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PRECAUTIONS PFP:00001

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

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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 Man-

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

AKS003TZ

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

AKS003M4

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

CAUTION:

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.

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CHECK POINTS FOR USING CONSULT-II

- 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, "CAN Communication Unit".

Precautions For Trouble Diagnosis CAN SYSTEM

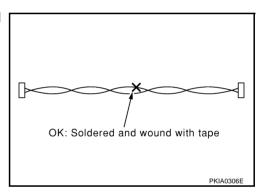
AKSOOOZD

- 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 negative battery terminal before checking the circuit.

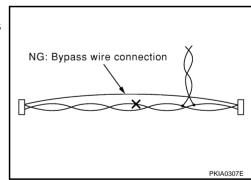
Precautions For Harness Repair CAN SYSTEM

AKS000ZE

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



 Do not perform bypass wire connections for the repair parts. (The spliced wire will become separated and the characteristics of twisted line will be lost.)



CAN COMMUNICATION

PFP:23710

System Description

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

CAN Communication Unit

AKS00AVB

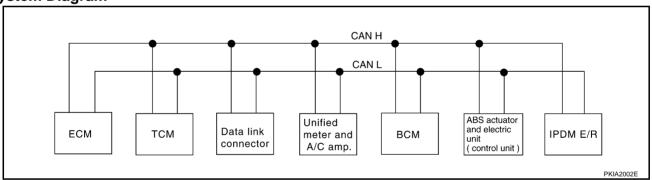
Go to CAN system, when selecting your CAN system type from the following table.

Body type	Roa	Roadster Coupe					
Axle		2WD					
Engine		VQ35DE					
Transmission	A/T	M/T	A/T	M/T			
Brake control	TCS	TCS	TCS	ABS	TCS	VDC	
Low tire pressure warning system						×	
CAN system type	1	2	1	3	2	4	
CAN system trouble diagnosis	<u>LAN-11</u>	LAN-38	LAN-11	LAN-62	LAN-38	LAN-86	

x: Applicable

TYPE 1

System Diagram



Input/output Signal Chart

T: Transmit R: Receive

Signals	ECM	TCM	Unified meter and A/C amp.	всм	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	

Signals	ECM	ТСМ	Unified meter and A/C amp.	ВСМ	ABS actuator and electric unit (control unit)	IPDM E/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
			R		Т	
Vehicle speed signal	R	R	Т	R		
Sleep request 1 signal			R	T		
Sleep request 2 signal				T		R
Wake up request 1 signal			R	T		
Door switch signal			R	T		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	T	R				
Output shaft revolution signal	R	Т				
Turbine revolution signal	R	Т				
Front wiper request signal		-		Т		R
Front wiper stop position signal				R		T
Rear window defogger switch signal				T		R
Rear window defogger control signal	R			•		T
Manual mode signal		R	Т			•
Not manual mode signal		R	T T			
Manual mode shift up signal		R	T			
Manual mode shift down signal		R	T			
Manual mode indicator signal		T	R			
Theft warning horn request signal			11	Т		R
Horn chirp signal						R
Hom omp signal				ı		IX

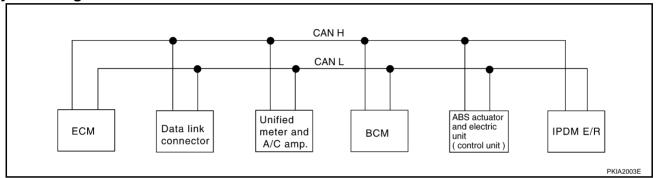
CAN COMMUNICATION

[CAN]

Signals	ECM	TCM	Unified meter and A/C amp.	всм	ABS actuator and electric unit (control unit)	IPDM E/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

				I: I rar	nsmit R: Rece
Signals	ECM	Unified meter and A/C amp.	ВСМ	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
Velicle and simple		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		

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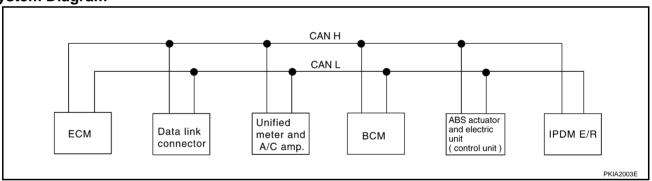
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Signals	ECM	Unified meter and A/C amp.	ВСМ	ABS actuator and electric unit (control unit)	IPDM E/R
Buzzer output signal		R	Т		
Fuel level sensor signal	R	Т			
Malfunction indicator lamp signal	T	R			
ASCD SET lamp signal	T	R			
ASCD CRUISE lamp signal	T	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 3

System Diagram



Input/output Signal Chart

T: Transmit R: Receive

				i. iiai	nsmit R: Receive
Signals	ECM	Unified meter and A/C amp.	ВСМ	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

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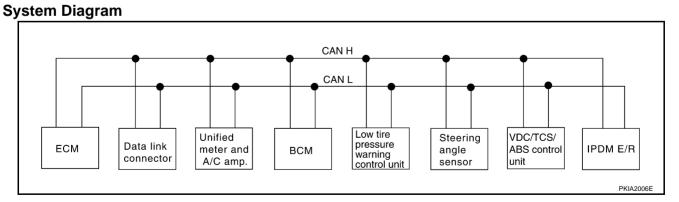
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Signals	ECM	Unified meter and A/C amp.	ВСМ	ABS actuator and electric unit (control unit)	IPDM E/R
High beam request signal		R	Т		R
High beam status signal	R				Т
Day time running light request signal			Т		R
Vahiala anadairnal		R		Т	
Vehicle speed signal	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	T		
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			T		R
Horn chirp signal			T		R
Ignition switch signal			Т		R
Tire pressure signal		R			
ABS warning lamp signal		R		Т	
Brake warning lamp signal		R		Т	

TYPE 4



Input/output Signal Chart

T: Transmit R: Receive

Signals	ECM	Unified meter and A/C amp.	ВСМ	Low tire pressure warning control unit	Steering angle sensor	VDC/TCS/ ABS control unit	IPDM E/R
Engine speed signal	Т	R				R	
Engine coolant temperature signal	Т	R					

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Signals	ECM	Unified meter and A/C amp.	всм	Low tire pressure warning control unit	Steering angle sensor	VDC/TCS/ ABS control unit	IPDM E/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	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						Т
Theft warning horn request signal			Т				R
Horn chirp signal			Т				R
Ignition switch signal			Т				R
Steering angle sensor signal					Т	R	
Tire pressure signal		R		Т			
ABS warning lamp signal		R				Т	
VDC OFF indicator lamp signal		R				Т	
SLIP indicator lamp signal		R				Т	
Brake warning lamp signal		R				Т	
<u> </u>							

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System Description

KS00A8P

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.

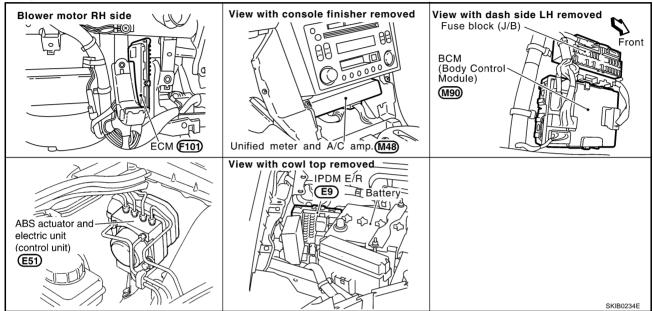
Component Parts and Harness Connector Location

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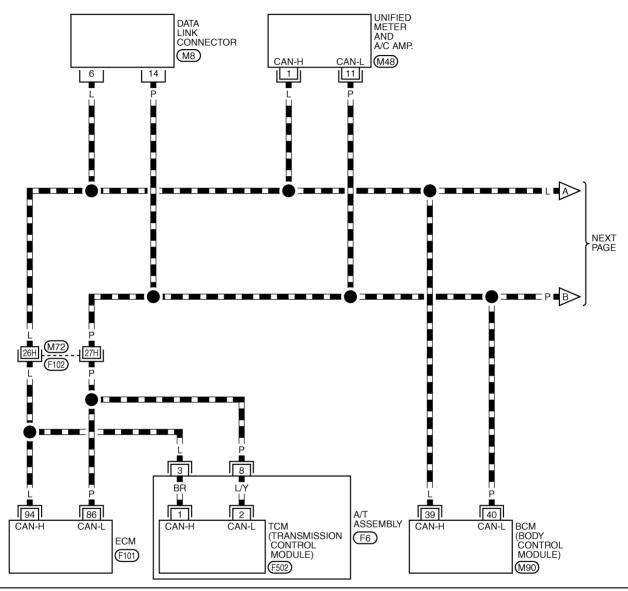
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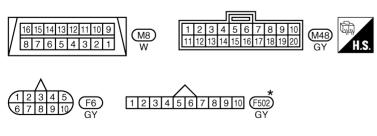
Wiring Diagram — CAN —

KS00A8R

LAN-CAN-01

: DATA LINE





*: THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT", PG SECTION.

REFER TO THE FOLLOWING.

(F102) -SUPER MULTIPLE
JUNCTION (SMJ)

(M90), (F101) -ELECTRICAL

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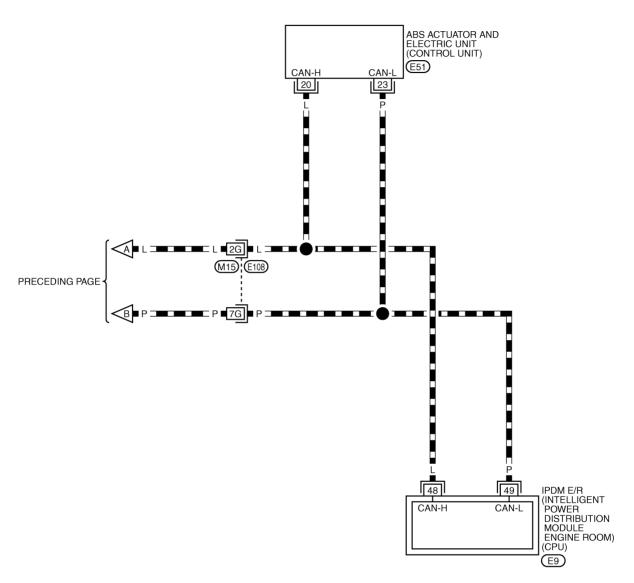
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LAN-CAN-02

: DATA LINE





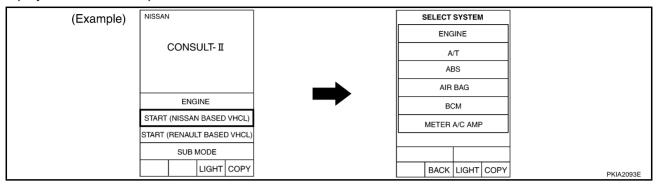
REFER TO THE FOLLOWING. (E108) -SUPER MULTIPLE JUNCTION (SMJ)

(E51) -ELECTRICAL UNITS

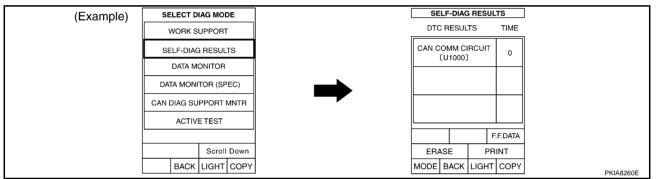
TKWT1554E

Work Flow

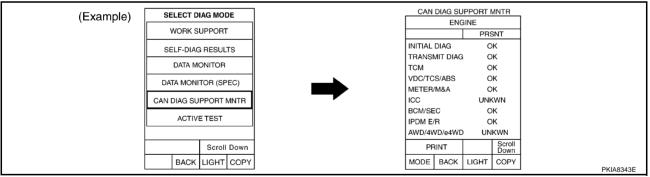
1. When there are no indications of "METER A/C AMP", "BCM" or "IPDM E/R" on "SELECT SYSTEM" display of CONSULT-II, print the "SELECT SYSTEM".



2. Print all the data of "SELF-DIAG RESULTS" for "ENGINE", "A/T", "METER A/C AMP", "BCM", "ABS" and "IPDM E/R" displayed on CONSULT-II.



 Print all the data of "CAN DIAG SUPPORT MNTR" for "ENGINE", "A/T", "METER A/C AMP", "BCM", "ABS" and "IPDM E/R" displayed on CONSULT-II.



- 4. Attach the printed sheet of "SELECT SYSTEM", "SELF-DIAG RESULTS" and "CAN DIAG SUPPORT MNTR" onto the check sheet. Refer to <u>LAN-15</u>, "CHECK SHEET".
- 5. Based on the indications of "SELECT SYSTEM" and the results of "CAN DIAG SUPPORT MNTR", put marks "v" onto the items with "No indication", "NG", or "UNKWN" in the check sheet table. Refer to LAN-15. "CHECK SHEET".

NOTE:

- If "NG" is displayed on "INITIAL DIAG (Initial diagnosis)" as "CAN DIAG SUPPORT MNTR" for the diagnosed control unit, replace the control unit.
- The "CAN DIAG SUPPORT MNTR" items, which are not in check sheet table, are not related to diagnostic procedure on service manual.
 So it is not necessary to check the status of the "CAN DIAG SUPPORT MNTR" items not in check sheet table.
- 6. According to the check sheet results (example), start inspection. Refer to <u>LAN-17</u>, "CHECK SHEET <u>RESULTS</u> (EXAMPLE)".

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CHECK SHEET

NOTE:

If "NG" is displayed on "INITIAL DIAG (Initial diagnosis)" as "CAN DIAG SUPPORT MNTR" for the diagnosed control unit, replace the control unit.

Check sheet tabl	e								
				C/	N DIAG SU	PPORT MN	TR		
SELECT SYST	FM screen	Initial	Transmit			Receive	diagnosis		
GEEEOT GTGT	LIW SOLCOII	diagnosis	diagnosis	ECM	TCM	METER /M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	-	UNKWN	_	UNKWN	_
METER A/C AMP	No indication	-	UNKWN	UNKWN	UNKWN	_	UNKWN	UNKWN	_
всм	No indication	NG	UNKWN	UNKWN	-	UNKWN	_	1	UNKWN
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	ı	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_

Symptoms :		

Attach copy of SELECT SYSTEM

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 BCM IPDM E/R 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 ВСМ ABS IPDM E/R CAN DIAG SUPPORT CAN DIAG SUPPORT CAN DIAG SUPPORT MNTR MNTR MNTR PKIA8199E

CHECK SHEET RESULTS (EXAMPLE)

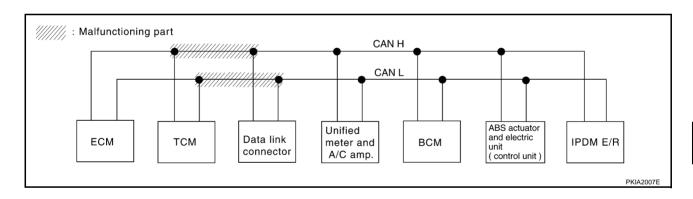
NOTE:

If "NG" is displayed on "INITIAL DIAG (Initial diagnosis)" as "CAN DIAG SUPPORT MNTR" for the diagnosed control unit, replace the control unit.

Case 1

Check harness between TCM and data link connector. Refer to <u>LAN-29</u>, "Circuit Check Between TCM and <u>Data Link Connector"</u>

				C/	AN DIAG SU	PPORT MN	TR		
SELECT SYST	EM screen	Initial	Transmit			Receive	diagnosis		
SELECT STOT	LIVI SCICCII	Initial diagnosis	Transmit diagnosis	ECM	тсм	METER /M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNK/WN	UNK WN	UNK/WN	UNK/WN
A/T	_	NG	UNKWN	UNKWN	_	UNK WN	_	UNKWN	_
METER A/C AMP	No indication	_	UNKWN	UNK/WN	UNIMN	_	UNKWN	UNKWN	_
всм	No indication	NG	UNKWN	UNK WN	_	UNKWN	_	_	UNKWN
ABS	_	NG	UNKWN	UNK/WN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNK WN	_	_	UNKWN	_	_



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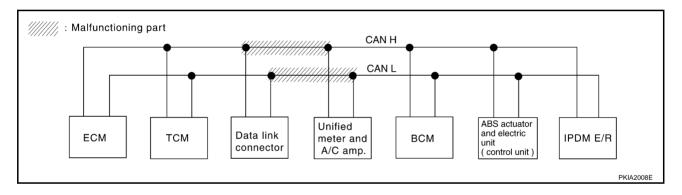
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Case 2
Check harness between data link connector and unified meter and A/C amp. Refer to LAN-30, "Circuit Check Between Data Link Connector and Unified Meter and A/C Amp."

