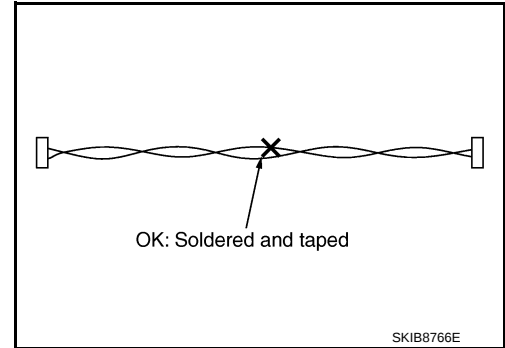
Precautions for Harness Repair

INFOID:000000009749869

- Solder the repaired area and wrap tape around the soldered area.

NOTE:

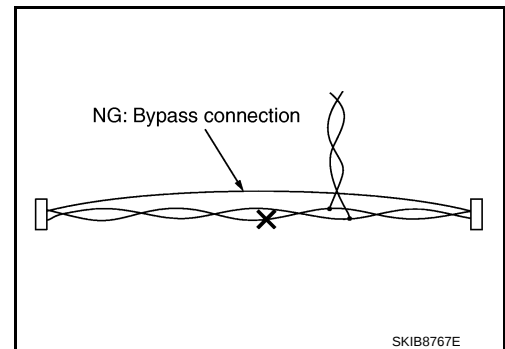
A fray of twisted lines must be within 110 mm (4.33 in).



- 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.



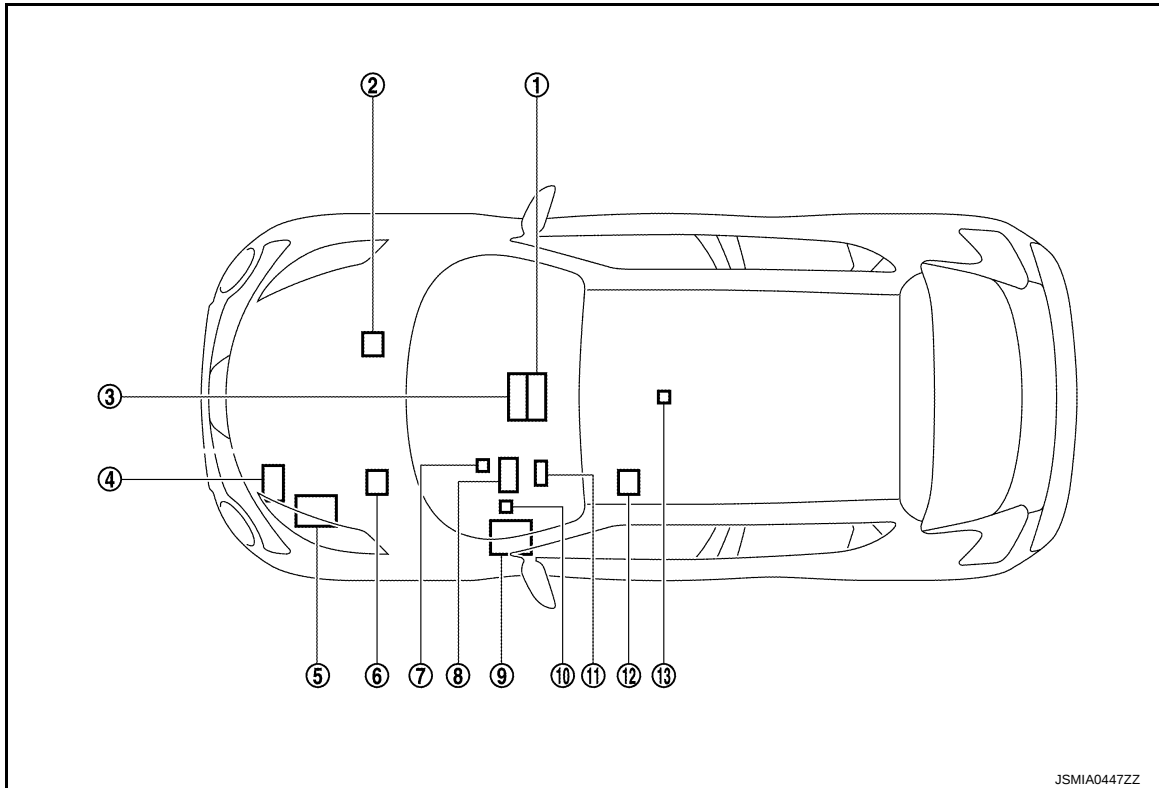
- Replace the applicable harness as an assembly if error is detected on the shield lines of CAN communication line.

SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

INFOID:000000009749870



- | | | |
|-----------------------------------|--|------------------------|
| 1. Multi display unit | 2. ABS actuator and electric unit (control unit) | 3. A/C auto amp. |
| 4. ECM | 5. IPDM E/R | 6. TCM |
| 7. EPS control unit | 8. Combination meter | 9. BCM |
| 10. Data link connector | 11. Steering angle sensor | 12. AWD control module |
| 13. Air bag diagnosis sensor unit | | |

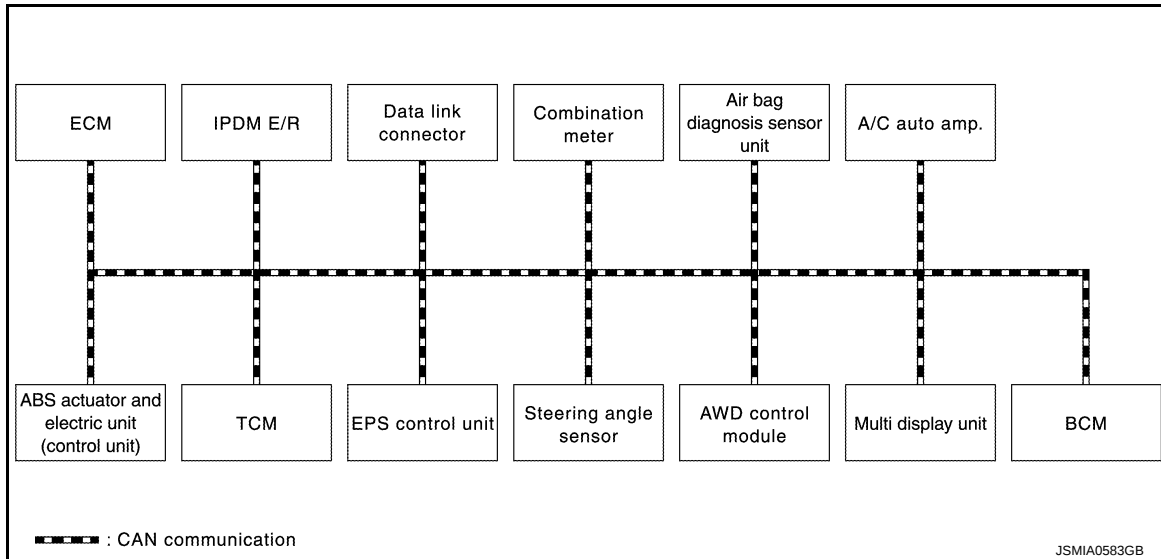
LAN

SYSTEM

CAN COMMUNICATION SYSTEM

CAN COMMUNICATION SYSTEM : System Diagram

INFOID:000000009749871

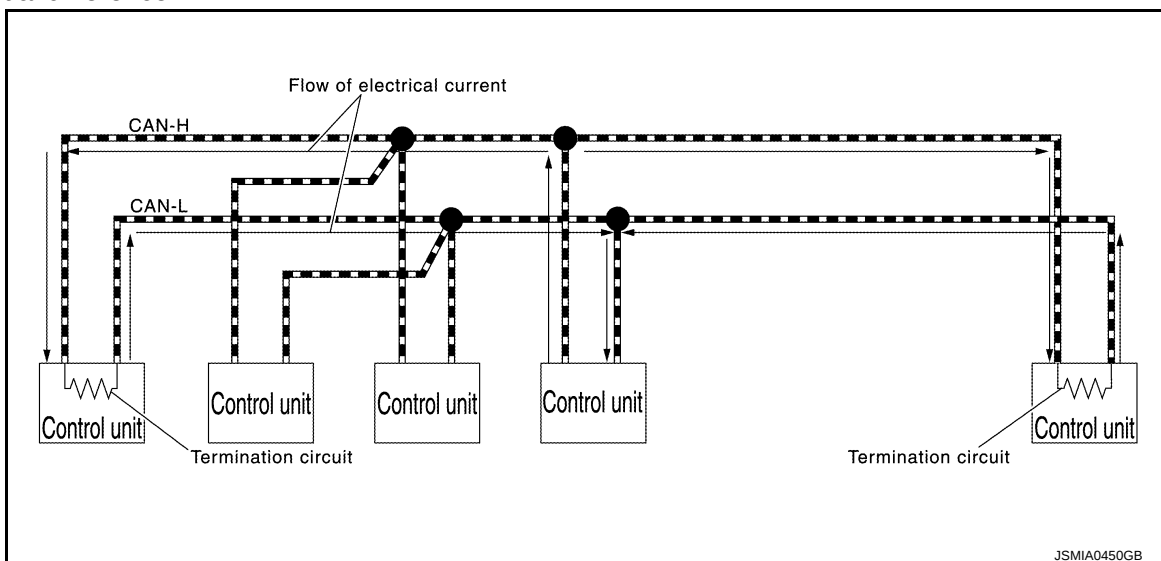


CAN COMMUNICATION SYSTEM : System Description

INFOID:000000009749872

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



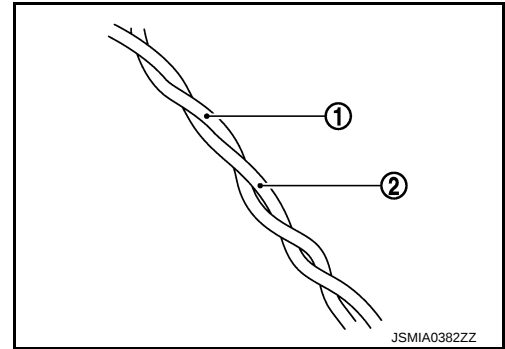
CAN Communication Line

SYSTEM

< SYSTEM DESCRIPTION >

[CAN]

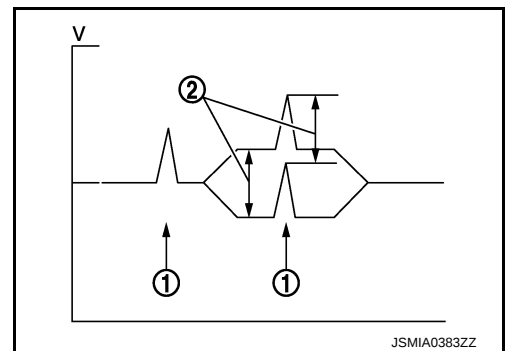
The CAN communication line is a twisted pair wire consisting of strands of CAN-H (1) and CAN-L (2) and has noise immunity.



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.

