# SECTION LAN SYSTEM

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# CONTENTS

#### CAN

PRECAUTIONS
Precautions for Supplemental Restraint System
(SRS) "AIR BAG" and "SEAT BELT PRE-TEN-
SIONER"
Precautions for Battery Service
Precautions When Using CONSULT-II
CHECK POINTS FOR USING CONSULT-II
Precautions For Trouble Diagnosis
CAN SYSTEM
Precautions For Harness Repair
CAN SYSTEM 4
TROUBLE DIAGNOSES WORK FLOW
When Displaying CAN Communication System
Errors
WHEN A MALFUNCTION IS DETECTED BY
CAN COMMUNICATION SYSTEM 5
WHEN A MALFUNCTION IS DETECTED
EXCEPT CAN COMMUNICATION SYSTEM 5
TROUBLE DIAGNOSIS FLOW CHART 6
Diagnosis Procedure7
SELECTING CAN SYSTEM TYPE (HOW TO
USE SPECIFICATION TABLE)
ACQUISITION OF DATA BY CONSULT-II
HOW TO USE CHECK SHEET TABLE
CAN Diagnostic Support Monitor
DESCRIPTION OF "CAN DIAG SUPPORT
MNTR" SCREEN FOR ECM 15
DESCRIPTION OF "CAN DIAG SUPPORT
MNTR" SCREEN FOR TCM 16
DESCRIPTION OF "CAN DIAG SUPPORT
MNTR" SCREEN FOR UNIFIED METER AND A/
C AMP 17
DESCRIPTION OF "CAN DIAG SUPPORT
MNTR" SCREEN FOR BCM 18
DESCRIPTION OF "CAN DIAG SUPPORT
MNTR" SCREEN FOR ABS ACTUATOR AND
ELECTRIC UNIT (CONTROL UNIT) 18
DESCRIPTION OF "CAN DIAG SUPPORT
MNTR" SCREEN FOR VDC/TCS/ABS CON-

TROL UNIT19	F
DESCRIPTION OF "CAN DIAG SUPPORT	
MNTR" SCREEN FOR IPDM E/R20	
CAN COMMUNICATION21	G
System Description21	
CAN Communication Unit21	
TYPE 122	Н
TYPE 224	11
TYPE 325	
TYPE 4	
TYPE 5	
CAN SYSTEM (TYPE 1)	
System Description	
Component Parts and Harness Connector Location 30	J
Wiring Diagram — CAN —	
CHECK SHEET	
CHECK SHEET RESULTS (EXAMPLE)	LAN
Inspection Between TCM and Data Link Connector	
Circuit	
Inspection Between Data Link Connector and ABS	
Actuator and Electric Unit (Control Unit) Circuit 45	L
ECM Circuit Inspection46	
TCM Circuit Inspection47	
Data Link Connector Circuit Inspection47	M
Unified Meter and A/C Amp. Circuit Inspection 48	
BCM Circuit Inspection48	
ABS Actuator and Electric Unit (Control Unit) Circuit	
Inspection49	
IPDM E/R Circuit Inspection49	
CAN Communication Circuit Inspection50	
IPDM E/R Ignition Relay Circuit Inspection53	
CAN SYSTEM (TYPE 2)54	
System Description54	
Component Parts and Harness Connector Location 54	
Wiring Diagram — CAN —	
CHECK SHEET	
CHECK SHEET RESULTS (EXAMPLE)59	
Inspection Between Data Link Connector and ABS	
Actuator and Electric Unit (Control Unit) Circuit 66	
ECM Circuit Inspection	

Data Link Connector Circuit Inspection68
Unified Meter and A/C Amp. Circuit Inspection 68
BCM Circuit Inspection69
ABSActuator and Electric Unit (Control Unit) Circuit
Inspection69
IPDM E/R Circuit Inspection70
CAN Communication Circuit Inspection71
IPDM E/R Ignition Relay Circuit Inspection74
CAN SYSTEM (TYPE 3)75
System Description75
Component Parts and Harness Connector Location75
Wiring Diagram — CAN —76
CHECK SHEET
CHECK SHEET RESULTS (EXAMPLE)80
Inspection Between Data Link Connector and ABS
Actuator and Electric Unit (Control Unit) Circuit 87
ECM Circuit Inspection
Data Link Connector Circuit Inspection
Unified Meter and A/C Amp. Circuit Inspection 89
BCM Circuit Inspection
ABS Actuator and Electric Unit (Control Unit) Circuit
Inspection
IPDM E/R Circuit Inspection
CAN Communication Circuit Inspection
IPDM E/R Ignition Relay Circuit Inspection
CAN SYSTEM (TYPE 4)
System Description
Component Parts and Harness Connector Location96
Wiring Diagram — CAN —97 CHECK SHEET99
CHECK SHEET RESULTS (EXAMPLE)

Inspection Between Data Link Connector and VDC/
TCS/ABS Control Unit Circuit109
ECM Circuit Inspection110
Data Link Connector Circuit Inspection 111
Unified Meter and A/C Amp. Circuit Inspection 111
BCM Circuit Inspection112
Steering Angle Sensor Circuit Inspection112
VDC/TCS/ABS Control Unit Circuit Inspection 113
IPDM E/R Circuit Inspection113
CAN Communication Circuit Inspection114
IPDM E/R Ignition Relay Circuit Inspection117
CAN SYSTEM (TYPE 5)118
System Description118
Component Parts and Harness Connector Location 118
Wiring Diagram — CAN —119
CHECK SHEET121
CHECK SHEET RESULTS (EXAMPLE)123
Inspection Between TCM and Data Link Connector
Circuit134
Inspection Between Data Link Connector and VDC/
TCS/ABS Control Unit Circuit134
ECM Circuit Inspection135
TCM Circuit Inspection136
Data Link Connector Circuit Inspection136
Unified Meter and A/C Amp. Circuit Inspection137
BCM Circuit Inspection137
Steering Angle Sensor Circuit Inspection138
VDC/TCS/ABS Control Unit Circuit Inspection138
IPDM E/R Circuit Inspection139
CAN Communication Circuit Inspection139
IPDM E/R Ignition Relay Circuit Inspection142

# PRECAUTIONS

# PRECAUTIONS

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

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

#### WARNING:

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the SRS section.
- Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.

#### **Precautions for Battery Service**

Before disconnecting the battery, lower both the driver and passenger windows. This will prevent any interference between the window edge and the vehicle when the door is opened/closed. During normal operation, the window slightly raises and lowers automatically to prevent any window to vehicle interference. The automatic window function will not work with the battery disconnected.

#### **Precautions When Using CONSULT-II**

When connecting CONSULT-II to data link connector, connect them through CONSULT-II CONVERTER.

If CONSULT-II is used with no connection of CONSULT-II CONVERTER, malfunctions might be detected in self-diagnosis depending on control unit which carry out CAN communication.

#### CHECK POINTS FOR USING CONSULT-II

- 1. Has CONSULT-II been used without connecting CONSULT-II CONVERTER on this vehicle?
- If YES, GO TO 2.
- If NO, GO TO 5.
- 2. Is there any indication other than indications relating to CAN communication system in the self-diagnosis results?
- If YES, GO TO 3.
- If NO, GO TO 4.
- 3. Based on self-diagnosis results unrelated to CAN communication, carry out the inspection.
- 4. Malfunctions may be detected in self-diagnosis depending on control units carrying out CAN communication. Therefore, erase the self-diagnosis results.
- 5. Diagnose CAN communication system. Refer to LAN-5, "TROUBLE DIAGNOSES WORK FLOW" .

#### **Precautions For Trouble Diagnosis** CAN SYSTEM

- Do not apply voltage of 7.0 V or higher to the measurement terminals.
- Use the tester with its open terminal voltage being 7.0 V or less.
- Be sure to turn ignition switch OFF and disconnect the battery cable from the negative terminal before checking the circuit.

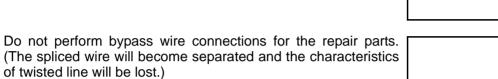
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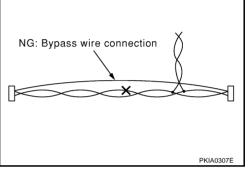
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#### Precautions For Harness Repair CAN SYSTEM

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• Solder the repaired parts, and wrap with tape. [Frays of twisted line must be within 110 mm (4.33 in).]





OK: Soldered and wound with tape

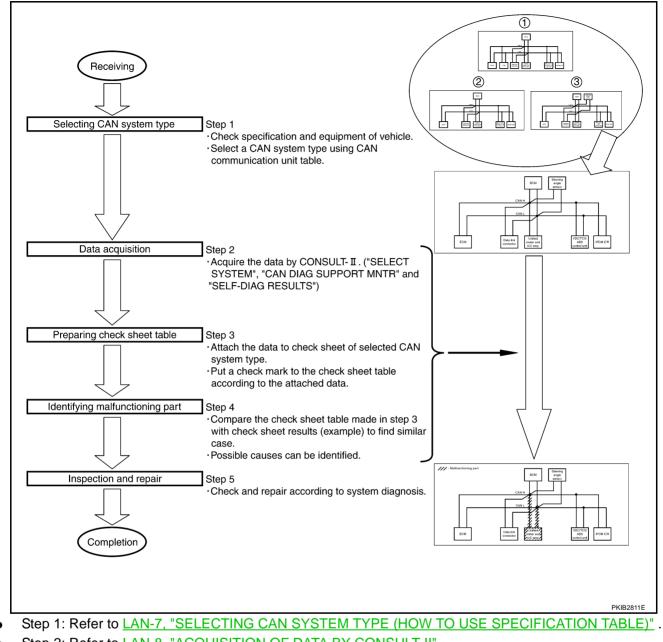
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[CAN]	
TROUBLE DIAGNOSES WORK FLOW PFP:00004	
When Displaying CAN Communication System Errors AKSODCEO WHEN A MALFUNCTION IS DETECTED BY CAN COMMUNICATION SYSTEM	
CAN communication line is open. (CAN H, CAN L, or both)	
<ul> <li>CAN communication line is shorted. (Ground, between CAN lines, or other harnesses)</li> </ul>	
<ul> <li>The areas related to CAN communication of unit is malfunctioning.</li> </ul>	
WHEN A MALFUNCTION IS DETECTED EXCEPT CAN COMMUNICATION SYSTEM	
<ul> <li>Removal and installation of parts: When the units that perform CAN communication or the sensors related to CAN communication are removed and installed, malfunction may be detected (or DTC other than CAN communication may be detected).</li> </ul>	
• Fuse blown out (removed): CAN communication of the unit may be stopped at such time.	
• Low voltage: If the voltage decreases because of battery discharge when IGN is ON, malfunction may be detected by self-diagnosis according to the units.	

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#### **TROUBLE DIAGNOSIS FLOW CHART**



- Step 2: Refer to LAN-8, "ACQUISITION OF DATA BY CONSULT-II".
- Step 3: Refer to LAN-9, "HOW TO USE CHECK SHEET TABLE".
- Step 4: Refer to LAN-10, "Example of Filling in Check Sheet When Initial Conditions Are Reproduced" .
- Step 5: Check and repair according to system diagnosis.

#### [CAN]

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#### Diagnosis Procedure SELECTING CAN SYSTEM TYPE (HOW TO USE SPECIFICATION TABLE)

Determine CAN system type from the equipment of the vehicle to select applicable check sheet.

Go to CAN system, when select	ing your	CAN Sys			ie ioliow	-			```
Body type			Coupe				Roadste	er	
Axle				21	VD				
Engine				VQ3	35DE				Check basic specification of the vehicle.
Transmission	A	/Т		M/T		A/T	N	1/T	
Brake control	TCS	VDC	ABS	TCS	VDC	TCS	TCS	VDC	J
CAN system type	1	5	2	3	4	1	3	4	Which number is selected when
CAN system trouble diagnosis	XX-XX	XX-XX	XX-XX	XX-XX	XX-XX	XX-XX	XX-XX	XX-XX	sequentially selecting from the top of
									the specification table? The number is "CAN system type" of
									the applicable vehicle.
									In the case of this example:
									It corresponds to type 4.

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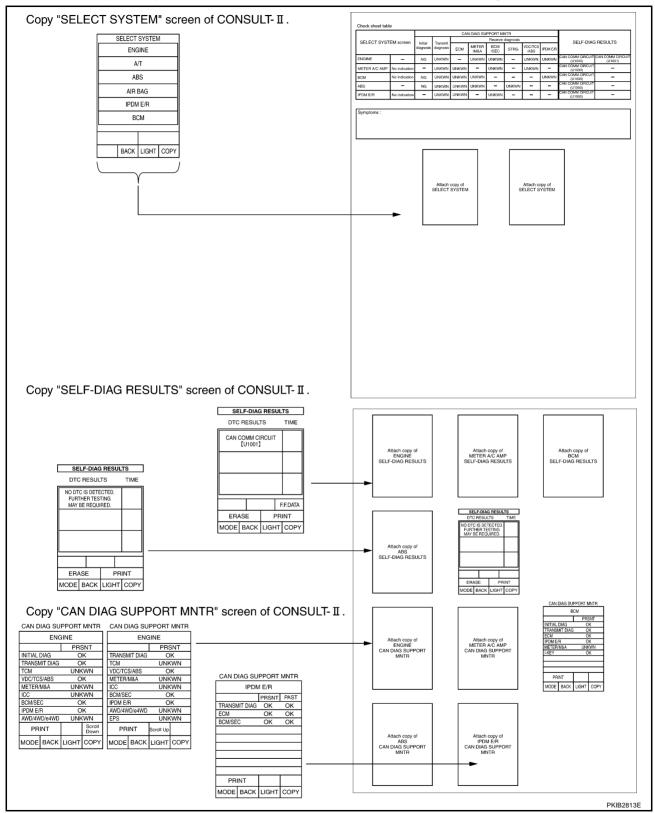
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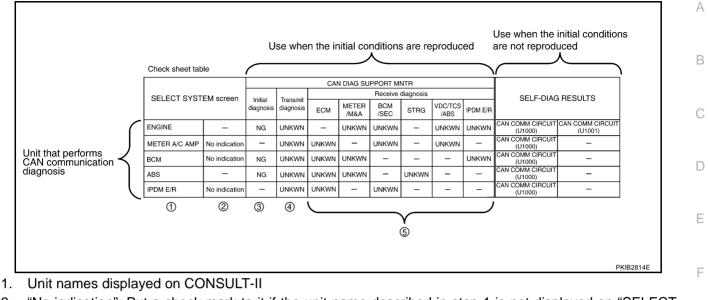
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#### **ACQUISITION OF DATA BY CONSULT-II**

Attach the data acquired by CONSULT-II on the check sheet determined according to CAN system type.



#### HOW TO USE CHECK SHEET TABLE



- "No indication": Put a check mark to it if the unit name described in step 1 is not displayed on "SELECT SYSTEM" screen of CONSULT-II. (Unit communicating with CONSULT-II via CAN communication line) "–": Column not used (Unit communicating with CONSULT-II excluding CAN communication line)
- 3. "NG": Display "NG" when malfunction is detected in the initial diagnosis of the diagnosed unit. Replace the unit if "NG" is displayed.
  - "-": Column not used (Initial diagnosis is not performed.)
- "UNKWN": Display "UNKWN" when the diagnosed unit does not transmit the data normally. Put a check mark to it if "UNKWN" is displayed on CONSULT-II.
   "-": Column not used (Transmit diagnosis is not performed.)
- 5. "UNKWN": Display "UNKWN" when the diagnosed unit does not receive the data normally. Put a check mark to it if "UNKWN" is displayed on CONSULT-II.

#### "-": Column not used (It is not necessary for CAN communication trouble diagnosis.)

#### NOTE:

CAN communication diagnosis checks if CAN communication works normally. (Contents of data are not diagnosed.)

- When the initial conditions are reproduced. Refer to <u>LAN-10</u>, "Example of Filling in Check Sheet When Initial Conditions Are Reproduced".
- When the initial conditions are not reproduced. Refer to <u>LAN-13</u>, "Example of Filling in Check Sheet When <u>Initial Conditions Are Not Reproduced</u>".

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#### Example of Filling in Check Sheet When Initial Conditions Are Reproduced CAN DIAG SUPPORT MNTR CAN DIAG SUPPORT MNT ENGINE ENGINE PRSNT PRSNT TRANSMIT DIAG INITIAL DIAG OK OK TRANSMIT DIAG OK TCM UNKWN VDC/TCS/ABS TCM UNKWN OK UNKWN OK METER/M&A VDC/TCS/ABS METER/M&A LINKWN ICC UNKWN UNKWN BCM/SEC OK BCM/SEC IPDM E/R OK OK UNKWN IPDM E/R Ok AWD/4WD/e4WD AWD/4WD/e4WD UNKWN EPS UNKWN Scroll Down PRINT PRINT Scroll Up MODE BACK LIGHT COPY MODE BACK LIGHT COPY Check sheet table CAN DIAG SUPPORT MNTR Receive diagnosis SELF-DIAG RESULTS SELECT SYSTEM screen Initial Transmi METER diagnosis BCM VDC/TCS iagnosi FCM STRG IPDM E/F /SEC /ABS <u>/M&A</u> CAN COMM CIRCUIT CAN COMM CIRCUIT ENGINE NG LINKWN \_ UNKWN INKWA \_ IINKWN UNKWN (U1000) (U1001) AN COMM CIBCU METER A/C AME No inclation UNKWN UNKWN . UNKWN \_ UNKWN (U1000) N COMM CIRCU No indicatio UNKWN \_ UNKWN BCM NG UNKWN UNKWN \_ (U1000) AN COMM CIRCUI ABS UNKWN \_ UNKWN \_ \_ \_ NG UNKWN UNKWN (U1000) COMM CIBCU IPDM E/R UNKWN UNKWN UNKWN No indication (U1000) SELECT\_SYSTEM ENGINE ∆/Т ABS AIR BAG IPDM E/R BCM BACK LIGHT COPY PKIB2815E

1. Put a check mark to "No indication" if some of unit names listed on the column of diagnosis system selection screen of a check sheet table are not displayed on "SELECT SYSTEM" screen attached to the check sheet.

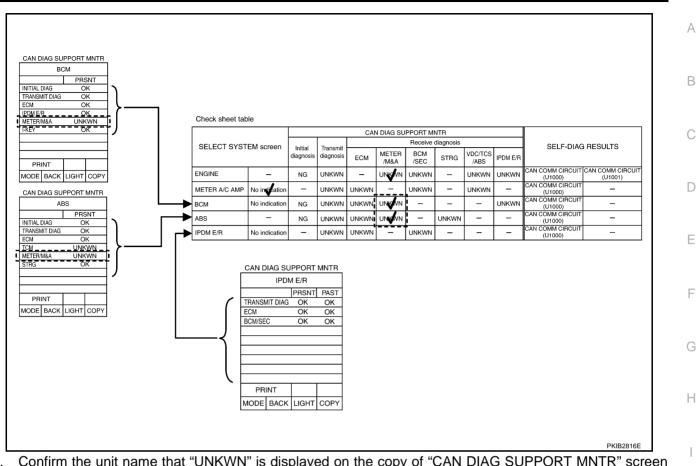
#### NOTE:

Put a check mark to "No indication" of METER A/C AMP because METER A/C AMP is not displayed on "SELECT SYSTEM" screen.

2. Confirm the unit name that "UNKWN" is displayed from the copy of "CAN DIAG SUPPORT MNTR" screen of "ENGINE" attached to the check sheet, and then put a check mark to the check sheet table.

#### NOTE:

In "CAN DIAG SUPPORT MNTR" screen, "UNKWN" is displayed on "TCM", "METER/M&A", "ICC", "AWD/ 4WD/e4WD" and "EPS". But put a check mark to "METER/M&A" because "UNKWN" is listed on the column of reception diagnosis of the check sheet table.



3. Confirm the unit name that "UNKWN" is displayed on the copy of "CAN DIAG SUPPORT MNTR" screen of "BCM", "ABS" and "IPDM E/R" as well as "ENGINE". And then, put a check mark to the check sheet table.

NOTE:

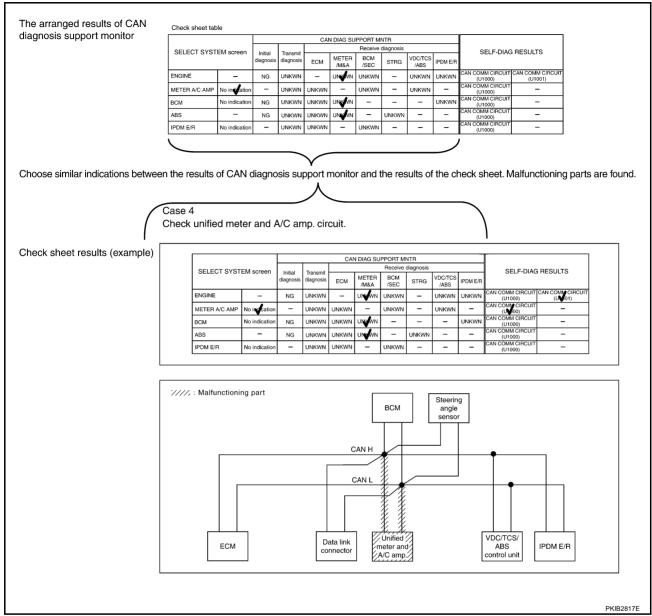
- For "BCM", "UNKWN" is displayed on "METER/M&A". Put a check mark to it.
- For "ABS", "UNKWN" is displayed on "TCM" and "METER/M&A". But a put a check mark to "METER/ M&A" because "UNKWN" is listed on the column of reception diagnosis on the check sheet.
- For "IPDM E/R", "UNKWN" is not displayed. Do not put a check to it.

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#### NOTE:

There is a case that some of "CAN DIAG SUPPORT MNTR" and "SELF-DIAG RESULTS" are not needed for diagnosis. In the case, "UNKWN" and "CAN COMM CIRCUIT(U1000)" in "Check sheet results (example)" change to "–". Then, ignore check marks on the check sheet table.

- 4. Perform system diagnosis for possible causes identified.
- 5. Perform diagnosis again after inspection and repair. Make sure that repair is completely performed, and then end the procedure.

Start CAN system trouble diagnosis if this procedure can be confirmed. Refer to <u>LAN-21</u>, "CAN Communication Unit".

#### [CAN]

#### Example of Filling in Check Sheet When Initial Conditions Are Not Reproduced

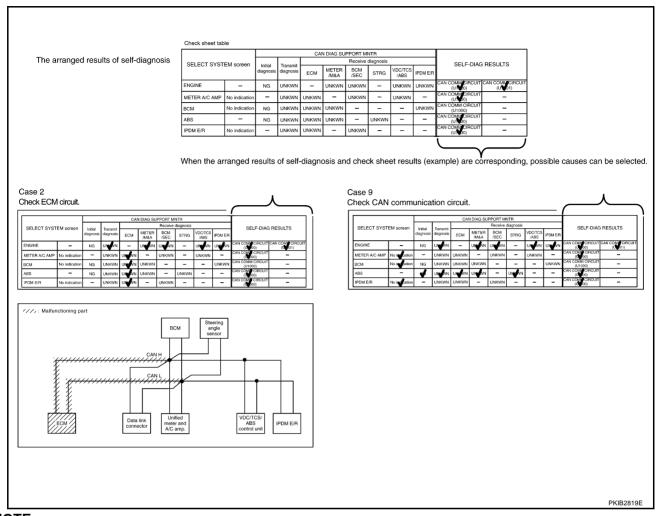
SELECT SYSTEM Screen       Initial diagnosis       Transmit diagnosis       ECM       METER /M&A       BCM       STRG       VDC/TCS       IPDM ER         ENGINE       -       NG       UNKWN       -       UNKWN       UNKWN       -       UNKWN       CAN COMM/CIRCUIT (UM01)         METER A/C AMP       No indication       -       UNKWN       UNKWN       -       UNKWN       CAN COMM/CIRCUIT (UM01)       -         BCM       No indication       NG       UNKWN       UNKWN       -       -       -       UNKWN       -       -         BCM       No indication       NG       UNKWN       UNKWN       UNKWN       -       -       -       UNKWN       -       -       -       (UN00)       -       (UN00)       -       -       (UN00)       -       (UN00)       -       -       -       UNKWN       -       -       -       UNKWN       -       -       -       -       UNKWN       -	SELECT SYSTEM Screen       Initial diagnosis       Transmit diagnosis       ECM       METER /M&A       BCM       STRG       VDC/TCS       IPDM ER         ENGINE       -       NG       UNKWN       -       UNKWN       -       UNKWN       CAN COMMCIRCUIT (UM01)       CAN COMMCIRCUIT (UM01)         METER A/C AMP       No indication       -       UNKWN       -       UNKWN       -       UNKWN       -       CAN COMMCIRCUIT (UM01)       -         BCM       No indication       NG       UNKWN       UNKWN       -       -       -       UNKWN       -       -       -       CAN COMMCIRCUIT (UM00)       -       -       -       UNKWN       -       -       -       CAN COMMCIRCUIT       -       -       -       <						CAN DIAG SUPPORT MNTR Receive diagnosis									
ENGINE       -       NG       UNKWN       -       UNKWN       -       UNKWN       UNKWN       (UNG0)       (UNG0)       (UNG0)         METER A/C AMP       No indication       -       UNKWN       UNKWN       -       UNKWN       -       UNKWN       -       UNKWN       -       -       (UNG0)       (UNG0)       -       -       -       -       UNKWN       -	ENGINE       -       NG       UNKWN       -       UNKWN       UNKWN       (UMO)       (UMO)         METER A/C AMP       No indication       -       UNKWN       -       UNKWN       -       UNKWN       -       CAN COMMCIRCUT       -         BCM       No indication       NG       UNKWN       UNKWN       -       -       -       CAN COMMCIRCUT       -       -       -       CAN COMMCIRCUT       -       -       -       UNKWN       -       <	SE	ELECT SYSTI	EM screen			ECM		BCM	-		IPDM E/R	SELF	-DIAG	RESULTS	
METER AC AMP       No indication       -       UNKWN       -       UNKWN       -       -       (UNKW)       -       -       -       (UNKW)       -       -       -       UNKWN       CAN COMM CIRCUT       -       -       -       UNKWN       CAN COMM CIRCUT       -       -       -       UNKWN       CAN COMM CIRCUT       -       -       -       UNKWN       -       -       -       -       UNKWN       CAN COMM CIRCUT       -       -       -       UNKWN       -       -       -       CAN COMM CIRCUT       -       -       -       -       UNKWN       -       -       -       CAN COMM CIRCUT       -       -       -       -       CAN COMM CIRCUT       -       -       -       -       -       -       -       -       -       -       -       -       -       -       - <th< th=""><th>METER AC AMP       No indication       -       UNKWN       -       UNKWN       -       -       -       UNKWN       -       -       -       -       -       UNKWN       -       <t< th=""><th>ENG</th><th>IGINE</th><th>-</th><th>NG</th><th>UNKWN</th><th>-</th><th>UNKWN</th><th>UNKWN</th><th>_</th><th>UNKWN</th><th>UNKWN</th><th>CAN COMMC (U100)</th><th>IRCUIT</th><th>CAN COMMCIRCU (UN01)</th><th>лт</th></t<></th></th<>	METER AC AMP       No indication       -       UNKWN       -       UNKWN       -       -       -       UNKWN       -       -       -       -       -       UNKWN       - <t< th=""><th>ENG</th><th>IGINE</th><th>-</th><th>NG</th><th>UNKWN</th><th>-</th><th>UNKWN</th><th>UNKWN</th><th>_</th><th>UNKWN</th><th>UNKWN</th><th>CAN COMMC (U100)</th><th>IRCUIT</th><th>CAN COMMCIRCU (UN01)</th><th>лт</th></t<>	ENG	IGINE	-	NG	UNKWN	-	UNKWN	UNKWN	_	UNKWN	UNKWN	CAN COMMC (U100)	IRCUIT	CAN COMMCIRCU (UN01)	лт
BCM       No indication       NG       UNKWN       UNKWN       UNKWN       -       -       -       -       Utilized in the indication       -	BCM       No indication       NG       UNKWN       UNKWN       UNKWN       -       -       -       UNKWN       (U1000)       -         ABS       -       NG       UNKWN       UNKWN       UNKWN       -       UNKWN       -       -       CAN COMMCIRCUIT       -       -       -       (U1000)       -       -       -       (U1000)       -       -       -       -       CAN COMMCIRCUIT       -       -       -       -       CAN COMMCIRCUIT       -       -       -       -       CAN COMMCIRCUIT       -       -       -       CAN COMMCIRCUIT       -       -       -       -       CAN COMM CIRCUIT       -       -       -       -       -       CAN COMM CIRCUIT       -       -       -       -       -       -       -       CAN COMM CIRCUIT       - </td <td>MET</td> <td>ETER A/C AMP</td> <td>No indication</td> <td>-</td> <td>UNKWN</td> <td>UNKWN</td> <td>_</td> <td>UNKWN</td> <td>—</td> <td>UNKWN</td> <td>-</td> <td>(U1<b>X</b>00)</td> <td>)  </td> <td>_</td> <td></td>	MET	ETER A/C AMP	No indication	-	UNKWN	UNKWN	_	UNKWN	—	UNKWN	-	(U1 <b>X</b> 00)	)	_	
ABS       -       NG       UNKWN       UNKWN       -       -       -       (UM60)       -         IPDM E/R       No indication       -       UNKWN       UNKWN       -       UNKWN       -       -       -       CAN COMMCIRCUIT       -         STEM       ENGINE       SYSTEM       METER A/C AMP       SYSTEM       BCM       SYSTEM ABS       SYSTEM IPDM E/R         SELF-DIAG RESULTS       SELF-DIAG RESULTS       SELF-DIAG RESULTS       SELF-DIAG RESULTS       SELF-DIAG RESULTS       SELF-DIAG RESULTS         C RESULTS       TIME       DTC RESULTS       TIME       DTC RESULTS       TIME       DTC RESULTS       TIME         N COMM CIRCUIT       1t       CAN COMM CIRCUIT       PAST       NO DTC IS DETECTED. MAY BE REQUIRED.       CAN COMM CIRCUIT       1       CAN COMM CIRCUIT       CAN COMM CIRCUIT       CAN COMM CIRCUIT       1       CAN COMM CIRCUIT       PAST	ABS       -       NG       UNKWN       UNKWN       UNKWN       -       ONKWN       -	BCM	м	No indication	NG	UNKWN	UNKWN	UNKWN	-	-	-		(U1000)	)	_	
IPDM E/R       No indication       -       UNKWN       - </td <td>IPDM ER       No indication       -       UNKWN       -<td>ABS</td><td>S</td><td>Ι</td><td>NG</td><td>UNKWN</td><td>UNKWN</td><td>UNKWN</td><td>—</td><td>UNKWN</td><td>-</td><td>-</td><td>(U<b>1V</b>00)</td><td></td><td>_</td><td></td></td>	IPDM ER       No indication       -       UNKWN       - <td>ABS</td> <td>S</td> <td>Ι</td> <td>NG</td> <td>UNKWN</td> <td>UNKWN</td> <td>UNKWN</td> <td>—</td> <td>UNKWN</td> <td>-</td> <td>-</td> <td>(U<b>1V</b>00)</td> <td></td> <td>_</td> <td></td>	ABS	S	Ι	NG	UNKWN	UNKWN	UNKWN	—	UNKWN	-	-	(U <b>1V</b> 00)		_	
SELF-DIAG RESULTS       SELF-DIAG RESULTS       SELF-DIAG RESULTS       SELF-DIAG RESULTS       SELF-DIAG RESULTS         C RESULTS       TIME       DTC RESULTS       TIME       DTC RESULTS       TIME       DTC RESULTS       SELF-DIAG RESULTS       SELF-DIAG RESULTS         N COMM CIRCUIT       1t       CAN COMM CIRCUIT       PAST       NO DTC IS DETECTED. FURTHER TESTING NO DTC IS DETECTED. FURTHER TESTING MAY BE REQUIRED.       CAN COMM CIRCUIT       1       CAN COMM CIRCUIT       PAST	SELF-DIAG RESULTS       SELF-DIAG RESULTS       SELF-DIAG RESULTS       SELF-DIAG RESULTS       SELF-DIAG RESULTS         C RESULTS       TIME       DTC RESULTS       TIME       CAN COMM CIRCUIT       TO CAN COMM CIRCU	IPDI	DM E/R	No indication	-	UNKWN	UNKWN	-	UNKWN	-	-	-	CAN COMMC (UN00)	IRCUIT	—	
Image: Construction of the construc	IC RESULTS TIME DTC RES															
N COMM CIRCUIT 1t CAN COMM CIRCUIT PAST NO DTC IS DETECTED. CAN COMM CIRCUIT 1 CAN COMM CIRCUIT PAST 1000] [U1000] FURTHER TESTING [U1000] [U1000] N COMM CIRCUIT 1t MAY BE REQUIRED.	AN COMM CIRCUIT 1t CAN COMM CIRCUIT PAST NO DTC IS DETECTED. CAN COMM CIRCUIT 1 CAN COMM CIRCUIT PAST 1000] [U1000] [U1000] [U1000] [U1000] AN COMM CIRCUIT 1t MAY BE REQUIRED. 11001]	/STEM EN	ENGINE	SYSTEM	M METE	R A/C AMF	P SY	STEM B	СМ		SYSTEM	I ABS		SYS	TEM IPDM E/R	
1000]         FURTHER TESTING         [U1000]         [U1000]           N COMM CIRCUIT         1t         MAY BE REQUIRED.         [U1000]	11000] [U1000] FURTHER TESTING [U1000] [U1000] N COMM CIRCUIT 1t MAY BE REQUIRED. 11001]						P SYS			TS			SULTS	SYS		JLTS
		SELF-DIA	IAG RESULTS	SE	lf-diag f	RESULTS		SELF-DI	AG RESUL		SEL	.F-DIAG RE			SELF-DIAG RESU	

#### NOTE:

- For "ENGINE", "CAN COMM CIRCUIT (U1000)" and "CAN COMM CIRCUIT (U1001)" are displayed. Put a check mark to it.
- For "METER/M&A", "CAN COMM CIRCUIT (U1000)" is displayed. Put a check mark to it.
- For "BCM", "NO DTC IS DETECTED" is displayed. Do not put a check mark to it.
- For "ABS", "CAN COMM CIRCUIT (U1000)" is displayed. Put a check mark to it.
- For "IPDM E/R", "CAN COMM CIRCUIT (U1000)" is displayed. Put a check mark to it.

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#### NOTE:

There is a case that some of "CAN DIAG SUPPORT MNTR" and "SELF-DIAG RESULTS" are not needed for diagnosis. In the case, "UNKWN" and "CAN COMM CIRCUIT(U1000)" in "Check sheet results (example)" change to "–". Then, ignore check marks on the check sheet table.