				C/	N DIAG SU	PPORT MN	TR		
SELECT SYST	EM screen	Initial	Tronomit			Receive	diagnosis		
OLLLO1 O101	EW SCICCII	Initial diagnosis	Transmit diagnosis	ECM	TCM	METER /M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNK WN	UNKWN	UNKWN	UNK WN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	_
METER A/C AMP	No indication	_	UNKWN	UNKWN	UNKWN	_	UNKWN	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_



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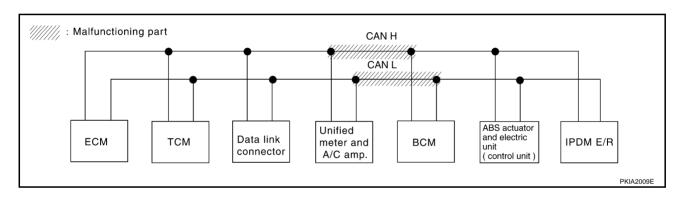
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Case 3

Check harness between unified meter and A/C amp. and BCM. Refer to <u>LAN-30</u>, "Circuit Check Between Unified Meter and A/C Amp. and BCM".

				CA	N DIAG SU	PPORT MN	TR		
SELECT SYST	EM screen	Initial	Transmit			Receive	diagnosis		
OLLLO1 0101	LIVI Screen	diagnosis	diagnosis	ECM	тсм	METER /M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNK WN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	_
METER A/C AMP	No indication	_	UNKWN	UNKWN	UNKWN	-	UNKWN	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	-	UNKWN	-	_	UNKWN
ABS	_	NG	UNKWN	UNK/WN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_



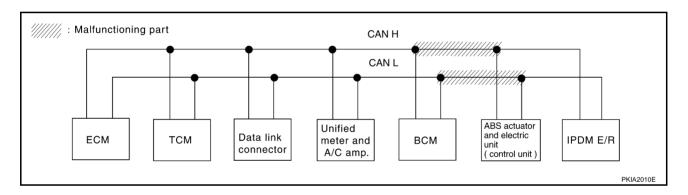
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Case 4

Check harness between BCM and ABS actuator and electric unit (control unit). Refer to <u>LAN-30</u>, "Circuit <u>Check Between BCM and ABS Actuator and Electric Unit (Control Unit)"</u>.

				C/	N DIAG SU	PPORT MN	TR		
SELECT SYST	FM screen	Initial	Transmit			Receive	diagnosis		
OLLLO1 0101	LIVI SCIECTI	diagnosis	diagnosis	ECM	TCM	METER /M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	NNKWN	∩ NK WN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	_
METER A/C AMP	No indication	_	UNKWN	UNKWN	UNKWN	_	UNKWN	UNK WN	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNK WN
ABS	_	NG	UNKWN	∩ NK WN	UNK WN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_



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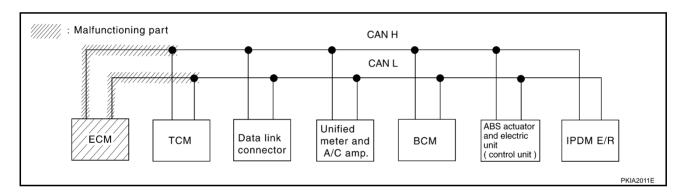
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Case 5
Check ECM circuit. Refer to <u>LAN-31</u>, "ECM Circuit Check".

				CA	AN DIAG SU	PPORT MN	TR		
SELECT SYST	EM screen	Initial	Transmit			Receive	diagnosis		
022201 0101	EM GOIGGI	diagnosis	diagnosis	ECM	ТСМ	METER /M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	Π ΝΚ ΜΝ	_	UNKWN	UNK WN	UNKWN	UNK WN	UNK WN
A/T	_	NG	UNKWN	∩ NK (MN	_	UNKWN	_	UNKWN	_
METER A/C AMP	No indication	_	UNKWN	η νκ ⁄ων	UNKWN	_	UNKWN	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNK WN	_	UNKWN	_	_	UNKWN
ABS	_	NG	UNKWN	UNK WN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNK/WN	_	_	UNKWN	_	_



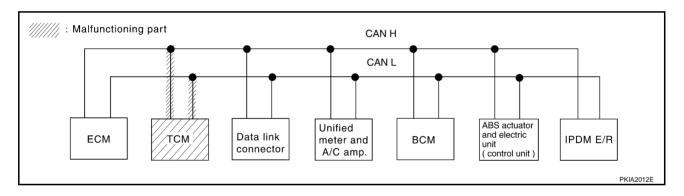
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Case 6
Check TCM circuit. Refer to <u>LAN-32</u>, "TCM Circuit Check" .

				C/	N DIAG SU	PPORT MN	TR		
SELECT SYST	FM screen	Initial	Transmit			Receive	diagnosis		
022201 0101	ZIVI GOLGGII	diagnosis	diagnosis	ECM	TCM	METER /M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	-	NG	UNKWN	UNK ∕ WN	-	UNKWN	_	UNKWN	_
METER A/C AMP	No indication	_	UNKWN	UNKWN	UNKWN	-	UNKWN	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	-	UNKWN	_	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	-	_	UNKWN	_	_



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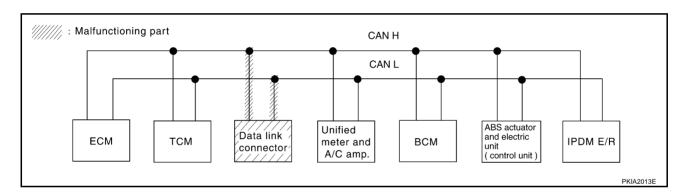
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Case 7
Check data link connector circuit. Refer to <u>LAN-32</u>, "<u>Data Link Connector Circuit Check</u>" .

				C/	N DIAG SU	PPORT MN	TR		
SELECT SYST	FM screen	Initial	Transmit			Receive	diagnosis		
022201 0101	ZIW GOTCOTT	diagnosis	diagnosis	ECM	TCM	METER /M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	_
METER A/C AMP	No indication	_	UNKWN	UNKWN	UNKWN	_	UNKWN	UNKWN	_
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_



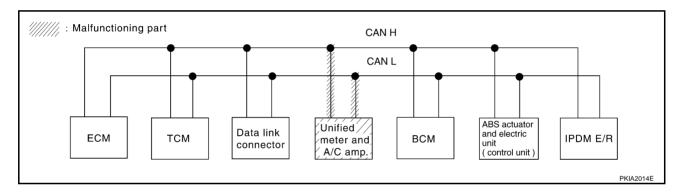
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Case 8
Check unified meter and A/C amp. circuit. Refer to <u>LAN-33, "Unified Meter and A/C Amp. Circuit Check"</u>.

				C.A	N DIAG SU	PPORT MN	TR		
SELECT SYST	EM screen	luciai a l	Tue se esseit			Receive	diagnosis		
OLLLO1 0101	LIW Screen	Initial diagnosis	Transmit diagnosis	ECM	TCM	METER /M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	_
METER A/C AMP	No indication	_	UNKWN	UNKWN	UNKWN	_	UNKWN	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNK/WN	_	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_



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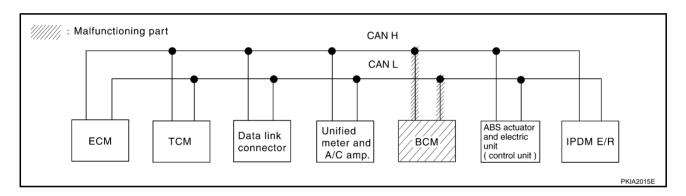
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Case 9
Check BCM circuit. Refer to <u>LAN-33</u>, "BCM Circuit Check" .

				C/	N DIAG SU	PPORT MN	TR		
SELECT SYST	FM screen	Initial	Transmit			Receive	diagnosis		
022201 0101	ZIVI GOTGOTI	diagnosis	diagnosis	ECM	TCM	METER /M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	NNR MN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	_
METER A/C AMP	No indication	_	UNKWN	UNKWN	UNKWN	-	NNKWN	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	-	UNKWN
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNK WN	_	_



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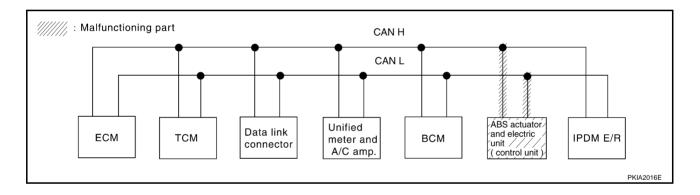
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Case 10

Check ABS actuator and electric unit (control unit) circuit. Refer to <u>LAN-34, "ABS Actuator and Electric Unit (Control Unit) Circuit Check"</u>.

		CAN DIAG SUPPORT MNTR									
SELECT SYST	EM screen	Initial	Transmit	Receive diagnosis							
022201 0101	ZIVI GOICCIT	diagnosis	Transmit diagnosis	ECM	TCM	METER /M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/R		
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN		
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	_		
METER A/C AMP	No indication	_	UNKWN	UNKWN	UNKWN	_	UNKWN	UNK WN	_		
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	-	UNKWN		
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	-	_		
IPDM E/R	No indication	_	UNKWN	UNKWN	-	_	UNKWN	_	_		



Case 11

Check IPDM E/R circuit. Refer to LAN-34, "IPDM E/R Circuit Check".

		CAN DIAG SUPPORT MNTR								
SELECT SYSTEM screen		Initial	Transmit	Receive diagnosis						
50101	55.0011	diagnosis	diagnosis	ECM	TCM	METER /M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/R	
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	∩ NR MN	
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	_	
METER A/C AMP	No indication	_	UNKWN	UNKWN	UNKWN	_	UNKWN	UNKWN	_	
ВСМ	No indication	NG	UNKWN	UNKWN	-	UNKWN	_	_	∩ иК ,МИ	
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	
IPDM E/R	No indication	_	UNKWN	UNKWN	-	_	UNKWN	-	-	

///// : Malfunctioning part CAN H CAN L ABS actuator Unified Data link and electric ECM TCM всм IPDM E/R meter and connector unit A/C amp. (control unit) PKIA2017E

Case 12

Check CAN communication circuit. Refer to LAN-35, "CAN Communication Circuit Check" .

				C/	AN DIAG SU		diagnosis		
SELECT SYST	EM screen	Initial diagnosis	Transmit diagnosis	ECM	ТСМ	METER /M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	Ω ΝΚ ,ΜΝ	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNK/WN	_	UNKWN	_	UNKWN	_
METER A/C AMP	No indication	_	UNKWN	UNKWN	UNKWN	_	UNKWN	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN
ABS	_	NG	UNK/WN	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_

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Case 13

Check IPDM E/R ignition relay circuit continuously sticks "OFF". Refer to <u>LAN-37</u>, "IPDM E/R Ignition Relay <u>Circuit Check"</u>.

		CAN DIAG SUPPORT MNTR									
SELECT SYSTEM screen		Initial diagnosis	Transmit diagnosis	Receive diagnosis							
				ECM	TCM	METER /M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/R		
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNK WN	UNKWN		
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	_		
METER A/C AMP	No indication	_	UNKWN	UNKWN	UNKWN	_	UNKWN	UNK WN	_		
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN		
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_		
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_		

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Case 14

Check IPDM E/R ignition relay circuit continuously sticks "ON". Refer to LAN-37, "IPDM E/R Ignition Relay Circuit Check".

SELECT SYSTEM screen		CAN DIAG SUPPORT MNTR									
		Initial diagnosis	Transmit	Receive diagnosis							
			diagnosis	ECM	TCM	METER /M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/R		
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN		
A/T	_	NG	UNKWN	∩ νΚ (ΜΝ	_	∩ NK WN	_	UNKWN	_		
METER A/C AMP	No indication	1	UNKWN	UNKWN	UNKWN	_	UNKWN	UNKWN	_		
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN		
ABS	_	NG	UNKWN	UNK W N	UNKWN	_	_		_		
IPDM E/R	No indication	-	UNKWN	UNKWN	_	-	UNKWN	-	_		

PKIA8213E

Circuit Check Between TCM and Data Link Connector

1. CHECK CONNECTOR

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- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check following terminals and connector 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)

: Continuity should exist.

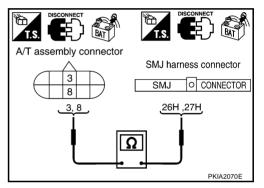
8 (P) - 27H (P)

: Continuity should exist.

OK or NG

OK >> GO TO 3.

NG >> Repair harness.



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)

: Continuity should exist.

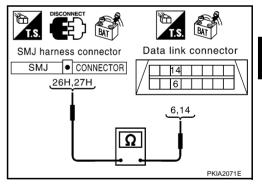
27H (P) - 14 (P)

: Continuity should exist.

OK or NG

OK >> Connect all the connectors and diagnose again. Refer to LAN-14, "Work Flow".

NG >> Repair harness.



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Circuit Check Between Data Link Connector and Unified Meter and A/C Amp.

1. CHECK HARNESS FOR OPEN CIRCUIT

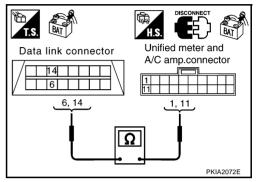
- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Disconnect ECM connector and unified meter and A/C amp. connector.
- Check continuity between data link connector M8 terminals 6 (L), 14 (P) and unified meter and A/C amp. harness connector M48 terminals 1 (L), 11 (P).

6 (L) – 1 (L) : Continuity should exist. 14 (P) – 11 (P) : Continuity should exist.

OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-14, "Work Flow"</u>.

NG >> Repair harness.



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Circuit Check Between Unified Meter and A/C Amp. and BCM

1. CHECK HARNESS FOR OPEN CIRCUIT

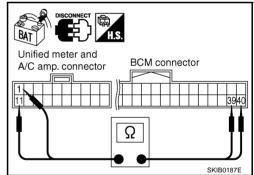
- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Disconnect the following connectors.
- ECM connector
- Unified meter and A/C amp. connector
- BCM connector
- 4. Check continuity between unified meter and A/C amp. harness connector M48 terminals 1 (L), 11 (P) and BCM harness connector M90 terminals 39 (L), 40 (P).

1 (L) – 39 (L) : Continuity should exist. 11 (P) – 40 (P) : Continuity should exist.

OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-14, "Work Flow"</u>.

NG >> Repair harness.



Circuit Check Between BCM and ABS Actuator and Electric Unit (Control Unit)

1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check following terminals and connector 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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$\overline{2}$. CHECK HARNESS FOR OPEN CIRCUIT

- Disconnect BCM connector and harness connector M15.
- Check continuity between BCM harness connector M90 terminals 39 (L), 40 (P) and harness connector M15 terminals 2G (L). 7G (P).

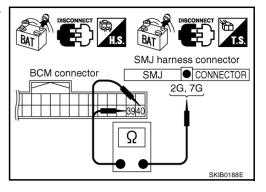
39(L) - 2G(L)40 (P) - 7G (P) : Continuity should exist.

: Continuity should exist.

OK or NG

OK >> GO TO 3.

NG >> Repair harness.



3. CHECK HARNESS FOR OPEN CIRCUIT

- 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)

: Continuity should exist.

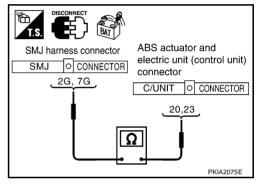
7G (P) - 23 (P)

: Continuity should exist.

OK or NG

OK >> Connect all the connectors and diagnose again. Refer to LAN-14, "Work Flow".

NG >> Repair harness.



AKS00A8X

ECM Circuit Check

1. CHECK CONNECTOR

- Turn ignition switch OFF. 1.
- 2. Disconnect the negative battery terminal.
- Check terminals and connector of ECM 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).

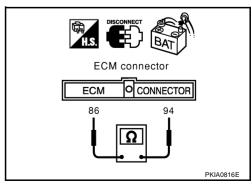
94 (L) - 86 (P)

: Approx. $108 - 132\Omega$

OK or NG

OK >> Replace ECM.

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



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TCM Circuit Check

1. CHECK CONNECTOR

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- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 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 >> GO TO 2.

NG >> Repair terminal or connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

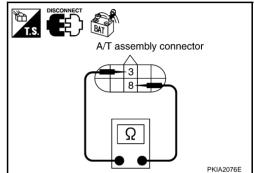
- 1. Disconnect A/T assembly connector.
- 2. Check resistance between A/T assembly harness connector F6 terminals 3 (L) and 8 (P).

3 (L)
$$-$$
 8 (P) : Approx. 54 $-$ 66 Ω

OK or NG

OK >> Replace A/T assembly.

NG >> Repair harness between A/T assembly and harness connector F102.



Data Link Connector Circuit Check

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1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 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

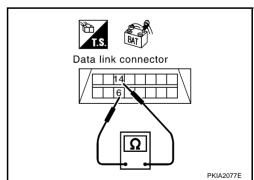
Check resistance between data link connector M8 terminals 6 (L) and 14 (P).

6 (L) – **14 (P)** : Approx.
$$54 - 66\Omega$$

OK or NG

OK >> Diagnose again. Refer to <u>LAN-14</u>, "Work Flow".

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



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Unified Meter and A/C Amp. Circuit Check

1. CHECK CONNECTOR

Turn ignition switch OFF.

- 2. Disconnect the negative battery 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.

2. CHECK HARNESS FOR OPEN CIRCUIT

- 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).