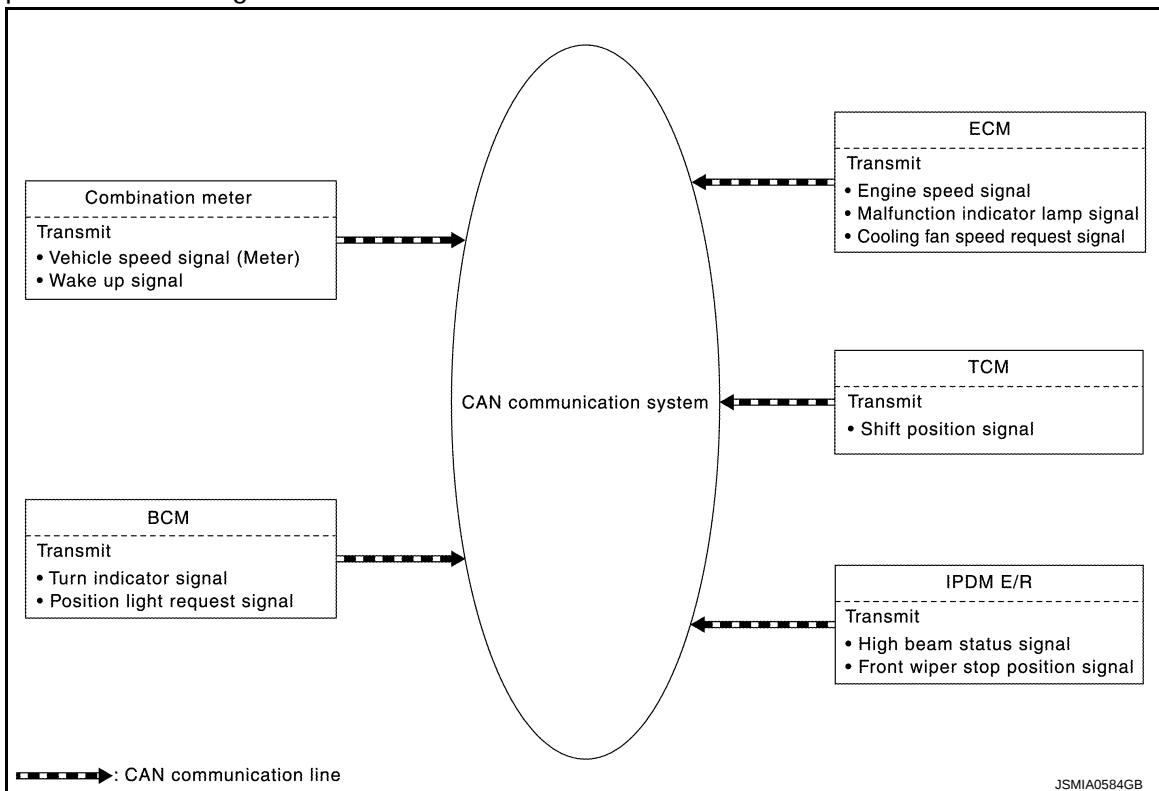
Since the CAN-H line and the CAN-L line are always adjacent to each other, the same degree of noise occurs, respectively, when a noise (1) occurs. Although the noise changes the voltage, the potential difference (2) between the CAN-H line and the CAN-L line is insensitive to noise. Therefore, noise-resistant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



CAN Signal Communications

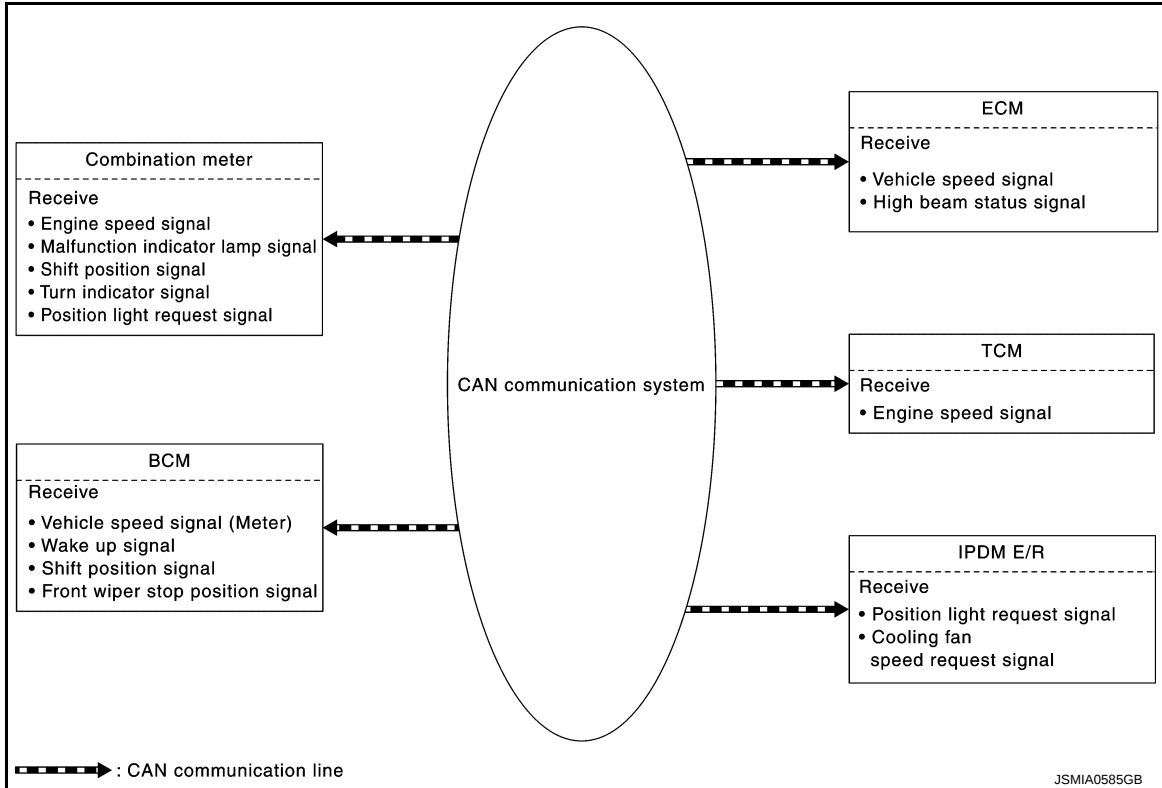
Each control unit of the CAN communication system transmits signals through the CAN communication control circuit included in the control unit and receives only necessary signals from each control unit to perform various kinds of control.

- Example: Transmitted signals



< SYSTEM DESCRIPTION >

• Example: Received signals



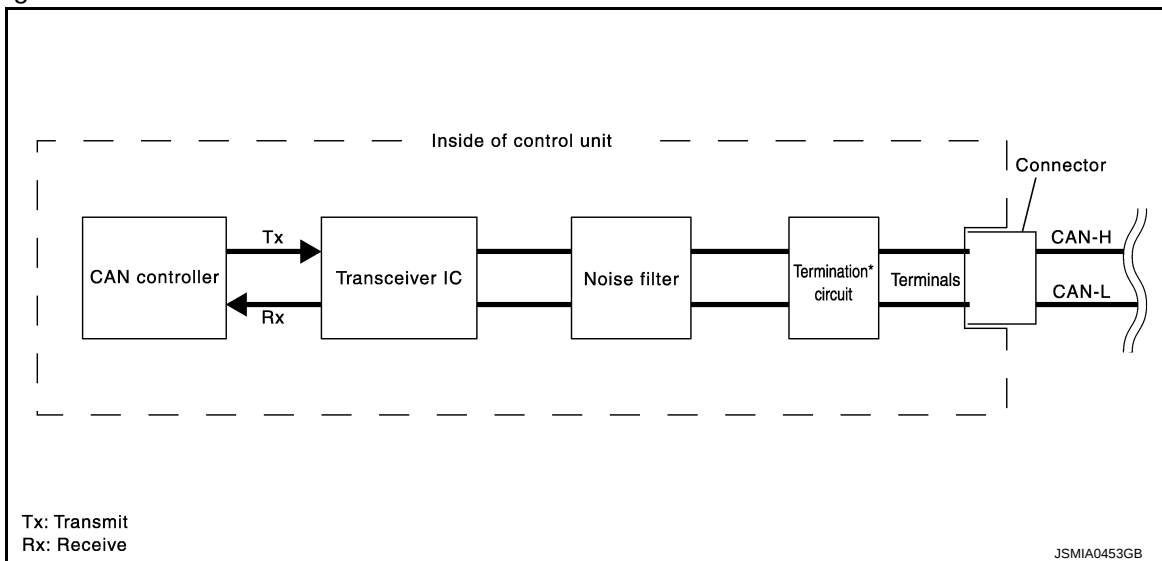
NOTE:

The above signal names and signal communications are provided for reference purposes. For CAN communications signals of this vehicle, refer to [LAN-28, "CAN COMMUNICATION SYSTEM : CAN Communication Signal Chart"](#).

CAN COMMUNICATION SYSTEM : CAN Communication Control Circuit

INFOID:000000009749873

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



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

SYSTEM

< SYSTEM DESCRIPTION >

[CAN]

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:0000000009749874

Determine CAN system type from the following specification chart.

NOTE:

Refer to [LAN-15. "Trouble Diagnosis Procedure"](#) for how to use CAN system specification chart.

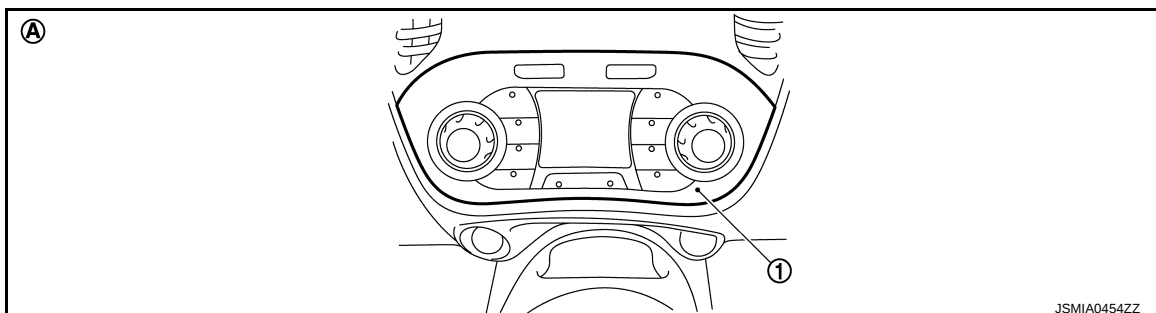
Body type	Hatch back					
Axle	2WD				AWD	
Engine	MR16DDT					
Transmission	M/T		CVT			
Brake control	VDC					
Integrated Control system		×		×		×
CAN system type	1	2	3	4	5	6
CAN communication unit						
ECM	×	×	×	×	×	×
AWD control module					×	×
ABS actuator and electric unit (control unit)	×	×	×	×	×	×
IPDM E/R	×	×	×	×	×	×
TCM			×	×	×	×
Data link connector	×	×	×	×	×	×
EPS control unit	×	×	×	×	×	×
Combination meter	×	×	×	×	×	×
Steering angle sensor	×	×	×	×	×	×
Air bag diagnosis sensor unit	×	×	×	×	×	×
A/C auto amp.		×		×		×
Multi display unit		×		×		×
BCM	×	×	×	×	×	×

×: Applicable

VEHICLE EQUIPMENT IDENTIFICATION INFORMATION

NOTE:

Check CAN system type from the vehicle shape and equipment.



1. Multi display unit
- A. With Integrated Control system

SYSTEM

< SYSTEM DESCRIPTION >

[CAN]

CAN COMMUNICATION SYSTEM : CAN Communication Signal Chart

INFOID:000000009749875

Refer to [LAN-14, "How to Use CAN Communication Signal Chart"](#) for how to use CAN communication signal chart.

NOTE:

Refer to [LAN-20, "Abbreviation List"](#) for the abbreviations of the connecting units.