2. For the selected possible causes, it is expected that malfunctions have been found in the past.

#### CAN Diagnostic Support Monitor DESCRIPTION OF "CAN DIAG SUPPORT MNTR" SCREEN FOR ECM

CAN DIAG SUPPORT MNTR       CAN DIAG SUPPORT MNTR         ENGINE       ENGINE         INITIAL DIAG       OK         TRANSMIT DIAG       OK         TCM       OK         TCM       OK         VDC/TCS/ABS       OK         METER/M&A       OK         ICC       UNKWN         BCM/SEC       OK         IPDM E/R       OK         IPDM E/R       OK         IPDM E/R       OK         AWD/4WD/e4WD       UNKWN         EPS       UNKWN         PRINT       DOWN         MODE       BACK       LIGHT         MODE       BACK       LIGHT       COPY			
ENGINE     ENGINE       INITIAL DIAG     OK       TRANSMIT DIAG     OK       TCM     OK       VDC/TCS/ABS     OK       VDC/TCS/ABS     OK       VDC/TCS/ABS     OK       ICC     UNKWN       ICC     UNKWN       BCM/SEC     OK       IPDM E/R     OK       AWD/4WD/e4WD     UNKWN       FPS     UNKWN       PRINT     Scroll Down       PRINT     Scroll Down       MODE     BACK	(Example)	CAN DIAG SUPPORT MNTR	CAN DIAG SUPPORT MNTR
INITIAL DIAG OK TRANSMIT DIAG OK TCM OK VDC/TCS/ABS OK VDC/TCS/ABS OK METER/M&A OK ICC UNKWN ICC UNKWN ICC UNKWN ICC OK BOM/SEC OK IPDM E/R OK AWD/4WD/e4WD UNKWN AWD/4WD/e4WD UNKWN EPS UNKWN PRINT Scroll Up PRINT Scroll Up MODE BACK LIGHT COPY	、 · · <i>·</i>	ENGINE	ENGINE
TRANSMIT DIAG     OK       TCM     OK       VDC/TCS/ABS     OK       VDC/TCS/ABS     OK       WETER/M&A     OK       ICC     UNKWN       BCM/SEC     OK       IPDM E/R     OK       AWD/4WD/e4WD     UNKWN       PRINT     Down       PRINT     Scroll Up       MODE     BACK       MODE     BACK		PRSNT	PRSNT
TCM     OK       VDC/TCS/ABS     OK       WDC/TCS/ABS     OK       METER/M&A     OK       ICC     UNKWN       ICC     UNKWN       BCM/SEC     OK       IPDM E/R     OK       AWD/4WD/e4WD     UNKWN       PRINT     Scroll       Down     PRINT       MODE     BACK       MODE     BACK		INITIAL DIAG OK	TRANSMIT DIAG OK
VDC/TCS/ABS     OK       METER/M&A     OK       ICC     UNKWN       ICC     UNKWN       BCM/SEC     OK       IPDM E/R     OK       AWD/4WD/e4WD     UNKWN       PRINT     Scroll       PRINT     Scroll       PRINT     Scroll       PRINT     COPY		TRANSMIT DIAG OK	TCM OK
METER/M&A     OK     ICC     UNKWN       ICC     UNKWN     BCM/SEC     OK       BCM/SEC     OK     IPDM E/R     OK       IPDM E/R     OK     AWD/4WD/e4WD     UNKWN       AWD/4WD/e4WD     UNKWN     EPS     UNKWN       PRINT     Scroll     Down     PRINT     Scroll Up       MODE     BACK     I/GHT     COPY     MODE		TCM OK	VDC/TCS/ABS OK
ICC     UNKWN     BCM/SEC     OK       BCM/SEC     OK     IPDM E/R     OK       IPDM E/R     OK     AWD/4WD/e4WD     UNKWN       AWD/4WD/e4WD     UNKWN     EPS     UNKWN       PRINT     Scroll Down     PRINT     Scroll Up       MODE     BACK     ILIGHT     COPY		VDC/TCS/ABS OK	METER/M&A OK
BCM/SEC     OK       IPDM E/R     OK       AWD/4WD/e4WD     UNKWN       AWD/4WD/e4WD     UNKWN       PRINT     Scroll       Down     PRINT       MODE     BACK       LIGHT     COPY		METER/M&A OK	ICC UNKWN
IPDM E/R     OK     AWD/4WD/e4WD     UNKWN       AWD/4WD/e4WD     UNKWN     EPS     UNKWN       PRINT     Scroll     Down     PRINT     Scroll Up       MODE     BACK     LIGHT     COPY     MODE     BACK     LIGHT     COPY		ICC UNKWN	BCM/SEC OK
AWD/4WD/e4WD     UNKWN       PRINT     Scroll       Down     PRINT       MODE     BACK       LIGHT     COPY		BCM/SEC OK	IPDM E/R OK
PRINT Scroll Down PRINT Scroll Up MODE BACK LIGHT COPY		IPDM E/R OK	AWD/4WD/e4WD UNKWN
			EPS UNKWN
MODE BACK LIGHT COPY MODE BACK LIGHT COPY SKIB0591		PRINT Scroll Down	PRINT Scroll Up
		MODE BACK LIGHT COPY	MODE BACK LIGHT COPY SKIB0591E

"SELECT SYSTEM" screen	"CAN DIAG SUPPORT MNTR" screen	Description	Present
	INITIAL DIAG	Make sure that microcomputer in ECU works normally.	OK/NG
	TRANSMIT DIAG	Make sure of normal transmission.	OK/UNKWN
	ТСМ	Make sure of normal reception from TCM.	OK/UNKWN
		Make sure of normal reception from VDC/TCS/ABS control unit.	OK/UNKWN
	VDC/TCS/ABS	Make sure of normal reception from ABS actuator and electric unit (control unit).	OK/UNKWN
ENGINE METER/	METER/M&A	Make sure of normal reception from unified meter and A/C amp.	OK/UNKWN
	ICC	ICC is not diagnosed.	UNKWN
BCM/SEC		Make sure of normal reception from BCM.	OK/UNKWN
	IPDM E/R	Make sure of normal reception from IPDM E/R.	OK/UNKWN
	AWD/4WD/e4WD	AWD/4WD/e4WD is not diagnosed.	UNKWN
	EPS	EPS is not diagnosed.	UNKWN

Display Results (Present)

• OK: Normal

NG: Malfunction

• UNKWN: The diagnosed unit does not transmit or receive the applicable data normally.

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#### [CAN]

# DESCRIPTION OF "CAN DIAG SUPPORT MNTR" SCREEN

mple)	CAN D	IAG SU	PPORT	MNTR	
	A/T				
			PR	SNT	
	INITIAL	DIAG	C	ĸ	
	TRANS	/IT DIAG	C	ĸ	
	ECM		С	ĸ	
	VDC/TC	S/ABS	C	ĸ	
	METER/	M&A	С	ĸ	
	ICC/e4W	/D	UNF	(WN	
	AWD/4W	/D	UNF	(WN	
	PR	INT			
	MODE	BACK	LIGHT	COPY	SKIB1623E

"SELECT SYSTEM" screen	"CAN DIAG SUPPORT MNTR" screen	Description	Present
	INITIAL DIAG	Make sure that microcomputer in ECU works normally.	OK/NG
	TRANSMIT DIAG	Make sure of normal transmission.	OK/UNKWN
	ECM	Make sure of normal reception from ECM.	OK/UNKWN
A/T	VDC/TCS/ABS	Make sure of normal reception from ABS actuator and electric unit (control unit).	OK/UNKWN
	METER/M&A	Make sure of normal reception from unified meter and A/C amp.	OK/UNKWN
	ICC/e4WD	ICC/4WD is not diagnosed.	UNKWN
	AWD/4WD	AWD/4WD is not diagnosed.	UNKWN

**Display Results (Present)** 

- OK: Normal
- NG: Malfunction
- UNKWN: The diagnosed unit does not transmit or receive the applicable data normally.

Example)	CAN DIAG SUPPORT MNTR	CAN DIAG SUPPORT MNTR
	METER A/C AMP	METER A/C AMP
	PRSNT PAST	PRSNT PAST
	TRANSMIT DIAG OK OK	IPDM E/R
	ECM OK OK	DISPLAY
	тсм ок ок	I-KEY
	BCM/SEC OK OK	EPS
	VDC/TCS/ABS OK OK	AWD/4WD
	IPDM E/R	e4WD
	DISPLAY	ICC
	I-KEY	LANE KEEP
	EPS	TIRE-P OK OK
	PRINT Scroll Down	PRINT Scroll Up
	MODE BACK LIGHT COPY	MODE BACK LIGHT COPY
		SKIB1624E

"SELECT SYSTEM" screen	"CAN DIAG SUPPORT MNTR" screen	Description	Present	Past	E
	TRANSMIT DIAG	Make sure of normal transmission.	OK/UNKWN/-		
	ECM	Make sure of normal reception from ECM.	OK/UNKWN/-		F
	ТСМ	Make sure of normal reception from TCM.	OK/UNKWN/-		1
	BCM/SEC	Make sure of normal reception from BCM.	OK/UNKWN/-		
	VDC/TCS/ABS	Make sure of normal reception from VDC/TCS/ABS control unit.	OK/UNKWN/-	-	G
	VDC/103/AB3	Make sure of normal reception from ABS actuator and electric unit (control unit).	OK/UNKWN/-	-	Н
METER A/C AMP	IPDM E/R	IPDM E/R is not diagnosed.	_	OK/0/1~39/-	
	DISPLAY	DISPLAY is not diagnosed.	-		
	I-KEY	I-KEY is not diagnosed.	_		
	EPS	EPS is not diagnosed.	-		
	AWD/4WD	AWD/4WD is not diagnosed.	_		J
	e4WD	e4WD is not diagnosed.	_		
	ICC	ICC is not diagnosed.	_		
	LANE KEEP	LANE KEEP is not diagnosed.	-		LAN
	TIRE-P	Not available for CAN system diagnosis.	OK/UNKWN		

#### **Display Results (Present)**

- OK: Normal
- UNKWN: The diagnosed unit does not transmit or receive the applicable data normally.
- -: There is no received unit or the unit is not in the condition that reception diagnosis is performed

#### **Display Results (Past)**

- OK: Normal
- 0: There is malfunction now.
- 1 ~ 39: Displays when it is normal at present and finds malfunction in the past. It increases like 0→1→2...38→39 after returning to the normal condition whenever IGN OFF→ON. If it is over 39, it is fixed to 39 until the self-diagnostic results are erased. It returns to 0 when malfunction is detected again in the process.
- -: Undiagnosed

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#### [CAN]

# DESCRIPTION OF "CAN DIAG SUPPORT MNTR" SCREEN FOR BCM

nple)	CANI	DIAG SU	PPORT	MNTR	
		BC	СМ		
			PR	SNT	
	INITIAL	DIAG	0	к	
	TRANS	VIT DIAC	à O	к	
	ECM		0	к	
	IPDM E	′R	0	К	
	METER	/M&A	0	к	
	I-KEY		0	к	
	PR	INT			
	MODE	BACK	LIGHT	COPY	
	-				SKIB1625E

"SELECT SYSTEM" screen	"CAN DIAG SUPPORT MNTR" screen	Description	Present
	INITIAL DIAG	Make sure that microcomputer in ECU works normally.	OK/NG
	TRANSMIT DIAG	Make sure of normal transmission.	OK/UNKWN
ВСМ	ECM	Make sure of normal reception from ECM.	OK/UNKWN
BCIVI	IPDM E/R	Make sure of normal reception from IPDM E/R.	OK/UNKWN
	METER/M&A	Make sure of normal reception from unified meter and A/C amp.	OK/UNKWN
	I-KEY	I-KEY is not diagnosed.	ОК

**Display Results (Present)** 

- OK: Normal
- NG: Malfunction
- UNKWN: The diagnosed unit does not transmit or receive the applicable data normally.

#### DESCRIPTION OF "CAN DIAG SUPPORT MNTR" SCREEN FOR ABS ACTUATOR AND ELEC-TRIC UNIT (CONTROL UNIT)

ABS models

#### (Example) CAN DIAG SUPPORT MNTR ABS PRSNT INITIAL DIAG OK ECM OK ECM OK PRINT PRINT MODE BACK LIGHT COPY PKIA8949E

"SELECT SYSTEM" screen	"CAN DIAG SUPPORT MNTR" screen	Description	Present
	INITIAL DIAG	Make sure that microcomputer in ECU works normally.	OK/NG
ABS	TRANSMIT DIAG	Make sure of normal transmission.	OK/UNKWN
	ECM	Make sure of normal reception from ECM.	OK/UNKWN

#### **Display Results (Present)**

- OK: Normal
- NG: Malfunction
- UNKWN: The diagnosed unit does not transmit or receive the applicable data normally.

Description

Make sure that microcomputer in ECU works normally.

Make sure of normal transmission.

Revision: 2005 August

ABS		
ABO .	ECM	Make sure of normal reception from ECM.
	ТСМ	Make sure of normal reception from TCM.

**"CAN DIAG SUPPORT** 

MNTR" screen

INITIAL DIAG

TRANSMIT DIAG

#### Display Results (Present)

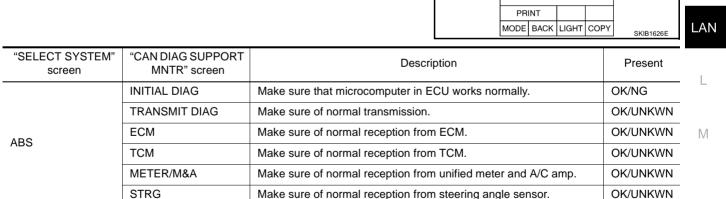
"SELECT SYSTEM"

screen

OK: Normal

**TCS models** 

- NG: Malfunction
- UNKWN: The diagnosed unit does not transmit or receive the applicable data normally.



#### **Display Results (Present)**

- OK: Normal
- NG: Malfunction
- UNKWN: The diagnosed unit does not transmit or receive the applicable data normally.

- Present
   D

   OK/NG
   E

   OK/UNKWN
   OK/UNKWN

   OK/UNKWN
   F
  - G

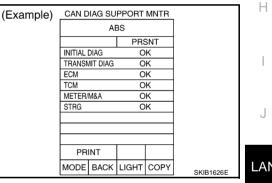
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DESCRIPTION OF "CAN DIAG SUPPORT MNTR" SCREEN FOR VDC/TCS/ABS CONTROL UNIT



#### [CAN] CAN DIAG SUPPORT MNTR (Example) ABS PRSNT INITIAL DIAG OK TRANSMIT DIAG OK ECM OK TCM OK PRINT MODE BACK LIGHT COPY SKIB0594E

#### [CAN]

# DESCRIPTION OF "CAN DIAG SUPPORT MNTR" SCREEN [(Examp

mple)	CAN D	IAG SU	PPORT	MNTR	
• /		IPDN	/I E/R		
			PRSNT	PAST	
	TRANSN	/IT DIAG	ОК	ОК	
	ECM		OK	OK	
	BCM/SE	С	OK	OK	
	PR				
	MODE	BACK	LIGHT	COPY	SKIB0595E

"SELECT SYSTEM" screen	"CAN DIAG SUPPORT MNTR" screen	Description	Present	Past
	TRANSMIT DIAG	Make sure of normal transmission.	OK/UNKWN/-	
IPDM E/R	ECM	Make sure of normal reception from ECM.	OK/UNKWN/-	OK/0/1~39/-
	BCM/SEC	Make sure of normal reception from BCM.	OK/UNKWN/-	

**Display Results (Present)** 

- OK: Normal
- UNKWN: The diagnosed unit does not transmit or receive the applicable data normally.
- -: There is no received unit or the unit is not in the condition that reception diagnosis is performed

#### **Display Results (Past)**

- OK: Normal
- 0: There is malfunction now.
- 1 ~ 39: Displays when it is normal at present and finds malfunction in the past. It increases like 0→1→2...38→39 after returning to the normal condition whenever IGN OFF→ON. If it is over 39, it is fixed to 39 until the self-diagnostic results are erased. It returns to 0 when malfunction is detected again in the process.
- -: Undiagnosed

#### **CAN COMMUNICATION**

#### **System Description**

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

#### **CAN Communication Unit**

Go to CAN system, when selecting your CAN system type from the following table.

Body type		Coupe Roadster							
Axle		2WD							
Engine		VQ35DE							
Transmission	A	A/T M/T			A/T	Μ	/T		
Brake control	TCS	VDC	ABS	TCS	VDC	TCS	TCS	VDC	
CAN system type	1	5	2	3	4	1	3	4	
CAN system trouble diagnosis	LAN-30	LAN-118	LAN-54	LAN-75	LAN-96	LAN-30	LAN-75	LAN-96	

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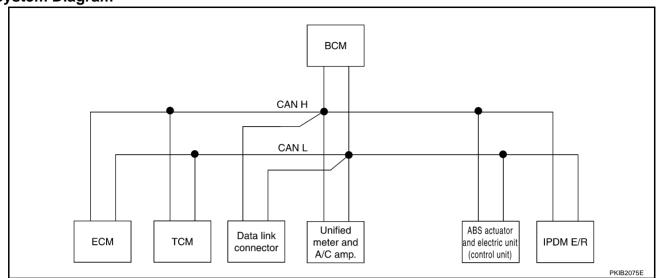
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#### TYPE 1 System Diagram



#### Input/output Signal Chart

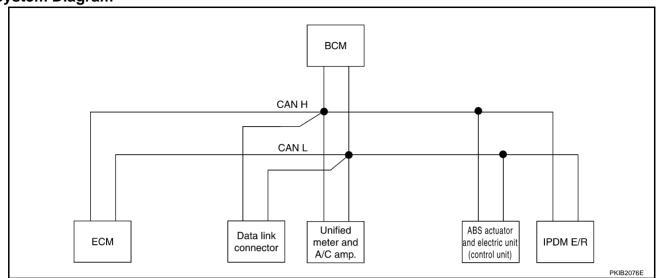
T: Transmit R: Receive

Signals	ECM	ТСМ	Unified meter and A/C amp.	BCM	ABS actuator and electric unit (control unit)	IPDM E/R
Engine speed signal	Т	R	R		R	
Engine coolant temperature signal	Т		R			
Accelerator pedal position signal	Т	R			R	
Closed throttle position signal	Т	R				
Wide open throttle position signal	Т	R				
Battery voltage signal	Т	R				
Stop lamp switch signal		R	Т			
Fuel consumption monitor signal	Т		R			
A/T self-diagnosis signal	R	Т				
A/T CHECK indicator lamp signal		Т	R			
A/T position indicator signal		Т	R		R	
Manual mode gear position signal		Т	R			
ABS operation signal		R			Т	
A/T shift schedule change demand signal		R			Т	
A/C switch signal	R			Т		
A/C compressor request signal	Т					R
A/C compressor feedback signal	Т		R			
Blower fan motor switch signal	R			Т		
Cooling fan speed request signal	Т					R
Position lights request signal			R	Т		R
Low beam request signal				Т		R
Low beam status signal	R					Т
High beam request signal			R	Т		R
High beam status signal	R					Т
Day time running light request signal				Т		R

Revision: 2005 August

Signals	ECM	ТСМ	Unified meter and A/C amp.	BCM	ABS actuator and electric unit (control unit)	IPDM E/R
			R		Т	
Vehicle speed signal	R	R	Т	R		
Sleep request 1 signal			R	Т		
Sleep request 2 signal				Т		R
Wake up request 1 signal			R	Т		
Door switch signal			R	Т		R
Turn indicator signal			R	Т		
Seat belt buckle switch signal			Т	R		
Buzzer output signal			R	Т		
Fuel level sensor signal	R		Т			
Malfunction indicator lamp signal	Т		R			
ASCD SET lamp signal	Т		R			
ASCD operation signal	Т	R				
ASCD CRUISE lamp signal	Т		R			
ASCD OD cancel request signal	Т	R				
Output shaft revolution signal	R	Т				
Turbine revolution signal	R	Т				
Front wiper request signal				Т		R
Front wiper stop position signal				R		Т
Rear window defogger switch signal				Т		R
Rear window defogger control signal	R					Т
Manual mode signal		R	Т			
Not manual mode signal		R	Т			
Manual mode shift up signal		R	Т			
Manual mode shift down signal		R	Т			
Manual mode indicator signal		Т	R			
Theft warning horn request signal				Т		R
Horn chirp signal				Т		R
Ignition switch signal				Т		R
ABS warning lamp signal			R		т	
TCS OFF indicator lamp signal			R		т	
SLIP indicator lamp signal			R		т	
Brake warning lamp signal			R		Т	

#### TYPE 2 System Diagram



#### Input/output Signal Chart

T: Transmit R: Receive

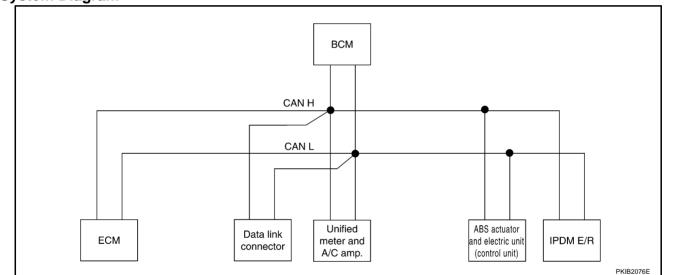
Signals	ECM	Unified meter and A/C amp.	BCM	ABS actuator and electric unit (control unit)	IPDM E/R
Engine speed signal	Т	R		R	
Engine coolant temperature signal	Т	R			
Accelerator pedal position signal	Т			R	
Fuel consumption monitor signal	Т	R			
A/C switch signal	R		Т		
A/C compressor request signal	Т				R
A/C compressor feedback signal	Т	R			
Blower fan motor switch signal	R		Т		
Cooling fan speed request signal	Т				R
Position lights request signal		R	Т		R
Low beam request signal			Т		R
Low beam status signal	R				Т
High beam request signal		R	Т		R
High beam status signal	R				Т
Day time running light request signal			Т		R
		R		Т	
Vehicle speed signal	R	Т	R		
Sleep request 1 signal		R	Т		
Sleep request 2 signal			Т		R
Wake up request 1 signal		R	Т		
Door switch signal		R	Т		R
Turn indicator signal		R	Т		
Seat belt buckle switch signal		Т	R		
Buzzer output signal		R	Т		
Fuel level sensor signal	R	Т			
Malfunction indicator lamp signal	Т	R			

Revision: 2005 August

Signals	ECM	Unified meter and A/C amp.	BCM	ABS actuator and electric unit (control unit)	IPDM E/R
ASCD SET lamp signal	Т	R			
ASCD CRUISE lamp signal	Т	R			
Front wiper request signal			Т		R
Front wiper stop position signal			R		Т
Rear window defogger switch signal			Т		R
Rear window defogger control signal	R				Т
Theft warning horn request signal			Т		R
Horn chirp signal			Т		R
Ignition switch signal			Т		R
ABS warning lamp signal		R		Т	
Brake warning lamp signal		R		Т	

#### **TYPE 3**

#### System Diagram



#### Input/output Signal Chart

#### T: Transmit R: Receive

Signals	ECM	Unified meter and A/C amp.	BCM	ABS actuator and electric unit (control unit)	IPDM E/R
Engine speed signal	Т	R		R	
Engine coolant temperature signal	Т	R			
Accelerator pedal position signal	Т			R	
Fuel consumption monitor signal	Т	R			
A/C switch signal	R		Т		
A/C compressor request signal	Т				R
A/C compressor feedback signal	Т	R			
Blower fan motor switch signal	R		Т		
Cooling fan speed request signal	Т				R
Position lights request signal		R	Т		R
Low beam request signal			Т		R
Low beam status signal	R				Т

Revision: 2005 August

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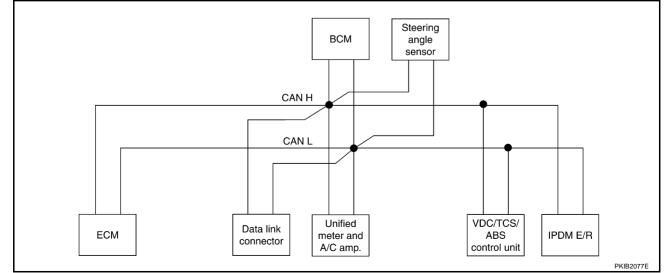
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Signals	ECM	Unified meter and A/C amp.	BCM	ABS actuator and electric unit (control unit)	IPDM E/R
High beam request signal		R	Т		R
High beam status signal	R				Т
Day time running light request signal			Т		R
		R		Т	
Vehicle speed signal	R	Т	R		
Sleep request 1 signal		R	Т		
Sleep request 2 signal			Т		R
Wake up request 1 signal		R	Т		
Door switch signal		R	Т		R
Turn indicator signal		R	Т		
Seat belt buckle switch signal		Т	R		
Buzzer output signal		R	Т		
Fuel level sensor signal	R	Т			
Malfunction indicator lamp signal	Т	R			
ASCD SET lamp signal	Т	R			
ASCD CRUISE lamp signal	Т	R			
Front wiper request signal			Т		R
Front wiper stop position signal			R		Т
Rear window defogger switch signal			Т		R
Rear window defogger control signal	R				Т
Theft warning horn request signal			Т		R
Horn chirp signal			Т		R
Ignition switch signal			Т		R
ABS warning lamp signal		R		Т	
TCS OFF indicator lamp signal		R		Т	
SLIP indicator lamp signal		R		Т	
Brake warning lamp signal		R		Т	

#### **TYPE 4**

#### System Diagram



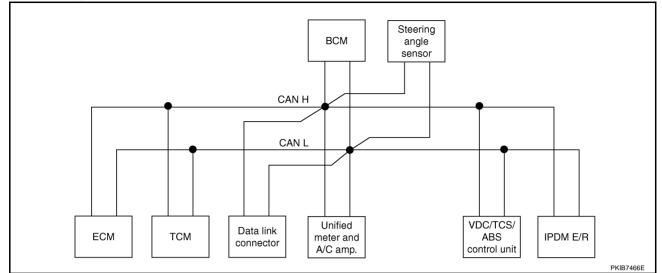
# Input/output Signal Chart

Signals	ECM	Unified meter and A/ C amp.	BCM	Steering angle sensor	VDC/TCS/ ABS control unit	IPDM E/R
Engine speed signal	т	R			R	
Engine coolant temperature signal	Т	R				
Accelerator pedal position signal	Т				R	
Fuel consumption monitor signal	Т	R				
A/C switch signal	R		Т			
A/C compressor request signal	Т					R
A/C compressor feedback signal	Т	R				
Blower fan motor switch signal	R		Т			
Cooling fan speed request signal	Т					R
Position lights request signal		R	Т			R
Low beam request signal			Т			R
Low beam status signal	R					Т
High beam request signal		R	Т			R
High beam status signal	R					T
Day time running light request signal			Т			R
, , , , , , , , , , , , , , , , , , , ,		R			Т	
Vehicle speed signal	R	т	R			
Sleep request 1 signal		R	Т			
Sleep request 2 signal			Т			R
Wake up request 1 signal		R	Т			
Door switch signal		R	Т			R
Turn indicator signal		R	Т			
Seat belt buckle switch signal		Т	R			
Buzzer output signal		R	Т			
Fuel level sensor signal	R	т				
Malfunction indicator signal	Т	R				
ASCD SET lamp signal	Т	R				
ASCD CRUISE lamp signal	Т	R				
Front wiper request signal			Т			R
Front wiper stop position signal			R			т
Rear window defogger switch signal			Т			R
Rear window defogger control signal	R		-			T
Theft warning horn request signal			Т			 R
Horn chirp signal			Т			R
Ignition switch signal			T			R
Steering angle sensor signal				Т	R	-
Tire pressure signal		R	Т			
ABS warning lamp signal		R	-		Т	
VDC OFF indicator lamp signal		R			T	
SLIP indicator lamp signal		R			T	
Brake warning lamp signal		R			T	

Revision: 2005 August

# [CAN]

#### TYPE 5 System Diagram



#### Input/output Signal Chart

T: Transmit R: Receive

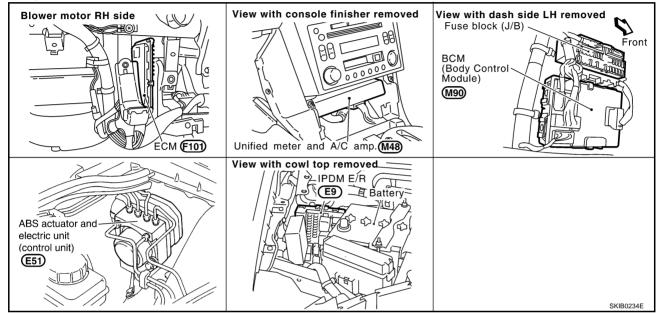
Signals	ECM	ТСМ	Unified meter and A/C amp.	BCM	Steering angle sensor	VDC/TCS/ ABS control unit	IPDM E/R
Engine speed signal	Т	R	R			R	
Engine coolant temperature signal	Т		R				
Accelerator pedal position signal	Т	R				R	
Closed throttle position signal	Т	R					
Wide open throttle position signal	Т	R					
Battery voltage signal	Т	R					
Stop lamp switch signal		R	Т				
Fuel consumption monitor signal	Т		R				
A/T self-diagnosis signal	R	Т					
A/T CHECK indicator lamp signal		Т	R				
A/T position indicator signal		Т	R			R	
Manual mode gear position signal		Т	R				
ABS operation signal		R				Т	
A/T shift schedule change demand signal		R				Т	
A/C switch signal	R			Т			
A/C compressor request signal	Т						R
A/C compressor feedback signal	Т		R				
Blower fan motor switch signal	R			Т			
Cooling fan speed request signal	Т						R
Position lights request signal			R	т			R
Low beam request signal				Т			R
Low beam status signal	R						Т
High beam request signal			R	Т			R
High beam status signal	R						Т
Day time running light request signal				Т			R

Signals	ECM	тсм	Unified meter and A/C amp.	BCM	Steering angle sensor	VDC/TCS/ ABS control unit	IPDM E/R
Vehicle speed signal			R			Т	
	R	R	Т	R			
Sleep request 1 signal			R	Т			
Sleep request 2 signal				Т			R
Wake up request 1 signal			R	Т			
Door switch signal			R	Т			R
Turn indicator signal			R	Т			
Seat belt buckle switch signal			Т	R			
Buzzer output signal			R	Т			
Fuel level sensor signal	R		Т				
Malfunction indicator lamp signal	Т		R				
ASCD SET lamp signal	Т		R				
ASCD operation signal	Т	R					
ASCD CRUISE lamp signal	Т		R				
ASCD OD cancel request signal	Т	R					
Output shaft revolution signal	R	Т					
Turbine revolution signal	R	Т					
Front wiper request signal				т			R
Front wiper stop position signal				R			Т
Rear window defogger switch signal				т			R
Rear window defogger control signal	R						Т
Manual mode signal		R	Т				
Not manual mode signal		R	Т				
Manual mode shift up signal		R	Т				
Manual mode shift down signal		R	Т				
Manual mode indicator signal		Т	R				
Theft warning horn request signal				т			R
Horn chirp signal				т			R
Ignition switch signal				т			R
Steering angle sensor signal					Т	R	
ABS warning lamp signal			R			Т	
TCS OFF indicator lamp signal			R			Т	
SLIP indicator lamp signal			R			Т	
Brake warning lamp signal			R			Т	

#### **System Description**

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

#### **Component Parts and Harness Connector Location**

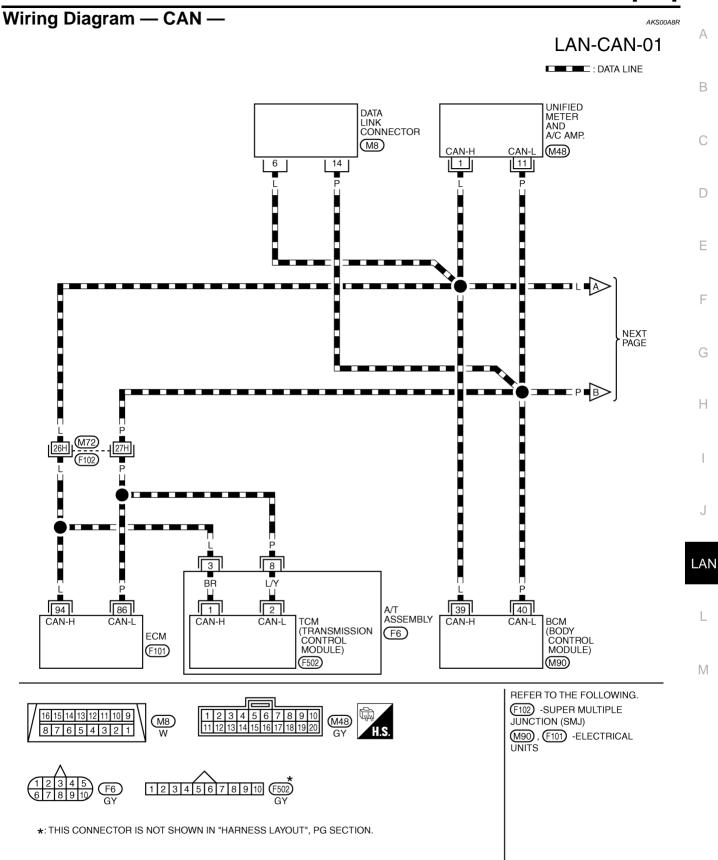


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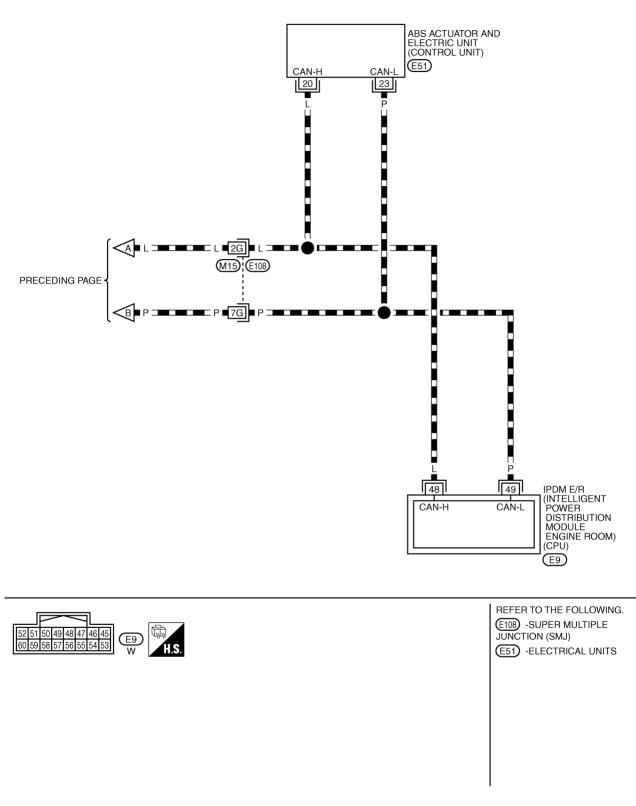


TKWT2517E

[CAN]

# LAN-CAN-02

: DATA LINE



TKWT1554E

# CHECK SHEET

#### [CAN]

#### AKS00A8S

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#### NOTE:

If a check mark is put on "NG" on "INITIAL DIAG (Initial diagnosis)", replace the control unit.