: Approx. $54 - 66\Omega$

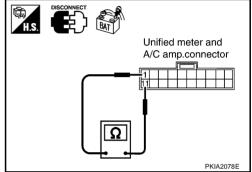
OK or NG

OK

>> Replace unified meter and A/C amp.

NG

>> Repair harness between unified meter and A/C amp. and BCM.



BCM Circuit Check

1. CHECK CONNECTOR

- Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 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

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

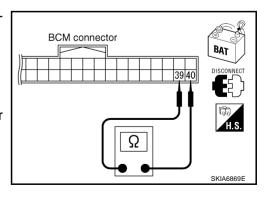
$$39(L) - 40(P)$$

: Approx. $54 - 66\Omega$

OK or NG

OK >> Replace BCM.

NG >> Repair harness between BCM and harness connector M15.



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AKS00A92

ABS Actuator and Electric Unit (Control Unit) Circuit Check

1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 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.

2. CHECK HARNESS FOR OPEN CIRCUIT

- 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. $54 - 66\Omega$

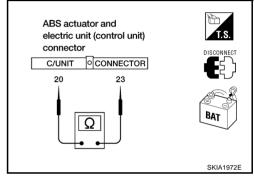
OK or NG

NG

OK

>> Replace ABS actuator and electric unit (control unit). >> Repair harness between ABS actuator and electric unit

(control unit) and IPDM E/R.



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IPDM E/R Circuit Check

1. CHECK CONNECTOR

- Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 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

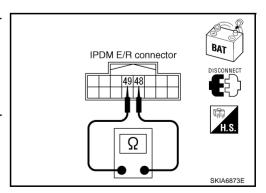
- Disconnect IPDM E/R connector. 1.
- 2. Check resistance between IPDM E/R harness connector E9 terminals 48 (L) and 49 (P).

: Approx. $108 - 132\Omega$

OK or NG

OK >> Replace IPDM E/R.

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



[CAN]

CAN Communication Circuit Check

1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- Check following terminals and connector 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

- Disconnect following connectors.
- ECM connector
- A/T assembly connector
- 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

>> GO TO 3. OK

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

ECM connector CONNECTOR **ECM** 86 PKIA0816E

3. CHECK HARNESS FOR SHORT CIRCUIT

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

> 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

ECM connector CONNECTOR ЕСМ 86, 94 PKIA0829E

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

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



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

6 (L) – ground : Continuity should not exist. 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.
 - 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.
- 2. Check continuity between IPDM E/R harness connector E9 terminals 48 (L) and 49 (P).

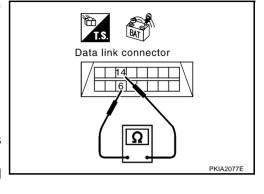
48 (L) – 49 (P) : Continuity should not exist.

OK or NG

OK >> GO TO 7.

NG >> Check

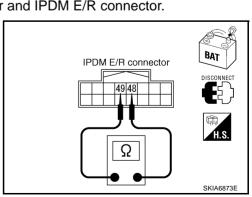
- >> Check the following harnesses. If any harness is damaged, repair the harness.
 - Harness between IPDM E/R and ABS actuator and electric unit (control unit)
 - Harness between IPDM E/R and harness connector E108



Data link connector

6

6, 14



7. CHECK HARNESS FOR SHORT CIRCUIT

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

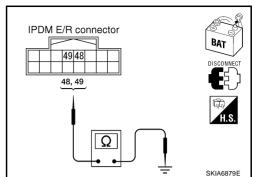
48 (L) – ground : Continuity should not exist. 49 (P) – ground : Continuity should not exist.

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 ABS actuator and electric unit (control unit)
 - Harness between IPDM E/R and harness connector E108



8. ECM/IPDM E/R INTERNAL CIRCUIT INSPECTION

Check components inspection. Refer to $\underline{\mathsf{LAN-37}}$, " $\underline{\mathsf{FCM/IPDM}}$ $\underline{\mathsf{E/R}}$ INTERNAL CIRCUIT INSPECTION" . OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-14, "Work Flow"</u>.

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

IPDM E/R Ignition Relay Circuit Check

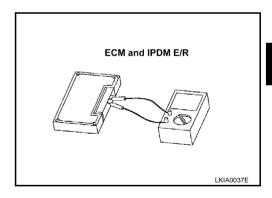
Check the following. If no malfunction is found, replace the IPDM E/R.

- IPDM E/R power supply circuit. Refer to PG-28, "IPDM E/R Power/Ground Circuit Inspection".
- Ignition power supply circuit. Refer to <u>PG-11, "IGNITION POWER SUPPLY IGNITION SW. IN "ON" AND/OR "START""</u>.

Component Inspection ECM/IPDM E/R INTERNAL CIRCUIT INSPECTION

- Remove ECM and IPDM E/R from vehicle.
- Check resistance between ECM terminals 94 and 86.
- Check resistance between IPDM E/R terminals 48 and 49.

Unit	Terminal	Resistance value (Ω) (Approx.)
ECM	94 - 86	108 - 132
IPDM E/R	48 - 49	100 - 132



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CAN SYSTEM (TYPE 2)

PFP:23710

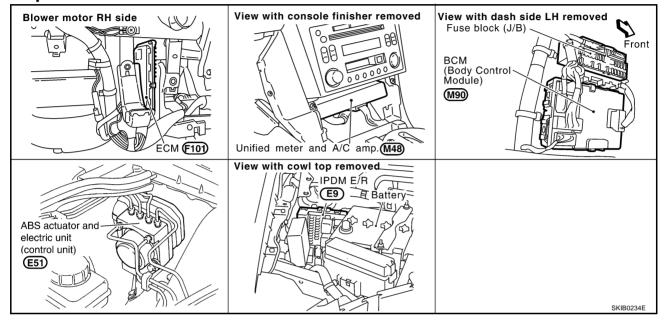
System Description

AKS00A97

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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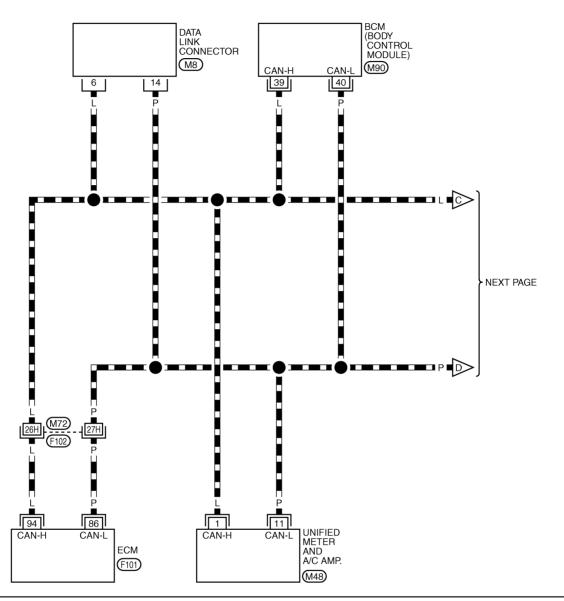
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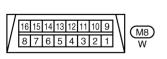
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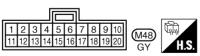
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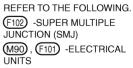
LAN-CAN-03

: DATA LINE





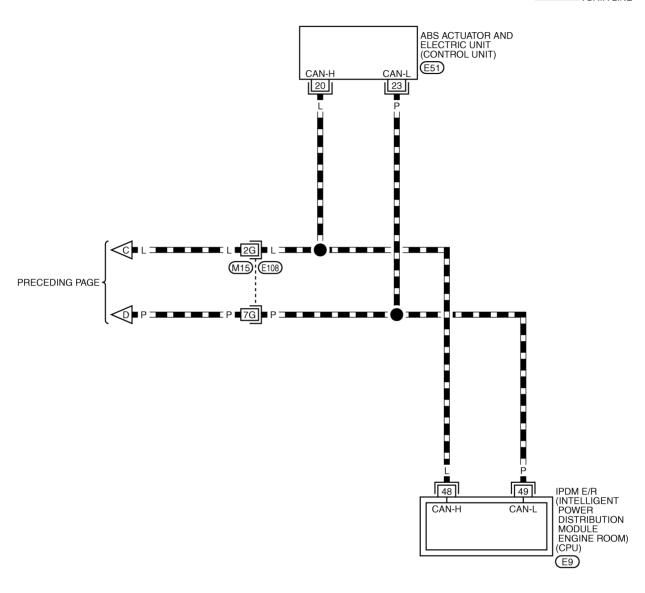




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LAN-CAN-04

: DATA LINE





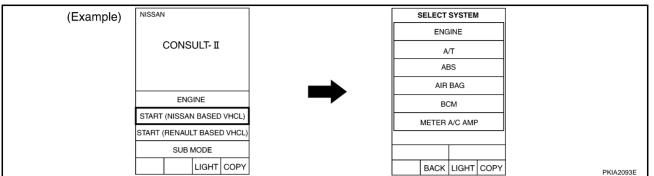
REFER TO THE FOLLOWING.

(E108) -SUPER MULTIPLE
JUNCTION (SMJ)

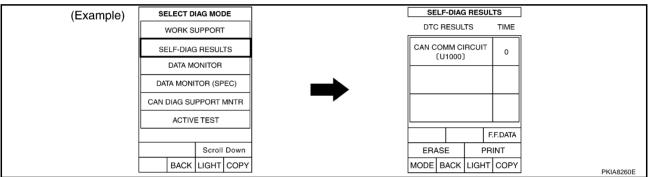
(E51) -ELECTRICAL UNITS

Work Flow

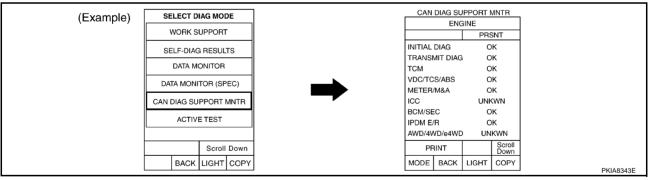
1. When there are no indications of "METER A/C AMP", "BCM" or "IPDM E/R" on "SELECT SYSTEM" display of CONSULT-II, print the "SELECT SYSTEM".



 Print all the data of "SELF-DIAG RESULTS" for "ENGINE", "METER A/C AMP", "BCM", "ABS" and "IPDM E/R" displayed on CONSULT-II.



3. Print all the data of "CAN DIAG SUPPORT MNTR" for "ENGINE", "METER A/C AMP", "BCM", "ABS" and "IPDM E/R" displayed on CONSULT-II.



- Attach the printed sheet of "SELECT SYSTEM", "SELF-DIAG RESULTS" and "CAN DIAG SUPPORT MNTR" onto the check sheet. Refer to <u>LAN-42</u>, "CHECK SHEET".
- 5. Based on the indications of "SELECT SYSTEM" and the results of "CAN DIAG SUPPORT MNTR", put marks "v" onto the items with "No indication", "NG", or "UNKWN" in the check sheet table. Refer to LAN-42, "CHECK SHEET".

NOTE:

- If "NG" is displayed on "INITIAL DIAG (Initial diagnosis)" as "CAN DIAG SUPPORT MNTR" for the diagnosed control unit, replace the control unit.
- The "CAN DIAG SUPPORT MNTR" items, which are not in check sheet table, are not related to diagnostic procedure on service manual.
 So it is not necessary to check the status of the "CAN DIAG SUPPORT MNTR" items not in check sheet table.
- 6. According to the check sheet results (example), start inspection. Refer to LAN-44, "CHECK SHEET RESULTS (EXAMPLE)".

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CHECK SHEET

NOTE:

If "NG" is displayed on "INITIAL DIAG (Initial diagnosis)" as "CAN DIAG SUPPORT MNTR" for the diagnosed control unit, replace the control unit.

				CAN D	IAG SUPPORT Re	FMNTR eceive diagnos		
SELECT SYST	EM screen	Initial diagnosis	Transmit diagnosis	ECM	METER/M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN
METER A/C AMP	No indication	-	UNKWN	UNKWN	_	UNKWN	UNKWN	-
ВСМ	No indication	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNKWN	_	_
					•			
		Attach cop SELECT SY			Attach c SELECT S	opy of 3YSTEM		

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Attach copy of Attach copy of Attach copy of ENGINÉ METER A/C AMP 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 ENGINÉ 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

CHECK SHEET RESULTS (EXAMPLE)

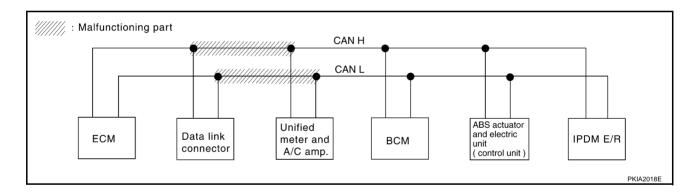
NOTE:

If "NG" is displayed on "INITIAL DIAG (Initial diagnosis)" as "CAN DIAG SUPPORT MNTR" for the diagnosed control unit, replace the control unit.

Case 1

Check harness between data link connector and unified meter and A/C amp. Refer to <u>LAN-54</u>, "Circuit Check <u>Between Data Link Connector and Unified Meter and A/C Amp."</u>

				CAN E	IAG SUPPORT	T MNTR						
SELECT SYST	EM scroon	11411	T		Re	eceive diagno:	sis					
OLLLO1 S131	LIVI SCIECTI	Initial diagnosis	Transmit diagnosis	ECM	METER/M&A BCM/S - UNKWN UNKN - UNKN	BCM/SEC	VDC/TCS /ABS	IPDM E/R				
ENGINE	_	NG -	NG	NG	NG	NG	UNKWN	_	UNKWN	UNIOWN	UNKWN	UNKWN
METER A/C AMP	No indication	_	UNKWN	UNKWN	_	UNKWN	UNKWN	_				
BCM	No indication	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN				
ABS	-	NG	UNKWN	UNKWN	_	_	_	_				
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNKWN	_	_				



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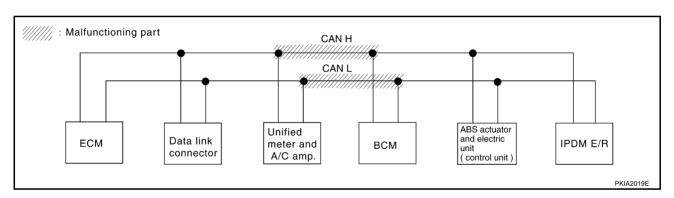
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Case 2

Check harness between unified meter and A/C amp. and BCM. Refer to <u>LAN-54</u>, "Circuit Check Between Unified Meter and A/C Amp. and BCM".

				CAN E	DIAG SUPPORT	MNTR		
SELECT SYST	FM screen	Initial	Transmit		Re	eceive diagno	sis	
OLLLO1 O101	EW Sciecti	diagnosis	diagnosis	- UNKWN UNKWN UN UNKWN - UNKWN UN	VDC/TCS /ABS	IPDM E/R		
ENGINE	_	NG –	UNKWN	_	UNKWN	UNIONN	UNKWN	UNIXWN
METER A/C AMP	No indication	-	UNKWN	UNKWN	_	UNIXWN	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	UNKWN	-	_	UNKWN
ABS	_	NG	UNKWN	UNI W N	_	_	_	_
IPDM E/R	No indication	-	UNKWN	UNKWN	_	UNKWN	_	_



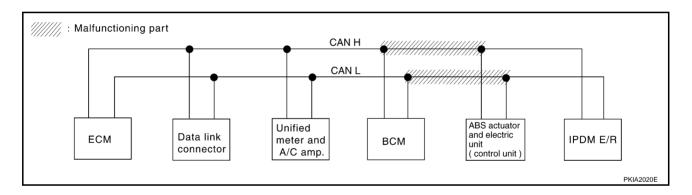
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Case 3

Check harness between BCM and ABS actuator and electric unit (control unit). Refer to <u>LAN-54</u>, "Circuit <u>Check Between BCM and ABS Actuator and Electric Unit (Control Unit)"</u>.

				CAN D	IAG SUPPORT	MNTR		
SELECT SYST	EM scroop	1	Turnelit		Re	eceive diagno	sis	
SELECT STST	LIVI SCIECTI	Initial diagnosis	Transmit diagnosis	ECM	METER/M&A BCM/ UNKWN UNK N — UNK	BCM/SEC	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN
METER A/C AMP	No indication	_	UNKWN	UNKWN	_	UNKWN	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	UNKWN	_	_	UNI W N
ABS	_	NG	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNKWN	_	_



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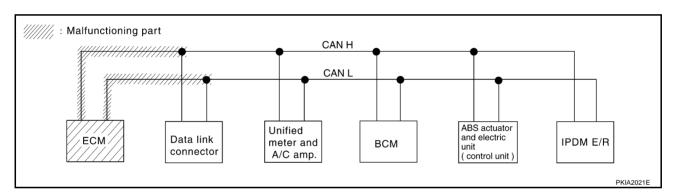
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Case 4
Check ECM circuit. Refer to <u>LAN-55</u>, "ECM Circuit Check".

