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### **PRECAUTIONS**

[CAN]

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 When Using CONSULT-II**

UKS001AF

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.

#### 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.
- Diagnose CAN communication system. Refer to <u>LAN-7</u>, "CAN Communication Unit".

# Precautions For Trouble Diagnosis CAN SYSTEM

UKS001AG

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

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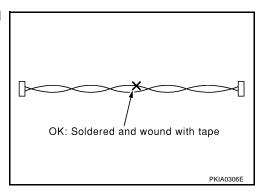
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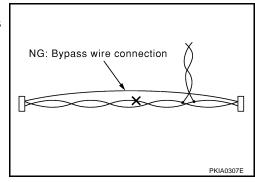
# **Precautions For Harness Repair CAN SYSTEM**

UKS001AH

• 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]

### **CAN COMMUNICATION**

#### PFP:23710

### **System Description**

UKS001AI

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**

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

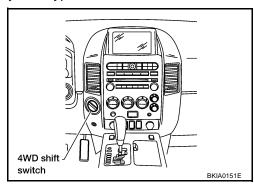
Body type		Truck											
Axle		2WD 4WD											
Engine		VK56DE											
Transmission		A/T											
Brake control	ABS	BS ABLS VDC ABLS								VDC			
Electronic locking rear differential										×	×	×	
Automatic drive positioner			×	×		×		×	×		×	×	×
Navigation system				×		×			×			×	
CAN system type	1	2	3	4	5	6	7	8	9	10	11	12	13
CAN system trouble diagnosis	<u>LAN-</u> <u>24</u>	<u>LAN-</u> <u>52</u>	<u>LAN-</u> <u>80</u>	<u>LAN-</u> <u>110</u>	<u>LAN-</u> <u>143</u>	<u>LAN-</u> <u>172</u>	<u>LAN-</u> <u>206</u>	<u>LAN-</u> <u>235</u>	<u>LAN-</u> <u>267</u>	<u>LAN-</u> <u>301</u>	<u>LAN-</u> <u>333</u>	<u>LAN-</u> <u>369</u>	<u>LAN-</u> <u>408</u>

<sup>×:</sup> Applicable

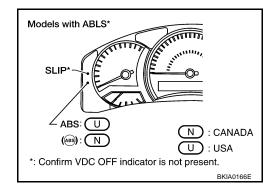
#### NOTE:

Confirming the presence of the following items helps to identify CAN system type.

Models with 4WD



Models with ABLS



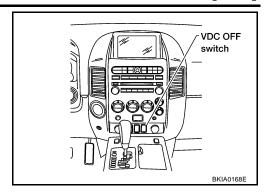
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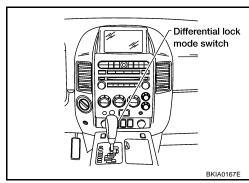
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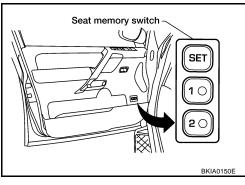
Models with VDC



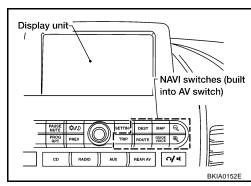
Models with electronic locking rear differential



Models with automatic drive positioner



Models with navigation system



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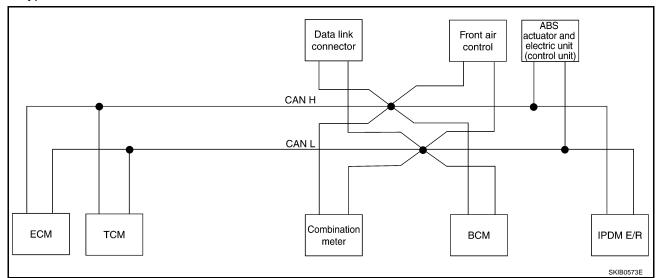
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TYPE 1 System diagram

Type 1



## Input/output signal chart

T: Transmit R: Receive

						T: Transmi	t R: Receive
Signals	ECM	TCM	Combina- tion meter	всм	Front air control	ABS actuator and electric unit (control unit)	IPDM E/R
Engine speed signal	Т	R	R		R		
Engine status signal	Т			R	R		
Engine coolant temperature signal	Т	R	R		R		
A/T self-diagnosis signal	R	Т					
Accelerator pedal position signal	Т	R					
Closed throttle position signal	Т	R					
Wide open throttle position signal	Т	R					
Battery voltage signal	Т	R					
Ignition switch signal				Т			R
Stop lamp switch signal		R	Т				
Fuel consumption monitor signal	Т		R T				
Turbine revolution signal	R	Т					
Output shaft revolution signal	R	Т					
A/C switch signal	R			Т	R		
A/C compressor request signal	Т						R
Blower fan motor switch signal	R			Т	R		
Cooling fan speed request signal	Т				R		R
Position light 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
Front fog light request signal				Т			R