LECT SYSTEM screen       Initial Initial Transmit Transmit Transmit       Receive diagnosis       SELF-DIAG RESULTS         NE       -       NG       UNKWN       -       UNKWN       UNKWN       UNKWN       UNKWN       CAN COMM CIRCUIT (U1000)       CAN COMM CIRCUIT (U1001)         NE       -       NG       UNKWN       -       UNKWN       UNKWN       UNKWN       UNKWN       CAN COMM CIRCUIT (U1000)       CAN COMM CIRCUIT (U1001)         ER A/C AMP       No indication       -       UNKWN       UNKWN       -       UNKWN       -       UNKWN       -       CAN COMM CIRCUIT (U1000)       -         Initial diagnosis       -       UNKWN       -       UNKWN       -       UNKWN       -       CAN COMM CIRCUIT (U1000)       -         Initial diagnosis       -       UNKWN       -       UNKWN       -       UNKWN       -       CAN COMM CIRCUIT (U1000)       -         Initial diagnosis       -       UNKWN       -       UNKWN       -       -       UNKWN       -       CAN COMM CIRCUIT (U1000)       -         ER A/C AMP       No indication       NG       UNKWN       UNKWN       -       UNKWN       -       CAN COMM CIRCUIT (U1000)       -	Check sheet table				CAN	DIAG SU	PPORT N	INTR				]		
diagnosis     ECM     TCM     METER (M&A     BCM (SEC     VDC/TCS (ABS     IPDM E/R       NE     -     NG     UNKWN     -     UNKWN     UNKWN     UNKWN     UNKWN     CAN COMM CIRCUIT (U1000)     CAN COMM CIRCUIT (U1000)       -     NG     UNKWN     UNKWN     UNKWN     UNKWN     UNKWN     CAN COMM CIRCUIT (U1000)     -       R A/C AMP     No indication     -     UNKWN     UNKWN     -     UNKWN     -     CAN COMM CIRCUIT (U1000)     -       R A/C AMP     No indication     -     UNKWN     UNKWN     -     UNKWN     -     CAN COMM CIRCUIT (U1000)     -       R A/C AMP     No indication     NG     UNKWN     UNKWN     -     UNKWN     -     CAN COMM CIRCUIT (U1000)     -       -     No indication     NG     UNKWN     UNKWN     -     -     -     CAN COMM CIRCUIT (U1000)     -       IE/R     No indication     -     UNKWN     UNKWN     -     -     CAN COMM CIRCUIT (U1000)     -	SELECT SYST	EM screen	Initial	Transmit			Receive	diagnosis		1	SELF-DIAG RESULTS			
NE     -     NG     UNKWN     -     UNKWN     UNKWN     UNKWN     UNKWN     UNKWN     UNKWN     CAN COMM CIRCUIT (U1000)       -     NG     UNKWN     UNKWN     -     UNKWN     -     UNKWN     -     CAN COMM CIRCUIT (U1000)     -       ER A/C AMP     No indication     -     UNKWN     UNKWN     UNKWN     -     UNKWN     -     CAN COMM CIRCUIT (U1000)     -       No indication     NG     UNKWN     UNKWN     -     UNKWN     -     CAN COMM CIRCUIT (U1000)     -       -     NG     UNKWN     UNKWN     UNKWN     -     UNKWN     CAN COMM CIRCUIT (U1000)     -       -     NG     UNKWN     UNKWN     UNKWN     -     -     UNKWN     CAN COMM CIRCUIT (U1000)     -       -     NG     UNKWN     UNKWN     UNKWN     -     -     -     CAN COMM CIRCUIT (U1000)     -       IE/R     No indication     -     UNKWN     UNKWN     -     -     -     CAN COMM CIRCUIT (U1000)     -						тсм	METER /M&A	BCM /SEC	VDC/TCS /ABS	IPDM E/R				
Ind     INK     ONK     Ink     ONK     Ink     ONK     Ink       ER A/C AMP     No indication     -     UNK     UNK     UNK     UNK     UNK     UNK     UNK     -     CAN COMM CIRCUIT     -       No indication     NG     UNK     UNK     UNK     -     UNK     -     UNK     CAN COMM CIRCUIT     -       Image: Comparison of the indication     NG     UNK     UNK     -     -     -     UNK     CAN COMM CIRCUIT     -       Image: Comparison of the indication     -     UNK     UNK     -     -     -     CAN COMM CIRCUIT     -       Image: Comparison of the indication     -     UNK     UNK     -     -     -     CAN COMM CIRCUIT     -       Image: Comparison of the indication     -     UNK     UNK     -     -     -     CAN COMM CIRCUIT     -       Image: Comparison of the indication     -     UNK     UNK     -     -     -     CAN COMM CIRCUIT     -       Image: Comparison of the indication     -     UNK     UNK     -     -     -     CAN COMM CIRCUIT       Image: Comparison of the indication     -     UNK     -     -     -     CAN COMM CIRCUIT       Image: C	NGINE	_	NG	UNKWN	-	UNKWN					CAN COMM CIRCUIT (U1000)	(U1001)		
In the indication       Image: Construction of the indication of the indication of the indication       Image: Construction of the indication of the indicatindicatine indication of the indication of the indicati	/Т	-	NG	UNKWN	UNKWN	_	UNKWN	-	UNKWN	-	CAN COMM CIRCUIT (U1000)	_		
No indication       NG       UNKWN       UNKWN       -       -       UNKWN       (U1000)       -         -       NG       UNKWN       UNKWN       UNKWN       -       -       -       CAN COMM CIRCUIT       -         IE/R       No indication       -       UNKWN       UNKWN       -       -       -       CAN COMM CIRCUIT       -         ptoms :       -       UNKWN       UNKWN       -       -       UNKWN       -       -       -       CAN COMM CIRCUIT       -         ptoms :       -       -       UNKWN       -       -       UNKWN       -       -       -       CAN COMM CIRCUIT       -       -         ptoms :       -       -       UNKWN       -       -       -       CAN COMM CIRCUIT       -       -       -       -       -       -       -       CAN COMM CIRCUIT       -       -       -       -       -       -       -       -       -       -       -       -       -       -	ETER A/C AMP	No indication	-	UNKWN	UNKWN	UNKWN	-	UNKWN	UNKWN	_	(U1000)			
IE/R       No indication       -       UNKWN       UNKWN       -       -       IE/R       CAN COMM CIRCUIT       -         ptoms :       -       UNKWN       UNKWN       -       -       UNKWN       -       -       CAN COMM CIRCUIT       -         ptoms :       -       -       UNKWN       -       -       UNKWN       -       -       CAN COMM CIRCUIT       -         Attach copy of       -       -       UNKWN       -       -       UNKWN       -       -       CAN COMM CIRCUIT       -	СМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_		UNKWN	(U1000)	-		
ptoms :	BS	_	NG	UNKWN	UNKWN	UNKWN	_	_		_	(U1000)	-		
Attach copy of Attach copy of	DM E/R	No indication	I	UNKWN	UNKWN	—	-	UNKWN	-	-	CAN COMM CIRCUIT (U1000)	_		
				Attach SELECT	copy of SYSTEM			S	Attach ca	opy of YSTEM				

Attach copy of Attach copy of Attach copy of ENGINÉ A/T METER A/C AMP SELF-DIAG RESULTS SELF-DIAG RESULTS SELF-DIAG RESULTS Attach copy of Attach copy of Attach copy of IPDM E/R BCM ABS SELF-DIAG RESULTS SELF-DIAG RESULTS SELF-DIAG RESULTS Attach copy of Attach copy of Attach copy of ENGINE METER A/C AMP A/T CAN DIAG SUPPORT CAN DIAG SUPPORT CAN DIAG SUPPORT MNTR MNTR MNTR Attach copy of Attach copy of Attach copy of BCM ABS IPDM E/R CAN DIAG SUPPORT CAN DIAG SUPPORT CAN DIAG SUPPORT MNTR MNTR MNTR PKIA8199E

#### CHECK SHEET RESULTS (EXAMPLE)

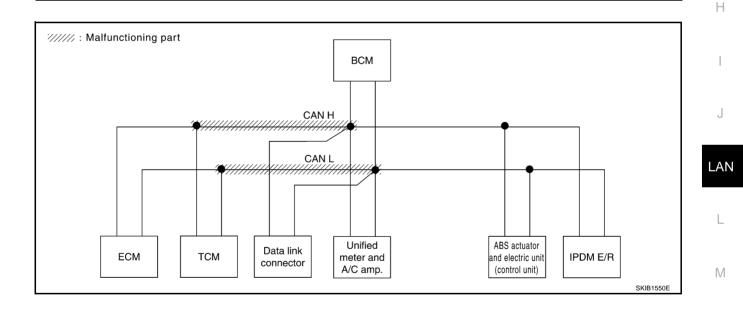
#### NOTE:

If a check mark is put on "NG" on "INITIAL DIAG (Initial diagnosis)", replace the control unit.

#### Case 1

Check harness between TCM and data link connector. Refer to <u>LAN-45, "Inspection Between TCM and Data</u> <u>Link Connector Circuit</u>".

				CAN								
SELECT SYSTEM screen		Initial	Tranamit			Receive	•			SELE-DIAG BESULTS		
3LLL01 3131		Initial diagnosis	Transmit diagnosis	ECM	тсм	METER /M&A	BCM /SEC	VDC/TCS /ABS	IPDM E/R	SEE -DIAC	NEGULI G	
ENGINE	_	NG	UNKWN	_	UNKWN		UNK			CAN COMM CIRCUIT (U1000)	CAN COMY CIRCUIT (UN01)	
A/T	-	NG	UNKWN	UNKWN	-	UNKWN	-		-	CAN COMM CIRCUIT (UN000)	-	
METER A/C AMP	No indication	_	UNKWN	UNKWN	UNI	_	UNKWN	UNKWN	-	CAN COMM CIRCUIT (UN000)	_	
BCM	No indication	NG	UNKWN		-	UNKWN	-	_	UNKWN	CAN COMM CIRCUIT (U1000)	_	
ABS	_	NG	UNKWN	UNKWN	UNKWN	-	-	_	-	CAN COMIN CIRCUIT	_	
IPDM E/R	No indication	_	UNKWN	UNKWN	-	-	UNKWN	_	_	CAN COMIN CIRCUIT	_	



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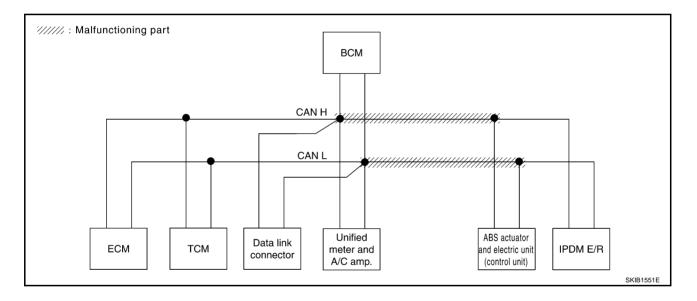
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#### Case 2

Check harness between data link connector and ABS actuator and electric unit (control unit). Refer to <u>LAN-45</u>, "Inspection Between Data Link Connector and ABS Actuator and Electric Unit (Control Unit) Circuit".

				CAN								
SELECT SYSTEM screen		Initial	Transmit			Receive	diagnosis			SELF-DIAG RESULTS		
SELECT STOP		diagnosis		ECM	тсм	METER /M&A	BCM /SEC	VDC/TCS /ABS	IPDM E/R			
ENGINE	-	NG	UNKWN	-	UNKWN	UNKWN	UNKWN		UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMIN CIRCUI (UN01)	
A/T	_	NG	UNKWN	UNKWN	-	UNKWN	-		Ι	CAN COMM CIRCUIT (UN000)	—	
METER A/C AMP	No indication	_	UNKWN	UNKWN	UNKWN	-	UNKWN		Ι	CAN COMM CIRCUIT (UN000)	-	
BCM	No indication	NG	UNKWN	UNKWN	-	UNKWN	-	-		CAN COMM CIRCUIT (U1000)	_	
ABS	_	NG	UNKWN	UNKWN		_	-	I	-	CAN COMIC CIRCUIT (UN00)	_	
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	CAN COMM CIRCUIT (U 000)	_	





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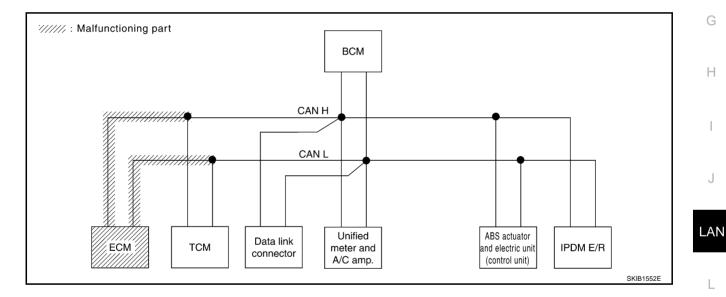
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#### Case 3

Check ECM circuit. Refer to LAN-46, "ECM Circuit Inspection" .

			<b>-</b>	CAN	DIAG SU	PPORT N	INTR				
SELECT SYST	FM screen	Initial	Transmit			Receive				SELF-DIAG	BESULTS
		diagnosis			тсм	METER /M&A	BCM /SEC	VDC/TCS /ABS	IPDM E/R	OLLI DING	
ENGINE	-	NG		-	UNI		UNKWN		UNKWN	CAN COMIN CIRCUIT (U 1000)	CAN COMP CIRCUIT (UV01)
A/T	-	NG	UNKWN		_	UNKWN	-	UNKWN	_	CAN COMM CIRCUIT (U 000)	-
METER A/C AMP	No indication	-	UNKWN		UNKWN	_	UNKWN	UNKWN	-	CAN COMM CIRCUIT (UN000)	_
BCM	No indication	NG	UNKWN		-	UNKWN	-	_	UNKWN	CAN COMM CIRCUIT (U1000)	_
ABS	_	NG	UNKWN		UNKWN	_	—	_	-	CAN COMIN CIRCUIT (UN00)	_
IPDM E/R	No indication	-	UNKWN		-	-	UNKWN	-	-	CAN COMIN CIRCUIT (UN00)	_

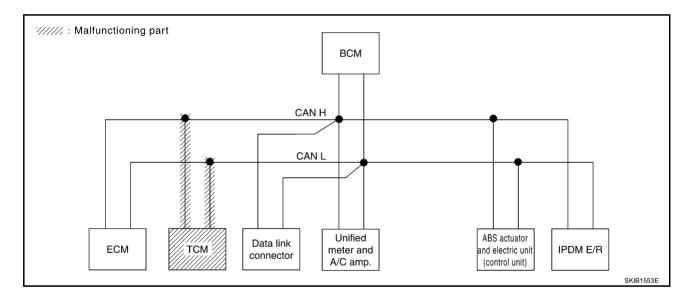


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#### Case 4

Check TCM circuit. Refer to LAN-47, "TCM Circuit Inspection" .

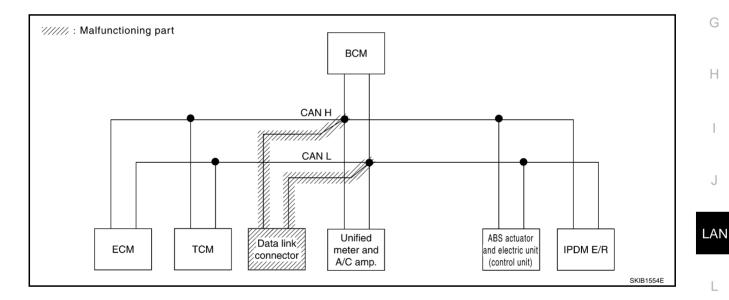
				CAN	DIAG SU	PPORT N	1NTR				
SELECT SYST	FM screen	Initial	Transmit			Receive	diagnosis			SELF-DIAG	BESULTS
		diagnosis		ECM	тсм	METER /M&A	BCM /SEC	VDC/TCS /ABS	IPDM E/R		
ENGINE	-	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN	CAN COMN CIRCUIT (UV00)	CAN COMIN CIRCU (UN01)
A/T	_	NG	UNKWN		_	UNKWN	-	UNKWN	Ι	CAN COMM CIRCUIT (UV000)	_
METER A/C AMP	No indication	—	UNKWN	UNKWN		—	UNKWN	UNKWN	-	CAN COMM CIRCUIT (UN000)	_
ВСМ	No indication	NG	UNKWN	UNKWN	-	UNKWN	-	_	UNKWN	CAN COMM CIRCUIT (U1000)	_
ABS	-	NG	UNKWN	UNKWN		_	-	-	I	CAN COMU CIRCUIT (UN00)	_
IPDM E/R	No indication	—	UNKWN	UNKWN	-	—	UNKWN	—	Ι	CAN COMM CIRCUIT (U1000)	_



#### Case 5

Check data link connector circuit. Refer to LAN-47, "Data Link Connector Circuit Inspection" .

				CAN	DIAG SU	PPORT N	/NTR				
SELECT SYST	FM screen	Initial	Transmit			Receive	diagnosis			SELF-DIAG	RESULTS
		diagnosis		ECM	тсм	METER /M&A	BCM /SEC	VDC/TCS /ABS	IPDM E/R		
ENGINE	_	NG	UNKWN	-	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMM CIRCUIT (U1001)
A/T	_	NG	UNKWN	UNKWN	-	UNKWN	_	UNKWN	_	CAN COMM CIRCUIT (U1000)	_
METER A/C AMP	No indication	-	UNKWN	UNKWN	UNKWN	_	UNKWN	UNKWN	_	CAN COMM CIRCUIT (U1000)	_
BCM	No indication	NG	UNKWN	UNKWN	-	UNKWN	_	-	UNKWN	CAN COMM CIRCUIT (U1000)	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	-	-	-	CAN COMM CIRCUIT (U1000)	_
IPDM E/R	No indication	-	UNKWN	UNKWN	-	-	UNKWN	-	-	CAN COMM CIRCUIT (U1000)	_



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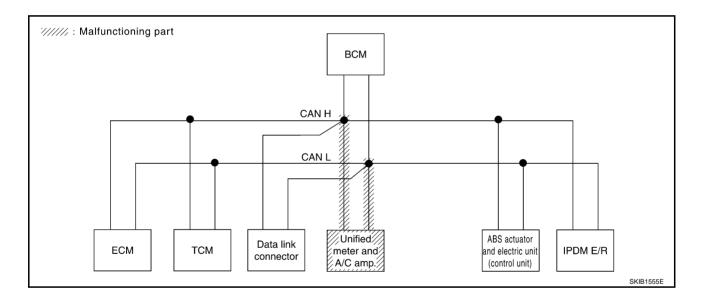
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#### Case 6

Check unified meter and A/C amp. circuit. Refer to LAN-48, "Unified Meter and A/C Amp. Circuit Inspection" .

				CAN	DIAG SU						
SELECT SYST	EM screen	Initial	Transmit		1	Receive	diagnosis			SELF-DIAG	RESULTS
		diagnosis		ECM	тсм	METER /M&A	BCM /SEC	VDC/TCS /ABS	IPDM E/R		
ENGINE	-	NG	UNKWN	_	UNKWN		UNKWN	UNKWN	UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMU CIRCUI (UN01)
A/T	_	NG	UNKWN	UNKWN	-		I	UNKWN	-	CAN COMM CIRCUIT (UV000)	_
METER A/C AMP	No indication	_	UNKWN	UNKWN	UNKWN	I	UNKWN	UNKWN		CAN COMM CIRCUIT (UN000)	_
BCM	No indication	NG	UNKWN	UNKWN	_	UNKWN	-	-	UNKWN	CAN COMM CIRCUIT (U1000)	_
ABS	-	NG	UNKWN	UNKWN	UNKWN	-	-	-	-	CAN COMM CIRCUIT (U1000)	_
IPDM E/R	No indication	—	UNKWN	UNKWN	-		UNKWN	—	—	CAN COMM CIRCUIT (U1000)	_



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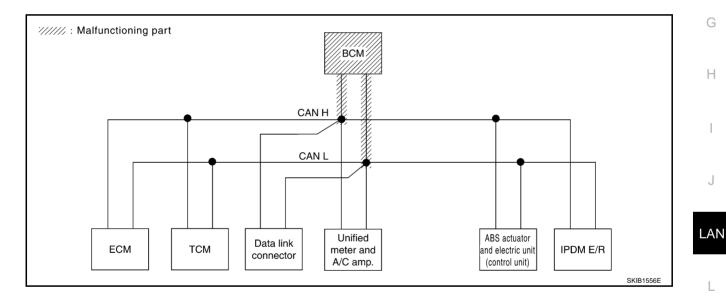
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#### Case 7

Check BCM circuit. Refer to LAN-48, "BCM Circuit Inspection" .

				CAN	DIAG SU	PPORT N	INTR				
SELECT SYST	FM screen	Initial	Transmit		_	Receive				SELF-DIAG	BESULTS
	LWBORCON		diagnosis		тсм	METER /M&A	BCM /SEC	VDC/TCS /ABS	IPDM E/R	OLLI DINC	
ENGINE	-	NG	UNKWN	_	UNKWN	UNKWN		UNKWN	UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMM CIRCUIT (UN01)
A/T	-	NG	UNKWN	UNKWN	-	UNKWN	_	UNKWN	-	CAN COMM CIRCUIT (U1000)	_
METER A/C AMP	No indication	_	UNKWN	UNKWN	UNKWN	-		UNKWN	-	CAN COMM CIRCUIT	_
BCM	No indication	NG	UNKWN	UNKWN	-	UNKWN	_	_	UNKWN	CAN COMM CIRCUIT (U1000)	_
ABS	-	NG	UNKWN	UNKWN	UNKWN	-	-	1	-	CAN COMM CIRCUIT (U1000)	_
IPDM E/R	No indication	-	UNKWN	UNKWN	-	-	UNKWN	-	-		-



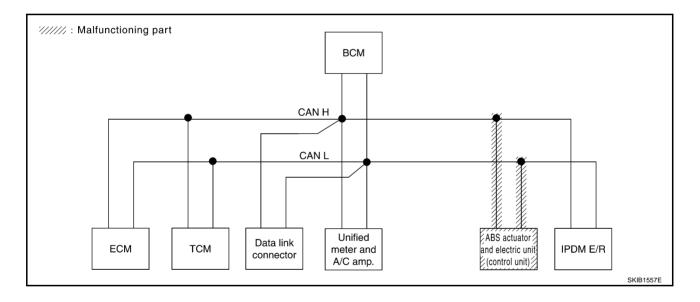
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#### Case 8

Check ABS actuator and electric unit (control unit) circuit. Refer to <u>LAN-49</u>, "ABS Actuator and Electric Unit (<u>Control Unit</u>) <u>Circuit Inspection</u>".

				CAN	DIAG SU	PPORT N	1NTR				
SELECT SYST	EM screen	Initial	Transmit			Receive	diagnosis			SELF-DIAG	BESULTS
0222010101		diagnosis			тсм	METER /M&A	BCM /SEC	VDC/TCS /ABS	IPDM E/R		
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN		UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMM CIRCUIT (UN001)
A/T	_	NG	UNKWN	UNKWN	-	UNKWN	-		-	CAN COMM CIRCUIT (UV000)	_
METER A/C AMP	No indication	-	UNKWN	UNKWN	UNKWN	-	UNKWN		I	CAN COMM CIRCUIT (UV000)	—
BCM	No indication	NG	UNKWN	UNKWN	-	UNKWN	Ι	-	UNKWN	CAN COMM CIRCUIT (U1000)	_
ABS	_	NG		UNKWN	UNKWN	_	_	_	_	CAN COMM CIRCUIT (UV00)	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	CAN COMM CIRCUIT (U1000)	_

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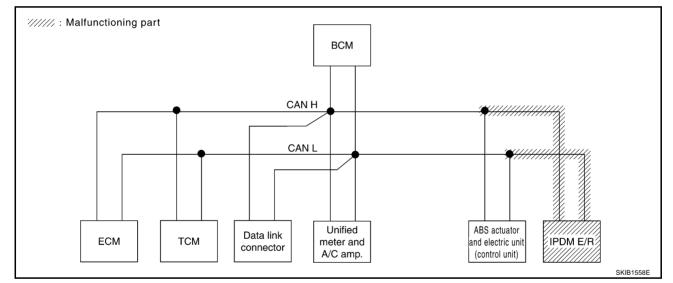
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#### Case 9

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Check IPDM E/R circuit. Refer to LAN-49, "IPDM E/R Circuit Inspection" .

				CAN	DIAG SU	PPORT N	1NTR				
SELECT SYST	EM scroop	Initial	Tuo us a usa it			Receive of				SELF-DIAG	RESULTS
SELECT STOT		Initial diagnosis	Transmit diagnosis	ECM	тсм	METER /M&A	BCM /SEC	VDC/TCS /ABS	IPDM E/R		
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMM CIRCUIT (UN01)
A/T	_	NG	UNKWN	UNKWN		UNKWN		UNKWN		CAN COMM CIRCUIT (U1000)	_
METER A/C AMP	No indication		UNKWN	UNKWN	UNKWN	-	UNKWN	UNKWN	Ι	CAN COMM CIRCUIT (U1000)	—
BCM	No indication	NG	UNKWN	UNKWN	I	UNKWN	—	_		(0.000)	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	-	-	—	-	CAN COMM CIRCUIT (U1000)	_
IPDM E/R	No indication	-	UNKWN	UNKWN	Ι	-	UNKWN	-	Ι	CAN COMM CIRCUIT (UN00)	—



#### Case 10

Check CAN communication circuit. Refer to LAN-50, "CAN Communication Circuit Inspection" .

				CAN	DIAG SU	PPORT M	1NTR				
SELECT SYST	EM screen	Initial	Transmit			Receive				SELF-DIAG	BESULTS
			diagnosis	ECM	тсм	METER /M&A	BCM /SEC	VDC/TCS /ABS	IPDM E/R		
ENGINE	-	NG	UNKWN	-	UNKWN		UNKWN	UNKWN		CAN COMM CIRCUIT (U1000)	CAN COMY CIRCUIT (U 001)
A/T	-	NG	UNKWN		-	UNK	-		-	CAN COMM CIRCUIT (UN000)	_
METER A/C AMP	No indication	-	UNKWN	UNKWN	UNKWN	-	UNKWN	UNKWN	-	CAN COMM CIRCUIT (UN000)	_
BCM	No indication	NG	UNKWN	UNKWN	I	UNKWN	_	_	UNKWN	CAN COMM CIRCUIT (U1000)	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	—	_	-	CAN COMIN CIRCUIT (UN00)	_
IPDM E/R	No indication	-	UNKWN	UNKWN	-	-	UNKWN	-	Ι	CAN COMM CIRCUIT (UN00)	_

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#### Case 11

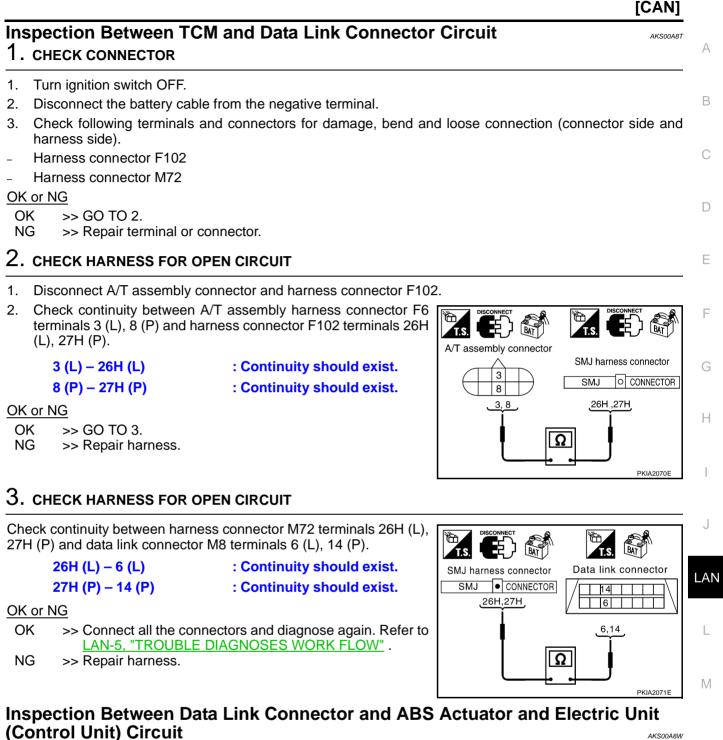
Check IPDM E/R ignition relay circuit continuously sticks "OFF". Refer to <u>LAN-53</u>, "IPDM E/R Ignition Relay <u>Circuit Inspection</u>".

				CAN	DIAG SU	PPORT N	1NTR				
SELECT SYST	EM scroon	Initial	Tronomit			Receive				SELF-DIAG	BESUITS
OLLEON OTON			Transmit diagnosis	ECM	тсм	METER /M&A	BCM /SEC	VDC/TCS /ABS	IPDM E/R		
ENGINE	_	NG	UNKWN	_		UNKWN	UNKWN		UNKWN	CAN COMM CIRCUIT (Un000)	CAN COMIN CIRCU (UN01)
A/T	-	NG	UNKWN	UNKWN	-	UNKWN	-	UNKWN	-	CAN COMM CIRCUIT (U1000)	-
METER A/C AMP	No indication	-	UNKWN	UNKWN		-	UNKWN		-	CAN COMM CIRCUIT (UN000)	—
BCM	No indication	NG	UNKWN	UNKWN	-	UNKWN	-	-	UNKWN	CAN COMM CIRCUIT (U1000)	—
ABS	_	NG	UNKWN	UNKWN	UNKWN	-	-	-	-	CAN COMM CIRCUIT (U1000)	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	-		CAN COMM CIRCUIT (U1000)	—

#### Case 12

Check IPDM E/R ignition relay circuit continuously sticks "ON". Refer to <u>LAN-53</u>, "IPDM E/R Ignition Relay Circuit Inspection".

				CAN	DIAG SU		INTR				
SELECT SYST	FM screen	Initial	Transmit			Receive	diagnosis			SELF-DIAG	RESULTS
		diagnosis		ECM	тсм	METER /M&A	BCM /SEC	VDC/TCS /ABS	IPDM E/R		
ENGINE	-	NG	UNKWN	-	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMM CIRCUIT (U1001)
A/T	_	NG	UNKWN	-	-	_	_	UNKWN	-	CAN COMM CIRCUIT (UN00)	_
METER A/C AMP	No indication	_	UNKWN	UNKWN	UNKWN	-	UNKWN	UNKWN	-	CAN COMM CIRCUIT (U1000)	_
ВСМ	No indication	NG	UNKWN	UNKWN	-	UNKWN	_	—	UNKWN	CAN COMM CIRCUIT (U1000)	_
ABS	-	NG	UNKWN	-	UNKWN	-	-	-	-	CAN COMM CIRCUIT (UN000)	_
IPDM E/R	No indication	_	UNKWN	UNKWN	—	_	UNKWN	_	-	CAN COMM CIRCUIT (U1000)	_



**1. CHECK CONNECTOR** 

- 1. Turn ignition switch OFF.
- 2. Disconnect the battery cable from the negative terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector M15
- Harness connector E108

OK or NG

- OK >> GO TO 2.
- NG >> Repair terminal or connector.

### LAN-45

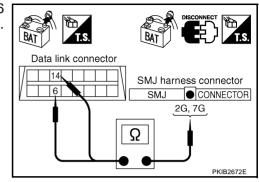
# $\overline{2}$ . CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect harness connector M15.
- Check continuity between data link connector M8 terminals 6 (L), 14 (P) and harness connector M15 terminals 2G (L), 7G (P).
  - 6 (L) 2G (L) 14 (P) – 7G (P)

: Continuity should exist. : Continuity should exist.

#### OK or NG

- OK >> GO TO 3.
- NG >> Repair harness.



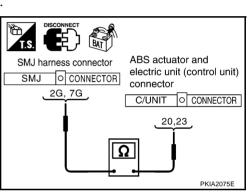
### $\mathbf{3}$ . Check harness for open circuit

- 1. Disconnect ABS actuator and electric unit (control unit) connector.
- Check continuity between harness connector E108 terminals 2G (L), 7G (P) and ABS actuator and electric unit (control unit) harness connector E51 terminals 20 (L), 23 (P).
  - 2G (L) 20 (L)
  - 7G (P) 23 (P)
- : Continuity should exist.

: Continuity should exist.

#### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to LAN-5, "TROUBLE DIAGNOSES WORK FLOW" . NG >> Repair harness.



AKS00A8X

### ECM Circuit Inspection

#### 1. CHECK CONNECTOR

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

#### OK or NG

- OK >> GO TO 2.
- NG >> Repair terminal or connector.

### 2. CHECK HARNESS FOR OPEN CIRCUIT

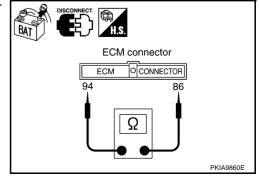
- 1. Disconnect ECM connector.
- Check resistance between ECM harness connector F101 terminals 94 (L) and 86 (P).

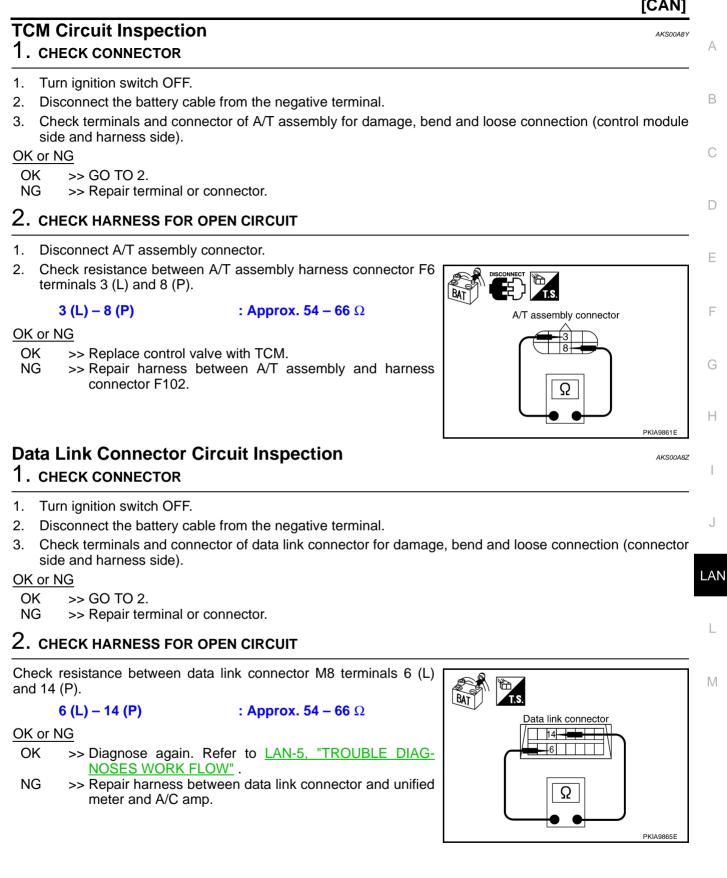
### 94 (L) – 86 (P)

: Approx. 108 – 132 Ω

#### OK or NG

- OK >> Replace ECM.
- NG >> Repair harness between ECM and A/T assembly.





### Unified Meter and A/C Amp. Circuit Inspection

### 1. CHECK CONNECTOR

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

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

#### 2. CHECK HARNESS FOR OPEN CIRCUIT

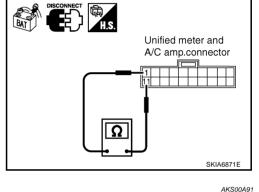
- 1. Disconnect unified meter and A/C amp. connector.
- Check resistance between unified meter and A/C amp. harness connector M48 terminals 1 (L) and 11 (P).

#### 1 (L) – 11 (P)

: **Approx. 54 – 66** Ω

#### OK or NG

- OK >> Replace unified meter and A/C amp.
- NG >> Repair harness between unified meter and A/C amp. and data link connector.



### **BCM Circuit Inspection**

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

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

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

### 2. CHECK HARNESS FOR OPEN CIRCUIT

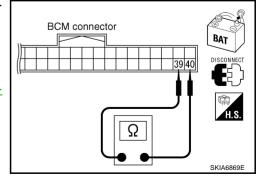
- 1. Disconnect BCM connector.
- Check resistance between BCM harness connector M90 terminals 39 (L) and 40 (P).