				CAN E	IAG SUPPORT	MNTR		
SELECT SYST	FM screen	Initial	Transmit		Re	eceive diagnos	sis	
022201 0101	ZW GOLGGII	diagnosis	diagnosis	ECM	METER/M&A	BCM/SEC UNIWN UNKWN	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UN K ₩N	UNIX WN	UNKWN	UNKWN
METER A/C AMP	No indication	-	UNKWN	UNK WN	_	UNKWN	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNIONN	UNKWN	_	_	UNKWN
ABS	_	NG	UNKWN	UNIONN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNION	_	UNKWN	_	_

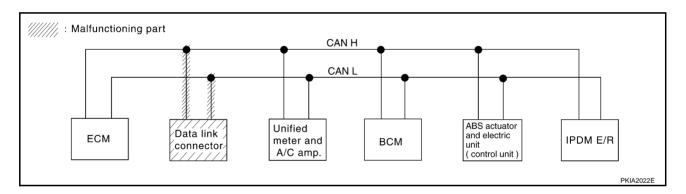


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Case 5
Check data link connector circuit. Refer to <u>LAN-56</u>, "Data <u>Link Connector Circuit Check"</u>.

				CAN E	DIAG SUPPOR	Γ MNTR		
SELECT SYST	EM screen	luitia l	Tue se e se it		Re	eceive diagnos	sis	
SELECT STST	LIVI SCIECTI	Initial diagnosis	Transmit diagnosis	liagnosis ECM METER/M&A BCM/SEC VDC/TCS /ABS IPDM E/ UNKWN - UNKWN UNKWN UNKWN UNKWN	IPDM E/R			
ENGINE	-	NG -	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN
METER A/C AMP	No indication	_	UNKWN	UNKWN	_	UNKWN	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNKWN	_	_



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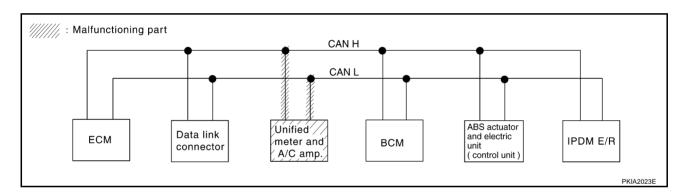
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Case 6

Check unified meter and A/C amp. circuit. Refer to LAN-56, "Unified Meter and A/C Amp. Circuit Check" .

				CAN E	IAG SUPPORT	MNTR		
SELECT SYST	EM scroon	lucition!	Tuo no consist		Re	eceive diagno:	sis	
SELECT STOT	LIVI SCIECTI	Initial diagnosis	Transmit diagnosis	ECM	METER/M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG -	UNKWN	_	UNK WN	UNKWN	UNKWN	UNKWN
METER A/C AMP	No indication	_	UNKWN	UNKWN	_	UNKWN	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	UNK/WN	_	_	UNKWN
ABS	-	NG	UNKWN	UNKWN	-	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNKWN	_	_

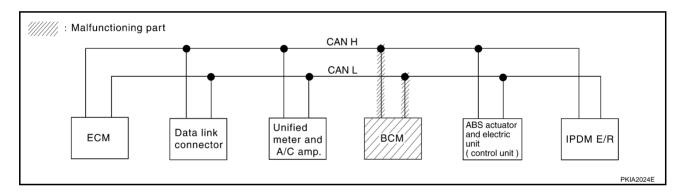


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Case 7
Check BCM circuit. Refer to <u>LAN-57</u>, "BCM Circuit Check".

				CAN E	IAG SUPPORT	MNTR		
SELECT SYST	EM sereen	1 - 212 - 1			Re	eceive diagno	sis	
SEELOT STST	LIVI SCIEETI	Initial diagnosis	Transmit diagnosis	ECM	METER/M&A BC	BCM/SEC	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNIOWN	UNKWN	UNKWN
METER A/C AMP	No indication	_	UNKWN	UNKWN	_	UNKWN	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNIWN	_	_



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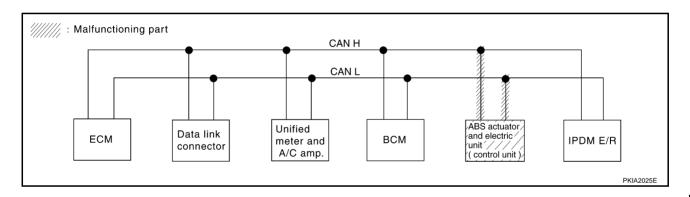
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Case 8

Check ABS actuator and electric unit (control unit) circuit. Refer to <u>LAN-57</u>, "ABS Actuator and Electric Unit (Control Unit) Circuit Check".

				CAN E	IAG SUPPORT	MNTR		
SELECT SYST	EM screen	Initial	Transmit		Re	eceive diagnos	sis	
0222010101	LIVI GOLCOIT	diagnosis	diagnosis	ECM	ECM METER/M&A BCM/S - UNKWN UNKW UNKWN - UNKW	BCM/SEC	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNK WN	UNKWN
METER A/C AMP	No indication	-	UNKWN	UNKWN	_	UNKWN	UNIONN	_
ВСМ	No indication	NG	UNKWN	UNKWN	UNKWN	_	-	UNKWN
ABS	_	NG	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNKWN	_	_

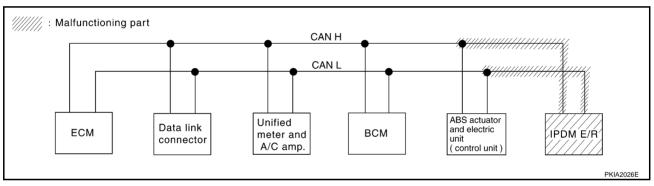


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Case 9
Check IPDM E/R circuit. Refer to <u>LAN-58</u>, "IPDM E/R Circuit Check" .

				CAN D	IAG SUPPORT	MNTR		
SELECT SYST	FM screen	Initial	Transmit		Re	eceive diagnos	sis	
022201 0101	ZIVI SOICCII	diagnosis	diagnosis	ECM	METER/M&A BCM/ UNKWN UNK N — UNK N UNKWN —	BCM/SEC	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN
METER A/C AMP	No indication	_	UNKWN	UNKWN	_	UNKWN	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	UNKWN	_	-	UNI W WN
ABS	_	NG	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNKWN	_	_



Case 10 Check CAN communication circuit. Refer to <u>LAN-59</u>, "CAN Communication Circuit Check" .

				CAN [DIAG SUPPORT	MNTR		
SELECT SYST	FM screen	Initial	Transmit		Re	eceive diagnos	sis	
022201 0101	ZIVI GOICCII	diagnosis	diagnosis	ECM	- UNIMN UNIM		VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG —	UNKWN	_	UNKWN	UNK WN	UNKWN	UNK WN
METER A/C AMP	No indication	_	UNKWN	UNKWN	_	UNKWN	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNKWN	_	_

Case 11

Check IPDM E/R ignition relay circuit continuously sticks "OFF". Refer to $\underline{\text{LAN-61}}$, "IPDM E/R Ignition Relay $\underline{\text{Circuit Check"}}$.

			CAN DIAG SUPPORT MNTR							
SELECT SYST	EM screen	Initial	Transmit		Re	eceive diagnos	sis			
OLLLO1 0101	LIW Screen	diagnosis	Transmit diagnosis	ECM	METER/M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/R		
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN		
METER A/C AMP	No indication	_	UNKWN	UNKWN	_	UNKWN	UNKWN	_		
всм	No indication	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN		
ABS	_	NG	UNKWN	UNKWN	_	_	_	_		
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNKWN	_	_		

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Case 12

Check IPDM E/R ignition relay circuit continuously sticks "ON". Refer to <u>LAN-61</u>, "IPDM E/R Ignition Relay Circuit Check" .

				CAN D	IAG SUPPOR	r MNTR		
SELECT SYST	EM screen	Initial	Transmit		Re	eceive diagnos	sis	
3222013131	LIVI SCIECTI	diagnosis	Transmit diagnosis	ECM	METER/M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN
METER A/C AMP	No indication	I	UNKWN	UNKWN	_	UNKWN	UNKWN	1
всм	No indication	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNKWN	_	-

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Circuit Check Between Data Link Connector and Unified Meter and A/C Amp.

1. CHECK HARNESS FOR OPEN CIRCUIT

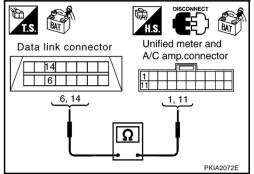
- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Disconnect ECM connector and unified meter and A/C amp. connector.
- 4. Check continuity between data link connector M8 terminals 6 (L), 14 (P) and unified meter and A/C amp. harness connector M48 terminals 1 (L), 11 (P).

6 (L) – 1 (L) : Continuity should exist. 14 (P) – 11 (P) : Continuity should exist.

OK or NG

OK >> Connect all the connectors and diagnose again. Refer to $\underline{\mathsf{LAN-41}}$, "Work Flow".

NG >> Repair harness.



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Circuit Check Between Unified Meter and A/C Amp. and BCM

1. CHECK HARNESS FOR OPEN CIRCUIT

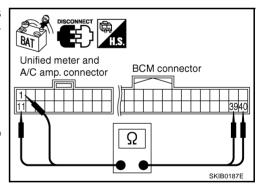
- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Disconnect the following connectors.
- ECM connector
- Unified meter and A/C amp. connector
- BCM connector
- 4. Check continuity between unified meter and A/C amp. harness connector M48 terminals 1 (L), 11 (P) and BCM harness connector M90 terminals 39 (L), 40 (P).

1 (L) – 39 (L) : Continuity should exist. 11 (P) – 40 (P) : Continuity should exist.

OK or NG

OK \rightarrow Connect all the connectors and diagnose again. Refer to <u>LAN-41, "Work Flow"</u>.

NG >> Repair harness.



Circuit Check Between BCM and ABS Actuator and Electric Unit (Control Unit)

1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- Check following terminals and connector 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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$\overline{2}$. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect BCM connector and harness connector M15.
- Check continuity between BCM harness connector M90 terminals 39 (L), 40 (P) and harness connector M15 terminals 2G (L), 7G (P).

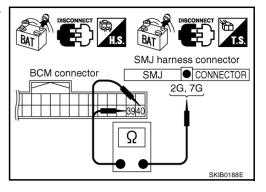
39 (L) – 2G (L) 40 (P) – 7G (P) : Continuity should exist.

: Continuity should exist.

OK or NG

OK >> GO TO 3.

NG >> Repair harness.



3. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect 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)

: Continuity should exist.

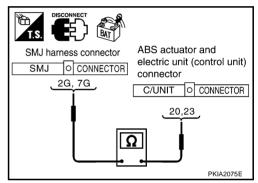
7G (P) - 23 (P)

: Continuity should exist.

OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-41, "Work Flow"</u>.

NG >> Repair harness.



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ECM Circuit Check

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1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check following terminals and connector for damage, bend and loose connection (control module 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

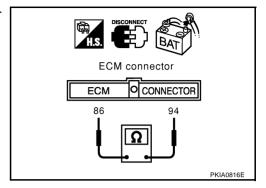
- 1. Disconnect ECM connector.
- 2. Check resistance between ECM harness connector F101 terminals 94 (L) and 86 (P).

94 (L)
$$-$$
 86 (P) : Approx. $108 - 132\Omega$

OK or NG

OK >> Replace ECM.

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



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Data Link Connector Circuit Check

1. CHECK CONNECTOR

- Turn ignition switch OFF. 1.
- Disconnect the negative battery terminal.
- 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

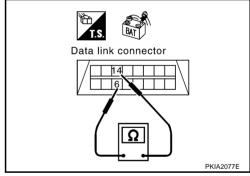
Check resistance between data link connector M8 terminals 6 (L) and 14 (P).

6 (L) – **14 (P)** : Approx.
$$54 - 66\Omega$$

OK or NG

OK >> Diagnose again. Refer to LAN-41, "Work Flow".

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



Unified Meter and A/C Amp. Circuit Check

1. CHECK CONNECTOR

1. Turn ignition switch OFF.

- 2. Disconnect the negative battery 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. AKS00A9G

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

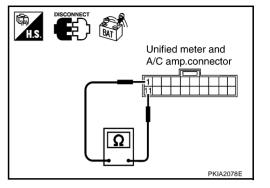
- Disconnect unified meter and A/C amp. connector.
- Check resistance between unified meter and A/C amp. harness connector M48 terminals 1 (L) and 11 (P).

: 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 BCM.



BCM Circuit Check

1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- Disconnect the negative battery terminal.
- 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).

: Approx. $54 - 66\Omega$

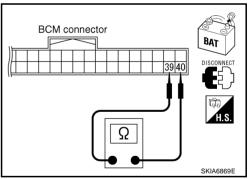
OK or NG

OK

>> Replace BCM.

NG

>> Repair harness between BCM and harness connector M15.



ABS Actuator and Electric Unit (Control Unit) Circuit Check

1. CHECK CONNECTOR

1. Turn ignition switch OFF.

- Disconnect the negative battery terminal.
- 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.

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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).

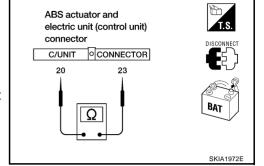
: Approx. $54 - 66\Omega$

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 Check

1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery 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).

: **Approx.** $108 - 132\Omega$

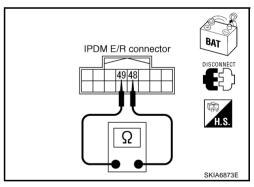
OK or NG

OK

>> Replace IPDM E/R.

NG

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



[CAN]

CAN Communication Circuit Check

1. CHECK CONNECTOR

1. Turn ignition switch OFF.

- 2. Disconnect the negative battery terminal.
- 3. Check following terminals and connector 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.

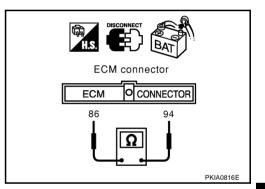
2. CHECK HARNESS FOR SHORT CIRCUIT

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

OK or NG

OK >> GO TO 3.

NG >> Repair harness between ECM and harness connector F102.



3. CHECK HARNESS FOR SHORT CIRCUIT

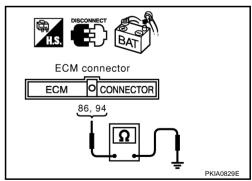
Check continuity between ECM harness connector F101 terminals 94 (L), 86 (P) and ground.

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

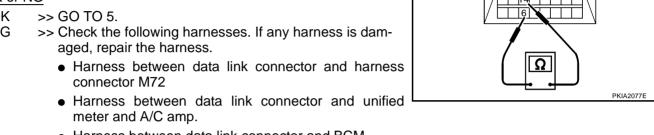
- 1. Disconnect following connectors.
- Unified meter and A/C amp. connector
- BCM connector
- Harness connector M15
- Check continuity between data link connector M8 terminals 6 (L) 2. and 14 (P).

OK or NG

OK

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- 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.

> : Continuity should not exist. 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 BCM
- Harness between data link connector and harness connector M15

6. CHECK HARNESS FOR SHORT CIRCUIT

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

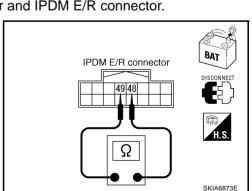
48 (L) - 49 (P) : Continuity should not exist.

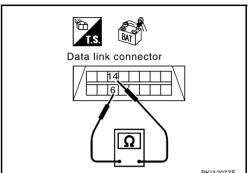
OK or NG

OK >> GO TO 7.

NG

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





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.

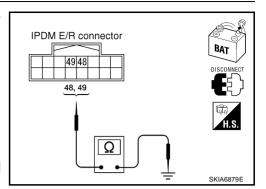
48 (L) – ground : Continuity should not exist. 49 (P) – ground : Continuity should not exist.

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 ABS actuator and electric unit (control unit)
 - Harness between IPDM E/R and harness connector E108



8. ECM/IPDM E/R INTERNAL CIRCUIT INSPECTION

Check components inspection. Refer to $\underline{\mathsf{LAN-61}}$, " $\underline{\mathsf{ECM/IPDM}}$ $\underline{\mathsf{E/R}}$ INTERNAL CIRCUIT INSPECTION" . OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-41</u>, "Work Flow".

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

IPDM E/R Ignition Relay Circuit Check

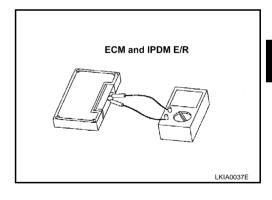
Check the following. If no malfunction is found, replace the IPDM E/R.

- IPDM E/R power supply circuit. Refer to PG-28, "IPDM E/R Power/Ground Circuit Inspection".
- Ignition power supply circuit. Refer to <u>PG-11</u>, "IGNITION POWER SUPPLY IGNITION SW. IN "ON" AND/OR "START"".

Component Inspection ECM/IPDM E/R INTERNAL CIRCUIT INSPECTION

- Remove ECM and IPDM E/R from vehicle.
- Check resistance between ECM terminals 94 and 86.
- Check resistance between IPDM E/R terminals 48 and 49.