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							[]
Signals	ECM	TCM	Combina- tion meter	всм	Front air control	ABS actuator and electric unit (control unit)	IPDM E/R
Day time running light request signal				Т			R
Rear window defogger request signal				Т	R		R
Rear window defogger status signal				R			Т
Vehicle and dispel			R		R	Т	
Vehicle speed signal	R	R	Т	R	R		
Sleep wake up signal			R	Т			R
Door switch signal			R	Т			R
Turn indicator signal			R	Т			
Buzzer output signal			R	Т			
Fuel level sensor signal	R		Т				
ASCD SET lamp signal	Т		R				
ASCD CRUISE lamp signal	Т		R				
Malfunction indicator lamp signal	Т		R				
Front wiper request signal				Т			R
Front wiper stop position signal				R			Т
Theft warning horn request signal				Т			R
Horn chirp signal				T			R
ABS warning lamp signal			R			Т	
Brake warning lamp signal			R			Т	
ASCD operation signal	Т	R					
ASCD OD cancel request	Т	R					
A/T CHECK indicator lamp signal		Т	R				
A/T position indicator lamp signal		Т	R				
Tire pressure signal			R	Т			
1st position switch signal*1		R	Т				
4th position switch signal*1		R	Т				
Manual mode switch signal*2		R	Т				
Not manual mode switch signal*2		R	Т				
Manual mode shift up signal*2		R	Т				
Manual mode shift down signal*2		R	Т				
Tow mode switch signal		R	Т				
A/T fluid temperature sensor signal		Т	R				
Seat belt buckle switch signal			Т	R			

<sup>\*1:</sup> Floor shift model only.

<sup>\*2:</sup> Column shift model only.

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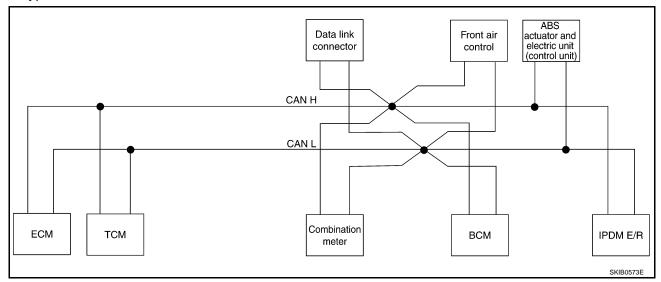
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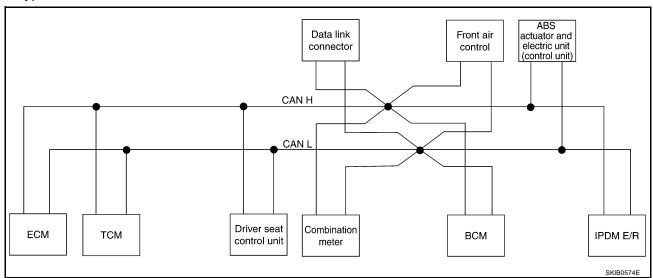
# TYPE 2/TYPE 3/TYPE 4