T: Transmit R: Receive

Signal name/Connecting unit	ECM	4WD	ABS	IPDM-E	TCM	EPS	M&A	STRG	HVAC	MDU	BCM
A/C compressor request signal	T			R							
Accelerator pedal position signal	T	R	R		R						
ASCD status signal	T						R				
Boost pressure signal	T									R	
Closed throttle position signal	T				R						
Cooling fan speed request signal	T			R							
Engine and CVT integrated control signal	T				R						
	R				T						
Engine coolant temperature signal	T						R		R		
Engine speed signal	T	R	R		R		R			R	
Engine status signal	T					R	R			R	R
Engine torque signal	T	R								R	
Fuel consumption monitor signal	T						R			R	
Malfunctioning indicator signal	T						R				
Oil pressure warning lamp signal	T						R				
Power generation command value signal	T			R							
Speed limiter operation signal	T						R				
Starter motor relay cut off signal	T			R							R
AWD mode indicator signal		T					R				
AWD warning lamp signal		T					R				
Current AWD mode signal		T	R								
Target engine torque signal	R	T									
Torque vectoring indicator signal		T					R				
ABS malfunction signal			T		R						
ABS operation signal		R	T		R		R				
ABS warning lamp signal			T				R				
Brake warning lamp signal			T				R				
Decel G sensor signal		R	T							R	
Request drive torque signal		R	T								
Side G sensor signal		R	T							R	
Stop lamp switch signal		R	T								
					R						T
Target throttle position signal	R		T								
TCS malfunction signal		R	T								
TCS operation signal		R	T		R						
VDC malfunction signal		R	T								
VDC OFF indicator lamp signal			T				R				

SYSTEM

< SYSTEM DESCRIPTION >

[CAN]

Signal name/Connecting unit	ECM	4WD	ABS	IPDME	TCM	EPS	M&A	STRG	HVAC	MDU	BCM	
VDC operation signal		R	T		R							A
VDC warning lamp signal			T				R					B
Vehicle speed signal (ABS)	R	R	T		R	R	R				R	
Yaw rate signal		R	T									C
Back-up lamp switch signal*1				T							R	
Detention switch signal				T							R	
Front wiper stop position signal				T							R	D
High beam status signal	R			T								
Ignition switch ON signal				T							R	E
				R							T	
Ignition switch signal				T							R	
Interlock/PNP switch signal				T							R	F
				R							T	
Low beam status signal	R			T								
Push-button ignition switch status signal				T							R	G
Sleep-ready signal							T				R	H
				T							R	
Starter control relay signal				T							R	I
				R							T	
Starter relay status signal				T							R	J
				R							T	
Starter motor relay/Starter motor control relay control signal	R			T								
ATF temperature signal		R			T							
Current gear position signal		R	R		T							K
CVT indicator signal					T		R					
CVT ratio signal		R			T							L
Input shaft revolution signal	R	R			T							
Manual mode shift refusal signal					T		R					
N range signal			R		T							LAN
Next gear position signal			R		T							
Output shaft revolution signal	R	R			T							
P range signal			R		T							N
R range signal			R		T							
Shift position signal			R*2		T		R				R	O
Vehicle speed signal (TCM)					T						R	
Drive mode select signal*3	R				T							P
EPS operation signal	R					T						
EPS warning lamp signal						T	R					
Brake fluid level switch signal			R				T					
Manual mode shift down signal					R		T					
Manual mode shift up signal					R		T					
Manual mode signal					R		T					

SYSTEM

< SYSTEM DESCRIPTION >

[CAN]

Signal name/Connecting unit	ECM	4WD	ABS	IPDM-E	TCM	EPS	M&A	STRG	HVAC	MDU	BCM
Non-manual mode signal					R		T				
Paddle shift up signal*4					R		T				
Paddle shift down signal*4					R		T				
Odometer signal							T			R	R
Parking brake switch signal		R	R				T				
Seat belt buckle switch signal (driver side) signal							T				R
Vehicle speed signal (Meter)	R		R	R		R	T			R	R
Wake up signal							T				R
Steering angle sensor malfunction signal		R						T			
Steering angle sensor signal		R	R					T			
Steering calibration signal			R					T			
ECO mode signal					R	R			R	T	
NORMAL mode signal					R	R				T	
SPORT mode signal					R	R				T	
A/C display signal									T	R	
A/C ECO setting signal									R	T	
A/C operation signal									R	T	
Rear window defogger switch signal*5										T	R
Idle up request signal	R										T
A/C ON signal	R										T
Blower fan ON signal	R										T
Buzzer output signal							R				T
Daytime running light request signal*6				R							T
Door switch signal				R			R				T
Engine start operation indicator lamp signal							R				T
Front fog light request signal				R							T
Front wiper request signal				R							T
Front wiper service position signal				R							T
High beam request signal				R			R				T
Horn reminder signal				R							T
Key warning lamp signal							R				T
LOCK warning lamp signal							R				T
Low beam request signal				R							T
Low tire pressure warning lamp signal							R				T
Position light request signal				R			R			R	T
Rear window defogger control signal				R							T
	R			T						R*5	
Shift P warning lamp signal							R				T
Sleep wake up signal				R			R			R	T
Theft warning horn request signal				R							T
TPMS malfunction warning lamp signal							R				T
Turn indicator signal							R				T

SYSTEM

< SYSTEM DESCRIPTION >

[CAN]

*1: M/T models

*2: CVT models

*3: With Integrated Control System

*4: NISMO RS models

*5: With automatic air conditioning

*6: With daytime running light system

NOTE:

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

A

B

C

D

E

F

G

H

1

J

K

L

LAN

N

O

P

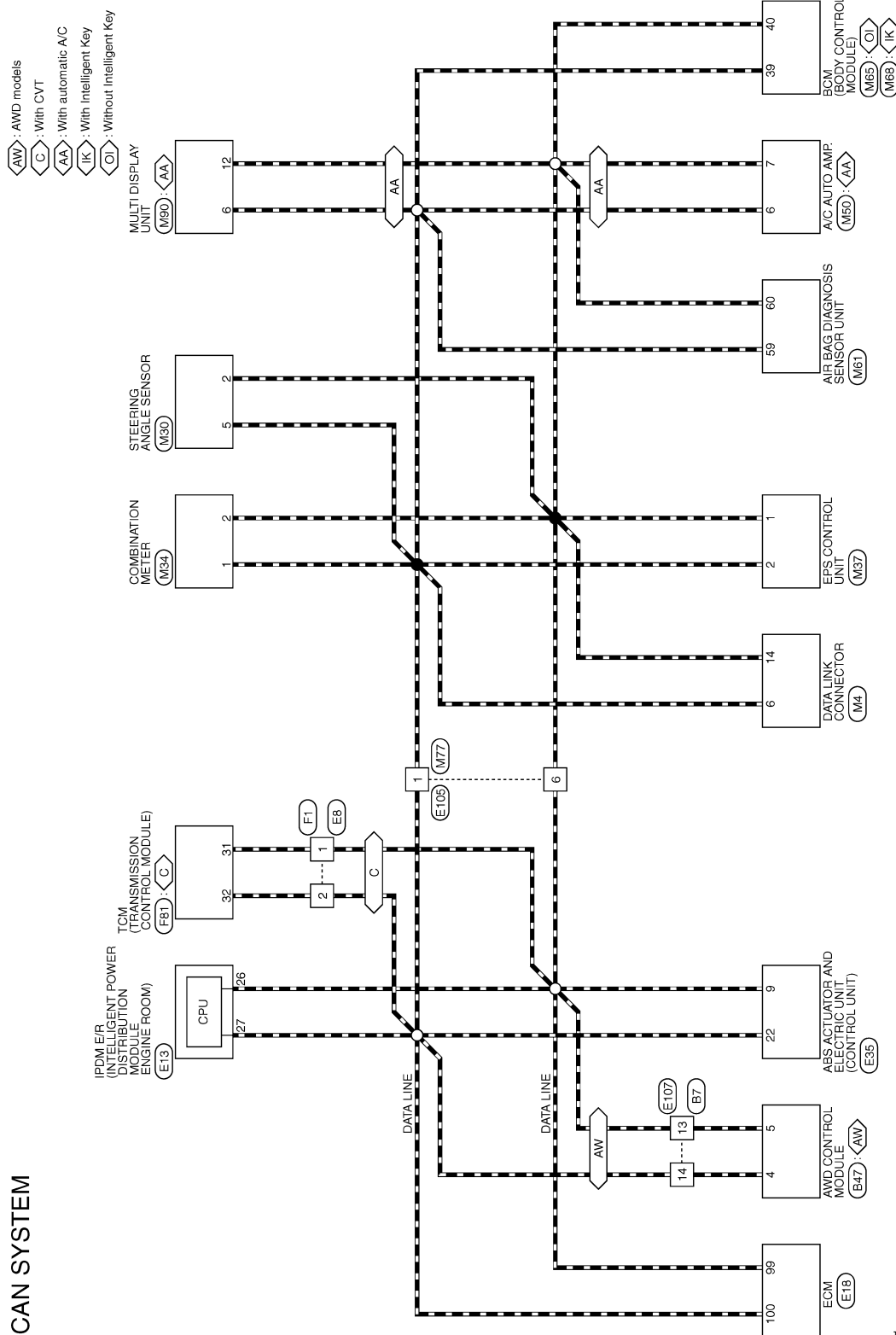
< WIRING DIAGRAM >

WIRING DIAGRAM

CAN SYSTEM

Wiring Diagram

INFOID:000000009749876



CAN SYSTEM

2010/08/30

JCMWA6074GB

CAN SYSTEM

< WIRING DIAGRAM >

[CAN]

CAN SYSTEM

Connector No.	E17
Connector Name	WIRE TO WIRE
Connector Type	TH24FW-NH



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

Terminal No.	Color Of Wire	Signal Name [Specification]
1	R	-
2	W	-
3	V	-
4	LG	-
5	G	-
6	LG	-
7	R	-
8	P	-
9	L	-
10	G	-
11	L	-
12	Y	-
13	P	-
14	L	-
15	B	-
16	BR	-
17	P	-
18	B	-
19	G	-
20	G	-
21	W	-
22	R	-
23	SHIELD	-

Connector No.	B47
Connector Name	AMD CONTROL MODULE
Connector Type	TH20FW-TB6



12	11	10	9	5	4	3	1
26	25	24	23	21			

Terminal No.	Color Of Wire	Signal Name [Specification]
1	GR	BATTERY
2	LG	CON-SW
3	LG	CON-SW
4	L	CAN-L
5	P	CAN-L
6	W	AMD-V SW
7	B	GND
8	B	GND
9	Y	SOL BAT
10	G	2WD SW
11	Y	2WD SW
12	R	AMD SOL L+
13	V	AMD SOL L-
14	W	AMD SOL R+
15	Y	AMD SOL R-

Connector No.	EB
Connector Name	WIRE TO WIRE
Connector Type	SA438MS-FS10-SJZZ



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	41	42	43	44	45	46	47	48
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Terminal No.	Color Of Wire	Signal Name [Specification]
1	P	-
2	L	-
3	O	-
4	LG	-
5	O	-

9	V	-
10	SB	-
11	R	-
12	G	-
13	O	-
14	Y	-
15	R	-
16	SB	-
17	GR	-
18	W	-
19	L/B	-
20	L/W	-
21	G	-
22	GR	-
23	SHIELD	-
24	P	-
25	R	-
26	B	-
27	B	-
28	LG	-
29	SB	-
30	R	-
31	G	-
32	Y	-
33	BR	-
34	W	-
35	L	-
36	P	-
37	V	-
38	L	-
39	L	-
40	V	-
41	V	-
42	L	-
43	BR	-
44	G	-
45	BR	-
46	Y	-
47	SB	-
48	LG	-

Connector No.	E13
Connector Name	WIRE TO INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM
Connector Type	TH12FW-NH



26	27	28	25	23
34	33	31	30	

Terminal No.	Color Of Wire	Signal Name [Specification]
23	SB	-
25	BR	-
27	L	-
28	Y	-
30	V	-
31	Y	-
33	G	-
34	L	-

Connector No.	E18
Connector Name	ECM
Connector Type	RA24FCY-R2S-R-NH



134	133	132	131	130	129	128	127	126	125	124	123	122	121	120	119	118	117	116	115	114	113	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	---	---	---	---	---	---	---	---	---

Terminal No.	Color Of Wire	Signal Name [Specification]
99	P	CAN COMMUNICATION LINE (CAN-L)
100	L	CAN COMMUNICATION LINE (CAN-H)
101	V	SENSOR POWER SUPPLY
102	R	ACCELERATOR PEDAL POSITION SENSOR 1
103	BR	PEAK HOLD SW
104	BR	DATA LINK CONNECTOR
105	GR	sensor (crank) accelerator pedal position sensor 1
106	Y	POWER SUPPLY FOR ECM (BACKUP)
108	GR	CLUTCH PEDAL POSITION SWITCH
109	O	IGNITION SWITCH

CAN SYSTEM

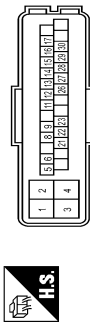
< WIRING DIAGRAM >

[CAN]

CAN SYSTEM

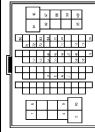
110	B	ASCD STEERING SWITCH
111	B	SENSOR GROUND
112	BR	ECM RELAY (SELF SHUT-OFF)
113	B	STOP LAMP SWITCH
115	SB	BRAKE PEDAL POSITION SWITCH
116	G	FUEL PUMP RELAY
117	Y	SENSOR POWER SUPPLY
118	O	ACCELERATOR PEDAL POSITION SENSOR 2
119	BR	SENSOR GROUND
120	Y	POWER SUPPLY FOR ECM
121	G	THROTTLE CONTROL MOTOR POWER SUPPLY
122	GR	ECM GROUND
123	B/Y	ECM GROUND
124	B/Y	A/F SENSOR HEATER
125	L	HEATED OXYGEN SENSOR 2 HEATER
126	W	ECM GROUND
127	B/Y	ECM GROUND