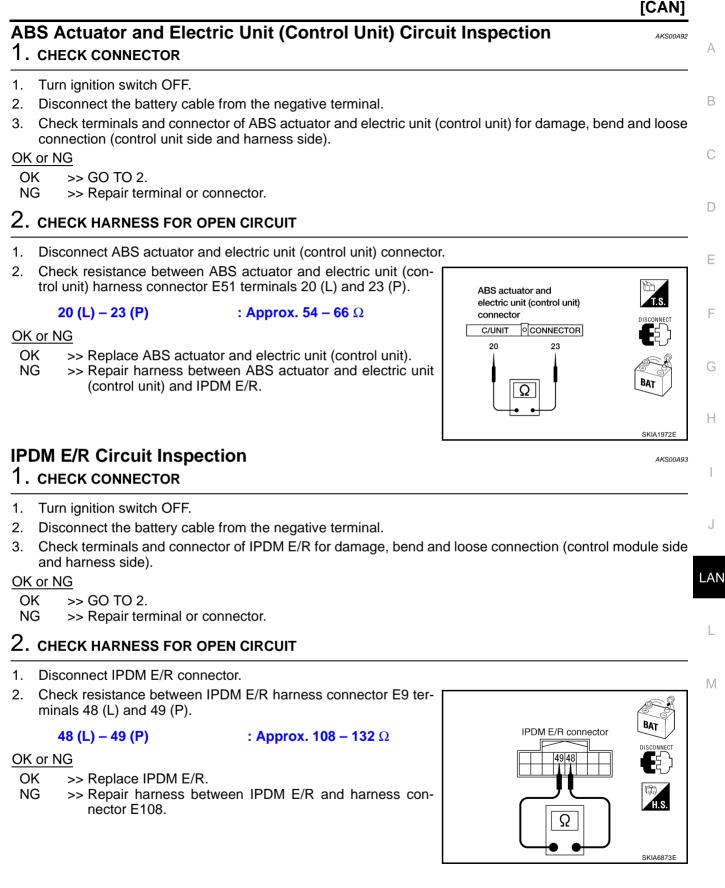
39 (L) – 40 (P)

: **Approx. 54 – 66** Ω

#### OK or NG

- OK >> Replace BCM. Refer to <u>BCS-18</u>, "Removal and Installation of <u>BCM</u>".
- NG >> Repair harness between BCM and data link connector.





### **CAN Communication Circuit Inspection**

### **1. CHECK CONNECTOR**

- 1. Turn ignition switch OFF.
- 2. Disconnect the battery cable from the negative terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (control module side, meter side, control unit side and harness side).
- ECM
- A/T assembly \_
- Unified meter and A/C amp.
- BCM
- ABS actuator and electric unit (control unit)
- IPDM E/R
- Between ECM and IPDM E/R

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

### 2. CHECK HARNESS FOR SHORT CIRCUIT

- 1. Disconnect following connectors.
- ECM connector
- A/T assembly connector
- Harness connector F102 \_

94 (L) - 86 (P)

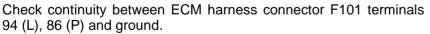
2. Check continuity between ECM harness connector F101 terminals 94 (L) and 86 (P).

#### : Continuity should not exist.

#### OK or NG

- OK >> GO TO 3.
- NG >> Check the following harnesses. If any harness is damaged, repair the harness.
  - Harness between ECM and A/T assembly
  - Harness between ECM and harness connector F102

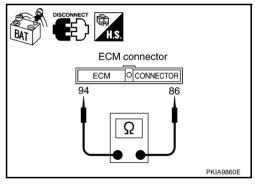
### 3. CHECK HARNESS FOR SHORT CIRCUIT

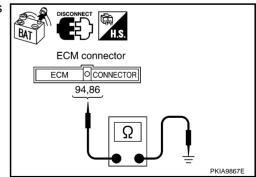


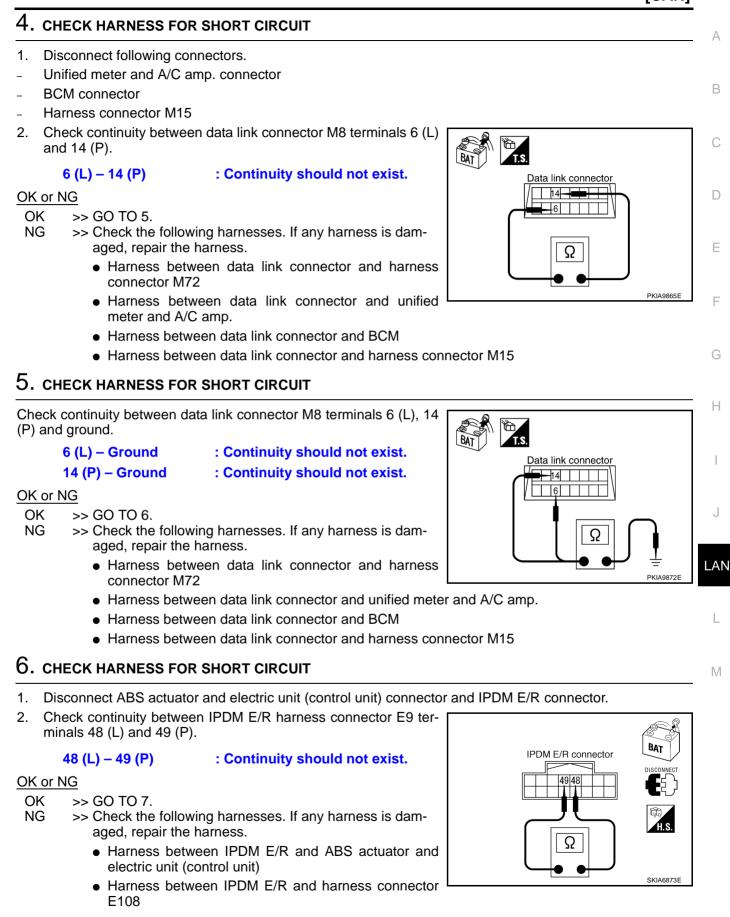
- 94 (L) Ground
- 86 (P) Ground
- : Continuity should not exist. : Continuity should not exist.

#### OK or NG

- OK >> GO TO 4.
- NG >> Check the following harnesses. If any harness is damaged, repair the harness.
  - Harness between ECM and A/T assembly
  - Harness between ECM and harness connector F102







### 7. CHECK HARNESS FOR SHORT CIRCUIT

Check continuity between IPDM E/R harness connector E9 terminals 48 (L), 49 (P) and ground.

- 48 (L) Ground 49 (P) – Ground
- : Continuity should not exist.
- : Continuity should not exist.

OK or NG

- OK >> GO TO 8.
- NG >> Check the following harnesses. If any harness is damaged, repair the harness.
  - Harness between IPDM E/R and ABS actuator and electric unit (control unit)
  - Harness between IPDM E/R and harness connector E108

: Approx. 108 – 132  $\Omega$ 

Fill in described symptoms on the column "Symptom" in the check sheet.

Connect all the connectors, and then make sure that the symptom is reproduced.

### 8. CHECK ECM AND IPDM E/R INTERNAL CIRCUIT

- Remove ECM and IPDM E/R from vehicle. 1.
- 2. Check resistance between ECM terminals 94 and 86.

94 - 86: Approx. 108 – 132  $\Omega$ 

3. Check resistance between IPDM E/R terminals 48 and 49.

48 - 49

#### OK or NG

1.

2.

OK or NG OK

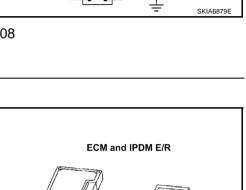
NG

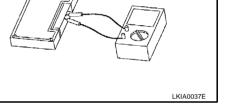
OK >> GO TO 9.

9. CHECK SYMPTOM

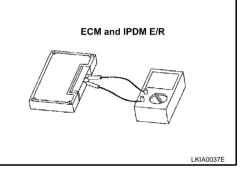
>> GO TO 10.

NG >> Replace ECM and/or IPDM E/R.





# IPDM E/R connector BAT 49 48 48, 49 Ω



>> Refer to LAN-13. "Example of Filling in Check Sheet When Initial Conditions Are Not Reproduced"

### [CAN]

10	). CHECK UNIT REPRODUCIBILITY	А
Per	form the following procedure for each unit, and then perform reproducibility test.	1
1.	Turn ignition switch OFF.	
2.	Disconnect the battery cable from the negative terminal.	В
3.	Disconnect the unit connector.	
4.	Connect the battery cable to the negative terminal.	0
5.	Make sure that the symptom filled in the "Symptom" of the check sheet is reproduced. (Do not confuse it with the symptom related to removed unit.)	С
6.	Make sure that the same symptom is reproduced.	D
-	A/T assembly	D
-	Unified meter and A/C amp.	
-	BCM	Е
-	ABS actuator and electric unit (control unit)	
-	ECM	
-	IPDM E/R	F
Ch	eck results	
	eproduced>>Install removed unit, and then check the other unit. ot reproduced>>Replace removed unit.	G
IPI	DM E/R Ignition Relay Circuit Inspection	
Ch	eck the following. If no malfunction is found, replace the IPDM E/R.	Н
•	IPDM E/R power supply circuit. Refer to PG-26, "IPDM E/R Power/Ground Circuit Inspection"	
•	Ignition power supply circuit. Refer to <u>PG-10, "IGNITION POWER SUPPLY — IGNITION SW. IN "ON"</u>	
	AND/OR "START"".	I

L

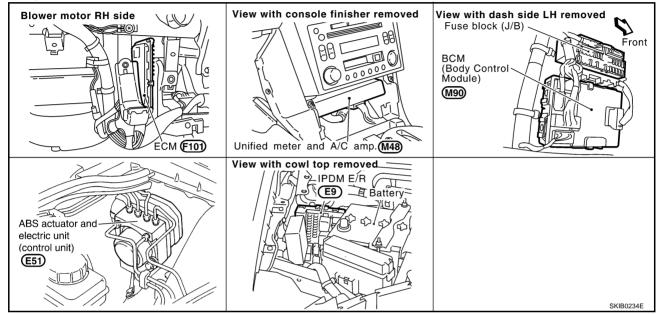
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### **System Description**

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

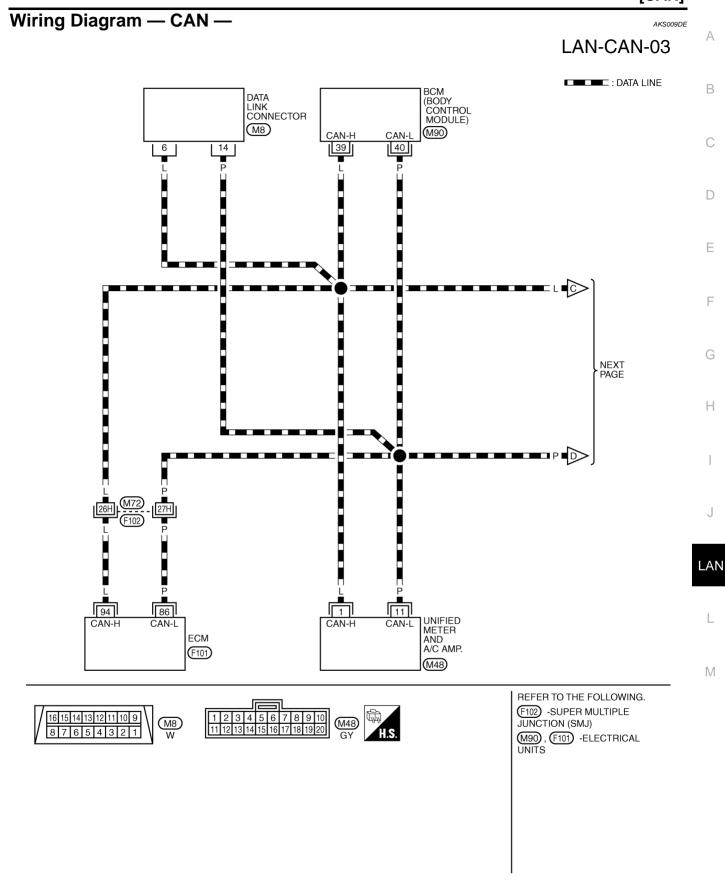
### **Component Parts and Harness Connector Location**



AKS009DC

AKS009DD

[CAN]

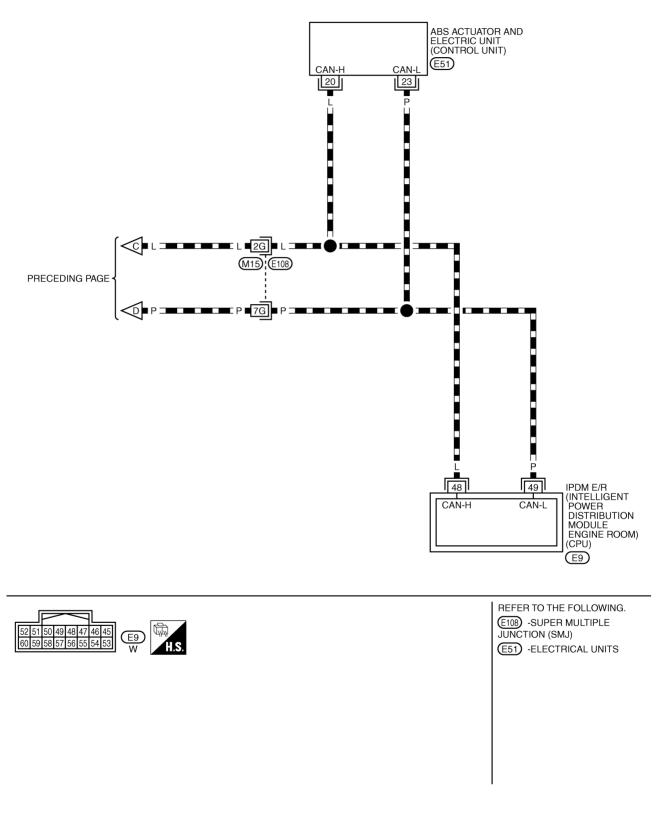


TKWT2518E

[CAN]

### LAN-CAN-04

: DATA LINE



TKWT1555E

### **CHECK SHEET**

### [CAN]

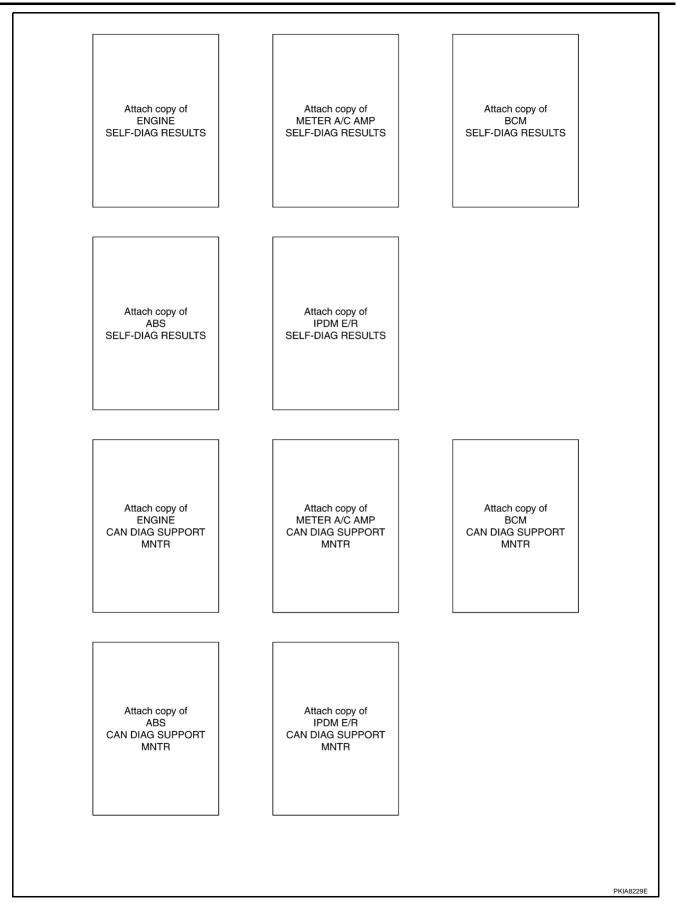
#### AKS00A9N

А

#### NOTE:

If a check mark is put on "NG" on "INITIAL DIAG (Initial diagnosis)", replace the control unit.

Initial diagnosis       Transmit diagnosis       SELF-DIAG RESULTS         ENGINE       -       NG       UNKWN       -       UNKWN       -       UNKWN       CAN COMM CIRCUT (U100)         ENGINE       -       NG       UNKWN       UNKWN       UNKWN       -       UNKWN       CAN COMM CIRCUT (U100)       -         ETER A/C AMP No indication       -       UNKWN       UNKWN       UNKWN       -       UNKWN       -       ON COMM CIRCUT (U100)       -         GRM       No indication       NG       UNKWN       UNKWN       UNKWN       -       -       -       ON COMM CIRCUT (U100)       -         GRM       No indication       NG       UNKWN       UNKWN       -       -       -       -       -       CAN COMM CIRCUT (U100)       -       -         State       -       NG       UNKWN       UNKWN       -       -       -       -       CAN COMM CIRCUT (U1000)       -       -       -       -       CAN COMM CIRCUT (U1000)       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -	SELECT STSTEW Screen     Initial diagnosis     Transmit diagnosis     ECM     METER /M&A     BCM /SEC     VDC/TCS /ABS     IPDM E/R       VGINE     -     NG     UNKWN     -     UNKWN     UNKWN     CAN COMM CIRCUT (U1000)     CAN COMM CIRCUT (U1000)     -       ETER A/C AMP     No indication     -     UNKWN     UNKWN     UNKWN     -     UNKWN     CAN COMM CIRCUT (U1000)     -       CM     No indication     NG     UNKWN     UNKWN     UNKWN     -     -     CAN COMM CIRCUT (U1000)     -       CM     No indication     NG     UNKWN     UNKWN     -     -     -     CAN COMM CIRCUT (U1000)     -       CM     No indication     -     UNKWN     UNKWN     -     -     -     CAN COMM CIRCUT (U1000)     -       DM E/R     No indication     -     UNKWN     UNKWN     -     -     CAN COMM CIRCUT (U1000)     -					CAN DIA	G SUPPOI					
Insgritter       Insgritter       Insgritter       Insgritter       Instruction       Instruction         INGINE       -       NG       UNKWN       -       UNKWN       -       UNKWN       CAN COMM CIRCUIT (U1001)         ItETER A/C AMP       No indication       -       UNKWN       UNKWN       -       UNKWN       CAN COMM CIRCUIT (U1001)       -         ItETER A/C AMP       No indication       -       UNKWN       UNKWN       -       UNKWN       CAN COMM CIRCUIT (U1001)       -         ISCM       No indication       NG       UNKWN       UNKWN       -       -       UNKWN       CAN COMM CIRCUIT (U1001)       -         ISS       -       NG       UNKWN       UNKWN       -       -       -       CAN COMM CIRCUIT (U1000)       -         PDM E/R       No indication       -       UNKWN       UNKWN       -       UNKWN       -       -       CAN COMM CIRCUIT (U1000)       -       -         PDM E/R       No indication       -       UNKWN       UNKWN       -       UNKWN       -       -       CAN COMM CIRCUIT (U1000)       -       -       -       No indication (U1000)       -       -       -       -       -       -       -	MGINE     -     NG     UNKWN     -     UNKWN     UNKWN     -     UNKWN     CAN COMM CIRCUT (U1000)     CAN COMM CIRCUT (U1000)     CAN COMM CIRCUT (U1000)       ETER A/C AMP     No indication     -     UNKWN     UNKWN     UNKWN     UNKWN     -     CAN COMM CIRCUT (U1000)     -       CM     No indication     NG     UNKWN     UNKWN     UNKWN     -     -     UNKWN     CAN COMM CIRCUT (U1000)     -       CM     No indication     NG     UNKWN     UNKWN     -     -     -     UNKWN     CAN COMM CIRCUT (U1000)     -       CM     No indication     -     UNKWN     UNKWN     -     -     -     CAN COMM CIRCUT (U1000)     -       DM E/R     No indication     -     UNKWN     UNKWN     -     UNKWN     -     CAN COMM CIRCUT (U1000)     -	SELECT SYST	EM screen		Transmit							RESULTS
Nome       Image       ONKWN       Image	Caline     -     NG     ONKWN     -     ONKWN     UNKWN     (U1000)     (U1000)       ETER A/C AMP     No indication     -     UNKWN     UNKWN     UNKWN     -     CAN COMM CIRCUIT     -       CM     No indication     NG     UNKWN     UNKWN     UNKWN     -     -     UNKWN     -     -       CM     No indication     NG     UNKWN     UNKWN     UNKWN     -     -     UNKWN     CAN COMM CIRCUIT     -       CM     No indication     -     UNKWN     UNKWN     -     -     -     CAN COMM CIRCUIT     -       CM     No indication     -     UNKWN     UNKWN     -     -     -     CAN COMM CIRCUIT     -       DM E/R     No indication     -     UNKWN     UNKWN     -     UNKWN     -     -			diagnosis	diagnosis	ECM	METER /M&A	BCM /SEC	VDC/TCS /ABS	IPDM E/R		
ETER A/C ANIP No indication     -     UNKWN     UNKWN     -     -     (U1000)     -       CM     No indication     NG     UNKWN     UNKWN     UNKWN     -     -     UNKWN     CAN COMM CIRCUIT (U1000)     -       BS     -     NG     UNKWN     UNKWN     -     -     -     CAN COMM CIRCUIT (U1000)     -       PDM E/R     No indication     -     UNKWN     UNKWN     -     UNKWN     -     -	ETER ACCAMP No Indication       -       UNKWN       UNKWN       -       -       (U1000)       -         CM       No indication       NG       UNKWN       UNKWN       UNKWN       -       -       UNKWN       CAN COMM CIRCUIT (U1000)       -         3S       -       NG       UNKWN       UNKWN       -       -       -       CAN COMM CIRCUIT (U1000)       -         DM E/R       No indication       -       UNKWN       UNKWN       -       UNKWN       -       -       CAN COMM CIRCUIT (U1000)       -         ymptoms :       -       UNKWN       UNKWN       -       UNKWN       -       -       CAN COMM CIRCUIT (U1000)       -	NGINE	_	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	(U1000)	CAN COMM CIRCUIT (U1001)
Min     No indication     NG     UNKWN     UNKWN     Image: Constraint of the second se	Mile     No indication     ING     UNKWN     UNKWN     Image: Constraint of the second	TER A/C AMP	No indication	_	UNKWN	UNKWN	_	UNKWN	UNKWN	_	(U1000)	
ING     UNKWN     UNKWN     UNKWN     ING     ING     ING     ING       DM E/R     No indication     -     UNKWN     UNKWN     -     UNKWN     -     -       ymptoms :     -     -     -     -     -     -     -	DM E/R     No indication     -     UNKWN     UNKWN     -     UNKWN     -     CAN COMM CIRCUIT     -       ymptoms :     -     -     -     -     -     -     -     -	м	No indication	NG	UNKWN	UNKWN	UNKWN	-	-		(U1000)	—
JM E/R     No indication     -     UNKWN     -     -     (U1000)     -   (mptoms :       Attach copy of     Attach copy of	JM E/R     No indication     -     UNKWN     -     -     (U1000)     -   (mptoms :       Attach copy of     Attach copy of	S	_	NG	UNKWN	UNKWN	-	-	-		(U1000)	
Attach copy of Attach copy of	Attach copy of	OM E/R	No indication	-	UNKWN	UNKWN	_	UNKWN	-	—		_
Attach copy of SELECT SYSTEM	Attach copy of SELECT SYSTEM						]					
				s	Attach co ELECT SY	py of ′STEM			Attach SELECT	copy of SYSTEM		



#### CHECK SHEET RESULTS (EXAMPLE)

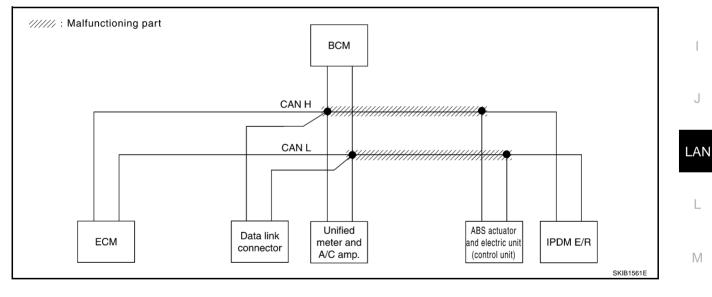
#### NOTE:

If a check mark is put on "NG" on "INITIAL DIAG (Initial diagnosis)", replace the control unit.

#### Case 1

Check harness between data link connector and ABS actuator and electric unit (control unit). Refer to <u>LAN-66</u>. "Inspection Between Data Link Connector and ABS Actuator and Electric Unit (Control Unit) Circuit".

				CAN DIA	G SUPPOI					
SELECT SYST	EM screen	Initial	Transmit		Rec	eive diagn	osis		SELF-DIAG	RESULTS
		diagnosis		ECM	METER /M&A	BCM /SEC	VDC/TCS /ABS	IPDM E/R		
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	-	UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMY CIRCUIT (UN001)
METER A/C AMP	No indication	_	UNKWN	UNKWN	-	UNKWN		-	CAN COMM CIRCUIT (UN00)	-
BCM	No indication	NG	UNKWN	UNKWN	UNKWN	-	-	UNKWN	CAN COMM CIRCUIT (U1000)	-
ABS	_	NG	UNKWN	UNKWN	_	-	-	-	CAN COMM CIRCUIT (U 000)	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNKWN	_	_	CAN COMM CIRCUIT (U 000)	_



А

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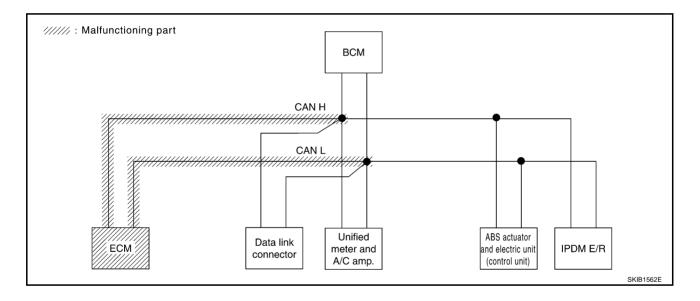
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#### Case 2

Γ

Check ECM circuit. Refer to LAN-67, "ECM Circuit Inspection" .

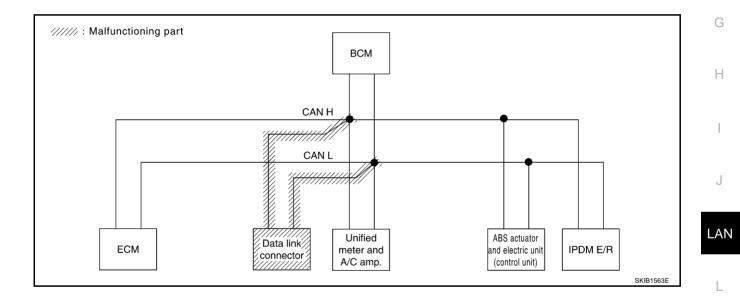
				CAN DIA	G SUPPOF					
SELECT SYST	FM screen	Initial	Transmit		Rec	eive diagn	osis		SELF-DIAG	BESULTS
		diagnosis	diagnosis diagnosis		METER /M&A	BCM /SEC	VDC/TCS /ABS	IPDM E/R		
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMM CIRCUIT (UN001)
METER A/C AMP	No indication	_	UNKWN	UNKWN	—	UNKWN	UNKWN	_	CAN COMM CIRCUIT (U 1000)	-
ВСМ	No indication	NG	UNKWN	UNKWN	UNKWN	—	—	UNKWN	CAN COMM CIRCUIT (U1000)	_
ABS	_	NG	UNKWN	UNKWN	_	—	—	-	CAN COMM CIRCUIT (UN000)	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNKWN	_	_	CAN COMM CIRCUIT (U 000)	_



#### Case 3

Check data link connector circuit. Refer to LAN-68, "Data Link Connector Circuit Inspection" .

				CAN DIA	G SUPPOF	RT MNTR						
SELECT SYST	FM screen	Initial	Transmit		Rec	eive diagn	osis			RESULTS		
OLLEON OTON	LW SCIECH	diagnosis	diagnosis	ECM	METER /M&A	BCM /SEC	VDC/TCS /ABS	IPDM E/R				
ENGINE	-	NG	UNKWN	-	UNKWN	UNKWN	_	UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMM CIRCUIT (U1001)		
METER A/C AMP	No indication	_	UNKWN	UNKWN	-	UNKWN	UNKWN	-	CAN COMM CIRCUIT (U1000)	-		
BCM	No indication	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMM CIRCUIT		
ABS	_	NG	UNKWN	UNKWN	—	—	—	-	CAN COMM CIRCUIT (U1000)	—		
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNKWN	_	-	CAN COMM CIRCUIT (U1000)	_		



Μ

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В

С

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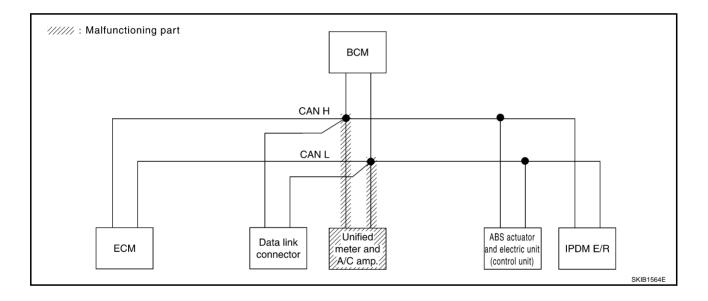
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PKIB2226E

#### Case 4

Check unified meter and A/C amp. circuit. Refer to LAN-68, "Unified Meter and A/C Amp. Circuit Inspection" .

				CAN DIA	G SUPPOR	RT MNTR eive diagn	ocic				
SELECT SYST	EM screen	Initial diagnosis	Transmit diagnosis	ECM	METER /M&A	BCM /SEC	VDC/TCS /ABS	IPDM E/R	- SELF-DIAG RESULTS		
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMM CIRCUIT (UN001)	
METER A/C AMP	No indication	_	UNKWN	UNKWN	_	UNKWN	UNKWN	_	CAN COMM CIRCUIT (UN000)	_	
BCM	No indication	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	CAN COMM CIRCUIT (U1000)	-	
ABS	_	NG	UNKWN	UNKWN	_	-	_	-	CAN COMM CIRCUIT (U1000)	-	
IPDM E/R	No indication	_	UNKWN	UNKWN	-	UNKWN	_	-	CAN COMM CIRCUIT (U1000)	_	



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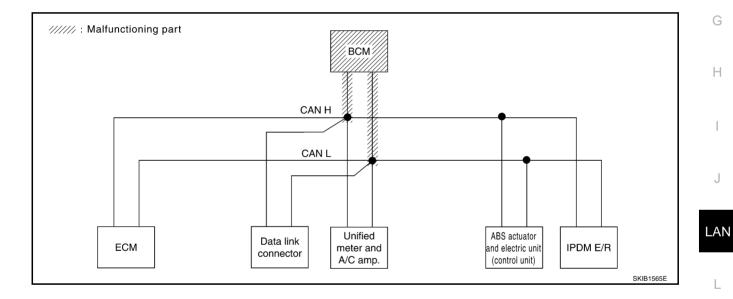
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#### Case 5

Check BCM circuit. Refer to LAN-69, "BCM Circuit Inspection" .

SELECT SYSTEM screen										
	Initial	Transmit		Rec	eive diagn	osis		SELF-DIAG	BESULTS	
	diagnosis		ECM	METER /M&A	BCM /SEC	VDC/TCS /ABS	IPDM E/R			
ENGINE –	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMM CIRCUIT (UN001)	
METER A/C AMP No indication	n —	UNKWN	UNKWN	_	UNKWN	UNKWN		CAN COMM CIRCUIT (UN000)	_	
BCM No indicatio	n NG	UNKWN	UNKWN	UNKWN	-	-	UNKWN	CAN COMM CIRCUIT (U1000)	-	
ABS –	NG	UNKWN	UNKWN	_	-	-	-	CAN COMM CIRCUIT (U1000)	_	
IPDM E/R No indicatio	ı —	UNKWN	UNKWN	_	UNHWN	_	_	CAN COMM CIRCUIT	_	



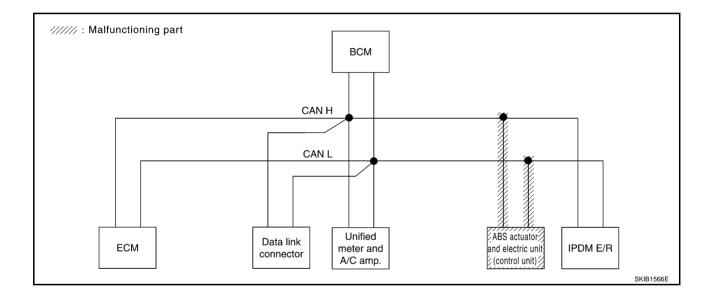
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PKIB2229E

#### Case 6

Check ABS actuator and electric unit (control unit) circuit. Refer to <u>LAN-69</u>, "ABS Actuator and Electric Unit (<u>Control Unit</u>) <u>Circuit Inspection</u>".

				CAN DIA	G SUPPOF	RT MNTR				
SELECT SYST	EM screen	Initial	Transmit		Rec	eive diagn	osis		SELF-DIAG	BESUITS
		diagnosis	Transmit diagnosis	ECM	CM METER BCM VDC/TCS /M&A /SEC /ABS		IPDM E/R		THEODERS	
ENGINE	_	NG	UNKWN	-	UNKWN	UNKWN	—	UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMM CIRCUI (UN001)
METER A/C AMP	No indication	_	UNKWN	UNKWN	_	UNKWN	UNKWN	-	CAN COMM CIRCUIT (UN000)	-
всм	No indication	NG	UNKWN	UNKWN	UNKWN	-	-	UNKWN	CAN COMM CIRCUIT (U1000)	—
ABS	_	NG	UNKWN	UNKWN	_	-	-	-		_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNKWN	_	_	CAN COMM CIRCUIT (U1000)	_



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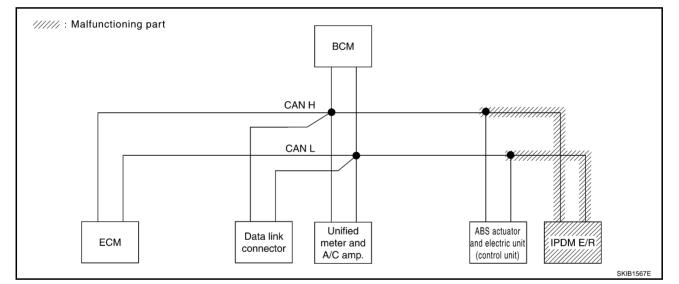
PKIB2230E

#### Case 7

Γ

Check IPDM E/R circuit. Refer to LAN-70, "IPDM E/R Circuit Inspection" .

				CAN DIA	G SUPPOR	RT MNTR				
SELECT SYST	EM coroon	1	<b>T</b>		Rec	eive diagn	osis			BRESULTS
SELECT STST		Initial diagnosis	Transmit diagnosis	ECM	METER /M&A	BCM /SEC	VDC/TCS /ABS	IPDM E/R		
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	_	UNIT	CAN COMM CIRCUIT (U1000)	CAN COMM CIRCUIT (UN001)
METER A/C AMP	No indication	_	UNKWN	UNKWN	_	UNKWN	UNKWN	_	CAN COMM CIRCUIT (U1000)	-
BCM	No indication	NG	UNKWN	UNKWN	UNKWN	-	-		CAN COMM CIRCUIT (U1000)	-
ABS	_	NG	UNKWN	UNKWN	_	-	-	-	CAN COMM CIRCUIT (U1000)	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNKWN	-	_	CAN COMM CIRCUIT	_



#### Case 8

Check CAN communication circuit. Refer to LAN-71, "CAN Communication Circuit Inspection" .