### System diagram

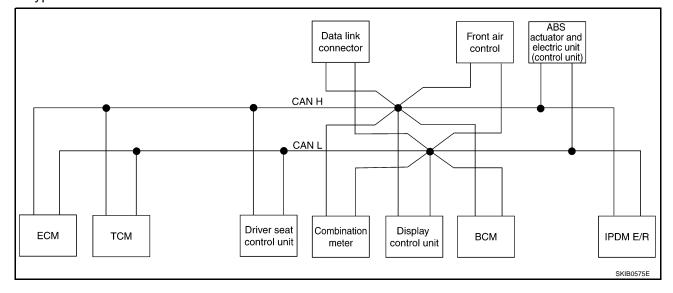
Type 2



Type 3



Type 4



## Input/output signal chart

T: Transmit R: Receive

							T: 1	Fransmit F	R: Receiv
Signals	ECM	тсм	Driver seat control unit	Combination meter	Display control unit	всм	Front air con- trol	ABS actuator and electric unit (control unit)	IPDM E/R
Engine speed signal	Т	R		R	R		R	R	
Engine status signal	Т					R	R		
Engine coolant temperature signal	Т	R		R			R		
A/T self-diagnosis signal	R	Т							
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							
Key switch signal			R			Т			
Ignition switch signal			R			Т			R
P range signal		Т	R					R	
Stop lamp switch signal		R		Т					
Fuel consumption monitor signal	Т			R T	R				
Turbine revolution signal	R	Т		•	11				
Output shaft revolution signal	R	T							
A/C switch signal	R	•				T			
A/C compressor request signal	T					'			R
Blower fan motor switch signal	R					Т	R		IX
Blower fair motor switch signal					Т	<u>'</u>	R		
A/C switch/indicator signal					R		T		
Cooling fan speed request signal	Т						R		R
Position light 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
Front fog light request signal						Т			R
Day time running light request signal						Т			R
Rear window defogger request signal						Т	R		R
Rear window defogger status signal						R			T
Vehicle speed signal	R	R	R	R T	R	R	R R	Т	
Sleep wake up signal		1	R	R	1	T			R
Door switch signal			R	R	R	 			R
Turn indicator signal			- 1	R	1	' 			11
Key fob ID signal			R	17		' 			
1.0, 100 ID digital			R			' 			
Key fob door unlock signal									

## **CAN COMMUNICATION**

[CAN]

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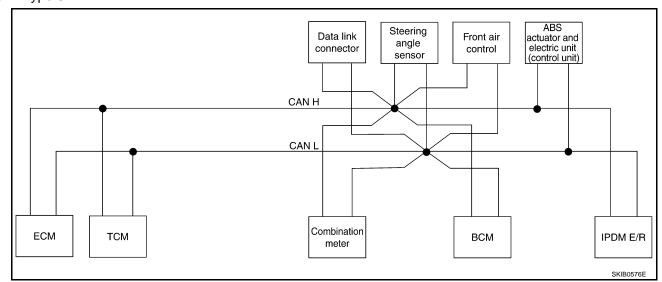
									[CAN]
Signals	ECM	тсм	Driver seat control unit	Combi- nation meter	Display control unit	всм	Front air con- trol	ABS actua- tor and electric unit (control unit)	IPDM E/R
Fuel level sensor signal	R			Т					
Fuel level low warning signal				Т	R				
ASCD SET lamp signal	Т			R					
ASCD CRUISE lamp signal	Т			R					
Malfunction indicator lamp signal	Т			R					
Front wiper request signal						Т			R
Front wiper stop position signal						R			Т
Theft warning horn request signal						Т			R
Horn chirp signal						Т			R
ABS warning lamp signal				R				Т	
Brake warning lamp signal				R				Т	
SLIP indicator lamp signal				R				Т	
System setting signal			R T		T R				
Distance to empty signal			•	Т	R				
ASCD operation signal	Т	R		-					
ASCD OD cancel request	Т	R							
A/T CHECK indicator lamp signal		Т		R					
A/T position indicator lamp signal		Т		R					
Tire pressure signal				R		Т			
Tire pressure data signal					R	Т			
1st position switch signal*1		R		Т					
4th position switch signal*1		R		Т					
Manual mode switch signal*2		R		Т					
Not manual mode switch signal <sup>*2</sup>		R		Т					
Manual mode shift up signal*2		R		Т					
Manual mode shift down signal*2		R		Т					
Tow mode switch signal		R		Т					
A/T fluid temperature sensor signal		Т		R					
Seat belt buckle switch signal				Т		R			

<sup>\*1:</sup> Floor shift model only.

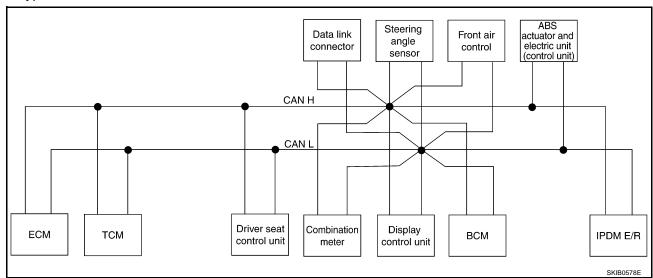
<sup>\*2:</sup> Column shift model only.