Unit	Terminal	Resistance value (Ω) (Approx.)
ECM	94 - 86	108 - 132
IPDM E/R	48 - 49	100 - 132



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CAN SYSTEM (TYPE 3)

PFP:23710

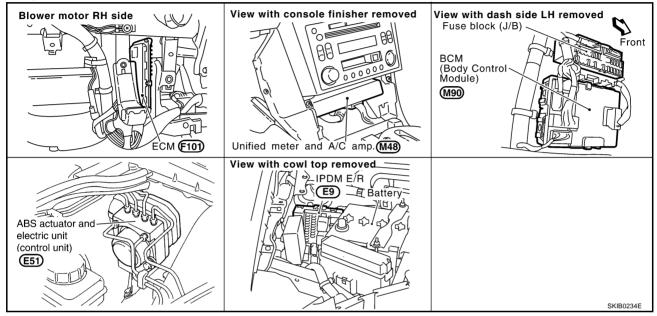
System Description

AKS009DC

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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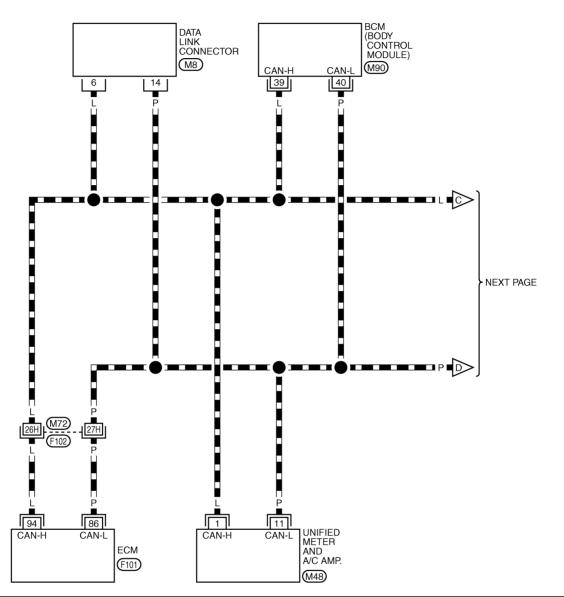
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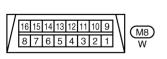
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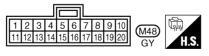
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LAN-CAN-03

: DATA LINE







REFER TO THE FOLLOWING.

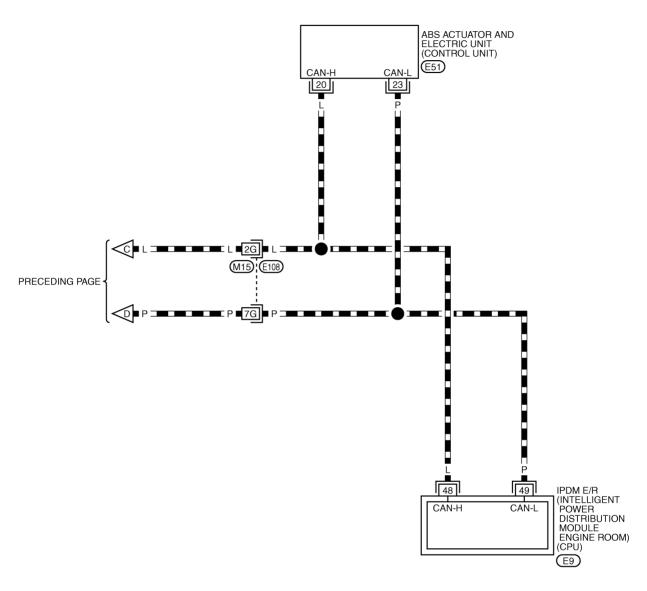
(F102) -SUPER MULTIPLE
JUNCTION (SMJ)

(M90) , (F101) -ELECTRICAL
UNITS

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LAN-CAN-04

: DATA LINE





REFER TO THE FOLLOWING.

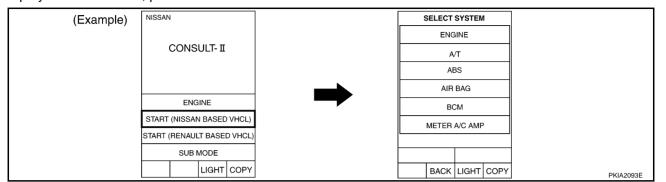
(E108) -SUPER MULTIPLE
JUNCTION (SMJ)

(E51) -ELECTRICAL UNITS

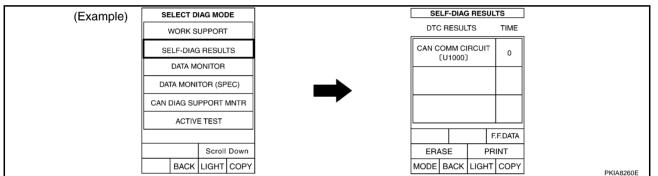
TKWT1555E

Work Flow

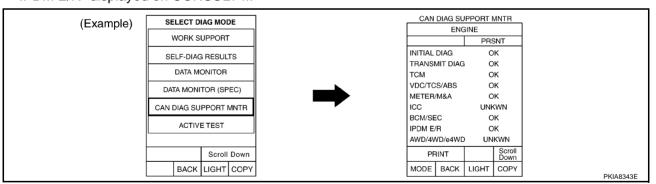
1. When there are no indications of "METER A/C AMP", "BCM" or "IPDM E/R" on "SELECT SYSTEM" display of CONSULT-II, print the "SELECT SYSTEM".



2. Print all the data of "SELF-DIAG RESULTS" for "ENGINE", "METER A/C AMP", "BCM", "ABS" and "IPDM E/R" displayed on CONSULT-II.



3. Print all the data of "CAN DIAG SUPPORT MNTR" for "ENGINE", "METER A/C AMP", "BCM", "ABS" and "IPDM E/R" displayed on CONSULT-II.



- Attach the printed sheet of "SELECT SYSTEM", "SELF-DIAG RESULTS" and "CAN DIAG SUPPORT MNTR" onto the check sheet. Refer to <u>LAN-66</u>, "CHECK SHEET".
- 5. Based on the indications of "SELECT SYSTEM" and the results of "CAN DIAG SUPPORT MNTR", put marks "v" onto the items with "No indication", "NG", or "UNKWN" in the check sheet table. Refer to LAN-66, "CHECK SHEET".

NOTE:

- If "NG" is displayed on "INITIAL DIAG (Initial diagnosis)" as "CAN DIAG SUPPORT MNTR" for the diagnosed control unit, replace the control unit.
- The "CAN DIAG SUPPORT MNTR" items, which are not in check sheet table, are not related to diagnostic procedure on service manual.
 So it is not necessary to check the status of the "CAN DIAG SUPPORT MNTR" items not in check sheet table.
- 6. According to the check sheet results (example), start inspection. Refer to LAN-68, "CHECK SHEET RESULTS (EXAMPLE)".

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CHECK SHEET

NOTE:

If "NG" is displayed on "INITIAL DIAG (Initial diagnosis)" as "CAN DIAG SUPPORT MNTR" for the diagnosed control unit, replace the control unit.

				CAN D	IAG SUPPORT			
SELECT SYST	EM screen	Initial diagnosis	Transmit diagnosis	ECM	METER/M&A	eceive diagnos	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN
METER A/C AMP	No indication	_	UNKWN	UNKWN	_	UNKWN	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNKWN	_	-
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Attach copy of Attach copy of Attach copy of ENGINÉ METER A/C AMP 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

CHECK SHEET RESULTS (EXAMPLE)

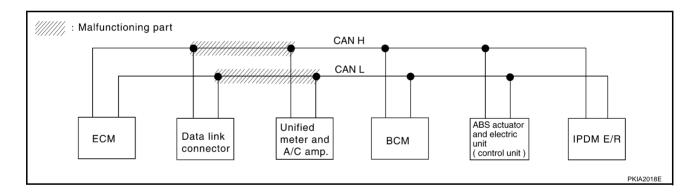
NOTE:

If "NG" is displayed on "INITIAL DIAG (Initial diagnosis)" as "CAN DIAG SUPPORT MNTR" for the diagnosed control unit, replace the control unit.

Case 1

Check harness between data link connector and unified meter and A/C amp. Refer to <u>LAN-78</u>, "Circuit Check <u>Between Data Link Connector and Unified Meter and A/C Amp."</u>

				CAN D	IAG SUPPORT	Γ MNTR		
SELECT SYST	EM scroop	lasidi a l	Tunnanit		Re	eceive diagnos	sis	
SEELOT STSTEM SCIEN		Initial diagnosis	Transmit diagnosis	ECM	METER/M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNK WN	UNKWN	_	UNKWN
METER A/C AMP	No indication	_	UNKWN	UNKWN	_	UNKWN	UNKWN	_
всм	No indication	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNKWN	_	_



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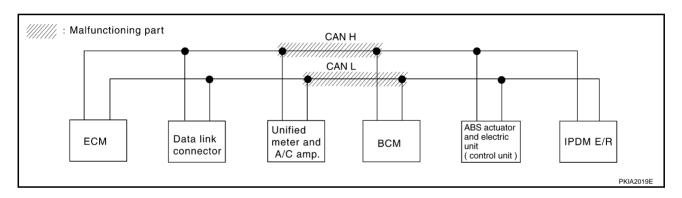
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Case 2

Check harness between unified meter and A/C amp. and BCM. Refer to <u>LAN-78</u>, "Circuit Check Between Unified Meter and A/C Amp. and BCM".

		CAN DIAG SUPPORT MNTR							
OF LECT OVER	·			0/1112		eceive diagnos	sis		
SELECT SYST	EIVI SCreen	Initial diagnosis	Transmit diagnosis	ECM	METER/M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/R	
ENGINE	_	NG	UNKWN	_	UNKWN	UNIOWN	_	UNIONN	
METER A/C AMP	No indication	_	UNKWN	UNKWN	_	UNKWN	UNIVAN	_	
BCM	No indication	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	
ABS	_	NG	UNKWN	UNKWN	-	_	_	_	
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNKWN	_	_	



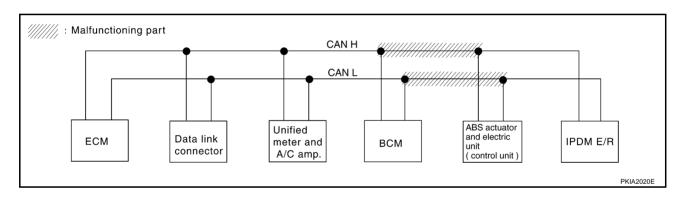
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Case 3

Check harness between BCM and ABS actuator and electric unit (control unit). Refer to <u>LAN-78</u>, "Circuit Check Between BCM and ABS Actuator and Electric Unit (Control Unit)".

				CAN E	DIAG SUPPORT	Γ MNTR		
SELECT SYST	EM scroon	Initial	Transmit		Re	eceive diagnos	sis	
OLLLO1 0101	LIVI SCIECTI	diagnosis	diagnosis	ECM	METER/M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	_	UNK WN
METER A/C AMP	No indication	_	UNKWN	UNKWN	_	UNKWN	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN
ABS	-	NG	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNKWN	_	_



CAN SYSTEM (TYPE 3)

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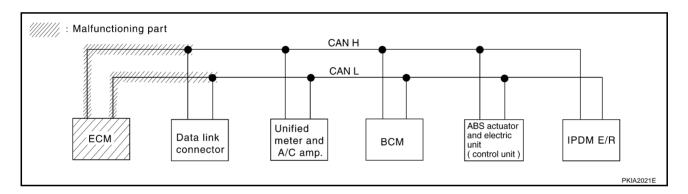
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Case 4
Check ECM circuit. Refer to <u>LAN-79</u>, "ECM Circuit Check".

				CAN E	IAG SUPPOR	Γ MNTR		
SELECT SYST	EM screen	lucition!	Tromonit		Re	eceive diagno:	sis	
SELECT STOT	LIVI SCIECTI	Initial diagnosis	Transmit - diagnosis	ECM	METER/M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNK/WN	UNK WN	-	UNKWN
METER A/C AMP	No indication	_	UNKWN	∩ M MN	_	UNKWN	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	UNKWN	_	-	UNKWN
ABS	_	NG	UNKWN	UNKWN	_	_	-	_
IPDM E/R	No indication	_	UNKWN	UNK WN	_	UNKWN	_	_



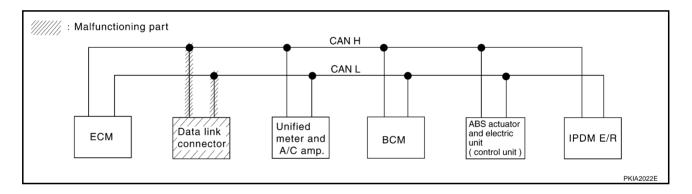
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Case 5
Check data link connector circuit. Refer to <u>LAN-80</u>, "<u>Data Link Connector Circuit Check</u>" .

				CAN [DIAG SUPPORT	Γ MNTR		
SELECT SYST	EM scroon	luciāi a l	Tuomomit		Re	eceive diagnos	sis	
SELECT STOT	LIW SCIECTI	Initial diagnosis	Transmit - diagnosis	ECM	METER/M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN
METER A/C AMP	No indication	_	UNKWN	UNKWN	_	UNKWN	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN
ABS	-	NG	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNKWN	_	_



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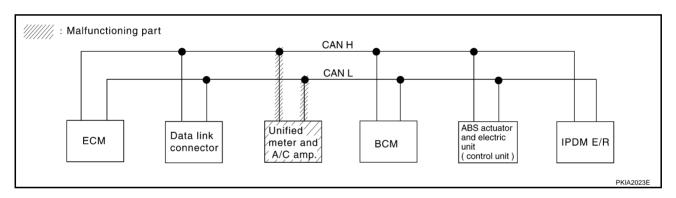
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Case 6

Check unified meter and A/C amp. circuit. Refer to LAN-80, "Unified Meter and A/C Amp. Circuit Check" .

				CAN D	IAG SUPPORT	Γ MNTR		
SELECT SYST	EM scroon	Initial	Transmit		Re	eceive diagno:	sis	
OLLLO1 O101	LIW SCIECTI	diagnosis	diagnosis	ECM	METER/M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	υ κγ νν	UNKWN	-	UNKWN
METER A/C AMP	No indication	_	UNKWN	UNKWN	_	UNKWN	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	η νκ ⁄νν	_	-	UNKWN
ABS	_	NG	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	-	UNKWN	_	_

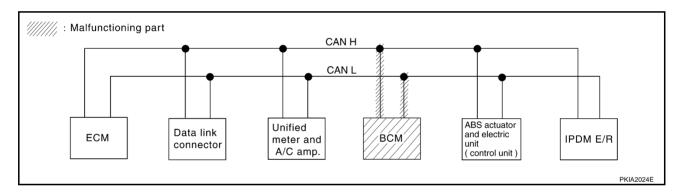


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Case 7
Check BCM circuit. Refer to <u>LAN-81</u>, "BCM Circuit Check".

				CAN D	IAG SUPPORT	MNTR		
SELECT SYST	EM scroon	lucition!	Tuomomit		Re	eceive diagnos	sis	
SELECT STOT	LIW SCIECTI	Initial diagnosis	Transmit diagnosis	ECM	METER/M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNK WN	_	UNKWN
METER A/C AMP	No indication	_	UNKWN	UNKWN	_	UNIO	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNIAWN	_	_



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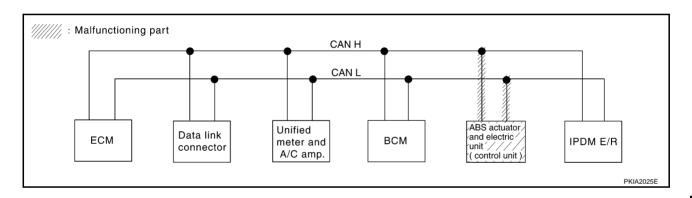
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Case 8

Check ABS actuator and electric unit (control unit) circuit. Refer to <u>LAN-81</u>, "ABS Actuator and Electric Unit (<u>Control Unit</u>) Circuit Check".

				CAN D	IAG SUPPORT	Γ MNTR		
SELECT SYST	EM scroon	1	Turanait		Re	eceive diagnos	sis	
SELECT STST	LIVI SCIECTI	Initial diagnosis	Transmit diagnosis	ECM	METER/M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/R
ENGINE	-	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN
METER A/C AMP	No indication	_	UNKWN	UNKWN	_	UNKWN	UNI WN	_
ВСМ	No indication	NG	UNKWN	UNKWN	UNKWN	_	-	UNKWN
ABS	-	NG	UNKWN	UNKWN	_	_	-	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNKWN	_	_

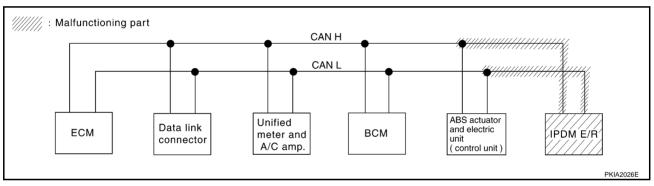


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Case 9
Check IPDM E/R circuit. Refer to <u>LAN-82</u>, "IPDM E/R Circuit Check".