				CAN DIA	G SUPPOF	RT MNTR				
SELECT SYST	FM screen	Initial	Transmit		Rec	eive diagn	osis		SELE-DIAG	RESULTS
		diagnosis	diagnosis	ECM	METER /M&A	BCM /SEC	VDC/TCS /ABS	IPDM E/R		
ENGINE	—	NG	UNKWN		UNIOWN	UNKWN	_	UNION	CAN COMM CIRCUIT (U 000)	CAN COMM CIRCUIT (UN001)
METER A/C AMP	No indication	_	UNKWN	UNKWN	_	UNKWN	UNKWN	_	CAN COMM CIRCUIT (UN000)	-
BCM	No indication	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	CAN COMM CIRCUIT (U1000)	-
ABS	_	NG	UNKWN	UNKWN	_	-	—	-	CAN COMM CIRCUIT (UN000)	-
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNKWN	—	—	CAN COMM CIRCUIT (U 000)	_

Μ

#### Case 9

Check IPDM E/R ignition relay circuit continuously sticks "OFF". Refer to <u>LAN-74</u>, "IPDM E/R Ignition Relay <u>Circuit Inspection</u>".

				CAN DIA	G SUPPOF						
SELECT SYST	EM screen	Initial	Transmit		Rec	eive diagn	OSIS		SELF-DIAG	RESULTS	
		diagnosis	diagnosis	ECM	METER /M&A	BCM /SEC	VDC/TCS /ABS	IPDM E/R			
ENGINE	_	NG	UNKWN	-	UNKWN	UNKWN	_	UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMM CIRCUIT (U1001)	
METER A/C AMP	No indication	Ι	UNKWN	UNKWN	-	UNKWN	UNKWN	_	CAN COMM CIRCUIT (UN000)	_	
BCM	No indication	NG	UNKWN	UNKWN	UNKWN		_	UNKWN	CAN COMM CIRCUIT (U1000)	_	
ABS	_	NG	UNKWN	UNKWN			_	-	CAN COMM CIRCUIT (U1000)	—	
IPDM E/R	No indication	-	UNKWN	UNKWN		UNKWN	_	_	CAN COMM CIRCUIT (U1000)	—	
									(01000)		

#### Case 10

Check IPDM E/R ignition relay circuit continuously sticks "ON". Refer to <u>LAN-74</u>, "IPDM E/R Ignition Relay Circuit Inspection".

				CAN DIA	G SUPPOF	RT MNTR					
SELECT SYST	FM screen	Initial	Transmit		Rec	eive diagn	osis		SELF-DIAG	BESULTS	
		diagnosis			METER /M&A	BCM /SEC	VDC/TCS /ABS	IPDM E/R			
ENGINE	-	NG	UNKWN	-	UNKWN	UNKWN	-	UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMM CIRCUIT (U1001)	
METER A/C AMP	No indication	-	UNKWN	UNKWN	-	UNKWN	UNKWN	Ι	CAN COMM CIRCUIT (U1000)	-	
BCM	No indication	NG	UNKWN	UNKWN	UNKWN	-	-	UNKWN	CAN COMM CIRCUIT (U1000)	-	
ABS	-	NG	UNKWN	Ι	-	-	-	-	CAN COMM CIRCUIT	_	
IPDM E/R	No indication	-	UNKWN	UNKWN	-	UNKWN	-	-	CAN COMM CIRCUIT (U1000)	—	

PKIB2233E

### Inspection Between Data Link Connector and ABS Actuator and Electric Unit (Control Unit) Circuit

- 1. CHECK CONNECTOR
- 1. Turn ignition switch OFF.
- 2. Disconnect the battery cable from the negative terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector M15
- Harness connector E108

#### OK or NG

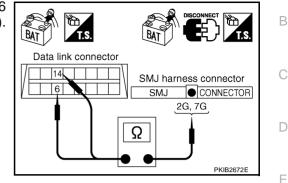
- OK >> GO TO 2.
- NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect harness connector M15.
- 2 Check continuity between data link connector M8 terminals 6 (L), 14 (P) and harness connector M15 terminals 2G (L), 7G (P),
  - 6 (L) 2G (L) 14 (P) - 7G (P)
- : Continuity should exist.
- : Continuity should exist.

#### OK or NG

- OK >> GO TO 3.
- NG >> Repair harness.



BAT

SMJ harness connector

2G, 7G

SMJ O CONNECTOR

ABS actuator and

connector

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electric unit (control unit)

C/UNIT O CONNECTOR

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### 3. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect ABS actuator and electric unit (control unit) connector.
- 2. Check continuity between harness connector E108 terminals 2G (L), 7G (P) and ABS actuator and electric unit (control unit) harness connector E51 terminals 20 (L), 23 (P).
  - 2G (L) 20 (L)
  - 7G (P) 23 (P)
- : Continuity should exist.

#### : Continuity should exist.

#### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to LAN-5, "TROUBLE DIAGNOSES WORK FLOW" . NG >> Repair harness.

### **ECM Circuit Inspection**

#### 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the battery cable from the negative terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (control module side, connector side and harness side).
- ECM connector
- Harness connector F102
- Harness connector M72

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector. ð

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Revision: 2005 August

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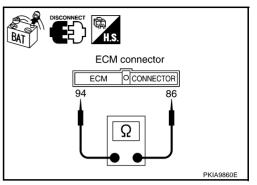
- 1. Disconnect ECM connector.
- 2. Check resistance between ECM harness connector F101 terminals 94 (L) and 86 (P).

#### 94 (L) – 86 (P)

: Approx. 108 – 132  $\Omega$ 

#### OK or NG

- OK >> Replace ECM.
- NG >> Repair harness between ECM and data link connector.



### **Data Link Connector Circuit Inspection**

#### 1. CHECK CONNECTOR

1. Turn ignition switch OFF.

- 2. Disconnect the battery cable from the negative terminal.
- 3. Check terminals and connector of data link connector for damage, bend and loose connection (connector side and harness side).

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

### 2. CHECK HARNESS FOR OPEN CIRCUIT

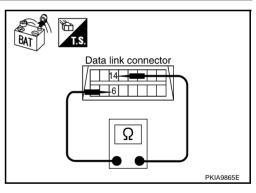
Check resistance between data link connector M8 terminals 6 (L) and 14 (P).

#### 6 (L) - 14 (P)

: Approx. 54 – 66 Ω

#### OK or NG

- OK >> Diagnose again. Refer to <u>LAN-5, "TROUBLE DIAG-</u> <u>NOSES WORK FLOW"</u>.
- NG >> Repair harness between data link connector and unified meter and A/C amp.



#### AKS00A9T

# Unified Meter and A/C Amp. Circuit Inspection

### 1. CHECK CONNECTOR

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

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

### LAN-68

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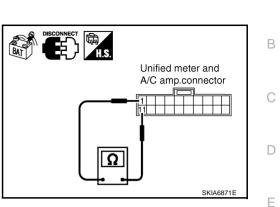
# $\overline{2}$ . CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect unified meter and A/C amp. connector.
- 2. Check resistance between unified meter and A/C amp. harness connector M48 terminals 1 (L) and 11 (P).

: Approx. 54 – 66 Ω

#### OK or NG

- OK >> Replace unified meter and A/C amp.
- NG >> Repair harness between unified meter and A/C amp. and data link connector.



**BCM Circuit Inspection** 

#### 1. CHECK CONNECTOR

#### 1. Turn ignition switch OFF.

- 2. Disconnect the battery cable from the negative terminal.
- 3. Check terminals and connector of BCM for damage, bend and loose connection (control module side and  $_{\rm G}$  harness side).

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

### 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect BCM connector.
- 2. Check resistance between BCM harness connector M90 terminals 39 (L) and 40 (P).

#### 39 (L) – 40 (P)

#### : **Approx. 54 – 66** Ω

#### OK or NG

- OK >> Replace BCM. Refer to <u>BCS-18</u>, "Removal and Installation of <u>BCM</u>".
- NG >> Repair harness between BCM and data link connector.

### ABS Actuator and Electric Unit (Control Unit) Circuit Inspection

#### 1. CHECK CONNECTOR

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

#### OK or NG

- OK >> GO TO 2.
- NG >> Repair terminal or connector.

### LAN-69

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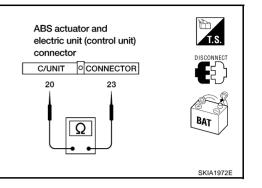
# $\overline{2}$ . CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect ABS actuator and electric unit (control unit) connector.
- Check resistance between ABS actuator and electric unit (control unit) harness connector E51 terminals 20 (L) and 23 (P).

: Approx. 54 – 66 Ω

OK or NG

- OK >> Replace ABS actuator and electric unit (control unit).
- NG >> Repair harness between ABS actuator and electric unit (control unit) and IPDM E/R.



### **IPDM E/R Circuit Inspection**

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

1. Turn ignition switch OFF.

- 2. Disconnect the battery cable from the negative terminal.
- 3. Check terminals and connector of IPDM E/R for damage, bend and loose connection (control module side and harness side).

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

### 2. CHECK HARNESS FOR OPEN CIRCUIT

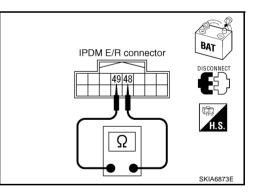
- 1. Disconnect IPDM E/R connector.
- 2. Check resistance between IPDM E/R harness connector E9 terminals 48 (L) and 49 (P).

#### 48 (L) – 49 (P)

: Approx. 108 – 132  $\Omega$ 

#### OK or NG

- OK >> Replace IPDM E/R.
- NG >> Repair harness between IPDM E/R and harness connector E108.



AKS00A9W

1.	CHECK CONNECTOR
1.	Turn ignition switch OFF.
2.	Disconnect the battery cable from the negative terminal.
3.	Check following terminals and connectors for damage, bend and loose connection (control module side, meter side, control unit side and harness side).
-	ECM
-	Unified meter and A/C amp.
-	BCM
-	ABS actuator and electric unit (control unit)
-	IPDM E/R
-	Between ECM and IPDM E/R
OK	Cor NG
O N	K >> GO TO 2. G >> Repair terminal or connector.
2.	CHECK HARNESS FOR SHORT CIRCUIT
1.	Disconnect ECM connector and harness connector F102.
2.	Check continuity between ECM harness connector F101 terminals 94 (L) and 86 (P).
	94 (L) – 86 (P) : Continuity should not exist.
-	Cor NG         ECM         OCONNECTOR           K         >> GO TO 3.         94         86

### 3. CHECK HARNESS FOR SHORT CIRCUIT

**CAN Communication Circuit Inspection** 

Check continuity between ECM harness connector F101 terminals 94 (L), 86 (P) and ground.

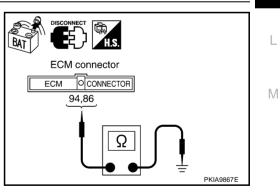
94 (L) - Ground

86 (P) – Ground

: Continuity should not exist. : Continuity should not exist.

#### OK or NG

- OK >> GO TO 4.
- NG >> Repair harness between ECM and harness connector F102.



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### 4. CHECK HARNESS FOR SHORT CIRCUIT

- 1. Disconnect following connectors.
- Unified meter and A/C amp. connector
- BCM connector
- Harness connector M15
- Check continuity between data link connector M8 terminals 6 (L) and 14 (P).

#### 6 (L) – 14 (P)

#### : Continuity should not exist.

OK or NG

#### OK >> GO TO 5.

- NG >> Check the following harnesses. If any harness is damaged, repair the harness.
  - Harness between data link connector and harness connector M72
  - Harness between data link connector and unified meter and A/C amp.
  - Harness between data link connector and BCM
  - Harness between data link connector and harness connector M15

#### 5. CHECK HARNESS FOR SHORT CIRCUIT

# Check continuity between data link connector M8 terminals 6 (L), 14 (P) and ground.

6 (L) – Ground

#### 14 (P) - Ground

: Continuity should not exist.

: Continuity should not exist.

#### OK or NG

OK >> GO TO 6.

- NG >> Check the following harnesses. If any harness is damaged, repair the harness.
  - Harness between data link connector and harness connector M72
  - Harness between data link connector and unified meter and A/C amp.
  - Harness between data link connector and BCM
  - Harness between data link connector and harness connector M15

#### 6. CHECK HARNESS FOR SHORT CIRCUIT

- 1. Disconnect ABS actuator and electric unit (control unit) connector and IPDM E/R connector.
- Check continuity between IPDM E/R harness connector E9 terminals 48 (L) and 49 (P).

#### 48 (L) – 49 (P)

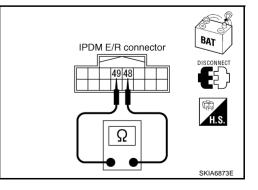
#### : Continuity should not exist.

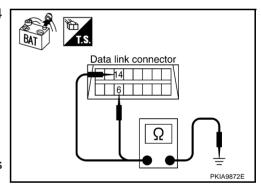
#### OK or NG

NG

OK >> GO TO 7.

- >> Check the following harnesses. If any harness is damaged, repair the harness.
  - Harness between IPDM E/R and ABS actuator and electric unit (control unit)
  - Harness between IPDM E/R and harness connector E108





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Data link connector

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## 7. CHECK HARNESS FOR SHORT CIRCUIT

Check continuity between IPDM E/R harness connector E9 terminals 48 (L), 49 (P) and ground.

- 48 (L) Ground
- 49 (P) Ground
- : Continuity should not exist.
- : Continuity should not exist.

### OK or NG

- OK >> GO TO 8.
- NG >> Check the following harnesses. If any harness is damaged, repair the harness.
  - Harness between IPDM E/R and ABS actuator and electric unit (control unit)
  - Harness between IPDM E/R and harness connector E108

: Approx. 108 – 132  $\Omega$ 

## 8. CHECK ECM AND IPDM E/R INTERNAL CIRCUIT

- 1. Remove ECM and IPDM E/R from vehicle.
- 2. Check resistance between ECM terminals 94 and 86.

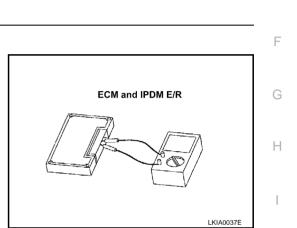
**94 – 86** : Approx. 108 – 132 Ω

3. Check resistance between IPDM E/R terminals 48 and 49.

#### **48 – 49**

OK or NG

- OK >> GO TO 9.
- NG >> Replace ECM and/or IPDM E/R.



IPDM E/R connector

49 48

48, 49

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## 9. CHECK SYMPTOM

- 1. Fill in described symptoms on the column "Symptom" in the check sheet.
- 2. Connect all the connectors, and then make sure that the symptom is reproduced.

#### OK or NG

OK >> GO TO 10.

NG >> Refer to LAN-13, "Example of Filling in Check Sheet When Initial Conditions Are Not Reproduced"

**LAN-73** 

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## 10. CHECK UNIT REPRODUCIBILITY

Perform the following procedure for each unit, and then perform reproducibility test.

- 1. Turn ignition switch OFF.
- 2. Disconnect the battery cable from the negative terminal.
- 3. Disconnect the unit connector.
- 4. Connect the battery cable to the negative terminal.
- 5. Make sure that the symptom filled in the "Symptom" of the check sheet is reproduced. (Do not confuse it with the symptom related to removed unit.)
- 6. Make sure that the same symptom is reproduced.
- Unified meter and A/C amp.
- BCM
- ABS actuator and electric unit (control unit)
- ECM
- IPDM E/R

#### Check results

Reproduced>>Install removed unit, and then check the other unit. Not reproduced>>Replace removed unit.

## **IPDM E/R Ignition Relay Circuit Inspection**

Check the following. If no malfunction is found, replace the IPDM E/R.

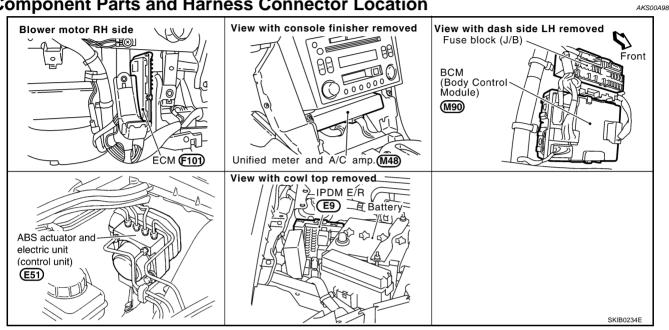
- IPDM E/R power supply circuit. Refer to PG-26, "IPDM E/R Power/Ground Circuit Inspection" .
- Ignition power supply circuit. Refer to <u>PG-10, "IGNITION POWER SUPPLY IGNITION SW. IN "ON"</u> <u>AND/OR "START"</u>.

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## **System Description**

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

### **Component Parts and Harness Connector Location**



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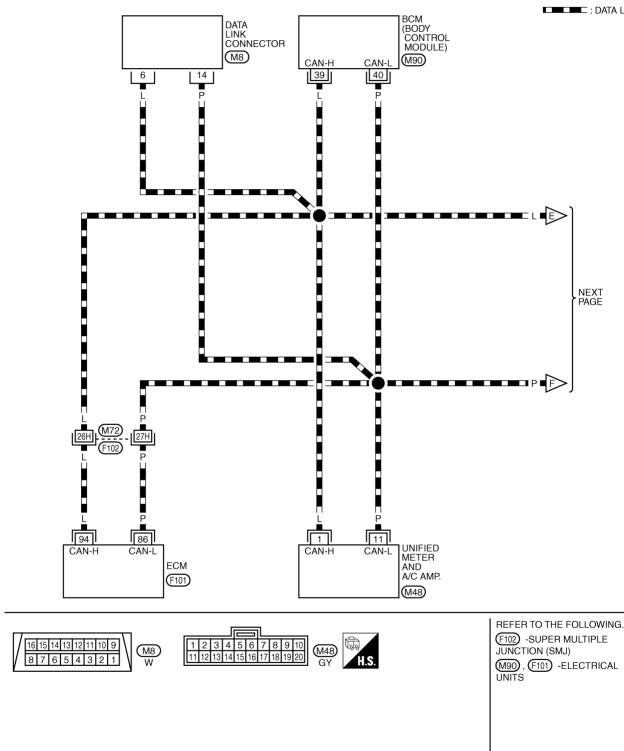
## Wiring Diagram — CAN —



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LAN-CAN-05

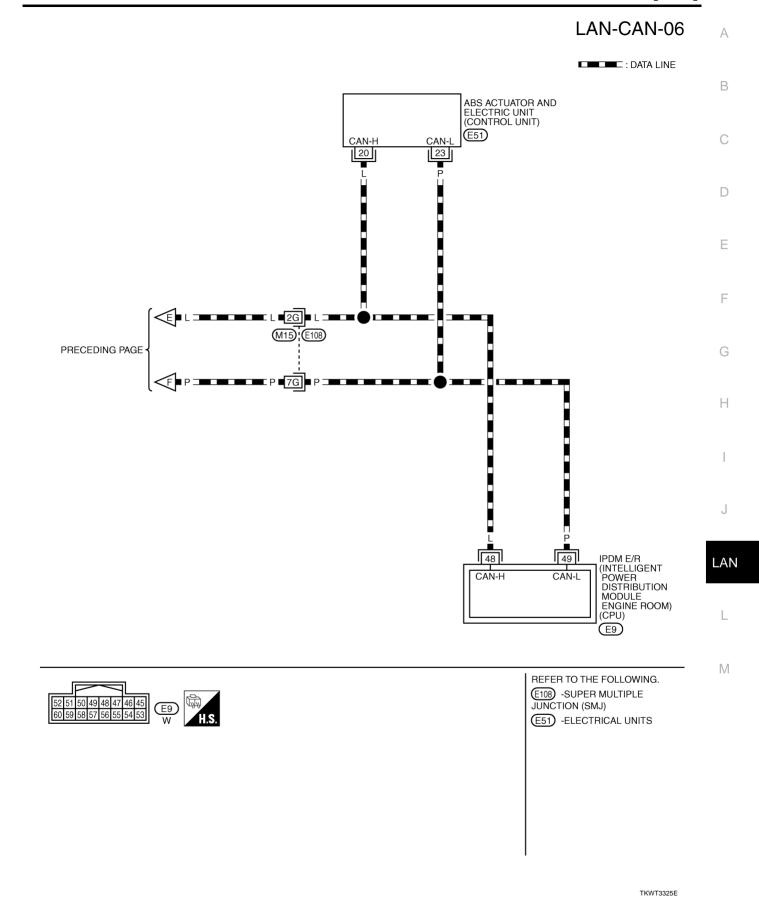




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[CAN]



## CHECK SHEET

## NOTE:

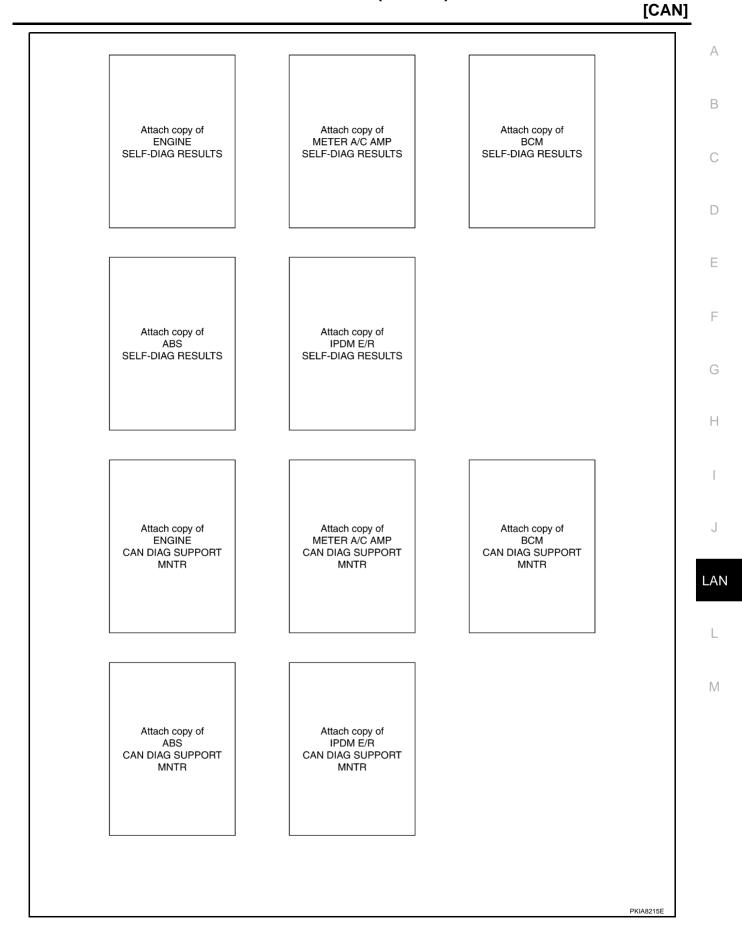
If a check mark is put on "NG" on "INITIAL DIAG (Initial diagnosis)", replace the control unit.

				CAN DIA	G SUPPOF	RT MNTR				
SELECT SYST	EM screen	Initial	Transmit		Rec	eive diagn	osis		SELF-DIAG	BESULTS
SELECT STOP		diagnosis diagnosis ECM METER BCM VDC/TCS /M&A /SEC /ABS IPDM								TILOULIO
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMM CIRCU (U1001)
METER A/C AMP	No indication	-	UNKWN	UNKWN	-	UNKWN	UNKWN	-	CAN COMM CIRCUIT (U1000)	-
BCM	No indication	NG	UNKWN	UNKWN	UNKWN	-	_	UNKWN	CAN COMM CIRCUIT (U1000)	_
ABS	_	NG	UNKWN	UNKWN	-	-	—	-	CAN COMM CIRCUIT (U1000)	_
IPDM E/R	No indication	-	UNKWN	UNKWN	_	UNKWN	_	-	CAN COMM CIRCUIT (U1000)	—

Symptoms :

Attach copy of SELECT SYSTEM

Attach copy of SELECT SYSTEM



### CHECK SHEET RESULTS (EXAMPLE)

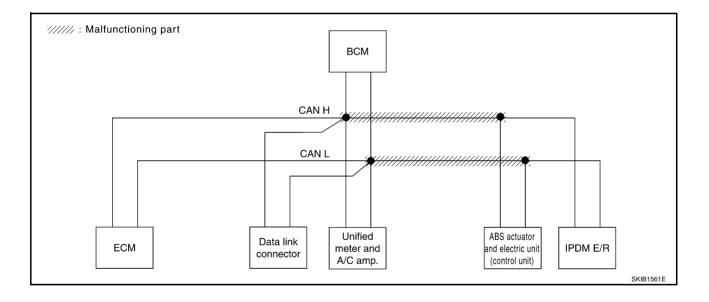
#### NOTE:

If a check mark is put on "NG" on "INITIAL DIAG (Initial diagnosis)", replace the control unit.

#### Case 1

Check harness between data link connector and ABS actuator and electric unit (control unit). Refer to <u>LAN-87</u>, "Inspection Between Data Link Connector and ABS Actuator and Electric Unit (Control Unit) Circuit".

				CAN DIA	G SUPPOF Rec	RT MNTR eive diagn	osis			
SELECT SYSTE	M screen	Initial diagnosis	Transmit diagnosis	ECM	METER /M&A	BCM /SEC	VDC/TCS /ABS	IPDM E/R	SELF-DIAG RESULTS	
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMM CIRCUIT (UN001)
	No indication	-	UNKWN	UNKWN	-	UNKWN	UNKWN	-	CAN COMM CIRCUIT (U 1000)	_
BCM N	No indication	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	CAN COMM CIRCUIT (U1000)	_
ABS	_	NG	UNKWN	UNKWN	-	_	_	_	CAN COMM CIRCUIT (U 1000)	_
IPDM E/R	No indication	-	UNKWN	UNKWN	-	UNKWN	_	-	CAN COMM CIRCUIT (UV000)	_



## [CAN]

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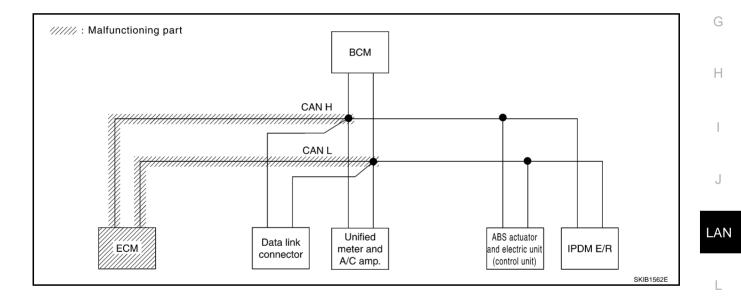
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### Case 2

Check ECM circuit. Refer to LAN-88, "ECM Circuit Inspection" .

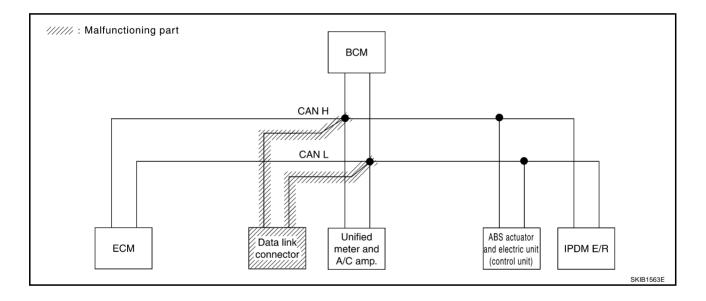
				CAN DIA	G SUPPOI	RT MNTR				
SELECT SYST	EM screen	Initial	Transmit		Rec	eive diagn	osis		SELE-DIAG	RESULTS
		diagnosis		ECM	METER /M&A	BCM /SEC	VDC/TCS /ABS	IPDM E/R		
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	CAN COMM CIRCUIT	CAN COMM CIRCUIT (UN01)
METER A/C AMP	No indication	-	UNKWN	UNKWN	_	UNKWN	UNKWN	_	CAN COMM CIRCUIT (U 1000)	_
BCM	No indication	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	CAN COMM CIRCUIT (U1000)	_
ABS	-	NG	UNKWN	UNKWN	_	_	_	_	CAN COMICIRCUIT (U 1000)	_
IPDM E/R	No indication	-	UNKWN	UNKWN	_	UNKWN	_	-	CAN COMM CIRCUIT	_



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Check data link connector circuit. Refer to LAN-89, "Data Link Connector Circuit Inspection" .

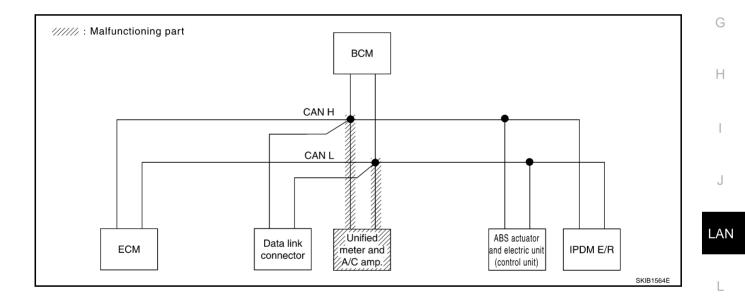
				CAN DIA	G SUPPOF	RT MNTR				
SELECT SYST	EM coroon	1	<b>T</b>		Rec	eive diagn	osis		SELF-DIAG	
SELECT STST	EIVI SCIEEII	Initial diagnosis	Transmit diagnosis	ECM	METER /M&A	BCM /SEC	VDC/TCS /ABS	IPDM E/R		
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMM CIRCU (U1001)
METER A/C AMP	No indication	_	UNKWN	UNKWN	—	UNKWN	UNKWN	_	CAN COMM CIRCUIT (U1000)	_
BCM	No indication	NG	UNKWN	UNKWN	UNKWN	-	_	UNKWN	CAN COMM CIRCUIT (U1000)	-
ABS	_	NG	UNKWN	UNKWN	_	_	_	_	CAN COMM CIRCUIT (U1000)	-
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNKWN	_	_	CAN COMM CIRCUIT (U1000)	_



#### Case 4

Check unified meter and A/C amp. circuit. Refer to LAN-89, "Unified Meter and A/C Amp. Circuit Inspection" .

				CAN DIA	G SUPPOF	RT MNTR				
SELECT SYST	FM screen	Initial	Transmit		Rec	eive diagn	osis			RESULTS
OLLEON ONON	LW Screen		diagnosis	ECM	METER /M&A	BCM /SEC	VDC/TCS /ABS	IPDM E/R	OLLI DIAC	
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMM CIRCUIT (UN001)
METER A/C AMP	No indication	-	UNKWN	UNKWN	_	UNKWN	UNKWN	_	CAN COMM CIRCUIT (UN000)	-
ВСМ	No indication	NG	UNKWN	UNKWN	UNKWN	-	-	UNKWN	CAN COMM CIRCUIT (U1000)	_
ABS	-	NG	UNKWN	UNKWN	_	_	_	_	CAN COMM CIRCUIT (U1000)	_
IPDM E/R	No indication	-	UNKWN	UNKWN	_	UNKWN	_	_	CAN COMM CIRCUIT (U1000)	_



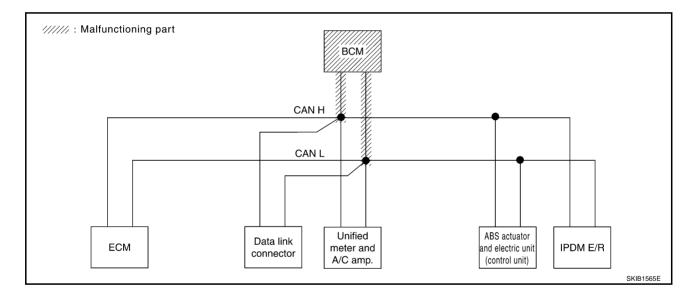
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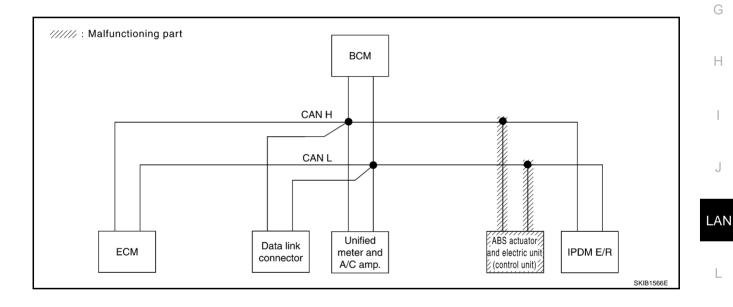
Check BCM circuit. Refer to LAN-90, "BCM Circuit Inspection" .

				CAN DIA	G SUPPOF	RT MNTR				
SELECT SYST	FM screen	Initial	Transmit		Rec	eive diagn	osis		SELF-DIAG	BESULTS
		diagnosis	diagnosis	ECM	METER /M&A	BCM /SEC	VDC/TCS /ABS	IPDM E/R		
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMM CIRCUIT (UN001)
METER A/C AMP	No indication		UNKWN	UNKWN	_	UNKWN	UNKWN		CAN COMM CIRCUIT (UN000)	_
BCM	No indication	NG	UNKWN	UNKWN	UNKWN	_	—	UNKWN	CAN COMM CIRCUIT (U1000)	_
ABS	_	NG	UNKWN	UNKWN	-	_	_	-	CAN COMM CIRCUIT (U1000)	_
IPDM E/R	No indication	-	UNKWN	UNKWN	-	UNKWN	_	-	CAN COMIN CIRCUIT (UN00)	_



Check ABS actuator and electric unit (control unit) circuit. Refer to <u>LAN-90</u>, "ABS Actuator and Electric Unit (<u>Control Unit</u>) Circuit Inspection".

				CAN DIA	G SUPPOF	RT MNTR				
SELECT SYST	EM screen	Initial	Tranamit		Rec	eive diagn	osis		SELF-DIAG	BESUITS
SELECT STOT	LWSCIECH	Initial diagnosis	Transmit diagnosis	ECM	METER /M&A	BCM /SEC	VDC/TCS /ABS	IPDM E/R		
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMM CIRCUIT (UN001)
METER A/C AMP	No indication	_	UNKWN	UNKWN	-	UNKWN	UNKWN	-	CAN COMM CIRCUIT (UN000)	_
BCM	No indication	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	(U <b>V</b> 000) CAN COMM CIRCUIT (U1000)	
ABS	_	NG	UNKWN	UNKWN	-	_	_	_	CAN COMM CIRCUIT	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNKWN	_	_	CAN COMM CIRCUIT (U1000)	_



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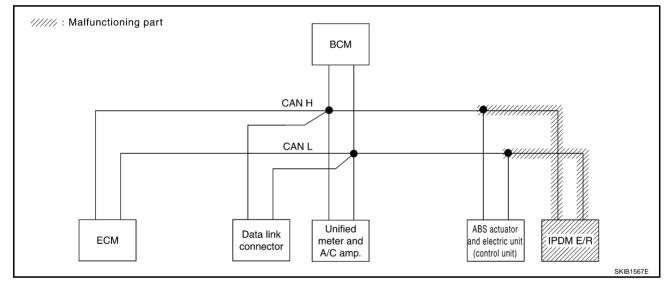
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Check IPDM E/R circuit. Refer to LAN-91, "IPDM E/R Circuit Inspection" .

				CAN DIA	G SUPPOF	RT MNTR				
SELECT SYST	EM coroon	1	<b>T</b>		Rec	eive diagn	osis		SELF-DIAG	
SELECT STOT		Initial diagnosis	Transmit diagnosis	ECM	METER /M&A	BCM /SEC	VDC/TCS /ABS	IPDM E/R		I NEGOLI G
ENGINE	-	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMM CIRCU (UN001)
METER A/C AMP	No indication	_	UNKWN	UNKWN	-	UNKWN	UNKWN	_	CAN COMM CIRCUIT (U1000)	_
BCM	No indication	NG	UNKWN	UNKWN	UNKWN	_	_		CAN COMM CIRCUIT (U1000)	_
ABS	_	NG	UNKWN	UNKWN	-	_	_	_	CAN COMM CIRCUIT (U1000)	_
IPDM E/R	No indication	_	UNKWN	UNKWN	-	UNKWN	_	_	CAN COMM CIRCUIT	—



#### Case 8

Check CAN communication circuit. Refer to LAN-92, "CAN Communication Circuit Inspection" .