# TYPE 5/TYPE 6 System diagram

### • Type 5



### Type 6



## Input/output signal chart

T: Transmit R: Receive

Signals	ECM	ТСМ	Driver seat con- trol unit	Com- bina- tion meter	Dis- play con- trol unit	ВСМ	Steer- ing angle sensor	Front air control	ABS actuator and electric unit (control unit)	IPDM E/R
Engine speed signal	Т	R		R	R			R	R	
Engine status signal	Т					R		R		
Engine coolant temperature signal	Т			R				R		
A/T self-diagnosis signal	R	Т								
Accelerator pedal position signal	Т	R							R	
Closed throttle position signal	Т	R								
Wide open throttle position signal	Т	R								

# **CAN COMMUNICATION**

[CAN]

Signals	ECM	ТСМ	Driver seat con- trol unit	Com- bina- tion meter	Dis- play con- trol unit	ВСМ	Steer- ing angle sensor	Front air control	ABS actuator and electric unit (control unit)	IPDM E/R
Battery voltage signal	Т	R								
Key switch signal			R			Т				
Ignition switch signal			R			Т				R
P range signal		Т	R						R	
Stop lamp switch signal		R		Т						
Fuel consumption monitor signal	Т			R T	R					
Turbine revolution signal	R	Т								
Output shaft revolution signal	R	Т								
A/C switch signal	R					Т				
A/C compressor request signal	Т									R
Blower fan motor switch signal	R					Т		R		
-					Т			R		
A/C switch/indicator signal					R			Т		
Cooling fan speed request signal	Т							R		R
Position light request signal				R		Т				R
Low beam request signal						Т				R
Low beam status signal	R									Т
High beam request signal				R		Т				R
High beam status signal	R									T
Front fog light request signal						Т				R
Day time running light request signal						Т				R
Rear window defogger request signall						Т		R		R
Rear window defogger status signal						R				Т
Valida and district				R				R	Т	
Vehicle speed signal	R	R	R	Т	R	R		R		
Sleep wake up signal			R	R		Т				R
Door switch signal			R	R	R	Т				R
Turn indicator signal				R		Т				
Key fob ID signal			R			Т				
Key fob door unlock signal			R			Т				
Buzzer output signal				R		Т				
Fuel level sensor signal	R			Т						
Fuel level low warning signal				Т	R					
ASCD SET lamp signal	Т			R						
ASCD CRUISE lamp signal	Т			R						
Malfunction indicator lamp signal	Т			R						
Front wiper request signal						Т				R
Front wiper stop position signal						R				Т
Theft warning horn request signal						Т				R

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Signals	ECM	тсм	Driver seat con- trol unit	Com- bina- tion meter	Dis- play con- trol unit	всм	Steer- ing angle sensor	Front air control	ABS actuator and electric unit (control unit)	IPDM E/R
Horn chirp signal						Т				R
Steering angle sensor signal							Т		R	
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	
System setting signal			R		Т					
System setting signal			Т		R					
Distance to empty signal				Т	R					
ASCD operation signal	Т	R								
ASCD OD cancel request	Т	R								
A/T CHECK indicator lamp signal		Т		R						
A/T position indicator lamp signal		Т		R						
Tire pressure signal				R		Т				
Tire pressure data signal					R	Т				
1st position switch signal*1		R		Т						_
4th position switch signal*1		R		Т						
Manual mode switch signal*2		R		Т						
Not manual mode switch signal*2		R		Т						
Manual mode shift up signal*2		R		Т						
Manual mode shift down signal*2		R		Т						
Tow mode switch signal		R		Т						
A/T fluid temperature sensor signal		Т		R						
Seat belt buckle switch signal				Т		R				

<sup>\*1:</sup> Floor shift model only.

<sup>\*2:</sup> Column shift model only.

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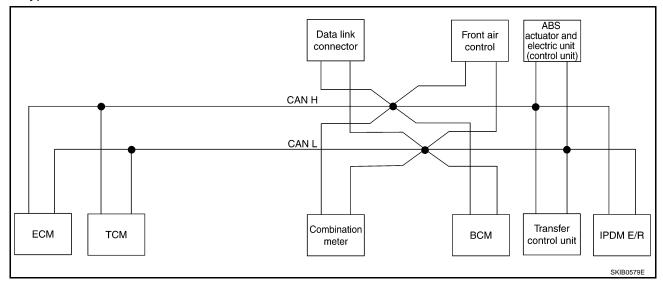
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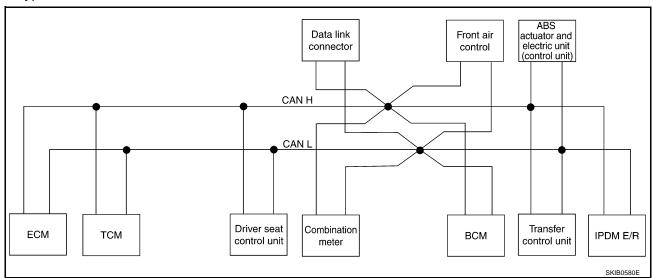
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# TYPE 7/TYPE 8/TYPE 9/TYPE 10/TYPE 11/TYPE 12 System diagram