				CAN D	IAG SUPPORT			
SELECT SYST	EM screen	Initial	Transmit		Re	ceive diagnos	Sis	
		diagnosis	diagnosis	ECM	METER/M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN		UNI W N
METER A/C AMP	No indication	_	UNKWN	UNKWN	_	UNKWN	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	_	_	_	-
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNKWN	_	_



Case 10 Check CAN communication circuit. Refer to <u>LAN-83</u>, "CAN Communication Circuit Check" .

				CAN D	IAG SUPPORT	MNTR		
SELECT SYST	EM screen	Initial	Transmit		Re	eceive diagnos	sis	
OLLLO1 0101	LIVI SCIECTI	diagnosis	diagnosis	ECM	METER/M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNK WN	Π ИΚ ,ΜИ	_	UNIOWN
METER A/C AMP	No indication	_	UNKWN	UNKWN	_	UNKWN	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN
ABS	_	NG	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNKWN	_	_

Case 11

Check IPDM E/R ignition relay circuit continuously sticks "OFF". Refer to $\underline{\mathsf{LAN-85}}$, "IPDM E/R Ignition Relay $\underline{\mathsf{Circuit}\ \mathsf{Check}}$ ".

				CAN D	IAG SUPPORT	Γ MNTR		
SELECT SYST	FM screen	Initial	Transmit		Re	eceive diagno	sis	
022201 0101	LIW SOLCOIT	diagnosis	diagnosis	ECM	METER/M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	1	UNKWN
METER A/C AMP	No indication	_	UNKWN	UNKWN	_	UNKWN	UNIONN	_
всм	No indication	NG	UNKWN	UNKWN	UNKWN	_	ı	UNKWN
ABS	_	NG	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNKWN	-	_

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Case 12

Check IPDM E/R ignition relay circuit continuously sticks "ON". Refer to $\underline{\text{LAN-85}}$, "IPDM E/R Ignition Relay Circuit Check".

				CAN D	IAG SUPPORT	MNTR		
SELECT SYST	FM screen	Initial	Transmit		Re	eceive diagnos	sis	
OLLLO1 0101	LIW SOLCOIT	diagnosis	diagnosis	ECM	METER/M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	-	UNKWN
METER A/C AMP	No indication	_	UNKWN	UNKWN	_	UNKWN	UNKWN	_
всм	No indication	NG	UNKWN	UNKWN	UNKWN	_	-	UNKWN
ABS	-	NG	UNKWN	NMMMN	-	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNKWN	_	_

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Circuit Check Between Data Link Connector and Unified Meter and A/C Amp.

1. CHECK HARNESS FOR OPEN CIRCUIT

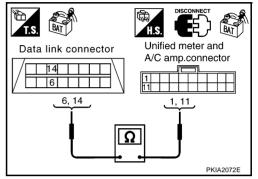
- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Disconnect ECM connector and unified meter and A/C amp. connector.
- Check continuity between data link connector M8 terminals 6 (L), 14 (P) and unified meter and A/C amp. harness connector M48 terminals 1 (L), 11 (P).

6 (L) – 1 (L) : Continuity should exist. 14 (P) – 11 (P) : Continuity should exist.

OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-65, "Work Flow"</u>.

NG >> Repair harness.



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Circuit Check Between Unified Meter and A/C Amp. and BCM

1. CHECK HARNESS FOR OPEN CIRCUIT

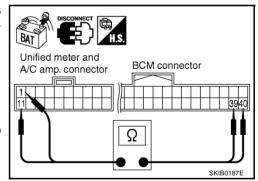
- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Disconnect the following connectors.
- ECM connector
- Unified meter and A/C amp. connector
- BCM connector
- 4. Check continuity between unified meter and A/C amp. harness connector M48 terminals 1 (L), 11 (P) and BCM harness connector M90 terminals 39 (L), 40 (P).

1 (L) – 39 (L) : Continuity should exist. 11 (P) – 40 (P) : Continuity should exist.

OK or NG

OK >> Connect all the connectors and diagnose again. Refer to $\underline{\mathsf{LAN-65}}$, "Work Flow".

NG >> Repair harness.



Circuit Check Between BCM and ABS Actuator and Electric Unit (Control Unit)

1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check following terminals and connector 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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$\overline{2}$. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect BCM connector and harness connector M15.
- Check continuity between BCM harness connector M90 terminals 39 (L), 40 (P) and harness connector M15 terminals 2G (L), 7G (P).

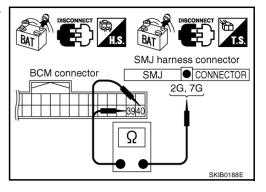
39 (L) – 2G (L) 40 (P) – 7G (P) : Continuity should exist.

: Continuity should exist.

OK or NG

OK >> GO TO 3.

NG >> Repair harness.



3. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect 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)

: Continuity should exist.

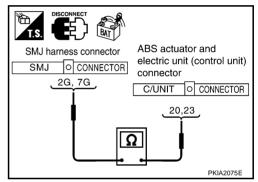
7G (P) - 23 (P)

: Continuity should exist.

OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-65, "Work Flow"</u>.

NG >> Repair harness.



AKS00A9R

ECM Circuit Check

1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- Check following terminals and connector for damage, bend and loose connection (control module 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

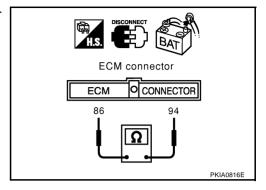
- 1. Disconnect ECM connector.
- 2. Check resistance between ECM harness connector F101 terminals 94 (L) and 86 (P).

94 (L)
$$-$$
 86 (P) : Approx. $108 - 132\Omega$

OK or NG

OK >> Replace ECM.

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



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Data Link Connector Circuit Check

1. CHECK CONNECTOR

- Turn ignition switch OFF. 1.
- Disconnect the negative battery terminal.
- 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

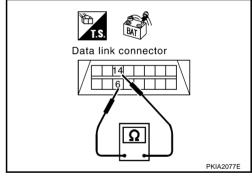
Check resistance between data link connector M8 terminals 6 (L) and 14 (P).

6 (L) – **14 (P)** : Approx.
$$54 - 66\Omega$$

OK or NG

OK >> Diagnose again. Refer to LAN-65, "Work Flow".

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



Unified Meter and A/C Amp. Circuit Check

1. CHECK CONNECTOR

1. Turn ignition switch OFF.

- 2. Disconnect the negative battery 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. AKS00A9T

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

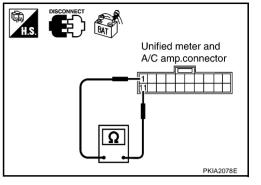
- Disconnect unified meter and A/C amp. connector.
- Check resistance between unified meter and A/C amp. harness connector M48 terminals 1 (L) and 11 (P).

: 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 BCM.



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BCM Circuit Check

1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- Disconnect the negative battery terminal.
- 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).

: Approx. $54 - 66\Omega$

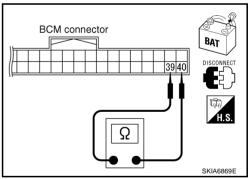
OK or NG

OK

>> Replace BCM.

NG

>> Repair harness between BCM and harness connector M15.



ABS Actuator and Electric Unit (Control Unit) Circuit Check

1. CHECK CONNECTOR

1. Turn ignition switch OFF.

- Disconnect the negative battery terminal.
- 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

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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).

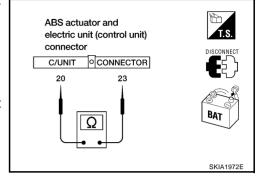
: Approx. $54 - 66\Omega$

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 Check

1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery 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).

: **Approx.** $108 - 132\Omega$

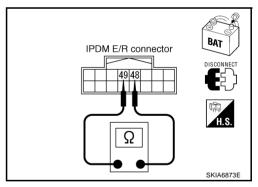
OK or NG

OK

>> Replace IPDM E/R.

NG

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



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CAN Communication Circuit Check

1. CHECK CONNECTOR

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- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check following terminals and connector 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.

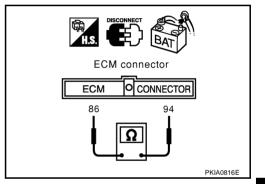
2. CHECK HARNESS FOR SHORT CIRCUIT

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

OK or NG

OK >> GO TO 3.

NG >> Repair harness between ECM and harness connector F102.



3. CHECK HARNESS FOR SHORT CIRCUIT

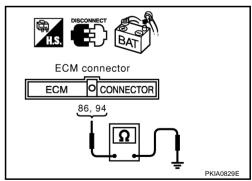
Check continuity between ECM harness connector F101 terminals 94 (L), 86 (P) and ground.

94 (L) – ground : Continuity should not exist. 86 (P) – ground : 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
- 2. Check continuity between data link connector M8 terminals 6 (L) and 14 (P).

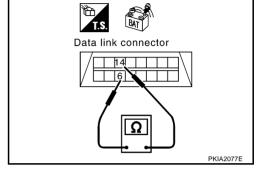
6 (L) – 14 (P) : Continuity should not exist.

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 harness connector M15



Data link connector

6

6, 14

5. CHECK HARNESS FOR SHORT CIRCUIT

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

6 (L) – ground : Continuity should not exist. 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 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.
- 2. Check continuity between IPDM E/R harness connector E9 terminals 48 (L) and 49 (P).

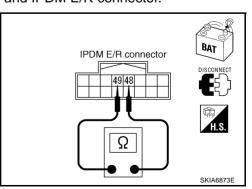
48 (L) – 49 (P) : Continuity should not exist.

OK or NG

OK >> GO TO 7.

NG >> Check th

- >> 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



7. CHECK HARNESS FOR SHORT CIRCUIT

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

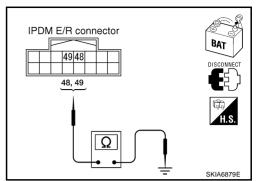
48 (L) – ground : Continuity should not exist. 49 (P) – ground : Continuity should not exist.

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 ABS actuator and electric unit (control unit)
 - Harness between IPDM E/R and harness connector E108



8. ECM/IPDM E/R INTERNAL CIRCUIT INSPECTION

Check components inspection. Refer to $\underline{\mathsf{LAN-85}}$, " $\underline{\mathsf{FCM/IPDM}}$ $\underline{\mathsf{E/R}}$ INTERNAL CIRCUIT INSPECTION" . OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-65</u>, "Work Flow".

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

IPDM E/R Ignition Relay Circuit Check

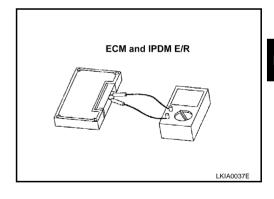
Check the following. If no malfunction is found, replace the IPDM E/R.

- IPDM E/R power supply circuit. Refer to PG-28, "IPDM E/R Power/Ground Circuit Inspection".
- Ignition power supply circuit. Refer to <u>PG-11, "IGNITION POWER SUPPLY IGNITION SW. IN "ON"</u> AND/OR "START"".

Component Inspection ECM/IPDM E/R INTERNAL CIRCUIT INSPECTION

- Remove ECM and IPDM E/R from vehicle.
- Check resistance between ECM terminals 94 and 86.
- Check resistance between IPDM E/R terminals 48 and 49.

Unit	Terminal	Resistance value (Ω) (Approx.)
ECM	94 - 86	108 - 132
IPDM E/R	48 - 49	100 - 132



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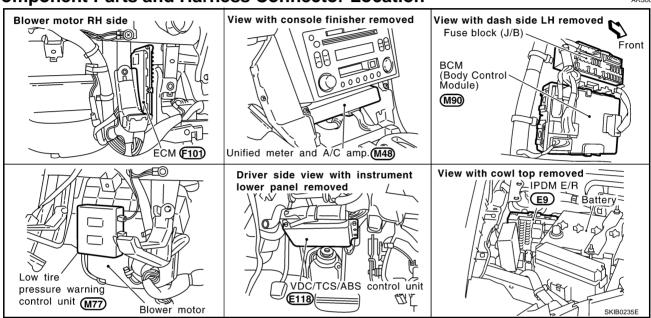
System Description

PFP:23710

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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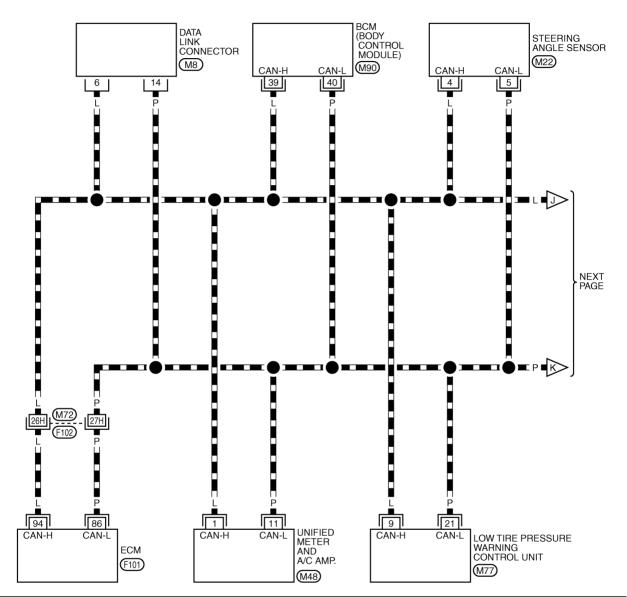
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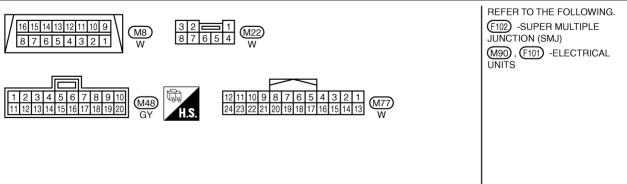
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: DATA LINE

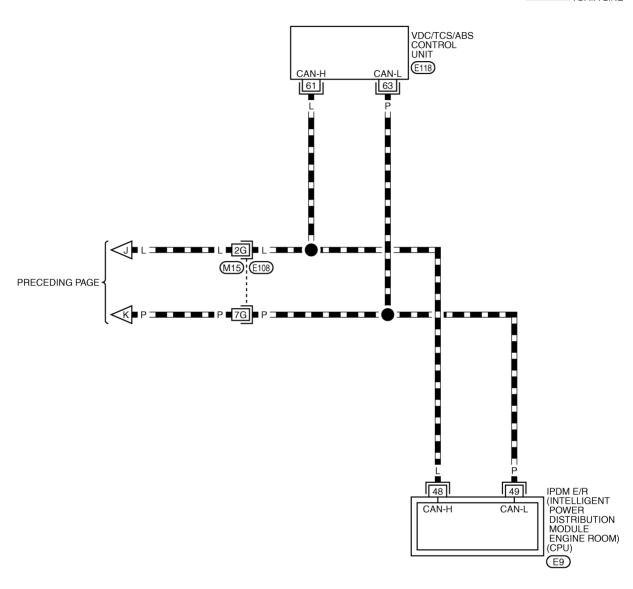




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: DATA LINE





REFER TO THE FOLLOWING.

(E108) -SUPER MULTIPLE
JUNCTION (SMJ)

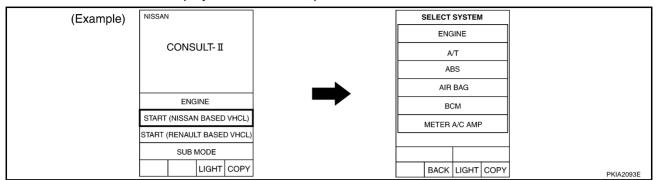
E118 -ELECTRICAL UNITS

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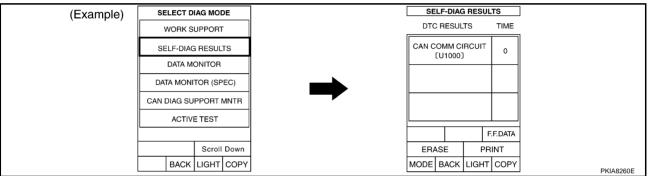
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Work Flow

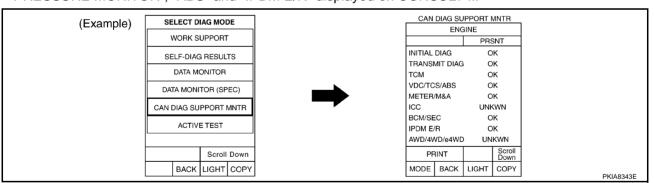
1. When there are no indications of "METER A/C AMP", "BCM", "AIR PRESSURE MONITOR" or "IPDM E/R" on "SELECT SYSTEM" display of CONSULT-II, print the "SELECT SYSTEM".



 Print all the data of "SELF-DIAG RESULTS" for "ENGINE", "METER A/C AMP", "BCM", "AIR PRESSURE MONITOR", "ABS" and "IPDM E/R" displayed on CONSULT-II.