				CAN DIA	G SUPPOF	RT MNTR				
SELECT SYST	EM screen	Initial	Transmit		Rec	eive diagn			SELF-DIAG	RESULTS
		diagnosis	diagnosis	ECM	METER /M&A	BCM /SEC	VDC/TCS /ABS	IPDM E/R		
ENGINE	_	NG	UNKWN		UNKWN	UNKWN	UNKWN		CAN COMM CIRCUIT (U 000)	CAN COMM CIRCUIT (UN001)
METER A/C AMP	No indication	_	UNKWN	UNKWN	_	UNKWN	UNKWN	_	CAN COMM CIRCUIT (UN000)	_
BCM	No indication	NG	UNKWN	UNKWN	UNKWN	—	—	UNKWN	CAN COMM CIRCUIT (U1000)	_
ABS	_	NG		UNKWN	_	—	—	-	CAN COMU CIRCUIT (UV000)	
IPDM E/R	No indication	—	UNKWN	UNKWN	_	UNKWN	—	_	CAN COMM CIRCUIT (UN000)	_

## [CAN]

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#### Case 9

Check IPDM E/R ignition relay circuit continuously sticks "OFF". Refer to <u>LAN-95</u>, "IPDM E/R Ignition Relay <u>A</u> <u>Circuit Inspection</u>".

				CAN DIA	G SUPPOF	RT MNTR				
SELECT SYST	EM screen	Initial	Transmit		Rec	eive diagn	osis			BESULTS
SELECT STOP	LWSCIECH		Transmit diagnosis	ECM	METER /M&A	BCM /SEC	VDC/TCS /ABS	IPDM E/R		TILOULIU
ENGINE	_	NG	UNKWN	-	UNKWN	UNKWN	UNKWN	UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMM CIRCUIT (UN001)
METER A/C AMP	No indication	_	UNKWN	UNKWN	-	UNKWN	UNKWN	_	CAN COMM CIRCUIT (UN000)	_
BCM	No indication	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	CAN COMM CIRCUIT (U1000)	-
ABS	_	NG	UNKWN	UNKWN	-	_	_	_	CAN COMM CIRCUIT (U1000)	_
IPDM E/R	No indication	_	UNKWN	UNKWN	-	UNKWN	_	-	CAN COMM CIRCUIT (U1000)	_

#### Case 10

Check IPDM E/R ignition relay circuit continuously sticks "ON". Refer to <u>LAN-95</u>, "IPDM E/R Ignition Relay Circuit Inspection".

				CAN DIA	G SUPPOF	RT MNTR				
SELECT SYST	FM screen	Initial	Transmit		Rec	eive diagn	osis		SELE-DIAG	RESULTS
SELECT STOT	LW Screen		diagnosis	ECM	METER /M&A	BCM /SEC	VDC/TCS /ABS	IPDM E/R		
ENGINE	_	NG	UNKWN	-	UNKWN	UNKWN	UNKWN	UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMM CIRCUIT (U1001)
METER A/C AMP	No indication	_	UNKWN	UNKWN	_	UNKWN	UNKWN	_	CAN COMM CIRCUIT (U1000)	-
BCM	No indication	NG	UNKWN	UNKWN	UNKWN	-	-	UNKWN	CAN COMM CIRCUIT (U1000)	-
ABS	_	NG	UNKWN	-	_	_	_	_	CAN COMIN CIRCUIT (U 1000)	_
IPDM E/R	No indication	-	UNKWN	UNKWN	-	UNKWN	_	-	CAN COMM CIRCUIT (U1000)	-

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## Inspection Between Data Link Connector and ABS Actuator and Electric Unit (Control Unit) Circuit

- 1. CHECK CONNECTOR
- 1. Turn ignition switch OFF.
- 2. Disconnect the battery cable from the negative terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector M15
- Harness connector E108

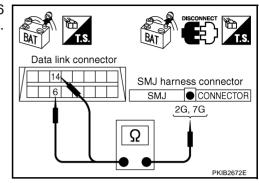
#### OK or NG

- OK >> GO TO 2.
- NG >> Repair terminal or connector.

- 1. Disconnect harness connector M15.
- Check continuity between data link connector M8 terminals 6 (L), 14 (P) and harness connector M15 terminals 2G (L), 7G (P).
  - 6 (L) 2G (L)
  - 14 (P) 7G (P)

: Continuity should exist.

- OK or NG
  - OK >> GO TO 3.
  - NG >> Repair harness.



## 3. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect ABS actuator and electric unit (control unit) connector.
- Check continuity between harness connector E108 terminals 2G (L), 7G (P) and ABS actuator and electric unit (control unit) harness connector E51 terminals 20 (L), 23 (P).
  - ess connector Est terminals
  - 2G (L) 20 (L) 7G (P) – 23 (P)
- : Continuity should exist.

: Continuity should exist.

### OK or NG

- OK >> Connect all the connectors and diagnose again. Refer to LAN-5, "TROUBLE DIAGNOSES WORK FLOW".
- NG >> Repair harness.

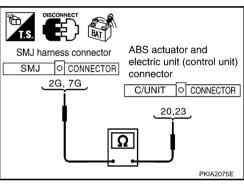
## ECM Circuit Inspection

### 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the battery cable from the negative terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (control module side, connector side and harness side).
- ECM connector
- Harness connector F102
- Harness connector M72

### OK or NG

- OK >> GO TO 2.
- NG >> Repair terminal or connector.



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: Continuity should exist.

# $\overline{2}$ . CHECK HARNESS FOR OPEN CIRCUIT

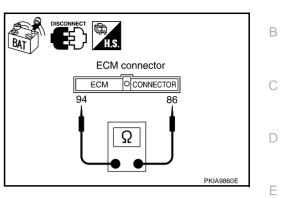
- 1. Disconnect ECM connector.
- 2. Check resistance between ECM harness connector F101 terminals 94 (L) and 86 (P).

94 (L) – 86 (P)

: Approx. 108 – 132 Ω

### OK or NG

- OK >> Replace ECM.
- NG >> Repair harness between ECM and data link connector.



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## **Data Link Connector Circuit Inspection**

## 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the battery cable from the negative terminal.
- 3. Check terminals and connector of data link connector for damage, bend and loose connection (connector  $_{\rm G}$  side and harness side).

### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

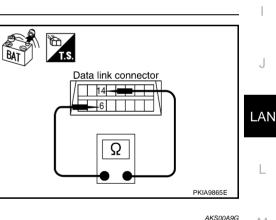
## 2. CHECK HARNESS FOR OPEN CIRCUIT

Check resistance between data link connector M8 terminals 6 (L) and 14 (P). 6 (L) – 14 (P) : Approx. 54 – 66  $\Omega$ 

### OK or NG

OK >> Diagnose again. Refer to <u>LAN-5, "TROUBLE DIAG-</u><u>NOSES WORK FLOW"</u>.

NG >> Repair harness between data link connector and unified meter and A/C amp.



## Unified Meter and A/C Amp. Circuit Inspection

## 1. CHECK CONNECTOR

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

### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# $\overline{2}$ . CHECK HARNESS FOR OPEN CIRCUIT

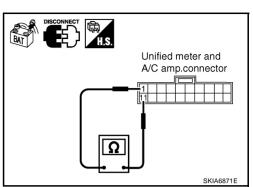
- 1. Disconnect unified meter and A/C amp. connector.
- 2. Check resistance between unified meter and A/C amp. harness connector M48 terminals 1 (L) and 11 (P).

### 1 (L) - 11 (P)

: Approx. 54 – 66  $\Omega$ 

#### OK or NG

- OK >> Replace unified meter and A/C amp.
- NG >> Repair harness between unified meter and A/C amp. and data link connector.



BCM connector

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## **BCM Circuit Inspection**

### 1. CHECK CONNECTOR

Turn ignition switch OFF. 1.

- Disconnect the battery cable from the negative terminal. 2.
- Check terminals and connector of BCM for damage, bend and loose connection (control module side and 3. harness side).

### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

## 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect BCM connector.
- 2. Check resistance between BCM harness connector M90 terminals 39 (L) and 40 (P).

#### 39 (L) - 40 (P)

: Approx. 54 – 66 Ω

### OK or NG

- OK >> Replace BCM. Refer to BCS-18, "Removal and Installation of BCM" .
- NG >> Repair harness between BCM and data link connector.

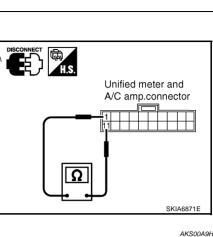
## ABS Actuator and Electric Unit (Control Unit) Circuit Inspection

### **1. CHECK CONNECTOR**

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

#### OK or NG

- OK >> GO TO 2.
- NG >> Repair terminal or connector.



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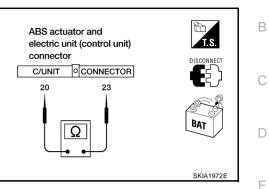
# $\overline{2}$ . CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect ABS actuator and electric unit (control unit) connector.
- Check resistance between ABS actuator and electric unit (control unit) harness connector E51 terminals 20 (L) and 23 (P).

: Approx. 54 – 66 Ω

### OK or NG

- OK >> Replace ABS actuator and electric unit (control unit).
- NG >> Repair harness between ABS actuator and electric unit (control unit) and IPDM E/R.



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## IPDM E/R Circuit Inspection

### 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the battery cable from the negative terminal.
- 3. Check terminals and connector of IPDM E/R for damage, bend and loose connection (control module side  $_{\rm G}$  and harness side).

### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

## 2. CHECK HARNESS FOR OPEN CIRCUIT

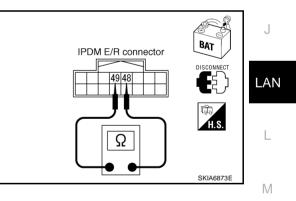
- 1. Disconnect IPDM E/R connector.
- 2. Check resistance between IPDM E/R harness connector E9 terminals 48 (L) and 49 (P).

#### 48 (L) – 49 (P)

### : Approx. 108 – 132 $\Omega$

### OK or NG

- OK >> Replace IPDM E/R.
- NG >> Repair harness between IPDM E/R and harness connector E108.



## **CAN Communication Circuit Inspection**

### 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the battery cable from the negative terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (control module side, meter side, control unit side and harness side).
- ECM
- Unified meter and A/C amp.
- BCM
- ABS actuator and electric unit (control unit)
- IPDM E/R
- Between ECM and IPDM E/R

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

### 2. CHECK HARNESS FOR SHORT CIRCUIT

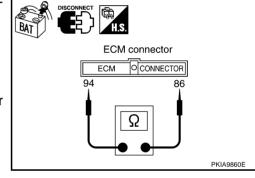
- 1. Disconnect ECM connector and harness connector F102.
- 2. Check continuity between ECM harness connector F101 termi-
- nals 94 (L) and 86 (P).

94 (L) - 86 (P)

: Continuity should not exist.

### OK or NG

- OK >> GO TO 3.
- NG >> Repair harness between ECM and harness connector F102.



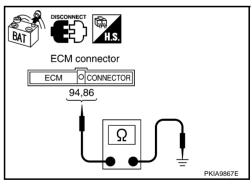
## 3. CHECK HARNESS FOR SHORT CIRCUIT

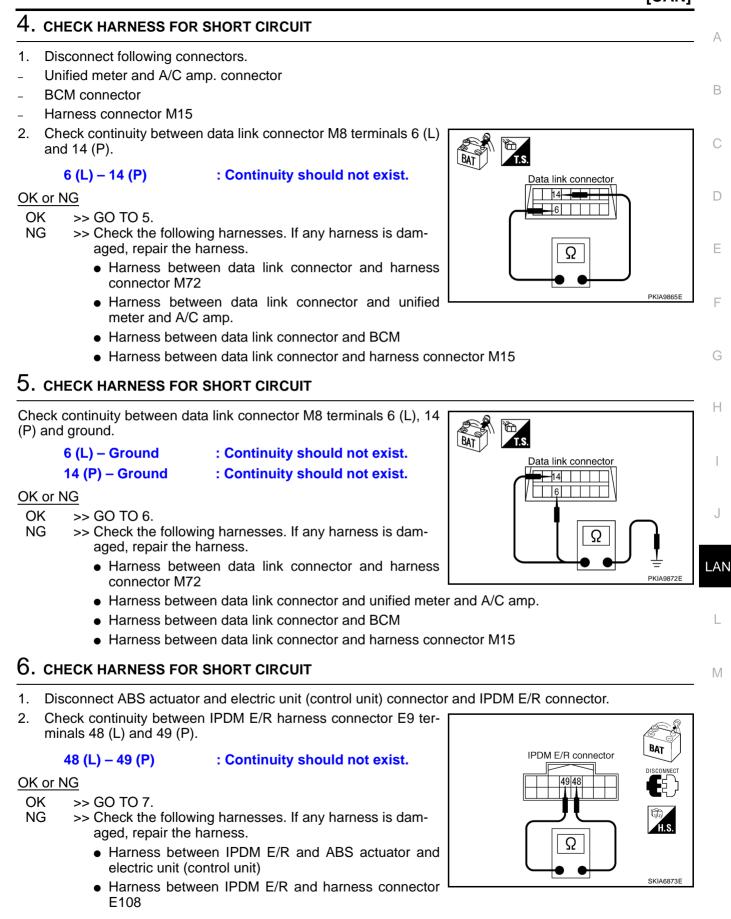
Check continuity between ECM harness connector F101 terminals 94 (L), 86 (P) and ground.

94 (L) – Ground 86 (P) – Ground : Continuity should not exist. : Continuity should not exist.

### OK or NG

- OK >> GO TO 4.
- NG >> Repair harness between ECM and harness connector F102.





## 7. CHECK HARNESS FOR SHORT CIRCUIT

Check continuity between IPDM E/R harness connector E9 terminals 48 (L), 49 (P) and ground.

- 48 (L) Ground 49 (P) – Ground

OK or NG

- OK >> GO TO 8.
- NG >> Check the following harnesses. If any harness is damaged, repair the harness.
  - Harness between IPDM E/R and ABS actuator and electric unit (control unit)
  - Harness between IPDM E/R and harness connector E108

: Approx. 108 – 132  $\Omega$ 

## 8. CHECK ECM AND IPDM E/R INTERNAL CIRCUIT

- Remove ECM and IPDM E/R from vehicle. 1.
- 2. Check resistance between ECM terminals 94 and 86.

94 - 86: Approx. 108 – 132  $\Omega$ 

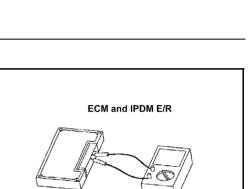
3. Check resistance between IPDM E/R terminals 48 and 49.

48 - 49

#### OK or NG

OK >> GO TO 9.

NG >> Replace ECM and/or IPDM E/R.



IPDM E/R connector

49 48

48, 49

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## 9. CHECK SYMPTOM

Fill in described symptoms on the column "Symptom" in the check sheet. 1.

Connect all the connectors, and then make sure that the symptom is reproduced. 2.

#### OK or NG

OK >> GO TO 10.

NG >> Refer to LAN-13. "Example of Filling in Check Sheet When Initial Conditions Are Not Reproduced"

**LAN-94** 

BAT

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LKIA0037E

: Continuity should not exist.

: Continuity should not exist.

10	). CHECK UNIT REPRODUCIBILITY	А
Per	form the following procedure for each unit, and then perform reproducibility test.	
1.	Turn ignition switch OFF.	
2.	Disconnect the battery cable from the negative terminal.	В
3.	Disconnect the unit connector.	
4.	Connect the battery cable to the negative terminal.	0
5.	Make sure that the symptom filled in the "Symptom" of the check sheet is reproduced. (Do not confuse it with the symptom related to removed unit.)	С
6.	Make sure that the same symptom is reproduced.	D
-	Unified meter and A/C amp.	D
-	BCM	
-	ABS actuator and electric unit (control unit)	Ε
-	ECM	
-	IPDM E/R	
Che	eck results	F
	eproduced>>Install removed unit, and then check the other unit. ot reproduced>>Replace removed unit.	
IPI	DM E/R Ignition Relay Circuit Inspection	G
Che	eck the following. If no malfunction is found, replace the IPDM E/R.	
•	IPDM E/R power supply circuit. Refer to PG-26, "IPDM E/R Power/Ground Circuit Inspection".	Н
•	Ignition power supply circuit. Refer to <u>PG-10, "IGNITION POWER SUPPLY — IGNITION SW. IN "ON"</u> <u>AND/OR "START""</u> .	
		I

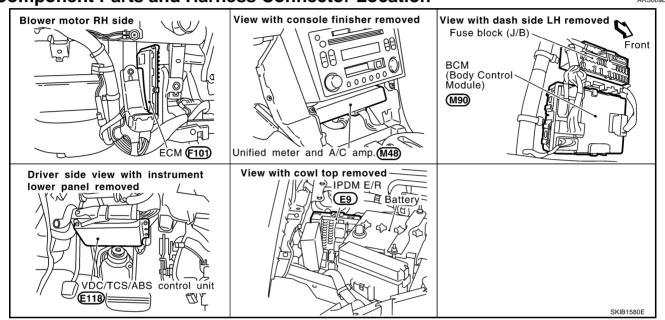
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## **System Description**

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

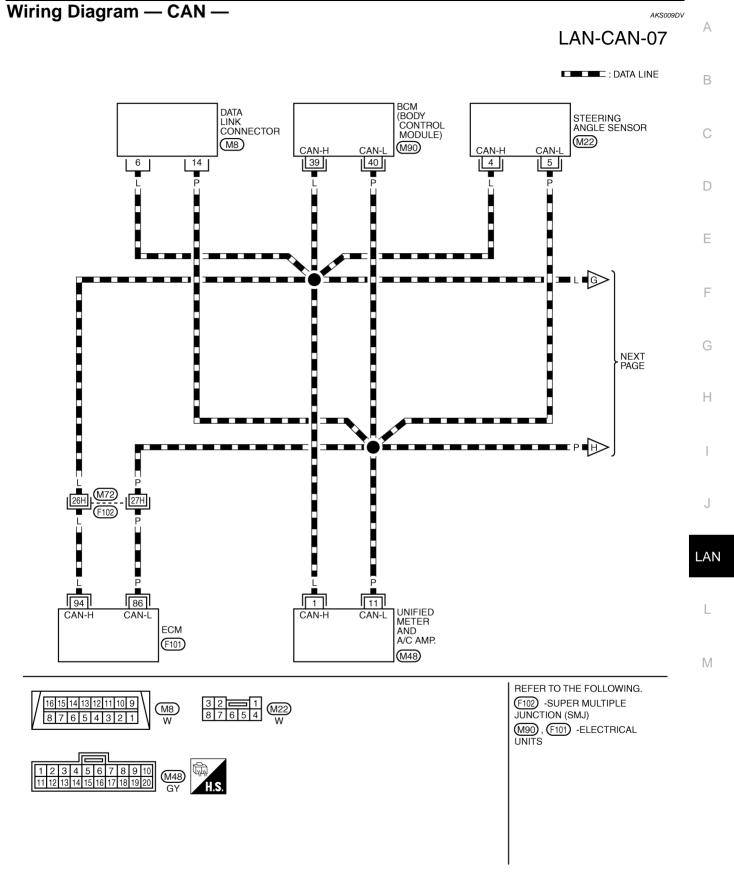
## **Component Parts and Harness Connector Location**



AKS009DT

AKS009DU

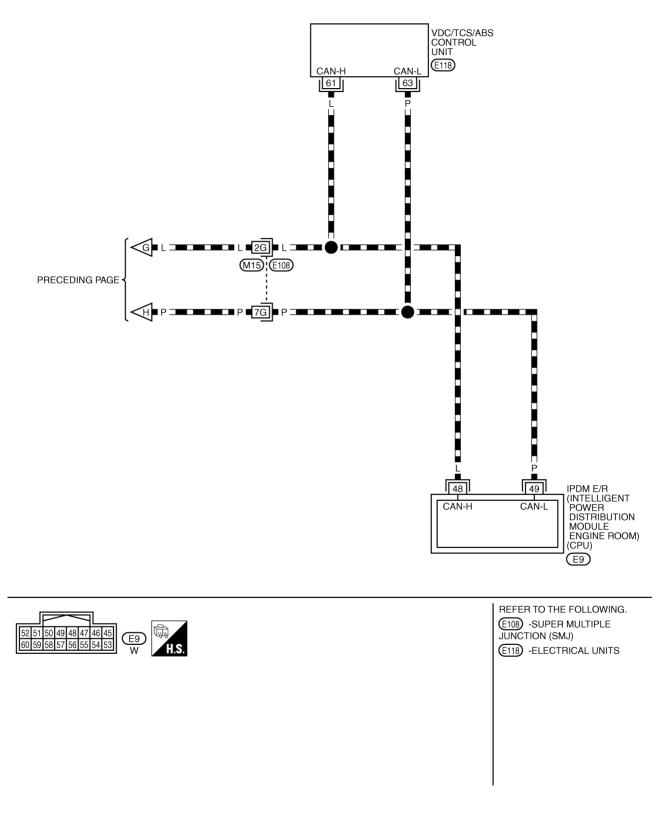
## [CAN]



TKWT3326E

## LAN-CAN-08

: DATA LINE



TKWT3327E

## **CHECK SHEET**

## [CAN]

#### AKS00AA0

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### NOTE:

If a check mark is put on "NG" on "INITIAL DIAG (Initial diagnosis)", replace the control unit.

				CAI	N DIAG SU	PPORT M	NTR						
SELECT SYST	EM screen	Initial	Transmit			Receive					SELF-DIAC	RESULTS	
		diagnosis	diagnosis	ECM	METER /M&A	BCM /SEC	STRG	VDC/TCS /ABS	IPDM E/R			-	
NGINE	_	NG	UNKWN	_	UNKWN		_	UNKWN			(U1000)	CAN COMM CIRCUIT (U1001)	
IETER A/C AMP	No indication	_	UNKWN	UNKWN	_	UNKWN	_	UNKWN	_	CAN C	OMM CIRCUIT (U1000)	_	
СМ	No indication	NG	UNKWN	UNKWN	UNKWN	-	-	_	UNKWN	CAN C	OMM CIRCUIT (U1000)	_	
BS	_	NG	UNKWN	UNKWN	UNKWN	-	UNKWN	—	-		OMM CIRCUIT (U1000)		
PDM E/R	No indication	I	UNKWN	UNKWN	_	UNKWN	1		_		OMM CIRCUIT (U1000)	_	
			Attach ( SELECT	copy of SYSTEM			s	Attach co	opy of YSTEM				

Attach copy of METER A/C AMP Attach copy of Attach copy of ENGINÉ всм SELF-DIAG RESULTS SELF-DIAG RESULTS SELF-DIAG RESULTS Attach copy of Attach copy of IPDM E/R ABS SELF-DIAG RESULTS SELF-DIAG RESULTS Attach copy of Attach copy of Attach copy of ENGINE METER A/C AMP всм CAN DIAG SUPPORT CAN DIAG SUPPORT CAN DIAG SUPPORT MNTR MNTR MNTR Attach copy of Attach copy of ABS IPDM E/R CAN DIAG SUPPORT CAN DIAG SUPPORT MNTR MNTR PKIA8215E

### **CHECK SHEET RESULTS (EXAMPLE)**

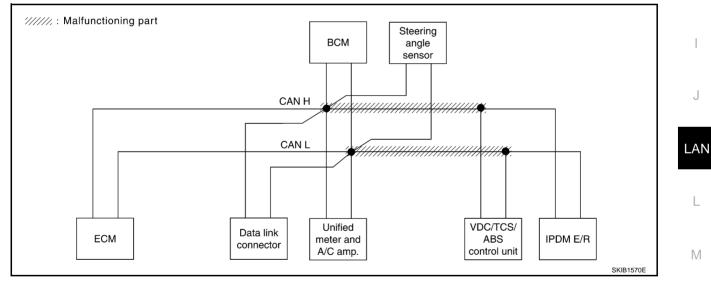
#### NOTE:

If a check mark is put on "NG" on "INITIAL DIAG (Initial diagnosis)", replace the control unit.

#### Case 1

В Check harness between data link connector and VDC/TCS/ABS control unit. Refer to LAN-109, "Inspection Between Data Link Connector and VDC/TCS/ABS Control Unit Circuit" .

		Initial			N DIAG SU	PPORT MI Receive	NTR diagnosis				
SELECT SYST	SYSTEM screen		Transmit diagnosis	ECM	METER /M&A	BCM /SEC	STRG	VDC/TCS /ABS	IPDM E/R		RESULTS
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	_		UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMM CIRCUIT (UN001)
METER A/C AMP	No indication	_	UNKWN	UNKWN	_	UNKWN	_	UNKWN		CAN COMPI CIRCUIT (U 000)	_
ВСМ	No indication	NG	UNKWN	UNKWN	UNKWN	_	_	_		CAN COMM CIRCUIT (U1000)	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	UNKWN	_	_	CAN COMM CIRCUIT	_
IPDM E/R	No incication	-	UNKWN	UNKWN	_	UNKWN	_	_	-	CAN COMM CIRCUIT (UN000)	_

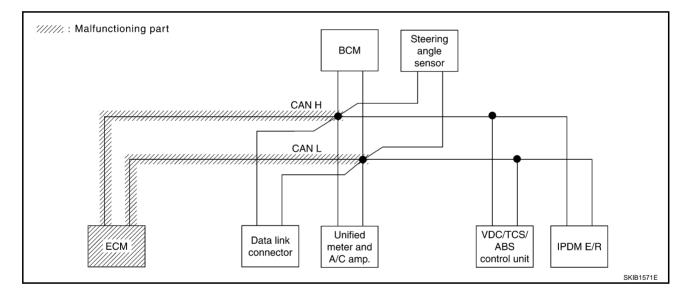


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Check ECM circuit. Refer to LAN-110, "ECM Circuit Inspection" .

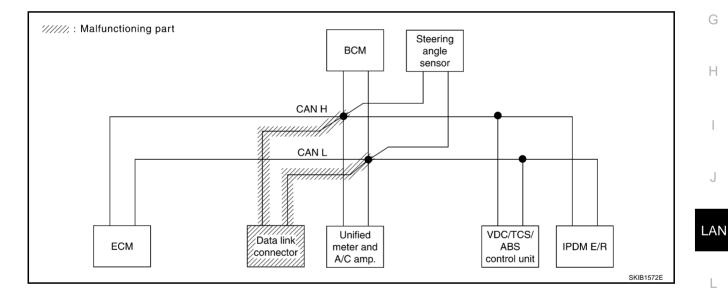
				CAN	I DIAG SU	PPORT MI	NTR				
SELECT SYST	EM screen	Initial	Transmit			Receive	diagnosis			SELE-DIAG	RESULTS
OLLEON OTON		diagnosis	Transmit diagnosis	ECM	METER /M&A	BCM /SEC	STRG	VDC/TCS /ABS	IPDM E/R		
ENGINE	_	NG		_	UNKWN	UNKWN	-			CAN COMM CIRCUIT (UN000)	CAN COMM CIRCU (UN001)
METER A/C AMP	No indication	_	UNKWN	UNKWN	_	UNKWN	_	UNKWN	-	CAN COMPLCIRCUIT (U 000)	_
BCM	No indication	NG	UNKWN		UNKWN	-	-	-	UNKWN	CAN COMM CIRCUIT (U1000)	_
ABS	_	NG	UNKWN	UNIWN	UNKWN	_	UNKWN	_	-		_
IPDM E/R	No indication	_	UNKWN		_	UNKWN	_	_	_	CAN COMM CIRCUIT (UN000)	_



#### Case 3

Check data link connector circuit. Refer to LAN-111, "Data Link Connector Circuit Inspection" .

				CAN	N DIAG SU	PPORT MI	NTR				
SELECT SYST	FM screen	Initial	Transmit			Receive	diagnosis			SELF-DIAG	BESULTS
		diagnosis		ECM	METER /M&A	BCM /SEC	STRG	VDC/TCS /ABS	IPDM E/R		
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMM CIRCUIT (U1001)
METER A/C AMP	No indication	-	UNKWN	UNKWN	-	UNKWN	-	UNKWN	_	CAN COMM CIRCUIT (U1000)	_
BCM	No indication	NG	UNKWN	UNKWN	UNKWN	_	_	-	UNKWN	CAN COMM CIRCUIT (U1000)	-
ABS	_	NG	UNKWN	UNKWN	UNKWN	-	UNKWN	-	_	CAN COMM CIRCUIT (U1000)	_
IPDM E/R	No indication	-	UNKWN	UNKWN	_	UNKWN	_	_	_	CAN COMM CIRCUIT (U1000)	_



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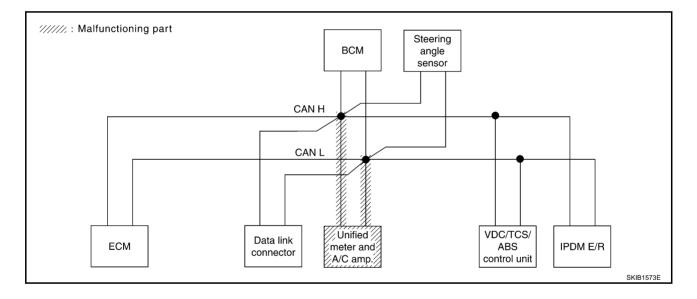
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Check unified meter and A/C amp. circuit. Refer to LAN-111, "Unified Meter and A/C Amp. Circuit Inspection" .

				CAN	I DIAG SU	PPORT M	NTR				
SELECT SYST	FM screen	Initial	Transmit			Receive	diagnosis			SELF-DIAG	BESULTS
011101010101		diagnosis	diagnosis	ECM	METER /M&A	BCM /SEC	STRG	VDC/TCS /ABS	IPDM E/R		
ENGINE	_	NG	UNKWN	—	UNKWN	UNKWN	-	UNKWN	UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMY CIRCUIT (UN01)
METER A/C AMP	No indication	Ι	UNKWN	UNKWN	-	UNKWN	Ι	UNKWN	Ι	CAN COMM CIRCUIT (UN00)	_
BCM	No indication	NG	UNKWN	UNKWN	UNKWN	-	_	-	UNKWN	CAN COMM CIRCUIT (U1000)	-
ABS	_	NG	UNKWN	UNKWN	UNIWN	-	UNKWN	-	_	CAN COMM CIRCUIT (U1000)	_
IPDM E/R	No indication		UNKWN	UNKWN	-	UNKWN	_	_	_	CAN COMM CIRCUIT (U1000)	_



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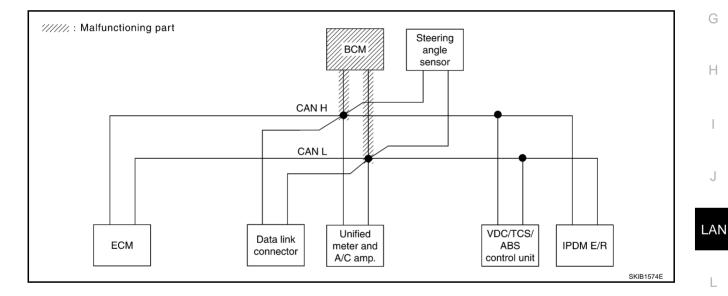
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### Case 5

Check BCM circuit. Refer to LAN-112, "BCM Circuit Inspection" .

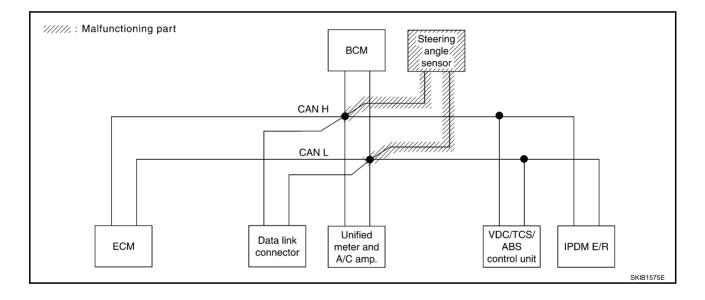
				CAN	I DIAG SU	PPORT M					
SELECT SYST	FM screen	Initial	Transmit			Receive	diagnosis			SELF-DIAG	BESULTS
		diagnosis		ECM	METER /M&A	BCM /SEC	STRG	VDC/TCS /ABS	IPDM E/R		
ENGINE	-	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMP CIRCUIT
METER A/C AMP	No indication	_	UNKWN	UNKWN	-		-	UNKWN	-	CAN COMM CIRCUIT (UN000)	_
ВСМ	No indication	NG	UNKWN	UNKWN	UNKWN	-	_	-	UNKWN	CAN COMM CIRCUIT (U1000)	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	-	UNKWN	-	_	CAN COMM CIRCUIT (U1000)	_
IPDM E/R	No indication	-	UNKWN	UNKWN	-	UNKWN	_	-	_	CAN COMIN CIRCUIT (UN00)	_



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Check steering angle sensor circuit. Refer to LAN-112, "Steering Angle Sensor Circuit Inspection" .

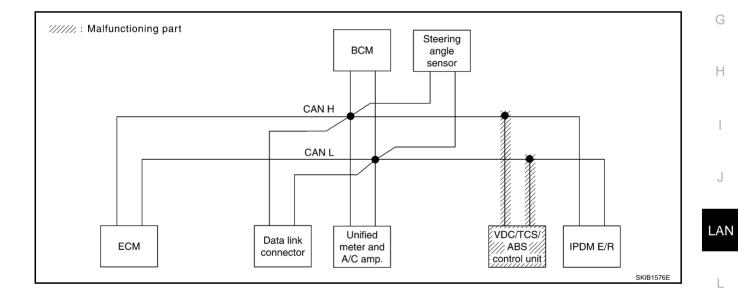
				CAN	N DIAG SU	PPORT MI	NTR					
SELECT SYST	FM screen	Initial	Transmit			Receive	diagnosis			SELE-DIAG	RESULTS	
			diagnosis	ECM	METER /M&A	BCM /SEC	STRG	VDC/TCS /ABS	IPDM E/R			
ENGINE	-	NG	UNKWN	-	UNKWN	UNKWN	_	UNKWN	UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMM CIRCUIT (U1001)	
METER A/C AMP	No indication	-	UNKWN	UNKWN	-	UNKWN	_	UNKWN	_	CAN COMM CIRCUIT (U1000)	_	
BCM	No indication	NG	UNKWN	UNKWN	UNKWN	_	_	_	UNKWN	CAN COMM CIRCUIT (U1000)	_	
ABS	_	NG	UNKWN	UNKWN	UNKWN	-		_	_	CAN COMM CIRCUIT (U1000)	_	
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNKWN	_	_	_	CAN COMM CIRCUIT (U1000)	_	



### Case 7

Check VDC/TCS/ABS control unit circuit. Refer to LAN-113, "VDC/TCS/ABS Control Unit Circuit Inspection".