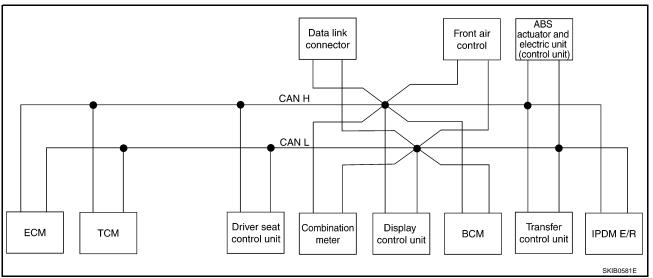
Type 7



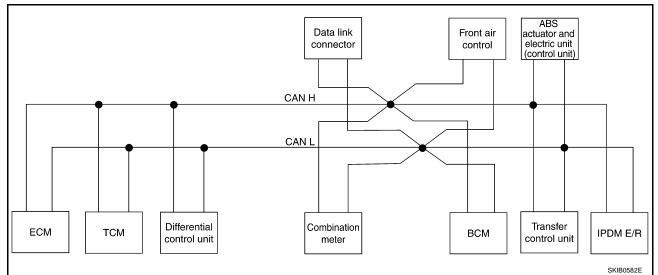
Type 8



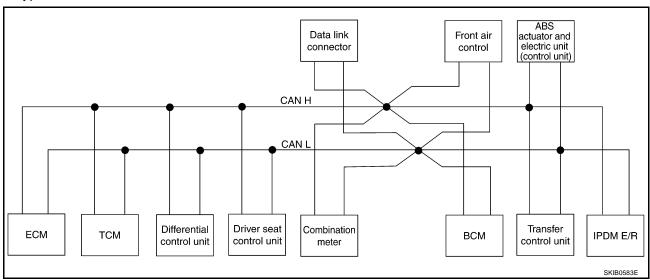
Type 9



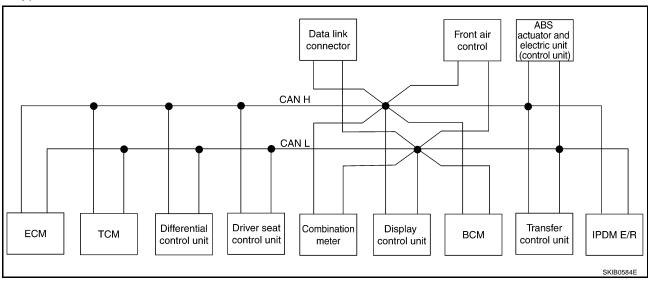




### Type 11



### Type 12



## **CAN COMMUNICATION**

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T: Transmit R: Receive

Input/output	signal	chart
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									i: irar	ismit R:	Receive
Signals	ECM	ТСМ	Differ- ential lock con- trol unit	Driver seat con- trol unit	Com- bina- tion meter	Dis- play con- trol unit	всм	Front air con- trol	Trans- fer con- trol unit	ABS actuator and electric unit (control unit)	IPDM E/R
A/T self-diagnosis signal	R	Т								,	
Stop lamp switch signal		R			Т				R	Т	
Battery voltage signal	T	R							IX.	1	
Key switch signal				R			Т				
Ignition switch signal				R			Т				R
P range signal		Ţ		R						R	
Closed throttle position signal	Т	R									
Wide open throttle position signal	Ţ	R									
Engine speed signal	Т	R			R	R		R	R	R	
Engine status signal	Ţ						R	R			
Engine coolant temperature signal	Т				R			R			
Accelerator pedal position signal	Т	R								R	
Fuel consumption monitor signal	Т				R T	R					
Turbine revolution signal	R	Т			•						
Output shaft revolution signal	R	Т									
A/C switch signal	R						Т				
A/C compressor request signal	T						·				R
Blower fan motor switch signal	R						Т	R			
A/C switch/indicator signal						T R		R T			
Cooling fan speed request signal	Т							R			R
Position light request signal					R		Т				R
Low beam request signal							Т				R
Low beam status signal	R										Т
High beam request signal					R		Т				R
High beam status signal	R										T
Front fog light request signal							Т				R
Day time running light request signal							Т				R
Rear window defogger request signal							Т	R			R
Rear window defogger status signal							R				Т
Vehicle speed signal	R	R	R	R	R T	D	R	R R	R	Т	
Sleep wake up signal	ĸ	K			R	R	T	ĸ			R
Door switch signal				R R	R	R	T				R
Key fob ID signal				R	11	11	T				