Connector No.	E35
Connector Name	ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)
Connector Type	RH28FE-NM4-UH



Terminal No.	Color Of Wire	Signal Name [Specification]
1	W	BAT (MTR)
2	L	BAT (SOL)
3	B	GND (SOL)
4	B	GND (MTR)
5	GR	VDC OFF SW
6	GR	BRAKE PEDAL POSITION SW
8	SB	STOP LAMP SW
9	P	CAN-L
11	BR	DP FR
12	W	DS FR
13	G	DS PR
14	R	SERIAL
15	Y	DS PR
16	V	IGN
17	W	REVERSE SIGNAL
21	Y	DP FR
22	L	CAN-H
23	LG	DP FL

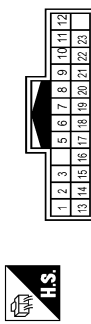
26	SB	DP RL
27	BR	DS FL
28	B	GND
29	W	SERIAL
30	O	DS RL



Terminal No.	Color Of Wire	Signal Name [Specification]
1	L	-
4	Y	-
5	GR	-
6	P	-
9	G	-
10	R	-
14	GR	-
15	B	-
16	P	-
17	SB	-
18	V	-
19	O	-
20	SB	-
21	R	-
22	Y	-
23	LG	-
24	GR	-
25	GR	-
26	R	-
27	W	-
28	SB	-
29	L	-
30	V	-
31	Y	-
32	B	-
33	W	-
34	L	-

83	Y	-
84	LG	-
85	GR	-
86	O	-
89	SHIELD	-
91	G	-
92	R	-
95	BR	-
96	P	-
97	GR	-
98	W	-
99	V	-
100	O	-

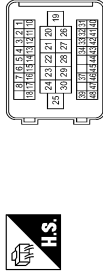
Connector No.	E107
Connector Name	WIRE TO WIRE
Connector Type	TH42MW-NH



Terminal No.	Color Of Wire	Signal Name [Specification]
1	SB	-
2	Y	-
3	V	-
5	G	-
6	O	-
7	R	-
8	SB	-
9	R	-
10	G	-
11	Y	-
12	O	-
13	P	-
14	LG	-
15	B	-
16	O	-
17	BR	-
18	Y	-
19	G	-
20	B	-
21	W	-
22	R	-

23	SHIELD	-
----	--------	---

Connector No.	F1
Connector Name	WIRE TO WIRE
Connector Type	SAA38FB-RS10-SL22



Terminal No.	Color Of Wire	Signal Name [Specification]
1	P	-
2	L	-
3	Y	-
4	EG	-
5	LG	-
6	SB	-
7	G	-
8	R	-
10	BR	-
11	Y	-
12	G	-
13	EG	-
14	B	-
15	BR	-
16	P	-
17	SB	-
18	G	-
19	G	-
20	BR	-
21	G	-
22	BR	-
23	SHIELD	-
24	R	-
25	R	-
26	B	-
27	B	-
28	W	-
29	W	-
30	R	-
31	EG	-
32	LG	-
33	BR	-
34	G	-

CAN SYSTEM

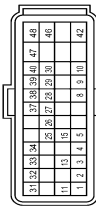
< WIRING DIAGRAM >

[CAN]

CAN SYSTEM

37	G	-
38	B	-
39	B	-
40	B	-
41	BR	-
42	W	-
43	L	-
44	G	-
45	BR	-
46	R	-
47	Y	-
48	GR	-

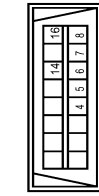
Connector No.	F81
Connector Name	TCM (TRANSMISSION CONTROL MODULE)
Connector Type	TH40P2B-R28-L-RH



Terminal No.	Color Of Wire	Signal Name [Specification]
1	G	R RANGE SW
2	Y	N RANGE SW
3	W	D RANGE SW
4	V	GROUND
5	B	GROUND (SEL 2)
6	BR	CHP SELECT (SEL 1)
9	G	DATE I/O (SEL 3)
10	W	P RANGE SW
11	L	CVT FLUID TEMPERATURE SENSOR
13	SB	SECONDARY PRESSURE SENSOR
15	P	SENSOR GROUND
25	Y	SENSOR POWER SUPPLY
26	LG	STEP MOTOR D
27	GR	STEP MOTOR G
28	V	STEP MOTOR B
29	BG	STEP MOTOR A
30	S	CAN-H
31	L	CAN-L
32	L	CAN-H
33	BG	PRIMARY SPEED SENSOR
34	R	SECONDARY SPEED SENSOR
37	L	LOCK-UP SELECT SOLENOID VALVE
38	G	TORQUE CONVERTER CLUTCH SOLENOID VALVE

39	W	SECONDARY PRESSURE SOLENOID VALVE
40	Y	LINE PRESSURE SOLENOID VALVE
41	B	GROUND
42	LG	IGNITION POWER SUPPLY
46	BG	BATTERY POWER SUPPLY (MEMORY BACK-UP)
47	Y	IGNITION POWER SUPPLY

Connector No.	IM4
Connector Name	DATA LINK CONNECTOR
Connector Type	BD16FW



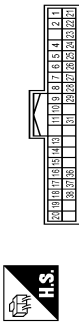
Terminal No.	Color Of Wire	Signal Name [Specification]
4	B	-
5	B	-
6	L	-
7	W	-
8	LG	-
14	P	-
16	Y	-

Connector No.	M30
Connector Name	STEERING ANGLE SENSOR
Connector Type	TH40FW-NH



Terminal No.	Color Of Wire	Signal Name [Specification]
1	B	GNL
2	P	CAN-L
4	LG	IGN
5	L	CAN-H

Connector No.	M34
Connector Name	COMBINATION METER
Connector Type	TH40FW-NH



Terminal No.	Color Of Wire	Signal Name [Specification]
1	L	CAN-H
2	V	VEHICLE SPEED SIGNAL (Without front fog lamp)
3	V	VEHICLE SPEED SIGNAL (With front fog lamp)
4	Y	VEHICLE SPEED SIGNAL (Without front fog lamp)
5	G	PADDLER SHIFTER UP SWITCH SIGNAL
6	BR	FUEL LEVEL SENSOR SIGNAL
7	R	AIR BAG SIGNAL
8	P	- (Without front fog lamp)
9	O	- (With front fog lamp)
10	W	SEAT BELT LOCKING SWITCH SIGNAL (Without front fog lamp)
11	G	SEAT BELT LOCKING SWITCH SIGNAL (With front fog lamp)
12	SB	PARKING BRAKE SWITCH SIGNAL
13	B	ILLUMINATION CONTROL SIGNAL (Without front fog lamp)
14	GR	ILLUMINATION CONTROL SIGNAL (With front fog lamp)
15	Y	ILLUMINATION CONTROL SIGNAL (Without front fog lamp)
16	L	MANUAL MODE SHIFT UP SIGNAL (Without front fog lamp)
17	O	ACC-POWER SUPPLY
18	W	MANUAL MODE SHIFT DOWN SIGNAL (Without front fog lamp)
19	G	WASHER LEVEL SWITCH SIGNAL (Without front fog lamp)
20	LG	WASHER LEVEL SWITCH SIGNAL (With front fog lamp)
21	R	SECURITY SIGNAL
22	GR	AMBIENT SENSOR SIGNAL
23	B	AMBIENT SENSOR GROUND (With front fog lamp)
24	B	AMBIENT SENSOR GROUND (Without front fog lamp)
25	B	GROUND
26	B	FUEL LEVEL SENSOR GROUND
27	V	IGNITION SIGNAL
28	GR	PADDLER SHIFTER DOWN SWITCH SIGNAL
29	LG	BATTERY POWER SUPPLY
30	LG	IGNITION SIGNAL
31	LG	PASSENGER SEAT BELT WARNING SIGNAL (With front fog lamp)
32	V	PASSENGER SEAT BELT WARNING SIGNAL (Without front fog lamp)

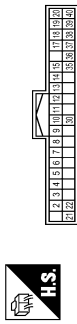
31	P	A/C AUTO AMP CONNECTION RECOGNITION SIGNAL
32	LG	INTAKE DOOR MOTOR (Without front fog lamp)
33	Y	MANUAL MODE SIGNAL (Without front fog lamp)
34	G	NON-MANUAL MODE SIGNAL (Without front fog lamp)
35	Y	NON-MANUAL MODE SIGNAL (Without front fog lamp)
36	P	ALTERNATOR SIGNAL

Connector No.	M37
Connector Name	EPS CONTROL UNIT
Connector Type	TH40FW-NH



Terminal No.	Color Of Wire	Signal Name [Specification]
1	P	CAN-L
2	L	CAN-H
4	LG	IGN

Connector No.	M35
Connector Name	A/C AUTO AMP
Connector Type	TH40FW-NH



Terminal No.	Color Of Wire	Signal Name [Specification]
2	LG	IN-VEHICLE SENSOR SIGNAL
3	Y	INTAKE SENSOR SIGNAL
4	GR	AMBIENT SENSOR SIGNAL
5	L	SUNLOAD SENSOR SIGNAL
6	L	CAN-H
7	P	CAN-L
8	W	INTAKE DOOR MOTOR PBR POWER SUPPLY
9	P	A/C AUTO AMP CONNECTION RECOGNITION SIGNAL
10	R	SENSOR GROUND

CAN SYSTEM

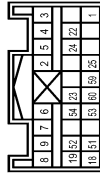
< WIRING DIAGRAM >

[CAN]

CAN SYSTEM

11	GP	IGNITION POWER SUPPLY
12	GR	BATTERY POWER SUPPLY
13	GR	POWER TRANSISTOR CONTROL SIGNAL
14	LG	BLOWER FAN ON SIGNAL
15	Y	A/C ON SIGNAL
17	BR	A/MIX DRIVE SIGNAL 4
18	GR	A/MIX DRIVE SIGNAL 3
19	W	A/MIX DRIVE SIGNAL 2
20	L	A/MIX DRIVE SIGNAL 1
21	G	IGNITION POWER SUPPLY
22	SB	INTAKE DOOR MOTOR PWR F/B SIGNAL
30	B	GROUND
35	G	REG DRIVE SIGNAL
36	V	PRE DRIVE SIGNAL
37	R	MODE DRIVE SIGNAL 4
38	P	MODE DRIVE SIGNAL 3
39	Y	MODE DRIVE SIGNAL 2
40	V	MODE DRIVE SIGNAL 1

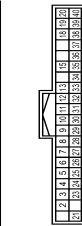
Connector No.	M61
Connector Name	AIR BAG DIAGNOSIS SENSOR UNIT
Connector Type	NI28FY-EX



Terminal No.	Color Of Wire	Signal Name [Specification]
1	BR	IGN
2	B	GND
3	Y	DR 1 (+)
4	Y/G	DR1 (-) DR2 (-)
5	Y	DR 2 (+)
6	Y/R	AS1 (+)
7	Y/B	AS2 (+)
8	Y	AS3 (+)
9	Y	AS4 (+)
18	LG	ECGS (-)
19	V	ECGS (+)
22	SHIELD	SHIELD
23	R	AIR BAG W/L
24	V	SEAT BELT W/L
25	G	OUTOFF TELLTALE
51	R	FMVSS SENS RH+

52	G	FMVSS SENS RH-
53	Y	FMVSS SENS LH-
54	BR	FMVSS SENS LH+
58	L	CAN-H
60	P	CAN-L

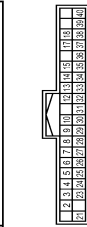
Connector No.	M65
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	TH40FW-NH