				CAN	N DIAG SU	PPORT M					
SELECT SYST	EM screen	Initial diagnosis	Transmit diagnosis	ECM	METER /M&A	BCM /SEC	diagnosis STRG	VDC/TCS /ABS	IPDM E/R	SELF-DIAG	RESULTS
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	_		UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMM CIRCUIT (UN001)
METER A/C AMP	No indication	_	UNKWN	UNKWN	_	UNKWN	_		_	CAN COMM CIRCUIT (U 000)	_
BCM	No indication	NG	UNKWN	UNKWN	UNKWN	-	_	_	UNKWN	CAN COMM CIRCUIT (U1000)	-
ABS	_	V		UNKWN	UNKWN	-		_	-	CAN COMM CIRCUIT (U 000)	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNKWN	_	_	_	CAN COMM CIRCUIT (U1000)	_



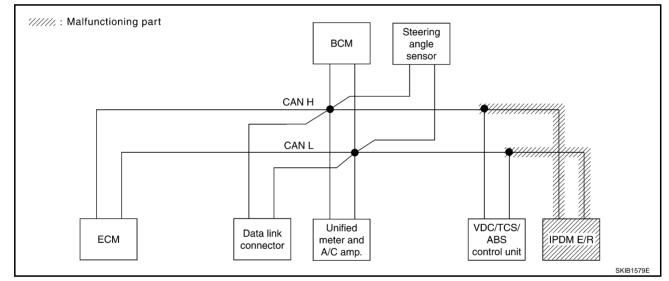
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Check IPDM E/R circuit. Refer to LAN-113, "IPDM E/R Circuit Inspection" .

				CAN	N DIAG SU	PPORT MI	NTR				
SELECT SYST	FM screen	Initial	Transmit			Receive	diagnosis			SELE-DIAG	RESULTS
		diagnosis		ECM	METER /M&A	BCM /SEC	STRG	VDC/TCS /ABS	IPDM E/R	OLLI DIVIC	
ENGINE	-	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN		CAN COMM CIRCUIT (U1000)	CAN COMM CIRCUI (UN001)
METER A/C AMP	No indication	-	UNKWN	UNKWN	-	UNKWN	_	UNKWN	-	CAN COMM CIRCUIT (U1000)	_
BCM	No indication	NG	UNKWN	UNKWN	UNKWN	_	_	-		CAN COMM CIRCUIT (U1000)	-
ABS	-	NG	UNKWN	UNKWN	UNKWN	-	UNKWN	-	-	CAN COMM CIRCUIT (U1000)	-
IPDM E/R	No indication	-	UNKWN	UNKWN	-	UNKWN	_	_	-		_



#### Case 9

Check CAN communication circuit. Refer to LAN-114, "CAN Communication Circuit Inspection" .

Dessive disapsois			
Receive diagnosis		SELF-DIAG	RESULTS
BCM /SEC STRG	VDC/TCS /ABS IPDM E/R		
UNIAWN -	UNION UNION	CAN COMM CIRCUIT (UN000)	CAN COMM CIRCUIT (UN001)
UNKWN -	UNKWN -	CAN COMM CIRCUIT (UN000)	_
	– UNKWN	CAN COMM CIRCUIT (U1000)	-
		CAN COMM CIRCUIT (U 000)	_
UNKWN –		CAN COMM CIRCUIT (UN000)	_
ι	/SEC STRG IN/WN INKWN  - UN/WN	/SEC STRG /ABS IPDM E/R INWN - UNWN UNWN INKWN - UNKWN - UNKWN - UNWN	BCM /SEC     STRG     VDC/TCS /ABS     IPDM E/R       INWWN     —     UNWWN     CAN COMM CIRCUIT (UV000)       INKWN     —     UNKWN     —       —     —     UNKWN     —       —     —     UNKWN     CAN COMM CIRCUIT (UV00)       —     —     UNKWN     CAN COMM CIRCUIT (U1000)       —     —     UNKWN     CAN COMM CIRCUIT (U1000)       —     UNWWN     —     —       CAN COMM CIRCUIT (UV00)     CAN COMM CIRCUIT (UV00)

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#### Case 10

Check IPDM E/R ignition relay circuit continuously sticks "OFF". Refer to <u>LAN-117</u>, "IPDM E/R Ignition Relay <u>A</u> <u>Circuit Inspection</u>".

				CAN	N DIAG SU	PPORT MI	NTR				
SELECT SYST	FM screen	Initial	Transmit			Receive	diagnosis			SELF-DIAG	BESULTS
	Linisoreen	diagnosis		ECM	METER /M&A	BCM /SEC	STRG	VDC/TCS /ABS	IPDM E/R		
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	-		UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMM CIRCUIT (UN001)
METER A/C AMP	No indication	-	UNKWN	UNKWN	-	UNKWN	-	UNION	-	CAN COMM CIRCUIT (UN000)	—
BCM	No indication	NG	UNKWN	UNKWN	UNKWN	-	-	_	UNKWN	CAN COMM CIRCUIT (U1000)	_
ABS	-	NG	UNKWN	UNKWN	UNKWN	_	UNKWN	_	_	CAN COMM CIRCUIT (U1000)	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNKWN	-	_	_	CAN COMM CIRCUIT (U1000)	_

#### Case 11

Check IPDM E/R ignition relay circuit continuously sticks "ON". Refer to <u>LAN-117</u>, "IPDM E/R Ignition Relay <u>Circuit Inspection</u>".

				CAN	N DIAG SU	PPORT M	ITR				
SELECT SYST	FM screen	Initial	Tronomit			Receive of	diagnosis			SELF-DIAG	BESUITS
		Initial diagnosis	Transmit diagnosis	ECM	METER /M&A	BCM /SEC	STRG	VDC/TCS /ABS	IPDM E/R		
ENGINE	-	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMM CIRCUIT (U1001)
METER A/C AMP	No indication	-	UNKWN	UNKWN	_	UNKWN	-	UNKWN	-	CAN COMM CIRCUIT (U1000)	_
BCM	No indication	NG	UNKWN	UNKWN	UNKWN	-	-	-	UNKWN	CAN COMM CIRCUIT (U1000)	-
ABS	_	NG	UNKWN	-	-	-	_	-	-	CAN COMM CIRCUIT (UN000)	—
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNKWN	_	_	_	CAN COMM CIRCUIT (U1000)	_

Inspection Between Data Link Connector and VDC/TCS/ABS Control Unit Circuit

### **1. CHECK CONNECTOR**

- 1. Turn ignition switch OFF.
- 2. Disconnect the battery cable from the negative terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector M15
- Harness connector E108

#### OK or NG

- OK >> GO TO 2.
- NG >> Repair terminal or connector.

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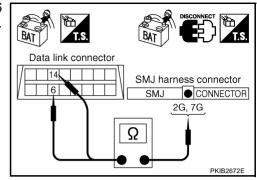
- 1. Disconnect harness connector M15.
- Check continuity between data link connector M8 terminals 6 (L), 14 (P) and harness connector M15 terminals 2G (L), 7G (P).
  - 6 (L) 2G (L)
  - 14 (P) 7G (P)

: Continuity should exist.

: Continuity should exist.

#### OK or NG

- OK >> GO TO 3.
- NG >> Repair harness.



# 3. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect VDC/TCS/ABS control unit connector.
- Check continuity between harness connector E108 terminals 2G (L), 7G (P) and VDC/TCS/ABS control unit harness connector E118 terminals 61 (L), 63 (P).
  - 2G (L) 61 (L)
  - 7G (P) 63 (P)
- : Continuity should exist.

: Continuity should exist.

#### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-5, "TROUBLE DIAGNOSES WORK FLOW"</u>. NG >> Repair harness.

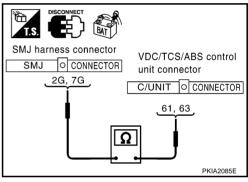
**ECM Circuit Inspection** 

### 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the battery cable from the negative terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (control module side, connector side and harness side).
- ECM connector
- Harness connector F102
- Harness connector M72

#### OK or NG

- OK >> GO TO 2.
- NG >> Repair terminal or connector.



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# $\overline{2}$ . CHECK HARNESS FOR OPEN CIRCUIT

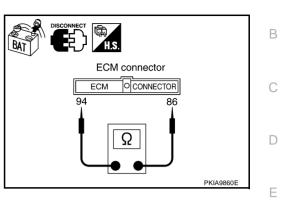
- 1. Disconnect ECM connector.
- 2. Check resistance between ECM harness connector F101 terminals 94 (L) and 86 (P).

94 (L) – 86 (P)

: Approx. 108 – 132 Ω

#### OK or NG

- OK >> Replace ECM.
- NG >> Repair harness between ECM and data link connector.



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# **Data Link Connector Circuit Inspection**

### 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the battery cable from the negative terminal.
- 3. Check terminals and connector of data link connector for damage, bend and loose connection (connector  $_{\rm G}$  side and harness side).

#### OK or NG

OK >> GO TO 2.

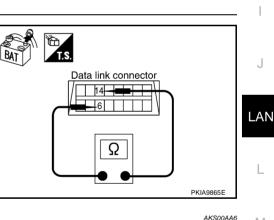
NG >> Repair terminal or connector.

### 2. CHECK HARNESS FOR OPEN CIRCUIT

Check resistance between data link connector M8 terminals 6 (L) and 14 (P). 6 (L) – 14 (P) : Approx. 54 – 66 Ω OK or NG

OK >> Diagnose again. Refer to <u>LAN-5, "TROUBLE DIAG-</u><u>NOSES WORK FLOW"</u>.

NG >> Repair harness between data link connector and unified meter and A/C amp.



# Unified Meter and A/C Amp. Circuit Inspection

# 1. CHECK CONNECTOR

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

### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

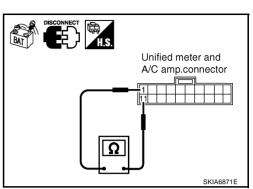
- 1. Disconnect unified meter and A/C amp. connector.
- 2. Check resistance between unified meter and A/C amp. harness connector M48 terminals 1 (L) and 11 (P).

#### 1 (L) – 11 (P)

: Approx. 54 – 66 Ω

#### OK or NG

- OK >> Replace unified meter and A/C amp.
- NG >> Repair harness between unified meter and A/C amp. and data link connector.



# **BCM Circuit Inspection**

### 1. CHECK CONNECTOR

1. Turn ignition switch OFF.

- 2. Disconnect the battery cable from the negative terminal.
- 3. Check terminals and connector of BCM for damage, bend and loose connection (control module side and harness side).

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect BCM connector.
- 2. Check resistance between BCM harness connector M90 terminals 39 (L) and 40 (P).

#### 39 (L) – 40 (P)

#### : Approx. 54 – 66 Ω

#### OK or NG

- OK >> Replace BCM. Refer to <u>BCS-18</u>, "Removal and Installation of BCM".
- NG >> Repair harness between BCM and data link connector.



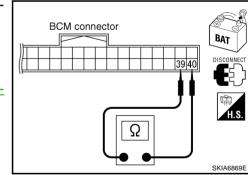
### 1. CHECK CONNECTOR

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

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.



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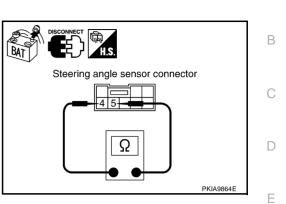
# 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect steering angle sensor connector.
- 2. Check resistance between steering angle sensor harness connector M22 terminals 4 (L) and 5 (P).

: Approx. 54 – 66  $\Omega$ 

#### OK or NG

- OK >> Replace steering angle sensor.
- NG >> Repair harness between steering angle sensor and data link connector.



# **VDC/TCS/ABS Control Unit Circuit Inspection**

#### 1. CHECK CONNECTOR

#### 1. Turn ignition switch OFF.

- 2. Disconnect the battery cable from the negative terminal.
- Check terminals and connector of VDC/TCS/ABS control unit for damage, bend and loose connection 3. G (control unit side and harness side).

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect VDC/TCS/ABS control unit connector.
- 2. Check resistance between VDC/TCS/ABS control unit harness connector E118 terminals 61 (L) and 63 (P).

#### 61 (L) - 63 (P)

#### : Approx. 54 – 66 $\Omega$

#### OK or NG

- OK >> Replace VDC/TCS/ABS control unit.
- NG >> Repair harness between VDC/TCS/ABS control unit and IPDM E/R.

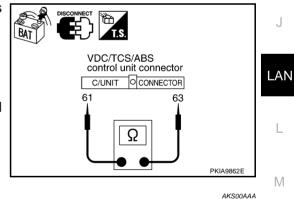
# **IPDM E/R Circuit Inspection**

### 1. CHECK CONNECTOR

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

#### OK or NG

- OK >> GO TO 2.
- NG >> Repair terminal or connector.



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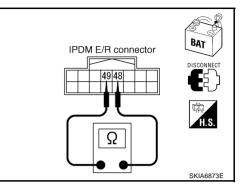
# $\overline{2}$ . CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect IPDM E/R connector.
- 2. Check resistance between IPDM E/R harness connector E9 terminals 48 (L) and 49 (P).

: Approx. 108 – 132 Ω

#### OK or NG

- OK >> Replace IPDM E/R.
- NG >> Repair harness between IPDM E/R and harness connector E108.



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# CAN Communication Circuit Inspection 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the battery cable from the negative terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (control module side, meter side, sensor side, control unit side and harness side).
- ECM
- Unified meter and A/C amp.
- BCM
- Steering angle sensor
- VDC/TCS/ABS control unit
- IPDM E/R
- Between ECM and IPDM E/R

#### OK or NG

- OK >> GO TO 2.
- NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR SHORT CIRCUIT

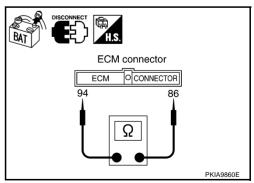
- 1. Disconnect ECM connector and harness connector F102.
- Check continuity between ECM harness connector F101 terminals 94 (L) and 86 (P).

#### 94 (L) – 86 (P)

: Continuity should not exist.

#### OK or NG

- OK >> GO TO 3.
- NG >> Repair harness between ECM and harness connector F102.



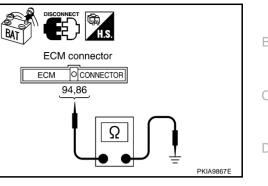
# $\overline{\mathbf{3}}$ . CHECK HARNESS FOR SHORT CIRCUIT

# Check continuity between ECM harness connector F101 terminals 94 (L), 86 (P) and ground.

- 94 (L) Ground
- 86 (P) Ground
- : Continuity should not exist.
- : Continuity should not exist.

#### OK or NG

- OK >> GO TO 4.
- NG >> Repair harness between ECM and harness connector F102.



# 4. CHECK HARNESS FOR SHORT CIRCUIT

- 1. Disconnect following connectors.
- Unified meter and A/C amp. connector
- BCM connector
- Steering angle sensor connector
- Harness connector M15
- 2. Check continuity between data link connector M8 terminals 6 (L) and 14 (P).

#### 6 (L) – 14 (P)

#### : Continuity should not exist.

#### OK or NG

OK >> GO TO 5.

- NG >> Check the following harnesses. If any harness is damaged, repair the harness.
  - Harness between data link connector and harness connector M72
  - Harness between data link connector and unified meter and A/C amp.
  - Harness between data link connector and BCM
  - Harness between data link connector and steering angle sensor
  - Harness between data link connector and harness connector M15

: Continuity should not exist.

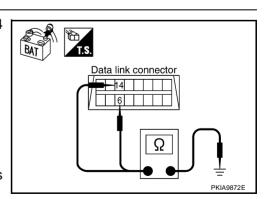
# 5. CHECK HARNESS FOR SHORT CIRCUIT

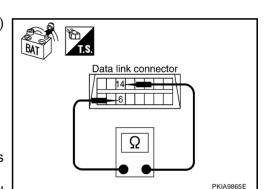
Check continuity between data link connector M8 terminals 6 (L), 14 (P) and ground.

- 6 (L) Ground
- 14 (P) Ground : Continuity should not exist.
- OK or NG
- OK >> GO TO 6.
- NG >> Check the following harnesses. If any harness is damaged, repair the harness.
  - Harness between data link connector and harness connector M72
  - Harness between data link connector and unified meter and A/C amp.

LAN-115

- Harness between data link connector and BCM
- Harness between data link connector and steering angle sensor
- Harness between data link connector and harness connector M15





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# 6. CHECK HARNESS FOR SHORT CIRCUIT

- 1. Disconnect VDC/TCS/ABS control unit connector and IPDM E/R connector.
- Check continuity between IPDM E/R harness connector E9 terminals 48 (L) and 49 (P).

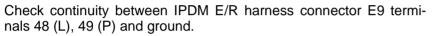
#### 48 (L) – 49 (P) : Continuity should not exist.

#### OK or NG

OK >> GO TO 7.

- NG >> Check the following harnesses. If any harness is damaged, repair the harness.
  - Harness between IPDM E/R and VDC/TCS/ABS control unit
  - Harness between IPDM E/R and harness connector E108

# 7. CHECK HARNESS FOR SHORT CIRCUIT



- 48 (L) Ground
- : Continuity should not exist. : Continuity should not exist.
- 49 (P) Ground

#### OK or NG

OK >> GO TO 8.

- NG >> Check the following harnesses. If any harness is damaged, repair the harness.
  - Harness between IPDM E/R and VDC/TCS/ABS control unit
  - Harness between IPDM E/R and harness connector E108

### 8. CHECK ECM AND IPDM E/R INTERNAL CIRCUIT

- 1. Remove ECM and IPDM E/R from vehicle.
- 2. Check resistance between ECM terminals 94 and 86.

**94 – 86** : Approx. 108 – 132 Ω

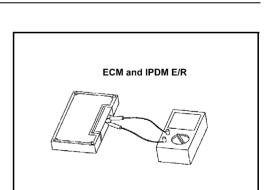
3. Check resistance between IPDM E/R terminals 48 and 49.

**48 – 49** : Approx. 108 – 132 Ω

#### OK or NG

OK >> GO TO 9.

NG >> Replace ECM and/or IPDM E/R.



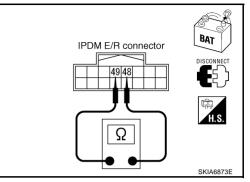
# 9. CHECK SYMPTOM

- 1. Fill in described symptoms on the column "Symptom" in the check sheet.
- 2. Connect all the connectors, and then make sure that the symptom is reproduced.

#### OK or NG

OK >> GO TO 10.

NG >> Refer to LAN-13, "Example of Filling in Check Sheet When Initial Conditions Are Not Reproduced"



IPDM E/R connector

49 48

48, 49

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LKIA0037F

BAT

SKIA6870E

1(	). CHECK UNIT REPRODUCIBILITY	А
Pe	form the following procedure for each unit, and then perform reproducibility test.	
1.	Turn ignition switch OFF.	
2.	Disconnect the battery cable from the negative terminal.	В
3.	Disconnect the unit connector.	
4.	Connect the battery cable to the negative terminal.	0
5.	Make sure that the symptom filled in the "Symptom" of the check sheet is reproduced. (Do not confuse it with the symptom related to removed unit.)	С
6.	Make sure that the same symptom is reproduced.	D
_	Unified meter and A/C amp.	D
-	BCM	
_	Steering angle sensor	Е
-	VDC/TCS/ABS control unit	
-	ECM	
-	IPDM E/R	F
<u>Ch</u>	eck results	
	eproduced>>Install removed unit, and then check the other unit. ot reproduced>>Replace removed unit.	G
IP	DM E/R Ignition Relay Circuit Inspection	
Ch	eck the following. If no malfunction is found, replace the IPDM E/R.	Н
•	IPDM E/R power supply circuit. Refer to PG-26, "IPDM E/R Power/Ground Circuit Inspection"	
•	Ignition power supply circuit. Refer to <u>PG-10, "IGNITION POWER SUPPLY — IGNITION SW. IN "ON"</u> <u>AND/OR "START""</u>	
		J

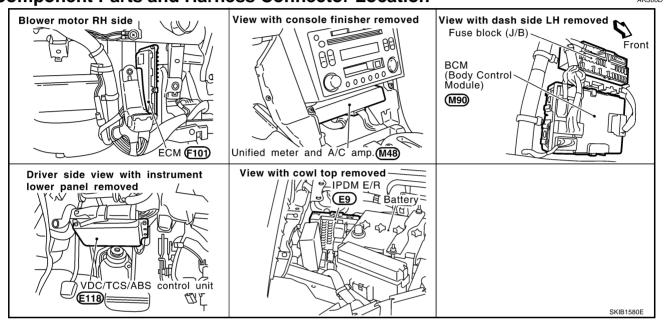
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# **System Description**

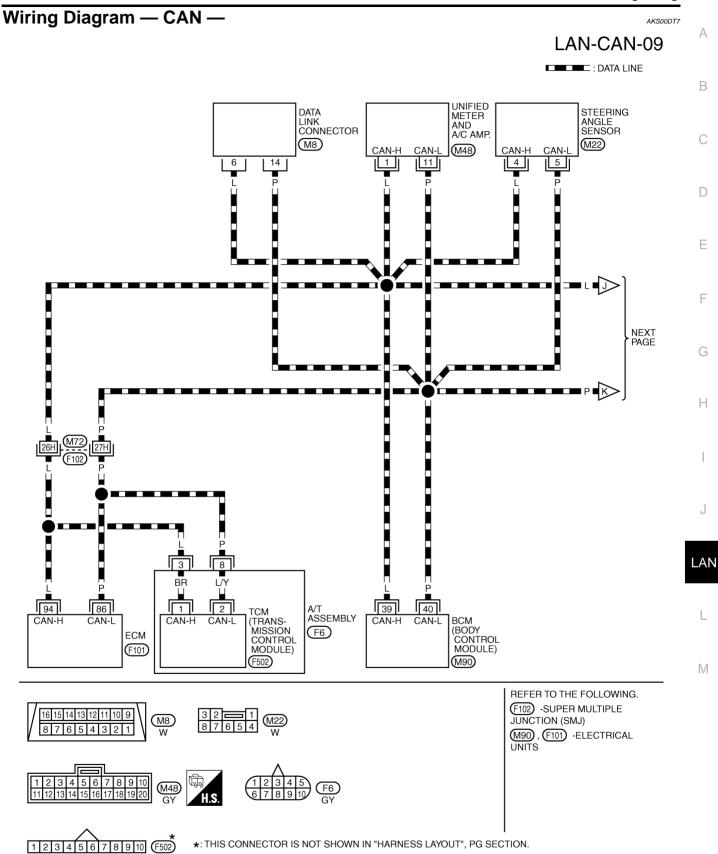
CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information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

### **Component Parts and Harness Connector Location**



AKS00DT6

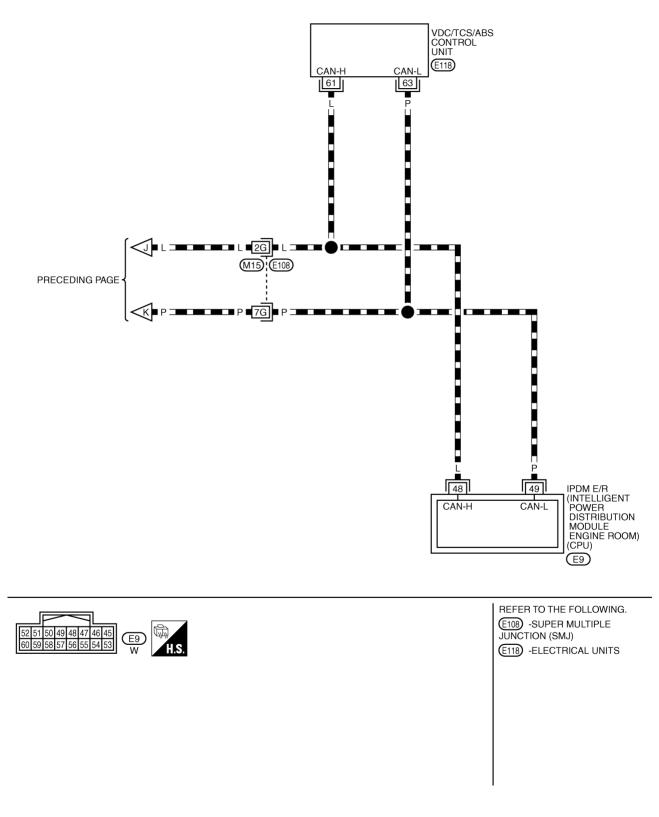
[CAN]



TKWT3239E

# LAN-CAN-10

: DATA LINE



TKWT3240E

# **CHECK SHEET**

#### NOTE:

If a check mark is put on "NG" on "INITIAL DIAG (Initial diagnosis)", replace the control unit.

LECT SYSTEM Screen         Initial Transmeter Receive diagnosis         SELF-DIAG RESULTS           LECT SYSTEM Screen         SELF-DIAG RESULTS           GINE         -         OWN ON COMM CIRCUT         CAN DIAG SUPPORT MNTR           Receive diagnosis         SELF-DIAG RESULTS           GINE         -         OWN ON COMM CIRCUT         CAN COMM CIRCUT         COM COM CIRCUT         CAN COMM CIRCUT         CAN COMM CIRCUT         COM COM CIRCUT           COM COM CIRCUT         COM COM CIRCUT         COM COM CIRCUT           COM COM CIRCUT         COM COM CIRCUT <th <="" colspa="2" th=""></th>	
LECT STSTEM Schen       Infinitial infansmitter       Infansmitter       ECM       TCM       METER MSChen       STRG       VDC/TCS       IPDM       ABS       SELF-UNAC RESULTS         GINE       -       NG       UNKWN       -       UNKWN       UNKWN       -       UNKWN       CAN COMM CIRCUIT (U1000)       -       (U1001)         -       NG       UNKWN       UNKWN       -       UNKWN       -       UNKWN       -       CAN COMM CIRCUIT (U1000)       -         TER A/C AMP       No indication       -       UNKWN       UNKWN       -       UNKWN       -       CAN COMM CIRCUIT (U1000)       -         M       No indication       NG       UNKWN       UNKWN       UNKWN       -       UNKWN       -       CAN COMM CIRCUIT (U1000)       -         M       No indication       NG       UNKWN       UNKWN       UNKWN       -       -       -       UNKWN       -       -       CAN COMM CIRCUIT (U1000)       -       -       -       -	
Lint         Intel         Ontoin	
Image         UNKWN         UNKWN         Image         UNKWN         Image         UNKWN         Image         UNKWN         Image         UNKWN         Image         Image <th< td=""></th<>	
TER A/C AMP       No indication       -       UNKWN       UNKWN       -       UNKWN       -       CAN COMM CIRCUIT       -         M       No indication       NG       UNKWN       UNKWN       -       UNKWN       -       UNKWN       CAN COMM CIRCUIT       -         S       -       NG       UNKWN       UNKWN       UNKWN       -       -       UNKWN       CAN COMM CIRCUIT       -         M       No indication       -       UNKWN       UNKWN       UNKWN       -       UNKWN       -       CAN COMM CIRCUIT       -         M E/R       No indication       -       UNKWN       UNKWN       -       -       -       CAN COMM CIRCUIT       -         Imptoms :       -       UNKWN       UNKWN       -       -       -       CAN COMM CIRCUIT       -         Imptoms :       -       UNKWN       UNKWN       -       -       -       CAN COMM CIRCUIT       -         Imptoms :       -       UNKWN       -       -       -       CAN COMM CIRCUIT       -         Attach copy of       -       -       -       UNKWN       -       -       -       CAN COMM CIRCUIT       -	
M         No indication         NG         UNKWN         Image: Constraint of the second se	
S       -       NG       UNKWN       UNKWN       UNKWN       -       -       CAN COMM CIRCUIT       -         M E/R       No indication       -       UNKWN       UNKWN       -       -       UNKWN       -       -       CAN COMM CIRCUIT       -         Immotion       -       UNKWN       UNKWN       -       -       UNKWN       -       -       CAN COMM CIRCUIT       -         Immotions :       -       UNKWN       UNKWN       -       -       UNKWN       -       -       CAN COMM CIRCUIT       -         Imptoms :       -       -       UNKWN       -       -       -       CAN COMM CIRCUIT       -         Imptoms :       -       -       UNKWN       -       -       -       CAN COMM CIRCUIT       -         Imptoms :       -       -       -       -       -       CAN COMM CIRCUIT       -         Attach copy of       -       -       -       -       -       -       -       CAN COMM CIRCUIT       -	
Intern         Intern<	
Imptoms :	
Attach copy of SELECT SYSTEM	

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Attach copy of Attach copy of Attach copy of ENGINÉ A/T METER A/C AMP SELF-DIAG RESULTS SELF-DIAG RESULTS SELF-DIAG RESULTS Attach copy of Attach copy of Attach copy of IPDM E/R BCM ABS SELF-DIAG RESULTS SELF-DIAG RESULTS SELF-DIAG RESULTS Attach copy of Attach copy of Attach copy of ENGINE METER A/C AMP A/T CAN DIAG SUPPORT CAN DIAG SUPPORT CAN DIAG SUPPORT MNTR MNTR MNTR Attach copy of Attach copy of Attach copy of BCM ABS IPDM E/R CAN DIAG SUPPORT CAN DIAG SUPPORT CAN DIAG SUPPORT MNTR MNTR MNTR PKIA8199E

#### CHECK SHEET RESULTS (EXAMPLE)

#### NOTE:

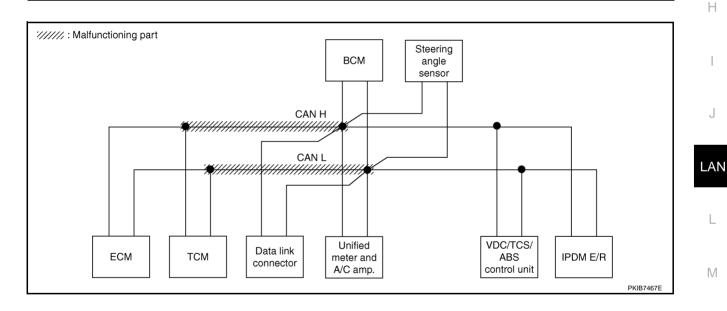
If a check mark is put on "NG" on "INITIAL DIAG (Initial diagnosis)", replace the control unit.

#### Case 1

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Check harness between TCM and data link connector. Refer to <u>LAN-134</u>, "Inspection Between TCM and Data <u>Link Connector Circuit</u>".

				C	AN DIAG	SUPPC	DRT MNT	R				
SELECT SYSTE	M screen	Initial	Transmit			Rece	eive diag				SELF-DIAG	BESULTS
			diagnosis		тсм	METER /M&A	BCM /SEC	STRG	VDC/TCS /ABS	IPDM E/R		
ENGINE	-	NG	UNKWN	_	UNKWN			—			CAN COMM CIRCUIT (U1000)	CAN COMM CIRCUIT (U <b>10</b> 01)
A/T	Ι	NG	UNKWN	UNKWN	1		—	—	UNK	-	CAN COMMCIRCUIT (U 1000)	_
METER A/C AMP	No indication	—	UNKWN			_	UNKWN	—	UNKWN	_	CAN COMM CIRCUIT (U 1000)	_
BCM	No indication	NG	UNKWN		1	UNKWN	—	—	_	UNKWN	CAN COMM CIRCUIT (U1000)	_
ABS	-	NG	UNKWN		UNKINN	UNKWN	—	UNKWN	—	-	CAN COMMCIRCUIT (U 100)	_
IPDM E/R	No indication	-	UNKWN		-	-	UNKWN	-	-	Ι	CAN COMMCIRCUIT (U 100)	_



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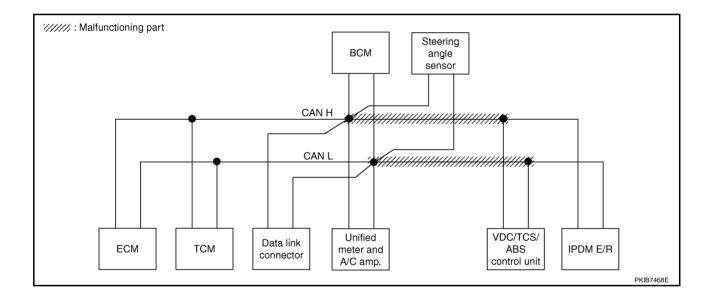
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#### Case 2

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Check harness between data link connector and VDC/TCS/ABS control unit. Refer to <u>LAN-134</u>, "Inspection <u>Between Data Link Connector and VDC/TCS/ABS Control Unit Circuit</u>".

				С	AN DIAG	SUPPC	DRT MNT	R				
SELECT SYSTI	EM screen	Initial	Transmit		-	Rece	eive diag	nosis			SELF-DIAG	BESUITS
			diagnosis		тсм	METER /M&A	BCM /SEC	STRG	VDC/TCS /ABS	IPDM E/R		
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	-		UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMMCIRCUI (Uno1)
A/T	-	NG	UNKWN	UNKWN	—	UNKWN	—	-		_	CAN COMM CIRCUIT (UN00)	_
METER A/C AMP	No indication	_	UNKWN	UNKWN	UNKWN	_	UNKWN	_		—	CAN COMM/CIRCUIT (U100)	_
BCM	No indication	NG	UNKWN	UNKWN	—	UNKWN	—	_	_	UNK	CAN COMM CIRCUIT (U1000)	_
ABS	-	NG	UNKWN				-		-	-	CAN COMMCIRCUIT (U 100)	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	-	_	_	CAN COMMCIRCUIT (U 1000)	_



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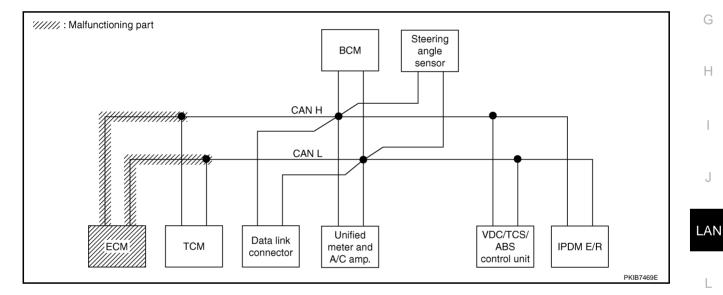
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### Case 3

Check ECM circuit. Refer to LAN-135, "ECM Circuit Inspection" .

				C	AN DIAG	SUPPC	DRT MNT	R				
SELECT SYSTE	- M screen	Initial	Transmit			Rece	eive diag	-			SELF-DIAG	BESULTS
			diagnosis	1	тсм	METER /M&A	BCM /SEC	SIRG	VDC/TCS /ABS	E/B		
ENGINE	-	NG		-				-				CAN COMM CIRCUIT (UN01)
A/T	-	NG	UNKWN		-	UNKWN	-	-	UNKWN	-	CAN COMM CIRCUIT (UN00)	_
METER A/C AMP	No indication	_	UNKWN	UNK	UNKWN	_	UNKWN	_	UNKWN	_	CAN COMMCIRCUIT (UN00)	-
BCM	No indication	NG	UNKWN		_	UNKWN	-	-	-	UNKWN	CAN COMM CIRCUIT (U1000)	-
ABS	—	NG	UNKWN		UNKWN	UNKWN	_	UNKWN	-	-	CAN COMMCIRCUIT (UN00)	_
IPDM E/R	No indication	_	UNKWN	UNK	_	_	UNKWN	_	_	_	CAN COMMCIRCUIT (U N00)	_



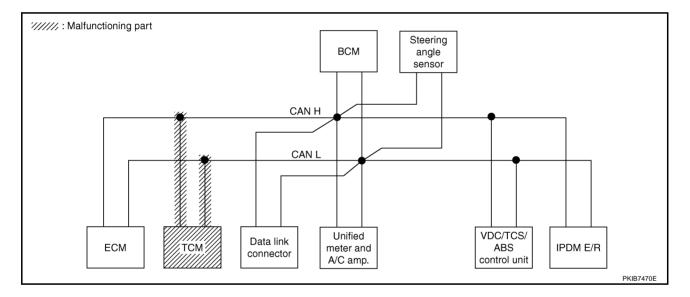
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#### Case 4

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Check TCM circuit. Refer to LAN-136, "TCM Circuit Inspection" .