3. Print all the data of "CAN DIAG SUPPORT MNTR" for "ENGINE", "METER A/C AMP", "BCM", "AIR PRESSURE MONITOR", "ABS" and "IPDM E/R" displayed on CONSULT-II.



- Attach the printed sheet of "SELECT SYSTEM", "SELF-DIAG RESULTS" and "CAN DIAG SUPPORT MNTR" onto the check sheet. Refer to <u>LAN-90</u>, "CHECK SHEET".
- 5. Based on the indications of "SELECT SYSTEM" and the results of "CAN DIAG SUPPORT MNTR", put marks "v" onto the items with "No indication", "NG", or "UNKWN" in the check sheet table. Refer to LAN-90, "CHECK SHEET".

NOTE:

- If "NG" is displayed on "CANINITIAL DIAG (Initial diagnosis)" as "CAN DIAG SUPPORT MNTR" for the diagnosed control unit, replace the control unit.
- The "CAN DIAG SUPPORT MNTR" items, which are not in check sheet table, are not related to diagnostic procedure on service manual.
 So it is not necessary to check the status of the "CAN DIAG SUPPORT MNTR" items not in check sheet table.
- According to the check sheet results (example), start inspection. Refer to <u>LAN-92</u>, "CHECK SHEET <u>RESULTS</u> (EXAMPLE)".

CHECK SHEET

NOTE:

If "NG" is displayed on "INITIAL DIAG (Initial diagnosis)" as "CAN DIAG SUPPORT MNTR" for the diagnosed control unit, replace the control unit.

					CAN DIA	AG SUPPOF	RT MNTR			
SELECT SYST	EM screen	Initial	Transmit		ı	Rec	eive diagno	osis		r
		diagnosis	diagnosis	ECM	METER /M&A	BCM/SEC	TIRE-P	STRG	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN
METER A/C AMP	No indication	_	UNKWN	UNKWN	_	UNKWN	UNKWN	_	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN
AIR PRESSURE MONITOR	No indication	NG	UNKWN	_	UNKWN	-	_	_	_	_
ABS	_	NG	UNKWN	UNKWN	_	_	_	UNKWN	_	-
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNKWN	_	_	_	_
		Attach o					copy of SYSTEM			

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Attach copy of Attach copy of Attach copy of ENGINÉ METER A/C AMP всм SELF-DIAG RESULTS **SELF-DIAG RESULTS** SELF-DIAG RESULTS Attach copy of Attach copy of Attach copy of AIR PRESSURE ABS IPDM E/R MONITOR **SELF-DIAG RESULTS** 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 Attach copy of AIR PRESSURE ABS IPDM E/R MONITOR CAN DIAG SUPPORT CAN DIAG SUPPORT **CAN DIAG SUPPORT** MNTR MNTR MNTR

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CHECK SHEET RESULTS (EXAMPLE)

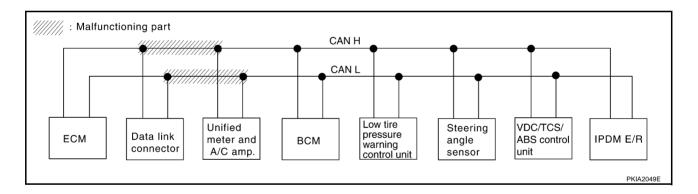
NOTE:

If "NG" is displayed on "INITIAL DIAG (Initial diagnosis)" as "CAN DIAG SUPPORT MNTR" for the diagnosed control unit, replace the control unit.

Case 1

Check harness between data link connector and unified meter and A/C amp. Refer to <u>LAN-106</u>, "Circuit Check Between Data Link Connector and Unified Meter and A/C Amp." .

					CAN DIA	G SUPPOF	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit			Red	eive diagn	osis		
GEEEGT GTGT			diagnosis	ECM	METER /M&A	BCM/SEC	TIRE-P	STRG	VDC/TCS /ABS	IPDM E/I
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN
METER A/C AMP	No indication	_	UNKWN	UNKWN	_	UNKWN	UNKWN	_	UNKWN	_
всм	No indication	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN
AIR PRESSURE MONITOR	No indication	NG	UNKWN	_	UNKWN	_	_	_	_	_
ABS	_	NG	UNKWN	UNK/WN	_	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNKWN	_	_	_	_



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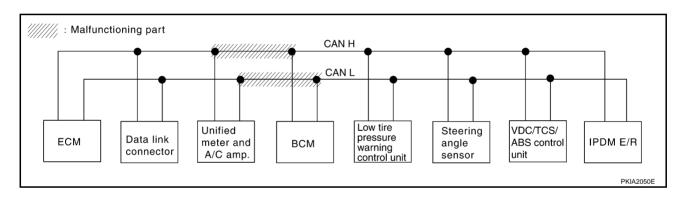
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Case 2

Check harness between unified meter and A/C amp. and BCM. Refer to $\underline{\text{LAN-106}}$, "Circuit Check Between Unified Meter and A/C Amp. and BCM".

					CAN DIA	G SUPPOR	RT MNTR			
SELECT SYST	EM screen	Initial	Transmit			Rec	eive diagn	osis		
		diagnosis	diagnosis	ECM	METER /M&A	BCM/SEC	TIRE-P	STRG	VDC/TCS /ABS	IPDM E/I
ENGINE	_	NG	UNKWN	_	UNKWN	nukwu	_	_	UNKWN	UNK WN
METER A/C AMP	No indication	_	UNKWN	UNKWN	_	∩ NR WN	UNIXWN	_	UNK/WN	-
всм	No indication	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN
AIR PRESSURE MONITOR	No indication	NG	UNKWN	_	UNKWN	_	-	_	_	1
ABS	-	NG	UNKWN	UNKWN	_	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNKWN		_	_	1

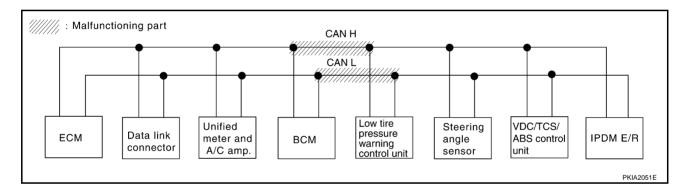


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Case 3
Check harness between BCM and Low Tire Pressure Warning Control Unit. Refer to <u>LAN-107</u>, "Circuit Check <u>Between BCM and Low Tire Pressure Warning Control Unit"</u>.

					CAN DIA	G SUPPOF	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit			Red	eive diagn	osis		
			diagnosis	ECM	METER /M&A	BCM/SEC	TIRE-P	STRG	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	_	_	UNK WN	UNK WN
METER A/C AMP	No indication	_	UNKWN	UNKWN	-	UNKWN	UNIXWN	_	UNK WN	_
ВСМ	No indication	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNIONN
AIR PRESSURE MONITOR	No indication	NG	UNKWN	_	UNKWN	_	_	_	_	_
ABS	_	NG	UNKWN	UNKWN	_	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNKWN	_	_	_	_



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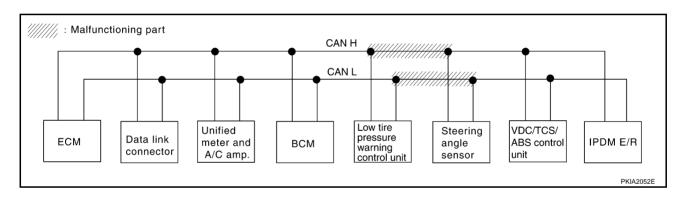
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Case 4

Check harness between Low Tire Pressure Warning Control Unit and steering angle sensor. Refer to <u>LAN-107</u>, "Circuit Check Between Low Tire Pressure Warning Control Unit and Steering Angle Sensor".

					CAN DIA	G SUPPOF	RT MNTR			
SELECT SYST	EM screen	Initial	Transmit			Rec	eive diagn	osis		
SEEE OF STOT	LIW SCIECTI	diagnosis	diagnosis	ECM	METER /M&A	BCM/SEC	TIRE-P	STRG	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	_	_	UNKWN	UNK WN
METER A/C AMP	No indication	_	UNKWN	UNKWN	_	UNKWN	UNKWN	_	UNK WN	_
всм	No indication	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UN ∳ WN
AIR PRESSURE MONITOR	No indication	NG	UNKWN	_	UNKWN	_	_	_	_	-
ABS	_	NG	UNKWN	∩ ИК МИ	_	_	_	UNKWN	_	-
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNKWN	_	_	_	_



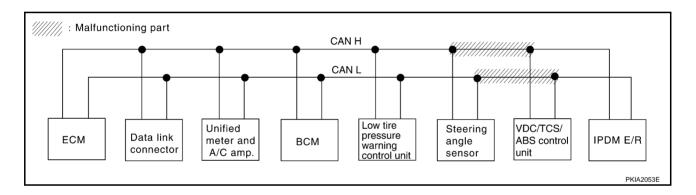
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Case 5

Check harness between steering angle sensor and VDC/TCS/ABS control unit. Refer to <u>LAN-108</u>, "Circuit <u>Check Between Steering Angle Sensor and VDC/TCS/ABS Control Unit"</u>.

					CAN DIA	G SUPPOF	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit			Red	eive diagn	osis		
0222010101	LIVI SOICCII			ECM	METER /M&A	BCM/SEC	TIRE-P	STRG	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	-	UNKWN	UNKWN	-	_	UNKWN	UN K ₩N
METER A/C AMP	No indication	_	UNKWN	UNKWN	_	UNKWN	UNKWN	-	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	UNKWN	_	_	-	_	UNI W N
AIR PRESSURE MONITOR	No indication	NG	UNKWN	_	UNKWN	_	_	_	_	_
ABS	_	NG	UNKWN	UNK/WN	_	_	_	UNK/WN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNKWN	_	_	_	_



CAN SYSTEM (TYPE 4)

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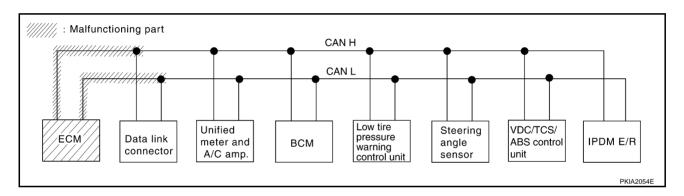
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Case 6
Check ECM circuit. Refer to <u>LAN-108</u>, "<u>ECM Circuit Check</u>".

					CAN DIA	G SUPPOR	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit			Red	eive diagn	osis		
SEEEOT STOT	LIVI 3016611	diagnosis	diagnosis	ECM	METER /M&A	BCM/SEC	TIRE-P	STRG	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UN K ₩N	_	UNK WN	UN K ₩N	_	_	UNK/WN	UN K ₩N
METER A/C AMP	No indication	_	UNKWN	UNK WN	_	UNKWN	UNKWN	_	UNKWN	_
всм	No indication	NG	UNKWN	UNK WN	UNKWN	_	_	_	_	UNKWN
AIR PRESSURE MONITOR	No indication	NG	UNKWN	_	UNKWN	_	_	_	_	_
ABS	_	NG	UNKWN	UNK WN	_	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNK WN	_	UNKWN		_	_	_



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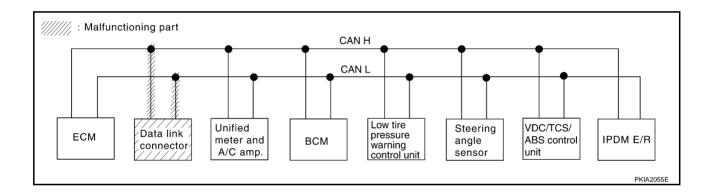
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Case 7
Check data link connector circuit. Refer to <u>LAN-109</u>, "<u>Data Link Connector Circuit Check"</u>.

					CAN DIA	G SUPPOF	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit			Red	eive diagn	osis		
OLLLOT GTGT	LIVI SCICCII	diagnosis	Transmit diagnosis	ECM	METER /M&A	BCM/SEC	TIRE-P	STRG	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN
METER A/C AMP	No indication	_	UNKWN	UNKWN	_	UNKWN	UNKWN	_	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN
AIR PRESSURE MONITOR	No indication	NG	UNKWN	_	UNKWN	_	_	_	_	_
ABS	_	NG	UNKWN	UNKWN	_	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	-	UNKWN	_	_	_	_



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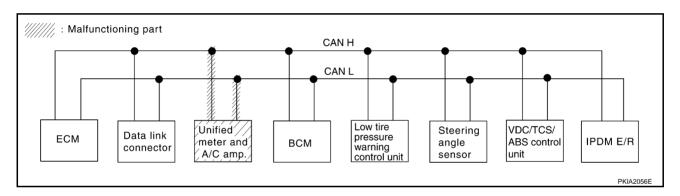
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Case 8

Check unified meter and A/C amp. circuit. Refer to LAN-109, "Unified Meter and A/C Amp. Circuit Check".

					CAN DIA	G SUPPOF	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit			Rec	eive diagn	osis		
OLLLO1 0101	LIVI SCICCII	diagnosis		ECM	METER /M&A	BCM/SEC	TIRE-P	STRG	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	∩ NR MN	UNKWN	_	_	UNKWN	UNKWN
METER A/C AMP	No indication	_	UNKWN	UNKWN	_	UNKWN	UNKWN	_	UNKWN	_
всм	No indication	NG	UNKWN	UNKWN	UNK WN	_	_	_	_	UNKWN
AIR PRESSURE MONITOR	No indication	NG	UNKWN	_	UNK\\	_	_	_	_	-
ABS	_	NG	UNKWN	UNKWN	_	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNKWN	_	_	_	_



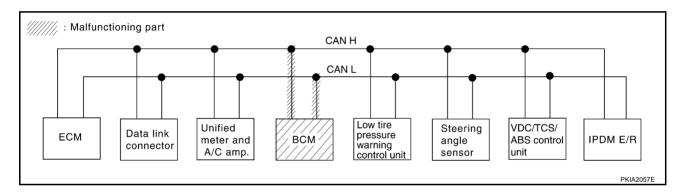
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Case 9
Check BCM circuit. Refer to <u>LAN-110, "BCM Circuit Check"</u>.

					CAN DIA	G SUPPOR	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit			Red	eive diagno	osis		
022201 0101	LIVI SOFCCIT	diagnosis	diagnosis	ECM	METER /M&A	BCM/SEC	TIRE-P	STRG	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	NNKWN	_	_	UNKWN	UNKWN
METER A/C AMP	No indication	_	UNKWN	UNKWN	_	∩ NR WN	UNKWN	_	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	UNKWN	_	_	-	_	UNKWN
AIR PRESSURE MONITOR	No indication	NG	UNKWN	_	UNKWN	_	_	_	_	_
ABS	_	NG	UNKWN	UNKWN	_	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNKWN	_	_	_	_



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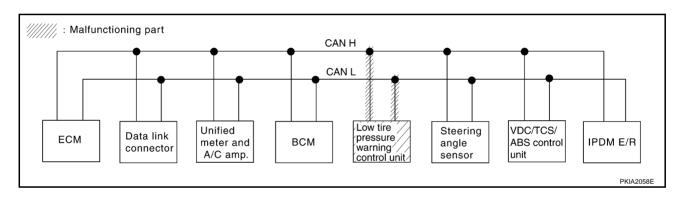
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Case 10

Check Low Tire Pressure Warning Control Unit circuit. Refer to <u>LAN-110</u>, "Low Tire Pressure Warning Control <u>Unit Circuit Check"</u>.

					CAN DIA	G SUPPOR	RT MNTR			
SELECT SYST	EM screen	Initial	Transmit			Red	eive diagn	osis		
OLLLO1 0101	LIW SCIECTI	diagnosis	diagnosis	ECM	METER /M&A	BCM/SEC	TIRE-P	STRG	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN
METER A/C AMP	No indication	_	UNKWN	UNKWN	_	UNKWN	UNIXWN	_	UNKWN	_
всм	No indication	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN
AIR PRESSURE MONITOR	No indication	NG	UNKWN	_	UNKWN	_	_	_	_	-
ABS	_	NG	UNKWN	UNKWN	_	_	_	UNKWN	_	-
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNKWN	_	_	_	_

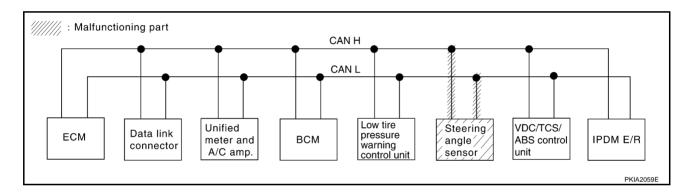


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Case 11
Check steering angle sensor circuit. Refer to <u>LAN-111</u>, "Steering Angle Sensor Circuit Check".