Terminal No.	Color Of Wire	Signal Name [Specification]
2	L	COMBI SW INPUT 5
3	GR	COMBI SW INPUT 4
4	BR	COMBI SW INPUT 3
5	G	COMBI SW INPUT 2
6	W	COMBI SW INPUT 1
7	L	KEY CYL UNLOCK SW
8	R	KEY CYL LOCK SW
9	C	STOP LAMP SW
10	W	REAR WINDOW DEF SW
11	W	IGN SW ACC
12	Y	DOOR LK & UNLK SW LOCK
13	BR	DOOR LK & UNLK SW UNLOCK
15	W	-
18	V	RECEIVER GND
19	BR	RECEIVER PWR SPLY
20	G	RECEIVER COMM
21	P	NATS ANT AMP
23	R	SECURITY IND LAMP CONT
24	SB	DONGLE LINK
25	LG	NATS ANT AMP
26	B	THERMO CONT AMP
27	Y	BLOWER FAN SW
28	O	HAZARD SW
30	L	BK DOOR OPENER SW
31	G	FR DEFROST SW
32	LG	COMBI SW OUTPUT 5
33	Y	COMBI SW OUTPUT 4
34	V	COMBI SW OUTPUT 3

35	R	COMBI SW OUTPUT 2
36	P	COMBI SW OUTPUT 1
37	GR	KEY SW
38	R	IGN SW ON
39	L	CAN-H
40	P	CAN-L

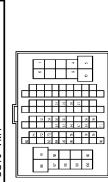
Connector No.	M68
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	TH40FB-NH



Terminal No.	Color Of Wire	Signal Name [Specification]
2	L	COMBI SW INPUT 5
3	GR	COMBI SW INPUT 4
4	BR	COMBI SW INPUT 3
5	G	COMBI SW INPUT 2
6	W	COMBI SW INPUT 1
7	L	KEY CYL UNLOCK SW
8	R	KEY CYL LOCK SW
9	C	STOP LAMP SW
10	W	REAR WINDOW DEF SW
12	Y	DOOR LK & UNLK SW LOCK (With front fog lamp)
13	BR	DOOR LK & UNLK SW UNLOCK
14	P	OPTICAL SENS
15	W	RR DEFROGGER SW
17	R	OPTICAL SENS PWR SPLY
18	V	RECEIVER GND
21	P	NATS ANT AMP
23	R	SECURITY IND LAMP CONT
24	SB	DONGLE LINK
25	LG	NATS ANT AMP
26	B	THERMO CONT AMP
27	Y	BLOWER FAN SW
28	O	HAZARD SW
29	L	BK DOOR OPENER SW
30	L	FR DEFROST SW
31	G	COMBI SW OUTPUT 5
32	LG	COMBI SW OUTPUT 4
33	Y	COMBI SW OUTPUT 3

31	GR	DR DOOR UNLK SENS
32	LG	COMBI SW OUTPUT 6
33	V	COMBI SW OUTPUT 4
34	V	COMBI SW OUTPUT 3
35	R	COMBI SW OUTPUT 2
36	P	COMBI SW OUTPUT 1
37	G	DETENT SW
38	SB	RECEIVER COMM
39	L	CAN-H
40	P	CAN-L

Connector No.	M77
Connector Name	WIRE TO WIRE
Connector Type	TH40FW-CSI (F-TM4)



Terminal No.	Color Of Wire	Signal Name [Specification]
1	L	-
4	V	-
5	W	-
8	P	-
9	R	-
10	R	-
34	LG	-
35	SB	-
36	P	-
37	P	-
52	R	-
53	L	-
54	SB	-
55	P	-
58	LG	-
59	G	-
65	GR	-
66	V	-
67	V	-
68	R	-
70	V	-
71	R	-
72	GR	-

A
B
C
D
E
F
G
H
I
J
K
L
N
O
P

CAN SYSTEM

73	G	-
74	W	-
75	LG	-
76	LG	-
77	V	-
78	LG	-
79	LG	-
80	LG	-
81	P	-
82	G	-
83	G	-
84	G	-
85	BR	-
86	LG	-
87	SHIELD	-
88	Y	-
89	BR	-
90	R	-
91	Y	-
92	Y	-
93	Y	-
94	L	-
95	GR	-
96	GR	-
97	G	-
98	G	-
99	W	-
100	LG	-

Connector No.	M60
Connector Name	MULTI DISPLAY UNIT
Connector Type	THIEF-NH





Terminal No.	Color Of Wire	Signal Name [Specification]
1	Y	BAT
2	V	ILL+
5	GR	ILL CONT
6	L	CAN-H
7	SB	IGN
10	B	GND
11	B	GND
12	P	CAN-L

LAN

BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Interview Sheet

INFOID:000000009749877

NOTE:Refer to [LAN-15, "Trouble Diagnosis Procedure"](#) for how to use interview sheet.**CAN Communication System Diagnosis Interview Sheet**

Date received:

Type:

VIN No.:

Model:

First registration:

Mileage:

CAN system type:

Symptom (Results from interview with customer)

Condition at inspection

Error symptom : Present / Past

SKIB8898E

MALFUNCTION AREA CHART

< DTC/CIRCUIT DIAGNOSIS >

[CAN]

DTC/CIRCUIT DIAGNOSIS

MALFUNCTION AREA CHART

Main Line

INFOID:000000009749878

Malfunction area	Reference
Main line between IPDM E/R and data link connector	LAN-40, "Diagnosis Procedure"
Main line between data link connector and air bag diagnosis sensor unit	LAN-41, "Diagnosis Procedure"
Main line between data link connector and multi display unit	LAN-42, "Diagnosis Procedure"

Branch Line

INFOID:000000009749879

Malfunction area	Reference
ECM branch line circuit	LAN-43, "Diagnosis Procedure"
AWD control module branch line circuit	LAN-44, "Diagnosis Procedure"
ABS actuator and electric unit (control unit) branch line circuit	LAN-45, "Diagnosis Procedure"
IPDM E/R branch line circuit	LAN-46, "Diagnosis Procedure"
TCM branch line circuit	LAN-47, "Diagnosis Procedure"
Data link connector branch line circuit	LAN-48, "Diagnosis Procedure"
EPS control unit branch line circuit	LAN-49, "Diagnosis Procedure"
Combination meter branch line circuit	LAN-50, "Diagnosis Procedure"
Steering angle sensor branch line circuit	LAN-51, "Diagnosis Procedure"
Air bag diagnosis sensor unit branch line circuit	LAN-52, "Diagnosis Procedure"
A/C auto amp. branch line circuit	LAN-53, "Diagnosis Procedure"
Multi display unit branch line circuit	LAN-54, "Diagnosis Procedure"
BCM branch line circuit	LAN-55, "Diagnosis Procedure"

Short Circuit

INFOID:000000009749880

Malfunction area	Reference
CAN communication circuit	LAN-56, "Diagnosis Procedure"

LAN

MAIN LINE BETWEEN IPDM-E AND DLC CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN]

MAIN LINE BETWEEN IPDM-E AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000009749881

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).
 - Harness connector E105
 - Harness connector M77

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 E105 and M77
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.	
E13	27	E105	1	Existed
	26		6	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the main line between the IPDM E/R and the harness connector E105.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

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

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M77	1	M4	6	Existed
	6		14	Existed

Is the inspection result normal?

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

YES (Past error)>>Error was detected in the main line between the IPDM E/R and the data link connector.

NO >> Repair the main line between the harness connector M77 and the data link connector.

MAIN LINE BETWEEN DLC AND A-BAG CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN]

MAIN LINE BETWEEN DLC AND A-BAG CIRCUIT

Diagnosis Procedure

INFOID:000000009749882

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the BCM harness connector.
4. Check the continuity between the data link connector and the BCM harness connector.
 - With Intelligent Key system

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M68	39	Existed
	14		40	Existed

- Without Intelligent Key system

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	39	Existed
	14		40	Existed

Is the inspection result normal?

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

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

NO >> Repair the main line between the data link connector and the air bag diagnosis sensor unit.

LAN

MAIN LINE BETWEEN DLC AND MDU CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN]

MAIN LINE BETWEEN DLC AND MDU CIRCUIT

Diagnosis Procedure

INFOID:000000009749883

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - Multi display unit
4. Check the continuity between the data link connector and the multi display unit harness connector.

Data link connector		Multi display unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M90	6	Existed
	14		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 data link connector and the multi display unit.

NO >> Repair the main line between the data link connector and the multi display unit.

ECM BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749884

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E18	100	99	Approx. 108 – 132

Is the measurement value within the specification?

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

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to [EC-170, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the ECM. Refer to [EC-561, "Removal and Installation"](#).
YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

A
B
C
D
E
F
G
H
I
J
K
L
N
O
P

LAN

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749885

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
 - AWD control module
 - Harness connector B7
 - Harness connector E107

Is the 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 module.
2. Check the resistance between the AWD control module harness connector terminals.

AWD control module harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B47	4	5	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the AWD control module branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the AWD control module. Refer to [DLN-76, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the AWD control module. Refer to [DLN-90, "Removal and Installation"](#).

YES (Past error)>>Error was detected in the AWD control module branch line.

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

ABS BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749886

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E35	22	9	Approx. 54 – 66

Is the measurement value within the specification?

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

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to [BRC-114, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to [BRC-138, "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.

LAN

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749887

1.CHECK CONNECTOR

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

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

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

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E13	27	26	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 the following.

- Models with Intelligent Key system: [PCS-33, "Diagnosis Procedure"](#)
- Models without Intelligent Key system: [PCS-61, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to the following.

- Models with Intelligent Key system: [PCS-34, "Removal and Installation"](#)
- Models without Intelligent Key system: [PCS-62, "Removal and Installation"](#)

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

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

TCM BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN]

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749888

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
 - TCM
 - Harness connector F1
 - Harness connector E8

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F81	32	31	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the TCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to [TM-272, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the TCM. Refer to [TM-320, "Removal and Installation"](#).
YES (Past error)>>Error was detected in the TCM branch line.
NO >> Repair the power supply and the ground circuit.

LAN

DLC BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000010283626

1.CHECK CONNECTOR

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

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M4	6	14	Approx. 54 – 66

Is the measurement value within the specification?

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

YES (Past error)>>Error was detected in the data link connector branch line circuit.

NO >> Repair the data link connector branch line.

EPS BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN]

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749890

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M37	2	1	Approx. 54 – 66

Is the measurement value within the specification?

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

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

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

Is the inspection result normal?

- YES (Present error)>>Replace the EPS control unit. Refer to [ST-11, "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.

LAN

M&A BRANCH LINE CIRCUIT**Diagnosis Procedure**

INFOID:000000009749891

1.CHECK CONNECTOR

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

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

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

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M34	1	2	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-50, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?YES (Present error)>>Replace the combination meter. Refer to [MWI-61, "Removal and Installation"](#).

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

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

STRG BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN]

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749892

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M30	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-52, "Wiring Diagram"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the steering angle sensor. Refer to [BRC-141, "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.

LAN

A-BAG BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN]

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749893

WARNING:

- Before servicing, turn ignition switch OFF, disconnect battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.)
- Never use unspecified tester or other measuring device.

1.CHECK CONNECTOR

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

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace the main harness.

2.CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to [SRC-32, "Work Flow"](#).

Is the inspection result normal?

YES >> Replace the main harness.

NO >> Replace parts whose air bag system has a malfunction.

HVAC BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN]

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749894

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the A/C auto amp. for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M50	6	7	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the A/C auto amp. branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the A/C auto amp. Refer to [HAC-72, "A/C AUTO AMP. : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the A/C auto amp. Refer to [HAC-90, "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.

A
B
C
D
E
F
G
H
I
J
K
L
N
O
P

LAN

MDU BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749895

1.CHECK CONNECTOR

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

Multi display unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M90	6	12	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
 NO >> Repair the multi display unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the multi display unit. Refer to [AV-181, "MULTI DISPLAY UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the multi display unit. Refer to [DMS-13, "Removal and Installation"](#).
 YES (Past error)>>Error was detected in the multi display unit branch line.
 NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749896

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of BCM.
 2. Check the resistance between the BCM harness connector terminals.
- Models with Intelligent Key system

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M68	39	40	Approx. 108 – 132

- Models without Intelligent Key system

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M65	39	40	Approx. 108 – 132

Is the measurement value within the specification?

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

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to the following.

- Models with Intelligent Key system: [BCS-83, "Diagnosis Procedure"](#)
- Models without Intelligent Key system: [BCS-150, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to the following.
- Models with Intelligent Key system: [BCS-90, "Removal and Installation"](#)
 - Models without Intelligent Key system: [BCS-157, "Removal and Installation"](#)

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

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

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000009749897

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication system.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M4	6	14	Not existed

Is the inspection result normal?