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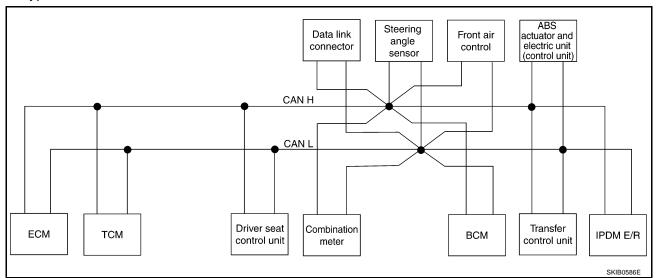
										L	CAN
Signals	ECM	тсм	Differ- ential lock con- trol unit	Driver seat con- trol unit	Com- bina- tion meter	Dis- play con- trol unit	всм	Front air con- trol	Trans- fer con- trol unit	ABS actuator and electric unit (control unit)	IPDM E/R
Key fob door unlock signal				R			Т				
Buzzer output signal					R		Т				
Fuel level sensor signal	R				Т						
ASCD SET lamp signal	Т				R						
ASCD CRUISE lamp signal	Т				R						
Malfunction indicator lamp signal	Т				R						
Fuel level low warning signal					Т	R					
Front wiper request signal							Т				R
Front wiper stop position signal							R				Т
Theft warning horn request signal							Т				R
Horn chirp signal							Т				R
ABS warning lamp signal					R					Т	
SLIP indicator lamp signal					R					T	
Brake warning lamp signal					R					Т	
System setting signal				R T		T R					
Distance to empty signal					Т	R					
ASCD operation signal	Т	R									
ASCD OD cancel request	Т	R									
A/T CHECK indicator lamp signal		Т			R						
A/T position indicator lamp signal		Т			R				R		
Tire pressure signal					R		Т				
Tire pressure data signal						R	Т				
1st position switch signal*1		R			Т						
4th position switch signal*1		R			Т						
Manual mode switch signal*2		R			Т						
Not manual mode switch signal <sup>*2</sup>		R			Т						
Manual mode shift up signal*2		R			Т						
Manual mode shift down signal*2		R			Т						
Tow mode switch signal		R			Т						
A/T fluid temperature sensor signal		Т			R						
4WD shift switch signal	R		R						Т		
Seat belt buckle switch signal					Т		R				
Differential lock switch signal			Т							R	
Differential lock indicator signal			Т							R	

<sup>\*1:</sup> Floor shift model only.

<sup>\*2:</sup> Column shift model only.

TYPE 13 System diagram

Type 13



## Input/output signal chart

T: Transmit R: Receive

								I: Ira	ansmit R	: Receive
Signals	ECM	ТСМ	Driver seat con- trol unit	Com- bina- tion meter	ВСМ	Steer- ing angle sensor	Front air control	Trans- fer con- trol unit	ABS actuator and electric unit (control unit)	IPDM E/R
A/T self-diagnosis signal	R	Т								
Stop lamp switch signal		R		Т						
								R	Т	
Battery voltage signal	Т	R								
Key switch signal			R		Т					
Ignition switch signal			R		Т					R
P range signal		Т	R						R	
Closed throttle position signal	Т	R								
Wide open throttle position signal	Т	R								
Engine speed signal	Т	R		R			R	R	R	
Engine status signal	Т				R		R			
Engine coolant temperature signal	Т			R			R			
Accelerator pedal position signal	Т	R							R	
Fuel consumption monitor signal	Т			R						
Turbine revolution signal	R	Т								
Output shaft revolution signal	R	Т								
A/C switch signal	R				Т		R			
A/C compressor request signal	Т									R
Blower fan motor switch signal	R				Т		R			
Cooling fan speed request signal	Т						R			R
Position light request signal				R	Т					R

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										[CAN
Signals	ECM	ТСМ	Driver seat con- trol unit	Com- bina- tion meter	всм	Steer- ing angle sensor	Front air control	Trans- fer con- trol unit	ABS actuator and electric unit (control unit)	IPDM E/R
Low beam request signal					T					R
Low beam status signal	R									Т
High beam request signal				R	Т					R
High beam status signal	R									Т
Front fog light request signal					T					R
Day time running light request signal					Т					R
Rear window defogger request signal					Т		R			R
Rear window defogger status signal					R					Т
Vahiala apand signal				R			R	R	Т	
Vehicle speed signal	R	R	R	Т	R		R			
Sleep wake up signal			R	R	Т					R
Door switch signal			R	R	Т					R
Key fob ID signal			R		Т					
Key fob door unlock signal			R		Т					
Buzzer output signal				R	Т					
Fuel level sensor signal	R			Т						
ASCD SET lamp signal	Т			R						
ASCD CRUISE lamp signal	Т			R						
Malfunction indicator lamp signal	Т			R						
Fuel level low warning signal				Т						
Front wiper request signal					Т					R
Front wiper stop position signal					R					Т
Theft warning horn request signal					Т					R
Horn chirp signal					Т					R
Steering angle sensor signal						Т			R	
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	
ASCD operation signal	Т	R								
ASCD OD cancel request	Т	R								
A/T CHECK indicator lamp signal		Т		R						
A/T position indicator lamp signal		Т		R				R		
Tire pressure signal				R	Т					
1st position switch signal*1		R		Т						
4th position switch signal <sup>*1</sup>		R		T						
<del>-</del>										
Manual mode switch signal*2		R		Т						
Not manual mode switch signal*2		R		Т						