					CAN DIA	G SUPPOF	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit			Rec	eive diagno	osis		
022201 0101	LIVI SOFCCIT	diagnosis	diagnosis	ECM	METER /M&A	BCM/SEC	TIRE-P	STRG	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	_	-	UNKWN	UNKWN
METER A/C AMP	No indication	_	UNKWN	UNKWN	_	UNKWN	UNKWN	_	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN
AIR PRESSURE MONITOR	No indication	NG	UNKWN	_	UNKWN	_	_	_	_	_
ABS	_	NG	UNKWN	UNKWN	_	-	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNKWN	_	_	_	_



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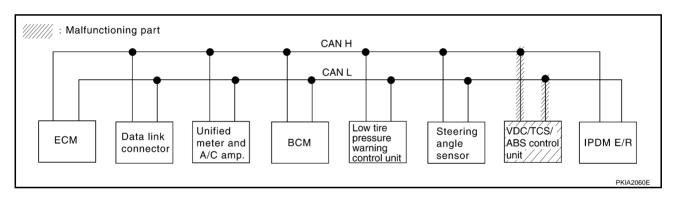
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Case 12

Check VDC/TCS/ABS control unit circuit. Refer to LAN-111, "VDC/TCS/ABS Control Unit Circuit Check" .

					CAN DIA	G SUPPOR	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit			Rec	eive diagn	osis		
0222010101	LIVI GOLGGII	diagnosis		ECM	METER /M&A	BCM/SEC	TIRE-P	STRG	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	_	-	UNKWN	UNKWN
METER A/C AMP	No indication	_	UNKWN	UNKWN	_	UNKWN	UNKWN	_	UNKWN	=
ВСМ	No indication	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN
AIR PRESSURE MONITOR	No indication	NG	UNKWN	_	UNKWN	_	_	_	_	_
ABS	_	W	UNIMN	UNK WN	_	_	_	UNK WN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNKWN	_	_	_	_



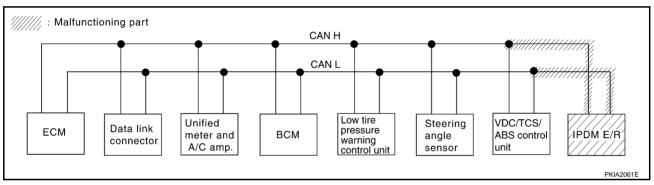
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Case 13
Check IPDM E/R circuit. Refer to <u>LAN-112</u>, "IPDM E/R Circuit Check".

					CAN DIA	G SUPPOF	RT MNTR			
SELECT SYST	EM screen	Initial	Transmit			Rec	eive diagn	osis		
022201 0101	LIW Screen	diagnosis		ECM	METER /M&A	BCM/SEC	TIRE-P	STRG	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	1	UNKWN	UNKWN	-	_	UNKWN	UNKWN
METER A/C AMP	No indication	_	UNKWN	UNKWN	_	UNKWN	UNKWN	_	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN
AIR PRESSURE MONITOR	No indication	NG	UNKWN	_	UNKWN	_	_	_	_	_
ABS	_	NG	UNKWN	UNKWN	_	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNKWN	_	_	_	_



Case 14
Check CAN communication circuit. Refer to <u>LAN-113</u>, "CAN Communication Circuit Check" .

					CAN DIA	G SUPPOF	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit			Red	eive diagn	osis		
022201 0101	LIVI SUICCII	diagnosis		ECM	METER /M&A	BCM/SEC	TIRE-P	STRG	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UN K ₩N	_	UNKWN	UNKWN	_	_	UNK WN	UN K ₩N
METER A/C AMP	No indication	_	UNKWN	UNKWN	_	UNKWN	UNKWN	_	UNKWN	_
всм	No indication	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN
AIR PRESSURE MONITOR	No indication	NG	UNKWN	_	UNKWN	_	_	_	_	_
ABS	_	W	UNION	UN K ₩N	_	_	_	Ω ΝΚ ⁄ΜΝ	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNKWN	_	_	_	_

Case 15

Check IPDM E/R ignition relay circuit continuously sticks "OFF". Refer to <u>LAN-115, "IPDM E/R Ignition Relay Circuit Check"</u> .

					CAN DIA	G SUPPOF	RT MNTR			
SELECT SYST	EM screen	Initial	Troponit		0/114 1517		eive diagno	osis		
3222013131	LIVI SCIEETI	diagnosis	Transmit diagnosis	ECM	METER /M&A	BCM/SEC	TIRE-P	STRG	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	_	_	UNK WN	UNKWN
METER A/C AMP	No indication	_	UNKWN	UNKWN	_	UNKWN	UNKWN	_	∩ иК МИ	_
всм	No indication	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN
AIR PRESSURE MONITOR	No indication	NG	UNKWN	_	UNKWN	_	_	_	-	_
ABS	_	NG	UNKWN	UNKWN	_	_	_	UNKWN	_	_
IPDM E/R	No indication	-	UNKWN	UNKWN	_	UNKWN	-	ı	_	_

Case 16

Check IPDM E/R ignition relay circuit continuously sticks "ON". Refer to $\underline{\text{LAN-115}}$, "IPDM E/R Ignition Relay $\underline{\text{Circuit Check"}}$.

SELECT SYSTEM screen		CAN DIAG SUPPORT MNTR								
		Initial diagnosis	Transmit diagnosis	Receive diagnosis						
				ECM	METER /M&A	BCM/SEC	TIRE-P	STRG	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN
METER A/C AMP	No indication	_	UNKWN	UNKWN	_	UNKWN	UNKWN	_	UNKWN	
всм	No indication	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN
AIR PRESSURE MONITOR	No indication	NG	UNKWN	_	UNKWN	_	_	_	_	
ABS	_	NG	UNKWN	UN K ₩N	_	_	_	∩ иК {\mathbb{M}}	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	UNKWN	_	_	_	_

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Circuit Check Between Data Link Connector and Unified Meter and A/C Amp.

1. CHECK HARNESS FOR OPEN CIRCUIT

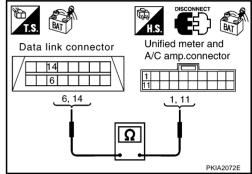
- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Disconnect ECM connector and unified meter and A/C amp. connector.
- Check continuity between data link connector M8 terminals 6 (L), 14 (P) and unified meter and A/C amp. harness connector M48 terminals 1 (L), 11 (P).

6 (L) – 1 (L) : Continuity should exist. 14 (P) – 11 (P) : Continuity should exist.

OK or NG

OK >> Connect all the connectors and diagnose again. Refer to $\underline{\mathsf{LAN-89}}$, "Work Flow".

NG >> Repair harness.



AKS00AA2

Circuit Check Between Unified Meter and A/C Amp. and BCM

1. CHECK HARNESS FOR OPEN CIRCUIT

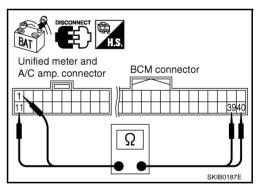
- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Disconnect the following connectors.
- ECM connector
- Unified meter and A/C amp. connector
- BCM connector
- 4. Check continuity between unified meter and A/C amp. harness connector M48 terminals 1 (L), 11 (P) and BCM harness connector M90 terminals 39 (L), 40 (P).

1 (L) – 39 (L) : Continuity should exist. 11 (P) – 40 (P) : Continuity should exist.

OK or NG

OK >> Connect all the connectors and diagnose again. Refer to $\underline{\mathsf{LAN-89}}$, "Work Flow".

NG >> Repair harness.



Circuit Check Between BCM and Low Tire Pressure Warning Control Unit

1. CHECK HARNESS FOR OPEN CIRCUIT

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- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Disconnect the following connectors.
- ECM connector
- BCM connector
- Low tire pressure warning control unit connector
- Check continuity between BCM harness connector M90 terminals 39 (L), 40 (P) and low tire pressure warning control unit harness connector M77 terminals 9 (L), 21 (P).

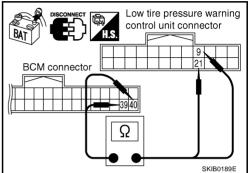
: Continuity should exist.

: Continuity should exist.

OK or NG

OK >> Connect all the connectors and diagnose again. Refer to LAN-89. "Work Flow".

NG >> Repair harness.



Circuit Check Between Low Tire Pressure Warning Control Unit and Steering Angle Sensor AKS009F0

1. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- Disconnect the following connectors.
- ECM connector
- Low tire pressure warning control unit connector
- Steering angle sensor connector
- Check continuity between Low tire pressure warning control unit harness connector M77 terminals 9 (L), 21 (P) and steering angle sensor harness connector M22 terminals 4 (L), 5 (P).

9(L) - 4(L)

: Continuity should exist.

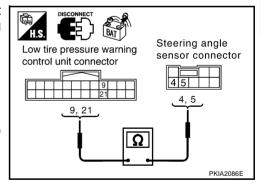
21 (P) - 5 (P)

: Continuity should exist.

OK or NG

OK >> Connect all the connectors and diagnose again. Refer to LAN-89, "Work Flow".

NG >> Repair harness.



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Circuit Check Between Steering Angle Sensor and VDC/TCS/ABS Control Unit

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1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check following terminals and connector 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.

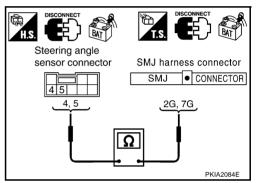
2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect steering angle sensor connector and harness connector M15.
- 2. Check continuity between steering angle sensor harness connector M22 terminals 4 (L), 5 (P) and harness connector M15 terminals 2G (L), 7G (P).

4 (L) – 2G (L) : Continuity should exist. 5 (P) – 7G (P) : 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) : Continuity should exist. 7G (P) – 63 (P) : Continuity should exist.

OK or NG

OK >> Connect all the connectors and diagnose again. Refer to LAN-89, "Work Flow".

NG >> Repair harness.

SMJ harness connector SMJ O CONNECTOR 2G, 7G C/UNIT O CONNECTOR 61, 63 PKIA2085E

AKS00AA4

ECM Circuit Check

1. CHECK CONNECTOR

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

OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

В

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

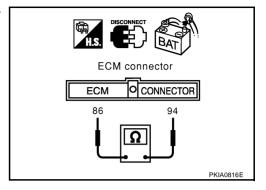
- 1. Disconnect ECM connector.
- Check resistance between ECM harness connector F101 terminals 94 (L) and 86 (P).

94 (L)
$$-$$
 86 (P) : Approx. $108 - 132\Omega$

OK or NG

OK >> Replace ECM.

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



Data Link Connector Circuit Check

1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- Disconnect the negative battery terminal.
- 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).

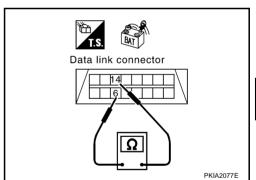
6 (L) – **14 (P)** : Approx.
$$54 - 66\Omega$$

OK or NG

OK >> Diagnose again. Refer to LAN-89, "Work Flow".

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





Unified Meter and A/C Amp. Circuit Check

1. CHECK CONNECTOR

- Turn ignition switch OFF.
- 2. Disconnect the negative battery 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.

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2. CHECK HARNESS FOR OPEN CIRCUIT

- 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).

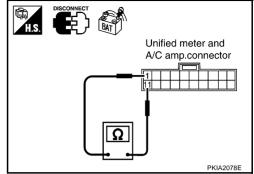
: Approx. $54 - 66\Omega$

OK or NG

OK >> Replace unified meter and A/C amp.

NG

>> Repair harness between unified meter and A/C amp. and BCM.



AKS00AA7

BCM Circuit Check

1. CHECK CONNECTOR

- Turn ignition switch OFF. 1.
- Disconnect the negative battery terminal.
- 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).

: Approx. $54 - 66\Omega$

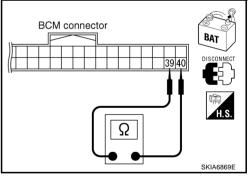
OK or NG

OK

>> Replace BCM.

NG

>> Repair harness between BCM and steering angle sensor.



Low Tire Pressure Warning Control Unit Circuit Check

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1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- Check terminals and connector of low tire pressure warning 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.

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

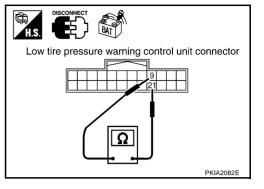
- 1. Disconnect low tire pressure warning control unit connector.
- 2. Check resistance between low tire pressure warning control unit harness connector M77 terminals 9 (L) and 21 (P).

: Approx. $54 - 66\Omega$

OK or NG

OK >> Replace low tire pressure warning control unit.

NG >> Repair harness between low tire pressure warning control unit and steering angle sensor.



AKS00AA8

Steering Angle Sensor Circuit Check

1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery 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.
- 2. Check resistance between steering angle sensor harness connector M22 terminals 4 (L) and 5 (P).

$$4(L) - 5(P)$$

: Approx. $54 - 66\Omega$

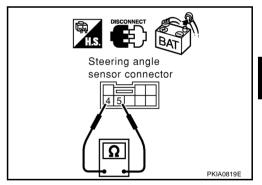
OK or NG

OK

>> Replace steering angle sensor.

NG

>> Repair harness between steering angle sensor and harness connector M15.



AKS00AA9

VDC/TCS/ABS Control Unit Circuit Check

1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery 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

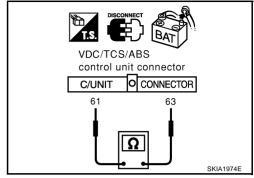
- Disconnect VDC/TCS/ABS control unit connector.
- 2. Check resistance between VDC/TCS/ABS control unit harness connector E118 terminals 61 (L) and 63 (P).

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.



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IPDM E/R Circuit Check

1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery 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

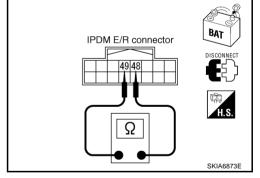
- 1. Disconnect IPDM E/R connector.
- 2. Check resistance between IPDM E/R harness connector E9 terminals 48 (L) and 49 (P).

48 (L) – 49 (P) : Approx.
$$108 - 132\Omega$$

OK or NG

OK >> Replace IPDM E/R.

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



[CAN]

CAN Communication Circuit Check

1. CHECK CONNECTOR

1. Turn ignition switch OFF.

- 2. Disconnect the negative battery terminal.
- Check following terminals and connector 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**
- Low tire pressure warning control unit
- 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.

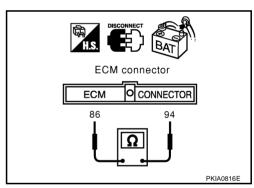
2. CHECK HARNESS FOR SHORT CIRCUIT

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

OK or NG

OK >> GO TO 3.

NG >> Repair harness between ECM and harness connector F102.



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3. CHECK HARNESS FOR SHORT CIRCUIT

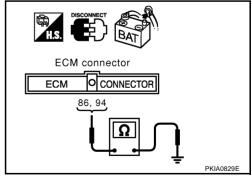
Check continuity between ECM harness connector F101 terminals 94 (L), 86 (P) and ground.

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

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
- Low tire pressure warning control unit connector
- Steering angle sensor connector
- Harness connector M15
- Check continuity between data link connector M8 terminals 6 (L) and 14 (P).

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 low tire pressure warning control unit
 - Harness between data link connector and steering angle sensor
 - 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 : Continuity should not exist. 14 (P) – ground : Continuity should not exist.

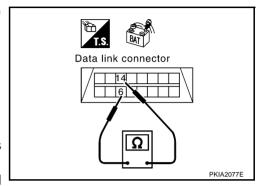
OK or NG

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.
 - Harness between data link connector and BCM
 - Harness between data link connector and low tire pressure warning control unit
 - Harness between data link connector and steering angle sensor
 - Harness between data link connector and harness connector M15



Data link connector

6

6, 14

6. CHECK HARNESS FOR SHORT CIRCUIT

- 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)

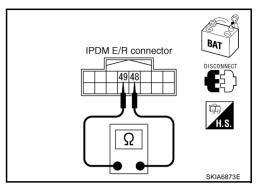
: Continuity should not exist.

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

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

IPDM E/R connector 48, 49 SKIA6870F

8. ECM/IPDM E/R INTERNAL CIRCUIT INSPECTION

Check components inspection. Refer to LAN-115, "ECM/IPDM E/R INTERNAL CIRCUIT INSPECTION". OK or NG

OK >> Connect all the connectors and diagnose again. Refer to LAN-89, "Work Flow".

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

IPDM E/R Ignition Relay Circuit Check

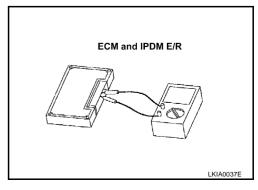
Check the following. If no malfunction is found, replace the IPDM E/R.

- IPDM E/R power supply circuit. Refer to PG-28, "IPDM E/R Power/Ground Circuit Inspection".
- Ignition power supply circuit. Refer to PG-11, "IGNITION POWER SUPPLY IGNITION SW. IN "ON" AND/OR "START"

Component Inspection ECM/IPDM E/R INTERNAL CIRCUIT INSPECTION

- Remove ECM and IPDM E/R from vehicle.
- Check resistance between ECM terminals 94 and 86.
- Check resistance between IPDM E/R terminals 48 and 49.

Unit	Terminal	Resistance value (Ω) (Approx.)			
ECM	94 - 86	108 - 132			
IPDM E/R	48 - 49	100 - 132			



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