YES >> GO TO 3.

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

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

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

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M4	6		Not existed
	14		Not existed

Is the inspection result normal?

YES >> GO TO 4.

NO >> Check the harness and repair 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.		
100	99	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
39	40	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.

CAN COMMUNICATION CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN]

Inspection result

Reproduced>>GO TO 6.

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

6.CHECK UNIT REPRODUCTION

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

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication system.

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.

A

B

C

D

E

F

G

H

I

J

K

L

LAN

N

O

P

MAIN LINE BETWEEN IPDM-E AND DLC CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 1)]

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN IPDM-E AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000009749898

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).
 - Harness connector E105
 - Harness connector M77

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 E105 and M77
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.	
E13	27	E105	1	Existed
	26		6	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the main line between the IPDM E/R and the harness connector E105.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

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

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M77	1	M4	6	Existed
	6		14	Existed

Is the inspection result normal?

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

YES (Past error)>>Error was detected in the main line between the IPDM E/R and the data link connector.

NO >> Repair the main line between the harness connector M77 and the data link connector.

MAIN LINE BETWEEN DLC AND A-BAG CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 1)]

MAIN LINE BETWEEN DLC AND A-BAG CIRCUIT

Diagnosis Procedure

INFOID:000000009749899

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the BCM harness connector.
4. Check the continuity between the data link connector and the BCM harness connector.
 - With Intelligent Key system

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M68	39	Existed
	14		40	Existed

- Without Intelligent Key system

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	39	Existed
	14		40	Existed

Is the inspection result normal?

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

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

NO >> Repair the main line between the data link connector and the air bag diagnosis sensor unit.

LAN

ECM BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 1)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749900

1.CHECK CONNECTOR

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

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

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

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E18	100	99	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to [EC-170, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to [EC-561, "Removal and Installation"](#).

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

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

ABS BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 1)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749901

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E35	22	9	Approx. 54 – 66

Is the measurement value within the specification?

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

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to [BRC-114, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to [BRC-138, "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.

A
B
C
D
E
F
G
H
I
J
K
L
N
O
P

LAN

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749902

1.CHECK CONNECTOR

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

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

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

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E13	27	26	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 the following.

- Models with Intelligent Key system: [PCS-33, "Diagnosis Procedure"](#)
- Models without Intelligent Key system: [PCS-61, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to the following.

- Models with Intelligent Key system: [PCS-34, "Removal and Installation"](#)
- Models without Intelligent Key system: [PCS-62, "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.

DLC BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 1)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749903

1.CHECK CONNECTOR

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

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M4	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.

LAN

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749904

1.CHECK CONNECTOR

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

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M37	2	1	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the EPS control unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

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

Is the inspection result normal?

YES (Present error)>>Replace the EPS control unit. Refer to [ST-11, "Removal and Installation"](#).

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

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

M&A BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 1)]

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749905

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M34	1	2	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-50, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the combination meter. Refer to [MWI-61, "Removal and Installation"](#).
YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

LAN

STRG BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 1)]

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749906

1.CHECK CONNECTOR

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

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M30	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-52, "Wiring Diagram"](#).

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to [BRC-141, "Removal and Installation"](#).

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

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

A-BAG BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 1)]

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749907

WARNING:

- Before servicing, turn ignition switch OFF, disconnect battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.)
- Never use unspecified tester or other measuring device.

1.CHECK CONNECTOR

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

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace the main harness.

2.CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to [SRC-32, "Work Flow"](#).

Is the inspection result normal?

YES >> Replace the main harness.

NO >> Replace parts whose air bag system has a malfunction.

A
B
C
D
E
F
G
H
I
J
K
L
N
O
P

LAN

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749908

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of BCM.
2. Check the resistance between the BCM harness connector terminals.
- Models with Intelligent Key system

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M68	39	40	Approx. 108 – 132

- Models without Intelligent Key system

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M65	39	40	Approx. 108 – 132

Is the measurement value within the specification?

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

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to the following.

- Models with Intelligent Key system: [BCS-83, "Diagnosis Procedure"](#)
- Models without Intelligent Key system: [BCS-150, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to the following.
- Models with Intelligent Key system: [BCS-90, "Removal and Installation"](#)
 - Models without Intelligent Key system: [BCS-157, "Removal and Installation"](#)

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

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

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000009749909

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication system.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M4	6	14	Not existed

Is the inspection result normal?

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

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

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

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M4	6		Not existed
	14		Not existed

Is the inspection result normal?

- YES >> GO TO 4.
 NO >> Check the harness and repair 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.		
100	99	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
39	40	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.

CAN COMMUNICATION CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 1)]

Inspection result

Reproduced>>GO TO 6.

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

6.CHECK UNIT REPRODUCTION

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

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication system.

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.

MAIN LINE BETWEEN IPDM-E AND DLC CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 2)]

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN IPDM-E AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000009749910

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).
 - Harness connector E105
 - Harness connector M77

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 E105 and M77
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.	
E13	27	E105	1	Existed
	26		6	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the main line between the IPDM E/R and the harness connector E105.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

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

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M77	1	M4	6	Existed
	6		14	Existed

Is the inspection result normal?

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

YES (Past error)>>Error was detected in the main line between the IPDM E/R and the data link connector.

NO >> Repair the main line between the harness connector M77 and the data link connector.

A
B
C
D
E
F
G
H
I
J
K
L
LAN
N
O
P

MAIN LINE BETWEEN DLC AND MDU CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 2)]

MAIN LINE BETWEEN DLC AND MDU CIRCUIT

Diagnosis Procedure

INFOID:000000010283627

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - Multi display unit
4. Check the continuity between the data link connector and the multi display unit harness connector.

Data link connector		Multi display unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M90	6	Existed
	14		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 data link connector and the multi display unit.

NO >> Repair the main line between the data link connector and the multi display unit.

ECM BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 2)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749912

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E18	100	99	Approx. 108 – 132

Is the measurement value within the specification?

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

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to [EC-170, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the ECM. Refer to [EC-561, "Removal and Installation"](#).
YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

A
B
C
D
E
F
G
H
I
J
K
L
N
O
P

LAN

ABS BRANCH LINE CIRCUIT**Diagnosis Procedure**

INFOID:000000009749913

1.CHECK CONNECTOR

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

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

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

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E35	22	9	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

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

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to [BRC-114, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to [BRC-138, "Removal and Installation"](#).

YES (Past error)>>Error was detected in the ABS actuator and electric unit (control unit) branch line.

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

IPDM-E BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 2)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749914

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E13	27	26	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 the following.

- Models with Intelligent Key system: [PCS-33, "Diagnosis Procedure"](#)
- Models without Intelligent Key system: [PCS-61, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the IPDM E/R. Refer to the following.
- Models with Intelligent Key system: [PCS-34, "Removal and Installation"](#)
 - Models without Intelligent Key system: [PCS-62, "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.

A
B
C
D
E
F
G
H
I
J
K
L
N
O
P

LAN

DLC BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 2)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749915

1.CHECK CONNECTOR

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

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M4	6	14	Approx. 54 – 66

Is the measurement value within the specification?

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

YES (Past error)>>Error was detected in the data link connector branch line circuit.

NO >> Repair the data link connector branch line.

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749916

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M37	2	1	Approx. 54 – 66

Is the measurement value within the specification?

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

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

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

Is the inspection result normal?

- YES (Present error)>>Replace the EPS control unit. Refer to [ST-11, "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.

A
B
C
D
E
F
G
H
I
J
K
L
N
O
P

LAN

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749917

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M34	1	2	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-50, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the combination meter. Refer to [MWI-61, "Removal and Installation"](#).
 YES (Past error)>>Error was detected in the combination meter branch line.
 NO >> Repair the power supply and the ground circuit.

STRG BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 2)]

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749918

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M30	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-52, "Wiring Diagram"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the steering angle sensor. Refer to [BRC-141, "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.

LAN

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749919

WARNING:

- Before servicing, turn ignition switch OFF, disconnect battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.)
- Never use unspecified tester or other measuring device.

1.CHECK CONNECTOR

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

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace the main harness.

2.CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to [SRC-32, "Work Flow"](#).

Is the inspection result normal?

YES >> Replace the main harness.

NO >> Replace parts whose air bag system has a malfunction.

HVAC BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 2)]

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749920

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the A/C auto amp. for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M50	6	7	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the A/C auto amp. branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the A/C auto amp. Refer to [HAC-72, "A/C AUTO AMP. : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the A/C auto amp. Refer to [HAC-90, "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.

A
B
C
D
E
F
G
H
I
J
K
L
N
O
P

LAN

MDU BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749921

1.CHECK CONNECTOR

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

Multi display unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M90	6	12	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the multi display unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the multi display unit. Refer to [AV-181, "MULTI DISPLAY UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the multi display unit. Refer to [DMS-13, "Removal and Installation"](#).

YES (Past error)>>Error was detected in the multi display unit branch line.

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

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749922

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of BCM.
 2. Check the resistance between the BCM harness connector terminals.
- Models with Intelligent Key system

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M68	39	40	Approx. 108 – 132

- Models without Intelligent Key system

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M65	39	40	Approx. 108 – 132

Is the measurement value within the specification?

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

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to the following.

- Models with Intelligent Key system: [BCS-83, "Diagnosis Procedure"](#)
- Models without Intelligent Key system: [BCS-150, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to the following.
- Models with Intelligent Key system: [BCS-90, "Removal and Installation"](#)
 - Models without Intelligent Key system: [BCS-157, "Removal and Installation"](#)

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

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

A
B
C
D
E
F
G
H
I
J
K
L
N
O
P

LAN

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000009749923

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication system.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M4	6	14	Not existed

Is the inspection result normal?

YES >> GO TO 3.

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

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

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

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M4	6		Not existed
	14		Not existed

Is the inspection result normal?

YES >> GO TO 4.

NO >> Check the harness and repair 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.		
100	99	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
39	40	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.

CAN COMMUNICATION CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 2)]

Inspection result

Reproduced>>GO TO 6.

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

6.CHECK UNIT REPRODUCTION

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

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication system.

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.

A

B

C

D

E

F

G

H

I

J

K

L

LAN

N

O

P

MAIN LINE BETWEEN IPDM-E AND DLC CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 3)]

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN IPDM-E AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000009749924

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).
 - Harness connector E105
 - Harness connector M77

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 E105 and M77
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.	
E13	27	E105	1	Existed
	26		6	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the main line between the IPDM E/R and the harness connector E105.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

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

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M77	1	M4	6	Existed
	6		14	Existed

Is the inspection result normal?

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

YES (Past error)>>Error was detected in the main line between the IPDM E/R and the data link connector.

NO >> Repair the main line between the harness connector M77 and the data link connector.

MAIN LINE BETWEEN DLC AND A-BAG CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 3)]

MAIN LINE BETWEEN DLC AND A-BAG CIRCUIT

Diagnosis Procedure

INFOID:000000009749925

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the BCM harness connector.
4. Check the continuity between the data link connector and the BCM harness connector.
 - With Intelligent Key system

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M68	39	Existed
	14		40	Existed

- Without Intelligent Key system

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	39	Existed
	14		40	Existed

Is the inspection result normal?

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

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

NO >> Repair the main line between the data link connector and the air bag diagnosis sensor unit.

LAN

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749926

1.CHECK CONNECTOR

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

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

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

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E18	100	99	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to [EC-170, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to [EC-561, "Removal and Installation"](#).

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

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

ABS BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 3)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749927

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E35	22	9	Approx. 54 – 66

Is the measurement value within the specification?

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

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to [BRC-114, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to [BRC-138, "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.

LAN

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749928

1.CHECK CONNECTOR

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

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

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

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E13	27	26	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 the following.

- Models with Intelligent Key system: [PCS-33, "Diagnosis Procedure"](#)
- Models without Intelligent Key system: [PCS-61, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to the following.

- Models with Intelligent Key system: [PCS-34, "Removal and Installation"](#)
- Models without Intelligent Key system: [PCS-62, "Removal and Installation"](#)

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

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

TCM BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 3)]

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010283635

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
 - TCM
 - Harness connector F1
 - Harness connector E8

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

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

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F81	32	31	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the TCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to [TM-272, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the TCM. Refer to [TM-320, "Removal and Installation"](#).