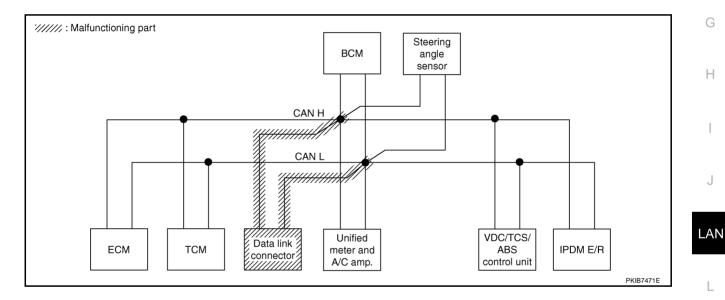
				С	AN DIAG	SUPPC	DRT MNT	R				
SELECT SYST		Initial	Transmit		-	Rece	eive diag	nosis			SELF-DIAG	BESUITS
		diagnosis		1	тсм	METER /M&A	BCM /SEC	STRG	VDC/TCS /ABS	IPDM E/R	OLLI DIVIC	
ENGINE	-	NG	UNKWN	_		UNKWN	UNKWN	-	UNKWN	UNKWN	CAN COMMCIRCUIT (U 1000)	CAN COMM CIRCUI (U1001)
A/T	-	NG	UNKWN	UNKWN	_		—	-	UNK	-	CAN COMMCIRCUIT (UN00)	-
METER A/C AMP	No indication	—	UNKWN	UNKWN	UNKWN	—	UNKWN	-	UNKWN	—	CAN COMM CIRCUIT (U 1000)	_
BCM	No indication	NG	UNKWN	UNKWN	-	UNKWN	-	-	-	UNKWN	CAN COMM CIRCUIT (U1000)	_
ABS	-	NG	UNKWN	UNKWN		UNKWN	—	UNKWN	-	-	CAN COMMCIRCUIT (U N00)	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	-	—	—	CAN COMM CIRCUIT (U1000)	-
											•	



#### Case 5

Check data link connector circuit. Refer to LAN-136, "Data Link Connector Circuit Inspection" .

				C	AN DIAG	SUPPC	ORT MNT	R				
SELECT SYST	- M screen	Initial	Transmit			Rece	eive diagi	nosis	-		SELF-DIAG	BESULTS
022201 0101			diagnosis		тсм	METER /M&A	BCM /SEC	STRG	VDC/TCS /ABS	IPDM E/R		
ENGINE	-	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	-	UNKWN	UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMM CIRCUIT (U1001)
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	-		UNKWN	I	CAN COMM CIRCUIT (U1000)	-
METER A/C AMP	No indication	_	UNKWN	UNKWN	UNKWN	—	UNKWN	_	UNKWN	_	CAN COMM CIRCUIT (U1000)	_
BCM	No indication	NG	UNKWN	UNKWN	_	UNKWN		-	_	UNKWN	CAN COMM CIRCUIT (U1000)	-
ABS	-	NG	UNKWN	UNKWN	UNKWN	UNKWN		UNKWN	_	-	CAN COMM CIRCUIT (U1000)	-
IPDM E/R	No indication	—	UNKWN	UNKWN	—	—	UNKWN	-	—	-	CAN COMM CIRCUIT (U1000)	_



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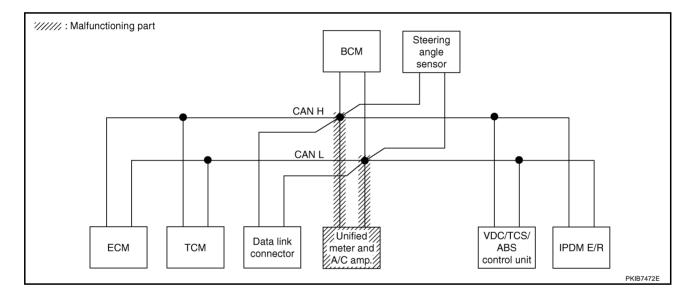
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#### Case 6

Check unified meter and A/C amp. circuit. Refer to LAN-137, "Unified Meter and A/C Amp. Circuit Inspection" .

				С	AN DIAG	SUPPC	RT MNT	R				
SELECT SYST	EM coroon	Initial	Transmit			Rece	eive diagi	nosis			SELF-DIAG	
SELECT STOR			diagnosis	ECM	тсм	METER /M&A	BCM /SEC	STRG	VDC/TCS /ABS	IPDM E/R	SELI-DIAC	A RESOLTS
ENGINE	-	NG	UNKWN		UNKWN		UNKWN	_	UNKWN	UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMMCIRCUIT (U1001)
A/T	-	NG	UNKWN	UNKWN	-		-	_	UNKWN	-	CAN COMMCIRCUIT (UN00)	_
METER A/C AMP	No indication	-	UNKWN	UNKWN	UNKWN	-	UNKWN	-	UNKWN	-	CAN COMMCIRCUIT (U 100)	-
BCM	No indication	NG	UNKWN	UNKWN	-		-	-	-	UNKWN	CAN COMM CIRCUIT (U1000)	-
ABS	-	NG	UNKWN	UNKWN	UNKWN		-	UNKWN	-	-	CAN COMM CIRCUIT (U1000)	-
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	-	CAN COMM CIRCUIT (U1000)	_



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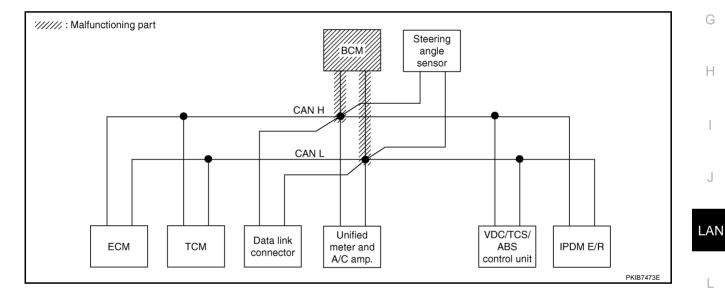
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### Case 7

Check BCM circuit. Refer to LAN-137, "BCM Circuit Inspection" .

				С	AN DIAG	SUPPC	ORT MNT	R				
SELECT SYSTI	=M screen	Initial	Transmit			Rece	eive diag	nosis				RESULTS
SELECT STON		diagnosis			тсм	METER /M&A	BCM /SEC	STRG	VDC/TCS /ABS	IPDM E/R		TILOULIS
ENGINE	-	NG	UNKWN	-	UNKWN	UNKWN		_	UNKWN	UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMMCIRCUIT (U101)
A/T	-	NG	UNKWN	UNKWN	-	UNKWN	_	_	UNKWN	-	CAN COMM CIRCUIT (U1000)	-
METER A/C AMP	No indication	_	UNKWN	UNKWN	UNKWN	_		_	UNKWN	_	CAN COMMCIRCUIT (UN00)	_
BCM	No indication	NG	UNKWN	UNKWN	-	UNKWN	_	_	-	UNKWN	CAN COMM CIRCUIT (U1000)	_
ABS	-	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	UNKWN	-	-	CAN COMM CIRCUIT (U1000)	-
IPDM E/R	No indication	-	UNKWN	UNKWN	Ι	-		-	-	-	CAN COMMCIRCUIT (UN00)	—



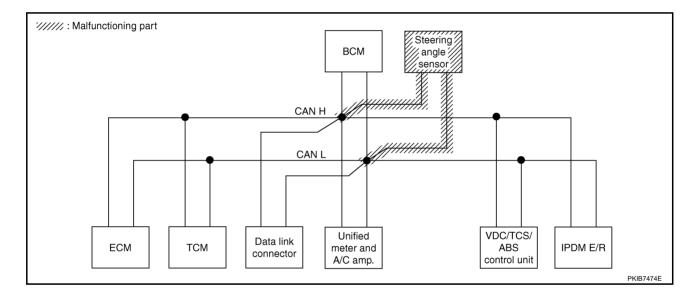
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#### Case 8

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Check steering angle sensor circuit. Refer to LAN-138, "Steering Angle Sensor Circuit Inspection" .

				С	AN DIAG	SUPPC	RT MNT	R				
SELECT SYSTE	-M scroon	Initial	Transmit			Rece	eive diagr	nosis			SELF-DIAG	
SELECT STOR		diagnosis			тсм	METER /M&A	BCM /SEC	STRG	VDC/TCS /ABS	IPDM E/R	SELI-DIAC	THEODERS
ENGINE	-	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN	UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMM CIRCUIT (U1001)
A/T	_	NG	UNKWN	UNKWN	—	UNKWN	-	_	UNKWN	_	CAN COMM CIRCUIT (U1000)	_
METER A/C AMP	No indication	-	UNKWN	UNKWN	UNKWN	-	UNKWN	_	UNKWN	-	CAN COMM CIRCUIT (U1000)	_
BCM	No indication	NG	UNKWN	UNKWN	—	UNKWN	-		-	UNKWN	CAN COMM CIRCUIT (U1000)	_
ABS	-	NG	UNKWN	UNKWN	UNKWN	UNKWN	-		-	-	CAN COMM CIRCUIT (U1000)	-
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	-	_	CAN COMM CIRCUIT (U1000)	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	-		_

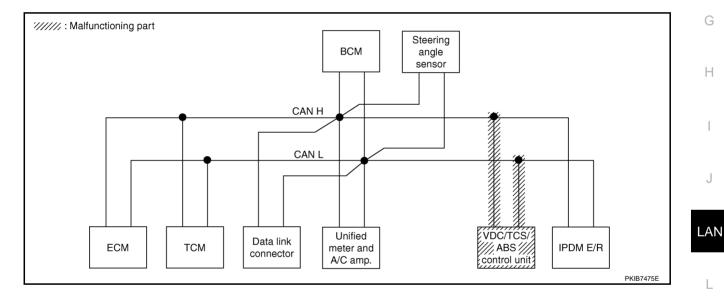


#### Case 9

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Check VDC/TCS/ABS control unit circuit. Refer to LAN-138, "VDC/TCS/ABS Control Unit Circuit Inspection" .

SELECT SYSTEW         Initial diagnosis         Transmit ECM         TCM         METER /M&A         SCM         VDC/TCS         IPDM /ABS         IPDM EVR           ENGINE         -         NG         UNKWN         -         UNKWN         VNKWN         VNKWN         INKWN         INKWN         CAN COMM CIRCUIT (U1000)         CAN COMM CIRCUIT (U1000)         CAN COMM CIRCUIT (U1001)           A/T         -         NG         UNKWN         UNKWN         -         UNKWN         -         CAN COMM CIRCUIT (U1000)         CAN COMM CIRCUIT (U1000)         -           METER A/C AMP         No indication         -         UNKWN         UNKWN         -         UNKWN         -         CAN COMM CIRCUIT (U1000)         -           BCM         No indication         NG         UNKWN         UNKWN         -         UNKWN         -         UNKWN         CAN COMM CIRCUIT (U1000)         -           ABS         -         NG         UNKWN         UNKWN         UNKWN         -         UNKWN         -         -         CAN COMM CIRCUIT (U1000)         -					С	AN DIAG	SUPPC	DRT MNT	R				
Instant diagnosis       In		EM screen	Initial	Transmit			Rece	eive diag	nosis				BESUITS
A/T       -       NG       UNKWN       UNKWN       -       UNKWN       -       CAN COMMODIRUIT       -         METER A/C AMP       No indication       -       UNKWN       UNKWN       -       UNKWN       -       CAN COMMODIRUIT       -         BCM       No indication       NG       UNKWN       UNKWN       -       UNKWN       -       UNKWN       -       CAN COMMODIRUIT       -         ABS       -       NG       UNKWN       UNKWN       UNKWN       -       UNKWN       -       CAN COMMICIRCUIT       -			minute		1	тсм			STRG	/ABS	E/R		
A/T       Image       I	ENGINE	-	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_		UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMM CIRCUIT (U1001)
INETER A/C AMP       No indication       -       ONKWN       -       ONKWN       -       ONKWN       -       ONKWN       -       -       (U Moo)       -       -       -       -       (U Moo)       -	A/T	_	NG	UNKWN	UNKWN	_	UNKWN	-	_		_		_
BCM     No indication     NG     UNKWN     UNKWN     -     -     -     -     UNKWN     (U1000)     -       ABS     -     NG     UNKWN     UNKWN     UNKWN     -     UNKWN     -     -     CAN COMM/CIRCUIT (U1000)     -	METER A/C AMP	No indication	_	UNKWN	UNKWN	UNKWN	_	UNKWN	—		-		_
	BCM	No indication	NG	UNKWN	UNKWN	_	UNKWN	-	-	-	UNKWN		_
	ABS	_	N	UNKWN	UNKWN			-		-	_		_
IPDM E/R       No indication       -       UNKWN       -       -       -       CAN COMM CIRCUIT       -         (U1000)       -       -       UNKWN       -       -       -       CAN COMM CIRCUIT       -	IPDM E/R	No indication	_	UNKWN	UNKWN	-	_	UNKWN	_	-	-	CAN COMM CIRCUIT (U1000)	_



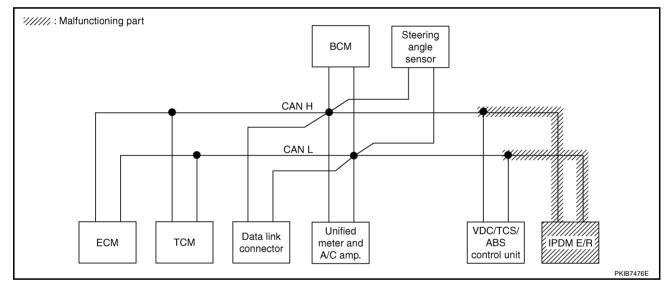
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#### Case 10

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#### Check IPDM E/R circuit. Refer to LAN-139, "IPDM E/R Circuit Inspection" .

				С	AN DIAG	SUPPC	RT MNT	R					
SELECT SYST	EM screen	Initial	Transmit			Rece	eive diagr	nosis			SELF-DIAG RESULTS		
		diagnosis			тсм	METER /M&A	BCM /SEC	STRG	VDC/TCS /ABS	F/R			
ENGINE	-	NG	UNKWN	-	UNKWN	UNKWN	UNKWN	_	UNKWN		CAN COMM CIRCUIT (U1000)	CAN COMM CIRCUI (U1001)	
A/T	-	NG	UNKWN	UNKWN	-	UNKWN	-	_	UNKWN	-	CAN COMM CIRCUIT (U1000)	_	
METER A/C AMP	No indication	-	UNKWN	UNKWN	UNKWN	-	UNKWN	_	UNKWN	_	CAN COMM CIRCUIT (U1000)	_	
BCM	No indication	NG	UNKWN	UNKWN	1	UNKWN	-		_		CAN COMM CIRCUIT (U1000)	_	
ABS	-	NG	UNKWN	UNKWN	UNKWN	UNKWN	-	UNKWN	-	-	CAN COMM CIRCUIT (U1000)	_	
IPDM E/R	No indication	-	UNKWN	UNKWN	-	-	UNKWN	_	-	-	CAN COMMCIRCUIT (U 100)	—	



#### Case 11

Check CAN communication circuit. Refer to LAN-139, "CAN Communication Circuit Inspection" .

				С	AN DIAG	SUPPC	RT MNT	R					
SELECT SYSTI	=M screen	Initial	Transmit			Rece	eive diagi	nosis			SELF-DIAG RESULTS		
SELECT STON			diagnosis	ECM	тсм	METER /M&A	BCM /SEC	STRG	VDC/TCS /ABS	IPDM E/R			
ENGINE	-	NG		—				_			CAN COMM CIRCUIT (U 1000)	CAN COMM CIRCUI (U1001)	
A/T	-	NG	UNKWN		-		-	_		-	CAN COMMCIRCUIT (UN00)	_	
METER A/C AMP	No indication	-	UNKWN	UNKWN	UNKWN	-	UNKWN	_	UNKWN	-	CAN COMMCIRCUIT (U 100)	_	
BCM	No indication	NG	UNKWN	UNKWN	-	UNKWN	-	_	-	UNKWN	CAN COMM CIRCUIT (U1000)	_	
ABS	-	N					-	UNK	-	-	CAN COMMCIRCUIT (U 100)	_	
IPDM E/R	No indication	-	UNKWN	UNKWN	_	-	UNKWN	_	-	-	CAN COMMCIRCUIT (U 100)	_	

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#### Case 12

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Check IPDM E/R ignition relay circuit continuously sticks "OFF". Refer to <u>LAN-142</u>, "IPDM E/R Ignition Relay <u>A</u> <u>Circuit Inspection</u>".

				С	AN DIAG	SUPPC	DRT MNT	R					
SELECT SYSTI	=M scroon	Initial	Transmit			Rece	eive diagi	nosis				RESULTS	
		diagnosis		ECM	тсм	METER /M&A	BCM /SEC	STRG	VDC/TCS /ABS	E/R			
ENGINE	-	NG	UNKWN	-		UNKWN	UNKWN	-		UNKWN	CAN COMM CIRCUIT	CAN COMMCIRCUIT (U1V01)	
A/T	-	NG	UNKWN	UNKWN	-	UNKWN	-	_	UNKWN	-	CAN COMM CIRCUIT (U1000)	_	
METER A/C AMP	No indication	-	UNKWN	UNKWN	UNK	-	UNKWN	_		-	CAN COMM CIRCUIT (UN00)	_	
BCM	No indication	NG	UNKWN	UNKWN	-	UNKWN	-	-	-	UNKWN	CAN COMM CIRCUIT (U1000)	-	
ABS	-	NG	UNKWN	UNKWN	UNKWN	UNKWN	-	UNKWN	-	-	CAN COMM CIRCUIT (U1000)	-	
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	-	_	CAN COMM CIRCUIT (U1000)	_	

#### Case 13

Check IPDM E/R ignition relay circuit continuously sticks "ON". Refer to <u>LAN-142</u>, "IPDM E/R Ignition Relay <u>Circuit Inspection</u>".

				С	AN DIAG		DRT MNT					
SELECT SYSTE		Initial diagnosis	Transmit diagnosis		тсм	Rece METER /M&A	eive diagr BCM /SEC	STRG	VDC/TCS /ABS	IPDM E/R	SELF-DIAG RESULTS	
ENGINE	-	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	-	UNKWN	UNKWN	CAN COMM CIRCUIT (U1000)	CAN COMM CIRCUIT (U1001)
A/T	-	NG	UNKWN	-	-	_	-	-	UNKWN	-	CAN COMMCIRCUIT (UN00)	_
METER A/C AMP	No indication	-	UNKWN	UNKWN	UNKWN	_	UNKWN	_	UNKWN	_	CAN COMM CIRCUIT (U1000)	-
ВСМ	No indication	NG	UNKWN	UNKWN	-	UNKWN	_	-	-	UNKWN	CAN COMM CIRCUIT (U1000)	-
ABS	-	NG	UNKWN	-	UNKWN	_	_	-	-	-	CAN COMMCIRCUIT (UN00)	-
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	-	-	CAN COMM CIRCUIT (U1000)	_

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# **Inspection Between TCM and Data Link Connector Circuit**

#### 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the battery cable from the negative terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector F102
- Harness connector M72

#### OK or NG

- OK >> GO TO 2.
- NG >> Repair terminal or connector.

### 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect A/T assembly connector and harness connector F102.
- Check continuity between A/T assembly harness connector F6 terminals 3 (L), 8 (P) and harness connector F102 terminals 26H (L), 27H (P).
  - 3 (L) 26H (L)
  - 8 (P) 27H (P)
- : Continuity should exist.

: Continuity should exist.

#### OK or NG

OK >> GO TO 3. NG >> Repair harness.

### $\mathbf{3}$ . CHECK HARNESS FOR OPEN CIRCUIT

Check continuity between harness connector M72 terminals 26H (L), 27H (P) and data link connector M8 terminals 6 (L), 14 (P).

- 26H (L) 6 (L) 27H (P) – 14 (P)
- : Continuity should exist.
- : Continuity should exist.

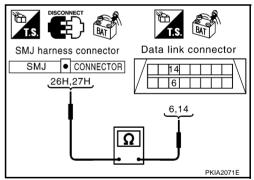
#### OK or NG

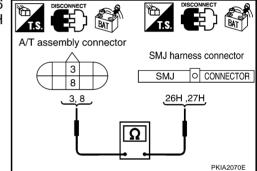
OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-5, "TROUBLE DIAGNOSES WORK FLOW"</u>. NG >> Repair harness.

# Inspection Between Data Link Connector and VDC/TCS/ABS Control Unit Circuit

- **1. CHECK CONNECTOR**
- 1. Turn ignition switch OFF.
- 2. Disconnect the battery cable from the negative terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector M15
- Harness connector E108
- OK or NG
- OK >> GO TO 2.
- NG >> Repair terminal or connector.

# LAN-134





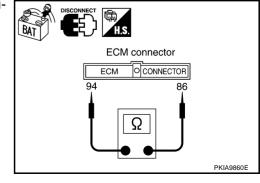
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#### $\overline{2}$ . CHECK HARNESS FOR OPEN CIRCUIT A 1. Disconnect harness connector M15. 2 Check continuity between data link connector M8 terminals 6 В (L), 14 (P) and harness connector M15 terminals 2G (L), 7G (P), BAT 6 (L) – 2G (L) : Continuity should exist. Data link connector 14(P) - 7G(P): Continuity should exist. 14 SMJ harness connector 6 OK or NG SMJ ● CONNECTOR 2G, 7G OK >> GO TO 3. NG >> Repair harness. Ω PKIB2672E F 3. CHECK HARNESS FOR OPEN CIRCUIT 1. Disconnect VDC/TCS/ABS control unit connector. F 2. Check continuity between harness connector E108 terminals 2G (L), 7G (P) and VDC/TCS/ABS control unit harness connector TS E118 terminals 61 (L), 63 (P). SMJ harness connector VDC/TCS/ABS control 2G (L) - 61 (L) : Continuity should exist. SMJ O CONNECTOR unit connector 2G, 7G 7G (P) - 63 (P) : Continuity should exist. C/UNIT O CONNECTOR Н OK or NG 61, 63 OK >> Connect all the connectors and diagnose again. Refer to Ω LAN-5, "TROUBLE DIAGNOSES WORK FLOW" . NG >> Repair harness. PKIA2085F **ECM Circuit Inspection** AKSOODTO 1. CHECK CONNECTOR Turn ignition switch OFF. 1. LAN Disconnect the battery cable from the negative terminal. 2. 3. Check terminals and connector of ECM for damage, bend and loose connection (control module side and harness side). L OK or NG OK >> GO TO 2. NG >> Repair terminal or connector. Μ 2. CHECK HARNESS FOR OPEN CIRCUIT 1. Disconnect ECM connector. Check resistance between ECM harness connector F101 termi-2. nals 94 (L) and 86 (P). BAT 94 (L) - 86 (P) : Approx. 108 – 132 $\Omega$ ECM connector

#### OK or NG

- OK >> Replace ECM.
- NG >> Repair harness between ECM and A/T assembly.



# **TCM Circuit Inspection**

### 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- Disconnect the battery cable from the negative terminal. 2.
- 3. Check terminals and connector of A/T assembly for damage, bend and loose connection (control module side and harness side).

#### OK or NG

OK >> GOTO2

NG >> Repair terminal or connector.

#### 2. CHECK HARNESS FOR OPEN CIRCUIT

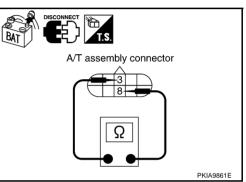
- Disconnect A/T assembly connector. 1.
- 2. Check resistance between A/T assembly harness connector F6 terminals 3 (L) and 8 (P).

#### 3 (L) – 8 (P)

: Approx. 54 – 66  $\Omega$ 

#### OK or NG

- >> Replace control valve with TCM. OK
- NG >> Repair harness between A/T assembly and harness connector F102.



# **Data Link Connector Circuit Inspection**

### **1. CHECK CONNECTOR**

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

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

### 2. CHECK HARNESS FOR OPEN CIRCUIT

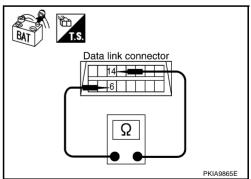
Check resistance between data link connector M8 terminals 6 (L) and 14 (P).

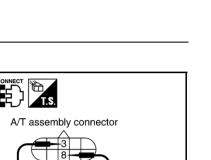
#### 6 (L) - 14 (P)

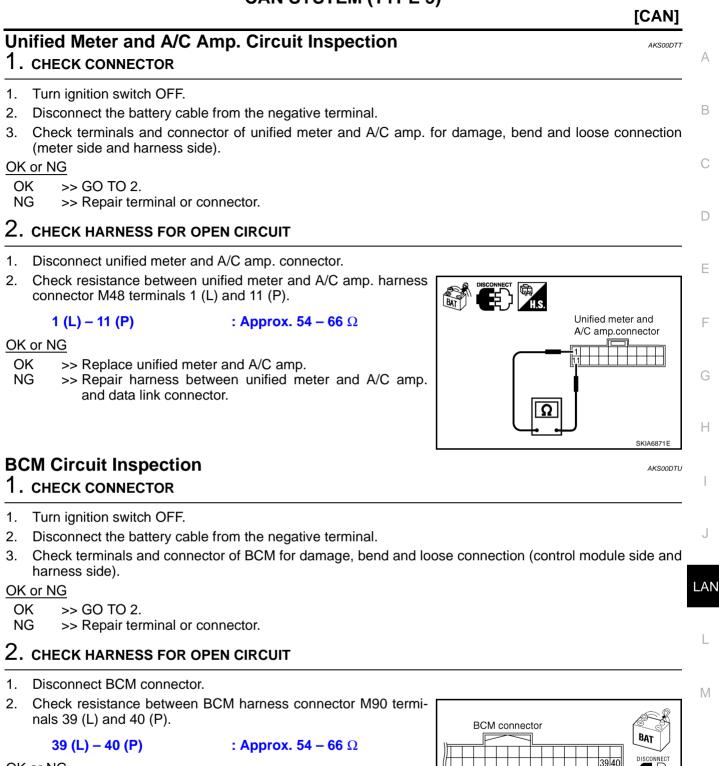
: Approx. 54 – 66  $\Omega$ 

#### OK or NG

- OK >> Diagnose again. Refer to LAN-5, "TROUBLE DIAG-NOSES WORK FLOW" .
- NG >> Repair harness between data link connector and unified meter and A/C amp.







#### OK or NG

-	ace BCM. Re	efer to E	<u>3CS-18,</u>	"Removal	and Insta	la-
<u>tion o</u>	f BCM" .					

NG >> Repair harness between BCM and data link connector.

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# **Steering Angle Sensor Circuit Inspection**

### **1.** CHECK CONNECTOR

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

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

#### 2. CHECK HARNESS FOR OPEN CIRCUIT

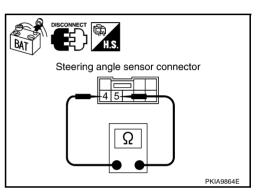
- 1. Disconnect steering angle sensor connector.
- Check resistance between steering angle sensor harness connector M22 terminals 4 (L) and 5 (P).

#### 4 (L) – 5 (P)

: Approx. 54 – 66 Ω

#### OK or NG

- OK >> Replace steering angle sensor.
- NG >> Repair harness between steering angle sensor and data link connector.



# **VDC/TCS/ABS Control Unit Circuit Inspection**

### 1. CHECK CONNECTOR

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

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

#### 2. CHECK HARNESS FOR OPEN CIRCUIT

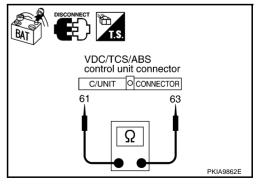
- 1. Disconnect VDC/TCS/ABS control unit connector.
- 2. Check resistance between VDC/TCS/ABS control unit harness connector E118 terminals 61 (L) and 63 (P).

#### 61 (L) – 63 (P)

: Approx. 54 – 66 Ω

#### OK or NG

- OK >> Replace VDC/TCS/ABS control unit.
- NG >> Repair harness between VDC/TCS/ABS control unit and IPDM E/R.



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# IPDM E/R Circuit Inspection 1. CHECK CONNECTOR 1. Turn ignition switch OFF.

- 2. Disconnect the battery cable from the negative terminal.
- 3. Check terminals and connector of IPDM E/R for damage, bend and loose connection (control module side and harness side).

#### OK or NG

- OK >> GO TO 2.
- NG >> Repair terminal or connector.

### 2. CHECK HARNESS FOR OPEN CIRCUIT

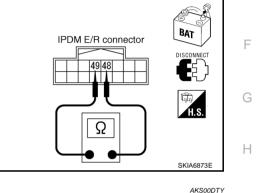
- 1. Disconnect IPDM E/R connector.
- 2. Check resistance between IPDM E/R harness connector E9 terminals 48 (L) and 49 (P).

#### 48 (L) – 49 (P)

: **Approx. 108 – 132** Ω

#### OK or NG

- OK >> Replace IPDM E/R.
- NG >> Repair harness between IPDM E/R and harness connector E108.



# **CAN Communication Circuit Inspection**

### 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the battery cable from the negative terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (control module side, meter side, sensor side, control unit side and harness side).
- ECM
- A/T assembly
- Unified meter and A/C amp.
- BCM
- Steering angle sensor
- VDC/TCS/ABS control unit
- IPDM E/R
- Between ECM and IPDM E/R

#### OK or NG

- OK >> GO TO 2.
- NG >> Repair terminal or connector.

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# $\overline{2}$ . CHECK HARNESS FOR SHORT CIRCUIT

- 1. Disconnect following connectors.
- ECM connector
- A/T assembly connector
- Harness connector F102
- 2. Check continuity between ECM harness connector F101 terminals 94 (L) and 86 (P).

#### 94 (L) – 86 (P)

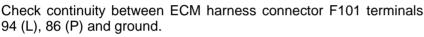
#### : Continuity should not exist.

OK or NG

#### OK >> GO TO 3.

- NG >> Check the following harnesses. If any harness is damaged, repair the harness.
  - Harness between ECM and A/T assembly
  - Harness between ECM and harness connector F102

# 3. CHECK HARNESS FOR SHORT CIRCUIT



- 94 (L) Ground
- : Continuity should not exist. : Continuity should not exist.

# 86 (P) – Ground

#### OK or NG

OK >> GO TO 4.

- NG >> Check the following harnesses. If any harness is damaged, repair the harness.
  - Harness between ECM and A/T assembly
  - Harness between ECM and harness connector F102

# 4. CHECK HARNESS FOR SHORT CIRCUIT

- 1. Disconnect following connectors.
- Unified meter and A/C amp. connector
- BCM connector
- Steering angle sensor connector
- Harness connector M15
- Check continuity between data link connector M8 terminals 6 (L) and 14 (P).

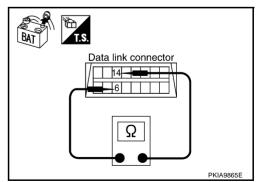
#### 6 (L) – 14 (P)

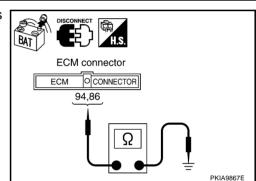
#### : Continuity should not exist.

#### OK or NG

OK >> GO TO 5.

- NG >> Check the following harnesses. If any harness is damaged, repair the harness.
  - Harness between data link connector and harness connector M72
  - Harness between data link connector and unified meter and A/C amp.
  - Harness between data link connector and BCM
  - Harness between data link connector and steering angle sensor
  - Harness between data link connector and harness connector M15





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94

ECM connector

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CONNECTOR

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# 5. CHECK HARNESS FOR SHORT CIRCUIT

Check continuity between data link connector M8 terminals 6 (L), 14 (P) and ground.

- 6 (L) Ground 14 (P) – Ground
- : Continuity should not exist.

: Continuity should not exist.

OK or NG

- OK >> GO TO 6.
- NG >> Check the following harnesses. If any harness is damaged, repair the harness.
  - Harness between data link connector and harness connector M72
  - Harness between data link connector and unified meter and A/C amp.
  - Harness between data link connector and BCM
  - Harness between data link connector and steering angle sensor
  - Harness between data link connector and harness connector M15

### 6. CHECK HARNESS FOR SHORT CIRCUIT

- 1. Disconnect VDC/TCS/ABS control unit connector and IPDM E/R connector.
  - Check continuity between IPDM E/R harness connector E9 terminals 48 (L) and 49 (P).

#### 48 (L) – 49 (P) : Continuity should not exist.

#### OK or NG

2.

OK >> GO TO 7.

- NG >> Check the following harnesses. If any harness is damaged, repair the harness.
  - Harness between IPDM E/R and VDC/TCS/ABS control unit
  - Harness between IPDM E/R and harness connector E108

### 7. CHECK HARNESS FOR SHORT CIRCUIT

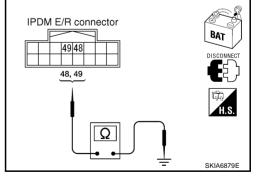
Check continuity between IPDM E/R harness connector E9 terminals 48 (L), 49 (P) and ground.

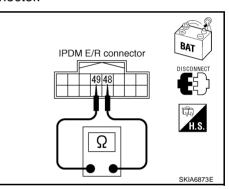
- 48 (L) Ground
- : Continuity should not exist.
- 49 (P) Ground
- : Continuity should not exist.

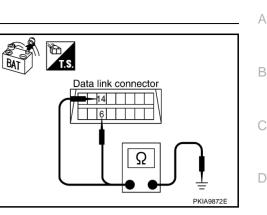
#### OK or NG

- OK >> GO TO 8.
- NG >> Check the following harnesses. If any harness is damaged, repair the harness.
  - Harness between IPDM E/R and VDC/TCS/ABS control unit
  - Harness between IPDM E/R and harness connector E108

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- 1. Remove ECM and IPDM E/R from vehicle.
- 2. Check resistance between ECM terminals 94 and 86.

**94 – 86** : Approx. 108 – 132 Ω

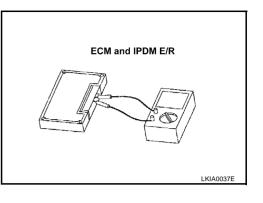
3. Check resistance between IPDM E/R terminals 48 and 49.

: Approx. 108 – 132 Ω

- OK or NG
- OK >> GO TO 9.

48 - 49

NG >> Replace ECM and/or IPDM E/R.



# 9. CHECK SYMPTOM

- 1. Fill in described symptoms on the column "Symptom" in the check sheet.
- 2. Connect all the connectors, and then make sure that the symptom is reproduced.

OK or NG

OK >> GO TO 10.

NG >> Refer to LAN-13, "Example of Filling in Check Sheet When Initial Conditions Are Not Reproduced"

# 10. CHECK UNIT REPRODUCIBILITY

Perform the following procedure for each unit, and then perform reproducibility test.

- 1. Turn ignition switch OFF.
- 2. Disconnect the battery cable from the negative terminal.
- 3. Disconnect the unit connector.
- 4. Connect the battery cable to the negative terminal.
- 5. Make sure that the symptom filled in the "Symptom" of the check sheet is reproduced. (Do not confuse it with the symptom related to removed unit.)
- 6. Make sure that the same symptom is reproduced.
- A/T assembly
- Unified meter and A/C amp.
- BCM
- Steering angle sensor
- VDC/TCS/ABS control unit
- ECM
- IPDM E/R

#### Check results

Reproduced>>Install removed unit, and then check the other unit. Not reproduced>>Replace removed unit.

# **IPDM E/R Ignition Relay Circuit Inspection**

Check the following. If no malfunction is found, replace the IPDM E/R.

- IPDM E/R power supply circuit. Refer to <u>PG-26, "IPDM E/R Power/Ground Circuit Inspection"</u>.
- Ignition power supply circuit. Refer to <u>PG-10, "IGNITION POWER SUPPLY IGNITION SW. IN "ON"</u> <u>AND/OR "START"</u>.

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