## **CAN COMMUNICATION**

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Signals	ECM	TCM	Driver seat con- trol unit	Com- bina- tion meter	всм	Steer- ing angle sensor	Front air control	Trans- fer con- trol unit	ABS actuator and electric unit (control unit)	IPDM E/R
Manual mode shift up signal*2		R		Т						
Manual mode shift down signal*2		R		Т						
Tow mode switch signal		R		Т						
A/T fluid temperature sensor signal		Т		R						
4WD shift switch signal	R							Т		
Seat belt buckle switch signal				Т	R					

<sup>\*1:</sup> Floor shift model only.

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<sup>\*2:</sup> Column shift model only.

### [CAN]

## **CAN SYSTEM (TYPE 1)**

PFP:23710

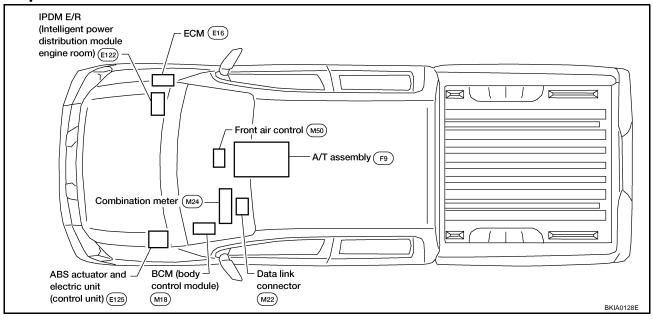
## **System Description**

UKS001AK

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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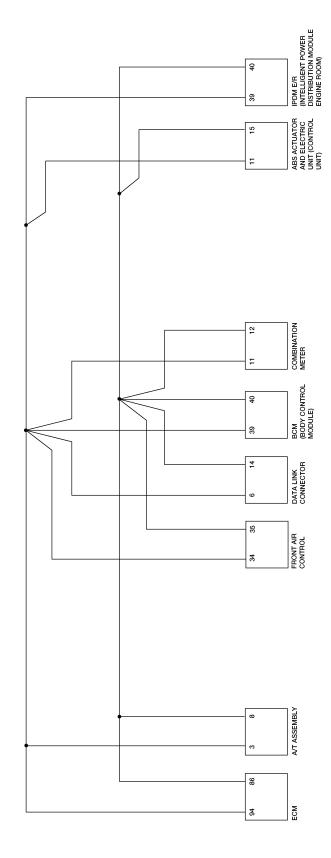
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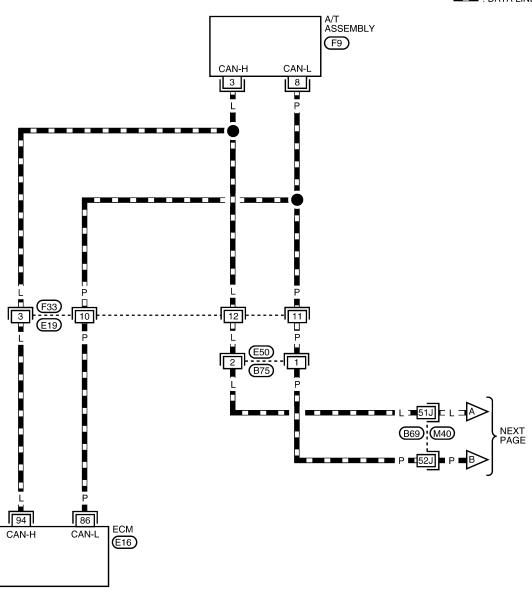
BKWA0130E