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

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

LAN

DLC BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 3)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749930

1.CHECK CONNECTOR

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

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M4	6	14	Approx. 54 – 66

Is the measurement value within the specification?

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

YES (Past error)>>Error was detected in the data link connector branch line circuit.

NO >> Repair the data link connector branch line.

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749931

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M37	2	1	Approx. 54 – 66

Is the measurement value within the specification?

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

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

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

Is the inspection result normal?

- YES (Present error)>>Replace the EPS control unit. Refer to [ST-11, "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.

A
B
C
D
E
F
G
H
I
J
K
L
N
O
P

LAN

M&A BRANCH LINE CIRCUIT**Diagnosis Procedure**

INFOID:000000009749932

1.CHECK CONNECTOR

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

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

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

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M34	1	2	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-50, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?YES (Present error)>>Replace the combination meter. Refer to [MWI-61, "Removal and Installation"](#).

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

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

STRG BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 3)]

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749933

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M30	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-52, "Wiring Diagram"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the steering angle sensor. Refer to [BRC-141, "Removal and Installation"](#).
YES (Past error)>>Error was detected in the steering angle sensor branch line.
NO >> Repair the power supply and the ground circuit.

A
B
C
D
E
F
G
H
I
J
K
L
N
O
P

LAN

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749934

WARNING:

- Before servicing, turn ignition switch OFF, disconnect battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.)
- Never use unspecified tester or other measuring device.

1.CHECK CONNECTOR

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

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace the main harness.

2.CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to [SRC-32, "Work Flow"](#).

Is the inspection result normal?

YES >> Replace the main harness.

NO >> Replace parts whose air bag system has a malfunction.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749935

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of BCM.
 2. Check the resistance between the BCM harness connector terminals.
- Models with Intelligent Key system

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M68	39	40	Approx. 108 – 132

- Models without Intelligent Key system

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M65	39	40	Approx. 108 – 132

Is the measurement value within the specification?

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

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to the following.

- Models with Intelligent Key system: [BCS-83, "Diagnosis Procedure"](#)
- Models without Intelligent Key system: [BCS-150, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to the following.
- Models with Intelligent Key system: [BCS-90, "Removal and Installation"](#)
 - Models without Intelligent Key system: [BCS-157, "Removal and Installation"](#)

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

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

A
B
C
D
E
F
G
H
I
J
K
L
N
O
P

LAN

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000009749936

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication system.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M4	6	14	Not existed

Is the inspection result normal?

YES >> GO TO 3.

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

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

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

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M4	6		Not existed
	14		Not existed

Is the inspection result normal?

YES >> GO TO 4.

NO >> Check the harness and repair 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.		
100	99	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
39	40	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.

CAN COMMUNICATION CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 3)]

Inspection result

Reproduced>>GO TO 6.

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

6.CHECK UNIT REPRODUCTION

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

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication system.

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.

A

B

C

D

E

F

G

H

I

J

K

L

LAN

N

O

P

MAIN LINE BETWEEN IPDM-E AND DLC CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 4)]

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN IPDM-E AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000009749937

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).
 - Harness connector E105
 - Harness connector M77

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 E105 and M77
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.	
E13	27	E105	1	Existed
	26		6	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the main line between the IPDM E/R and the harness connector E105.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

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

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M77	1	M4	6	Existed
	6		14	Existed

Is the inspection result normal?

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

YES (Past error)>>Error was detected in the main line between the IPDM E/R and the data link connector.

NO >> Repair the main line between the harness connector M77 and the data link connector.

MAIN LINE BETWEEN DLC AND MDU CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 4)]

MAIN LINE BETWEEN DLC AND MDU CIRCUIT

Diagnosis Procedure

INFOID:000000010283628

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - Multi display unit
4. Check the continuity between the data link connector and the multi display unit harness connector.

Data link connector		Multi display unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M90	6	Existed
	14		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 data link connector and the multi display unit.

NO >> Repair the main line between the data link connector and the multi display unit.

LAN

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749939

1.CHECK CONNECTOR

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

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

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

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E18	100	99	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to [EC-170, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to [EC-561, "Removal and Installation"](#).

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

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

ABS BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 4)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749940

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E35	22	9	Approx. 54 – 66

Is the measurement value within the specification?

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

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to [BRC-114, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to [BRC-138, "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.

LAN

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749941

1.CHECK CONNECTOR

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

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

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

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E13	27	26	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 the following.

- Models with Intelligent Key system: [PCS-33, "Diagnosis Procedure"](#)
- Models without Intelligent Key system: [PCS-61, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to the following.

- Models with Intelligent Key system: [PCS-34, "Removal and Installation"](#)
- Models without Intelligent Key system: [PCS-62, "Removal and Installation"](#)

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

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

TCM BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 4)]

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000010283636

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
 - TCM
 - Harness connector F1
 - Harness connector E8

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

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

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F81	32	31	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the TCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to [TM-272, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the TCM. Refer to [TM-320, "Removal and Installation"](#).

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

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

A
B
C
D
E
F
G
H
I
J
K
L
N
O
P

LAN

DLC BRANCH LINE CIRCUIT**Diagnosis Procedure**

INFOID:000000009749943

1.CHECK CONNECTOR

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

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M4	6	14	Approx. 54 – 66

Is the measurement value within the specification?

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

YES (Past error)>>Error was detected in the data link connector branch line circuit.

NO >> Repair the data link connector branch line.

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749944

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M37	2	1	Approx. 54 – 66

Is the measurement value within the specification?

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

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

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

Is the inspection result normal?

- YES (Present error)>>Replace the EPS control unit. Refer to [ST-11, "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.

A
B
C
D
E
F
G
H
I
J
K
L
N
O
P

LAN

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749945

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M34	1	2	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-50, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the combination meter. Refer to [MWI-61, "Removal and Installation"](#).
YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

STRG BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 4)]

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749946

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M30	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-52, "Wiring Diagram"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the steering angle sensor. Refer to [BRC-141, "Removal and Installation"](#).
YES (Past error)>>Error was detected in the steering angle sensor branch line.
NO >> Repair the power supply and the ground circuit.

A
B
C
D
E
F
G
H
I
J
K
L
N
O
P

LAN

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749947

WARNING:

- Before servicing, turn ignition switch OFF, disconnect battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.)
- Never use unspecified tester or other measuring device.

1.CHECK CONNECTOR

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

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace the main harness.

2.CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to [SRC-32, "Work Flow"](#).

Is the inspection result normal?

YES >> Replace the main harness.

NO >> Replace parts whose air bag system has a malfunction.

HVAC BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 4)]

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749948

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the A/C auto amp. for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M50	6	7	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the A/C auto amp. branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the A/C auto amp. Refer to [HAC-72, "A/C AUTO AMP. : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the A/C auto amp. Refer to [HAC-90, "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.

A
B
C
D
E
F
G
H
I
J
K
L
N
O
P

LAN

MDU BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749949

1.CHECK CONNECTOR

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

Multi display unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M90	6	12	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
 NO >> Repair the multi display unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the multi display unit. Refer to [AV-181, "MULTI DISPLAY UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the multi display unit. Refer to [DMS-13, "Removal and Installation"](#).
 YES (Past error)>>Error was detected in the multi display unit branch line.
 NO >> Repair the power supply and the ground circuit.

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749950

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of BCM.
 2. Check the resistance between the BCM harness connector terminals.
- Models with Intelligent Key system

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M68	39	40	Approx. 108 – 132

- Models without Intelligent Key system

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M65	39	40	Approx. 108 – 132

Is the measurement value within the specification?

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

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to the following.

- Models with Intelligent Key system: [BCS-83, "Diagnosis Procedure"](#)
- Models without Intelligent Key system: [BCS-150, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to the following.
- Models with Intelligent Key system: [BCS-90, "Removal and Installation"](#)
 - Models without Intelligent Key system: [BCS-157, "Removal and Installation"](#)

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

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

A
B
C
D
E
F
G
H
I
J
K
L
N
O
P

LAN

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000009749951

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication system.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M4	6	14	Not existed

Is the inspection result normal?

YES >> GO TO 3.

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

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

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

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M4	6		Not existed
	14		Not existed

Is the inspection result normal?

YES >> GO TO 4.

NO >> Check the harness and repair 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.		
100	99	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
39	40	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.

CAN COMMUNICATION CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 4)]

Inspection result

Reproduced>>GO TO 6.

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

6.CHECK UNIT REPRODUCTION

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

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication system.

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.

A

B

C

D

E

F

G

H

I

J

K

L

LAN

N

O

P

MAIN LINE BETWEEN IPDM-E AND DLC CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 5)]

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN IPDM-E AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000009749952

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).
 - Harness connector E105
 - Harness connector M77

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 E105 and M77
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.	
E13	27	E105	1	Existed
	26		6	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the main line between the IPDM E/R and the harness connector E105.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

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

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M77	1	M4	6	Existed
	6		14	Existed

Is the inspection result normal?

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

YES (Past error)>>Error was detected in the main line between the IPDM E/R and the data link connector.

NO >> Repair the main line between the harness connector M77 and the data link connector.

MAIN LINE BETWEEN DLC AND A-BAG CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 5)]

MAIN LINE BETWEEN DLC AND A-BAG CIRCUIT

Diagnosis Procedure

INFOID:000000009749953

1.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the BCM harness connector.
4. Check the continuity between the data link connector and the BCM harness connector.
 - With Intelligent Key system

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M68	39	Existed
	14		40	Existed

- Without Intelligent Key system

Data link connector		BCM harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M65	39	Existed
	14		40	Existed

Is the inspection result normal?

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

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

NO >> Repair the main line between the data link connector and the air bag diagnosis sensor unit.

LAN

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749954

1.CHECK CONNECTOR

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

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

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

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E18	100	99	Approx. 108 – 132

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the ECM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to [EC-170, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the ECM. Refer to [EC-561, "Removal and Installation"](#).

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

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

4WD BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 5)]

4WD BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:0000000010283637

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
 - AWD control module
 - Harness connector B7
 - Harness connector E107

Is the 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 module.
2. Check the resistance between the AWD control module harness connector terminals.

AWD control module harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B47	4	5	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the AWD control module branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the AWD control module. Refer to [DLN-76, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the AWD control module. Refer to [DLN-90, "Removal and Installation"](#).

YES (Past error)>>Error was detected in the AWD control module branch line.

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

LAN

ABS BRANCH LINE CIRCUIT**Diagnosis Procedure**

INFOID:000000009749956

1.CHECK CONNECTOR

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

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

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

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E35	22	9	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

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

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to [BRC-114, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to [BRC-138, "Removal and Installation"](#).

YES (Past error)>>Error was detected in the ABS actuator and electric unit (control unit) branch line.

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

IPDM-E BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 5)]

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749957

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E13	27	26	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 the following.

- Models with Intelligent Key system: [PCS-33, "Diagnosis Procedure"](#)
- Models without Intelligent Key system: [PCS-61, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the IPDM E/R. Refer to the following.
- Models with Intelligent Key system: [PCS-34, "Removal and Installation"](#)
 - Models without Intelligent Key system: [PCS-62, "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.

LAN

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000010283638

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
 - TCM
 - Harness connector F1
 - Harness connector E8

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

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

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F81	32	31	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the TCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to [TM-272, "Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the TCM. Refer to [TM-320, "Removal and Installation"](#).

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

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

DLC BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 5)]

DLC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749959

1.CHECK CONNECTOR

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

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

Check the resistance between the data link connector terminals.

Data link connector			Resistance (Ω)
Connector No.	Terminal No.		
M4	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.

LAN

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749960

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M37	2	1	Approx. 54 – 66

Is the measurement value within the specification?

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

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

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

Is the inspection result normal?

- YES (Present error)>>Replace the EPS control unit. Refer to [ST-11, "Removal and Installation"](#).
 YES (Past error)>>Error was detected in the EPS control unit branch line.
 NO >> Repair the power supply and the ground circuit.

M&A BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 5)]

M&A BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749961

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M34	1	2	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-50, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the combination meter. Refer to [MWI-61, "Removal and Installation"](#).
YES (Past error)>>Error was detected in the combination meter branch line.
NO >> Repair the power supply and the ground circuit.

A
B
C
D
E
F
G
H
I
J
K
L
N
O
P

LAN

STRG BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 5)]

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749962

1.CHECK CONNECTOR

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

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M30	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-52, "Wiring Diagram"](#).

Is the inspection result normal?

YES (Present error)>>Replace the steering angle sensor. Refer to [BRC-141, "Removal and Installation"](#).

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

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

A-BAG BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 5)]

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749963

WARNING:

- Before servicing, turn ignition switch OFF, disconnect battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.)
- Never use unspecified tester or other measuring device.

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to [SRC-32, "Work Flow"](#).

Is the inspection result normal?

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

A
B
C
D
E
F
G
H
I
J
K
L
N
O
P

LAN

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749964

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of BCM.
2. Check the resistance between the BCM harness connector terminals.
- Models with Intelligent Key system

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M68	39	40	Approx. 108 – 132

- Models without Intelligent Key system

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M65	39	40	Approx. 108 – 132

Is the measurement value within the specification?

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

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to the following.

- Models with Intelligent Key system: [BCS-83, "Diagnosis Procedure"](#)
- Models without Intelligent Key system: [BCS-150, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to the following.
- Models with Intelligent Key system: [BCS-90, "Removal and Installation"](#)
 - Models without Intelligent Key system: [BCS-157, "Removal and Installation"](#)

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

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

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000009749965

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication system.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M4	6	14	Not existed

Is the inspection result normal?

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

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

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

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M4	6		Not existed
	14		Not existed

Is the inspection result normal?

- YES >> GO TO 4.
 NO >> Check the harness and repair 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.		
100	99	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
39	40	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.

CAN COMMUNICATION CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 5)]

Inspection result

Reproduced>>GO TO 6.

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

6.CHECK UNIT REPRODUCTION

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

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication system.

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.

MAIN LINE BETWEEN IPDM-E AND DLC CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 6)]

DTC/CIRCUIT DIAGNOSIS

MAIN LINE BETWEEN IPDM-E AND DLC CIRCUIT

Diagnosis Procedure

INFOID:000000009749966

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (connector side and harness side).
 - Harness connector E105
 - Harness connector M77

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 E105 and M77
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.	
E13	27	E105	1	Existed
	26		6	Existed

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair the main line between the IPDM E/R and the harness connector E105.

3.CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

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

Harness connector		Data link connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M77	1	M4	6	Existed
	6		14	Existed

Is the inspection result normal?

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

YES (Past error)>>Error was detected in the main line between the IPDM E/R and the data link connector.

NO >> Repair the main line between the harness connector M77 and the data link connector.

A
B
C
D
E
F
G
H
I
J
K
L
LAN
N
O
P

MAIN LINE BETWEEN DLC AND MDU CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 6)]

MAIN LINE BETWEEN DLC AND MDU CIRCUIT

Diagnosis Procedure

INFOID:000000010283629

1. CHECK HARNESS CONTINUITY (OPEN CIRCUIT)

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect the following harness connectors.
 - ECM
 - Multi display unit
4. Check the continuity between the data link connector and the multi display unit harness connector.

Data link connector		Multi display unit harness connector		Continuity
Connector No.	Terminal No.	Connector No.	Terminal No.	
M4	6	M90	6	Existed
	14		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 data link connector and the multi display unit.

NO >> Repair the main line between the data link connector and the multi display unit.

ECM BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 6)]

ECM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749968

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

ECM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E18	100	99	Approx. 108 – 132

Is the measurement value within the specification?

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

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ECM. Refer to [EC-170, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the ECM. Refer to [EC-561, "Removal and Installation"](#).
YES (Past error)>>Error was detected in the ECM branch line.
NO >> Repair the power supply and the ground circuit.

A
B
C
D
E
F
G
H
I
J
K
L
N
O
P

LAN

4WD BRANCH LINE CIRCUIT**Diagnosis Procedure**

INFOID:000000010283644

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
 - AWD control module
 - Harness connector B7
 - Harness connector E107

Is the 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 module.
2. Check the resistance between the AWD control module harness connector terminals.

AWD control module harness connector			Resistance (Ω)
Connector No.	Terminal No.		
B47	4	5	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the AWD control module branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the AWD control module. Refer to [DLN-76, "Diagnosis Procedure"](#).

Is the inspection result normal?YES (Present error)>>Replace the AWD control module. Refer to [DLN-90, "Removal and Installation"](#).

YES (Past error)>>Error was detected in the AWD control module branch line.

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

ABS BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 6)]

ABS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749970

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

ABS actuator and electric unit (control unit) harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E35	22	9	Approx. 54 – 66

Is the measurement value within the specification?

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

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the ABS actuator and electric unit (control unit). Refer to [BRC-114, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the ABS actuator and electric unit (control unit). Refer to [BRC-138, "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.

A
B
C
D
E
F
G
H
I
J
K
L
N
O
P

LAN

IPDM-E BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749971

1.CHECK CONNECTOR

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

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

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

IPDM E/R harness connector			Resistance (Ω)
Connector No.	Terminal No.		
E13	27	26	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 the following.

- Models with Intelligent Key system: [PCS-33, "Diagnosis Procedure"](#)
- Models without Intelligent Key system: [PCS-61, "Diagnosis Procedure"](#)

Is the inspection result normal?

YES (Present error)>>Replace the IPDM E/R. Refer to the following.

- Models with Intelligent Key system: [PCS-34, "Removal and Installation"](#)
- Models without Intelligent Key system: [PCS-62, "Removal and Installation"](#)

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

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

TCM BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 6)]

TCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749972

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
 - TCM
 - Harness connecotor F1
 - Harness connecotor E8

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F81	32	31	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the TCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the TCM. Refer to [TM-272, "Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the TCM. Refer to [TM-320, "Removal and Installation"](#).
YES (Past error)>>Error was detected in the TCM branch line.
NO >> Repair the power supply and the ground circuit.

A
B
C
D
E
F
G
H
I
J
K
L
N
O
P

LAN

DLC BRANCH LINE CIRCUIT**Diagnosis Procedure**

INFOID:000000010283645

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the following terminals and connectors for damage, bend and loose connection (unit side and connector side).
 - TCM
 - Harness connector F1
 - Harness connector E8

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

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

TCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
F81	32	31	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the TCM branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUITCheck the power supply and the ground circuit of the TCM. Refer to [TM-272, "Diagnosis Procedure"](#).Is the inspection result normal?YES (Present error)>>Replace the TCM. Refer to [TM-320, "Removal and Installation"](#).

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

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

EPS BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749974

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of EPS control unit.
2. Check the resistance between the EPS control unit harness connector terminals.

EPS control unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M37	2	1	Approx. 54 – 66

Is the measurement value within the specification?

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

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

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

Is the inspection result normal?

- YES (Present error)>>Replace the EPS control unit. Refer to [ST-11, "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.

A
B
C
D
E
F
G
H
I
J
K
L
N
O
P

LAN

M&A BRANCH LINE CIRCUIT**Diagnosis Procedure**

INFOID:000000009749975

1.CHECK CONNECTOR

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

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS FOR OPEN CIRCUIT

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

Combination meter harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M34	1	2	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-50, "COMBINATION METER : Diagnosis Procedure"](#).

Is the inspection result normal?YES (Present error)>>Replace the combination meter. Refer to [MWI-61, "Removal and Installation"](#).

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

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

STRG BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 6)]

STRG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749976

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of steering angle sensor.
2. Check the resistance between the steering angle sensor harness connector terminals.

Steering angle sensor harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M30	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-52, "Wiring Diagram"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the steering angle sensor. Refer to [BRC-141, "Removal and Installation"](#).
YES (Past error)>>Error was detected in the steering angle sensor branch line.
NO >> Repair the power supply and the ground circuit.

A
B
C
D
E
F
G
H
I
J
K
L
N
O
P

LAN

A-BAG BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749977

WARNING:

- Before servicing, turn ignition switch OFF, disconnect battery negative terminal, and wait 3 minutes or more. (To discharge backup capacitor.)
- Never use unspecified tester or other measuring device.

1.CHECK CONNECTOR

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

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace the main harness.

2.CHECK AIR BAG DIAGNOSIS SENSOR UNIT

Check the air bag diagnosis sensor unit. Refer to [SRC-32, "Work Flow"](#).

Is the inspection result normal?

YES >> Replace the main harness.

NO >> Replace parts whose air bag system has a malfunction.

HVAC BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 6)]

HVAC BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749978

1.CHECK CONNECTOR

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Check the terminals and connectors of the A/C auto amp. for damage, bend and loose connection (unit side and connector side).

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

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

A/C auto amp. harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M50	6	7	Approx. 54 – 66

Is the measurement value within the specification?

- YES >> GO TO 3.
NO >> Repair the A/C auto amp. branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the A/C auto amp. Refer to [HAC-72, "A/C AUTO AMP. : Diagnosis Procedure"](#).

Is the inspection result normal?

- YES (Present error)>>Replace the A/C auto amp. Refer to [HAC-90, "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.

A
B
C
D
E
F
G
H
I
J
K
L
N
O
P

LAN

MDU BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749979

1.CHECK CONNECTOR

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

Multi display unit harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M90	6	12	Approx. 54 – 66

Is the measurement value within the specification?

YES >> GO TO 3.

NO >> Repair the multi display unit branch line.

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the multi display unit. Refer to [AV-181, "MULTI DISPLAY UNIT : Diagnosis Procedure"](#).

Is the inspection result normal?

YES (Present error)>>Replace the multi display unit. Refer to [DMS-13, "Removal and Installation"](#).

YES (Past error)>>Error was detected in the multi display unit branch line.

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

BCM BRANCH LINE CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 6)]

BCM BRANCH LINE CIRCUIT

Diagnosis Procedure

INFOID:000000009749980

1.CHECK CONNECTOR

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

Is the inspection result normal?

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

2.CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect the connector of BCM.
 2. Check the resistance between the BCM harness connector terminals.
- Models with Intelligent Key system

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M68	39	40	Approx. 108 – 132

- Models without Intelligent Key system

BCM harness connector			Resistance (Ω)
Connector No.	Terminal No.		
M65	39	40	Approx. 108 – 132

Is the measurement value within the specification?

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

3.CHECK POWER SUPPLY AND GROUND CIRCUIT

Check the power supply and the ground circuit of the BCM. Refer to the following.

- Models with Intelligent Key system: [BCS-83, "Diagnosis Procedure"](#)
- Models without Intelligent Key system: [BCS-150, "Diagnosis Procedure"](#)

Is the inspection result normal?

- YES (Present error)>>Replace the BCM. Refer to the following.
- Models with Intelligent Key system: [BCS-90, "Removal and Installation"](#)
 - Models without Intelligent Key system: [BCS-157, "Removal and Installation"](#)

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

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

A
B
C
D
E
F
G
H
I
J
K
L
N
O
P

LAN

CAN COMMUNICATION CIRCUIT

Diagnosis Procedure

INFOID:000000009749981

1.CONNECTOR INSPECTION

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect all the unit connectors on CAN communication system.
4. Check terminals and connectors for damage, bend and loose connection.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair the terminal and connector.

2.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

Check the continuity between the data link connector terminals.

Data link connector			Continuity
Connector No.	Terminal No.		
M4	6	14	Not existed

Is the inspection result normal?

YES >> GO TO 3.

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

3.CHECK HARNESS CONTINUITY (SHORT CIRCUIT)

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

Data link connector		Ground	Continuity
Connector No.	Terminal No.		
M4	6		Not existed
	14		Not existed

Is the inspection result normal?

YES >> GO TO 4.

NO >> Check the harness and repair 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.		
100	99	Approx. 108 – 132

3. Check the resistance between the BCM terminals.

BCM		Resistance (Ω)
Terminal No.		
39	40	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.

CAN COMMUNICATION CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[CAN SYSTEM (TYPE 6)]

Inspection result

Reproduced>>GO TO 6.

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

6.CHECK UNIT REPRODUCTION

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

1. Turn the ignition switch OFF.
2. Disconnect the battery cable from the negative terminal.
3. Disconnect one of the unit connectors of CAN communication system.

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.

A

B

C

D

E

F

G

H

I

J

K

L

LAN

N

O

P