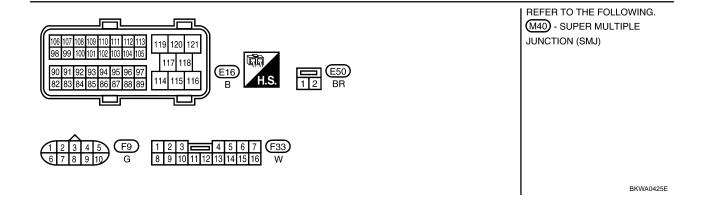
Wiring Diagram - CAN -

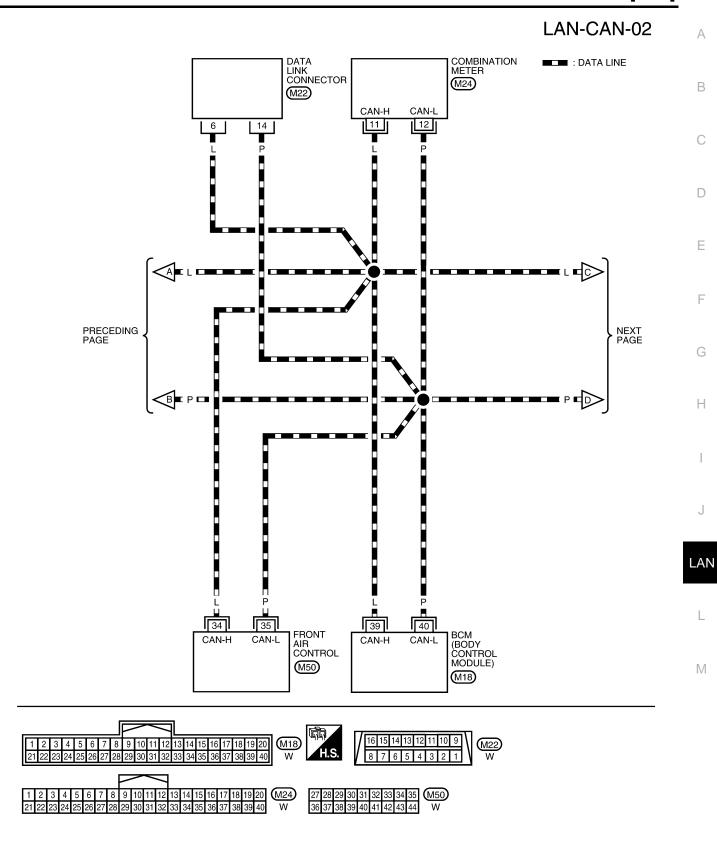
LIKS001AN

## LAN-CAN-01

■■ : DATA LINE



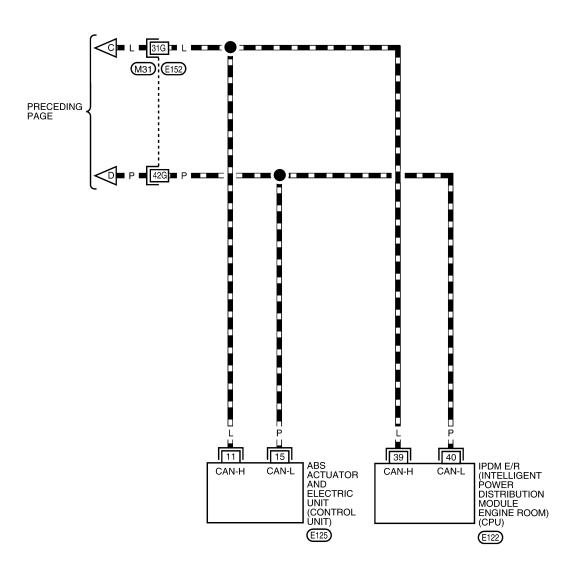


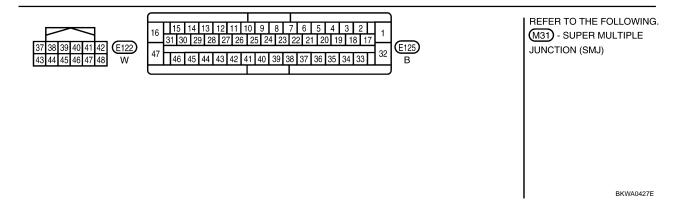


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## LAN-CAN-03

■■■: DATA LINE

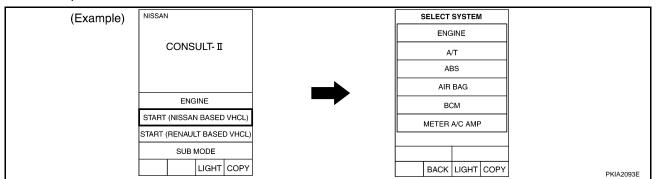




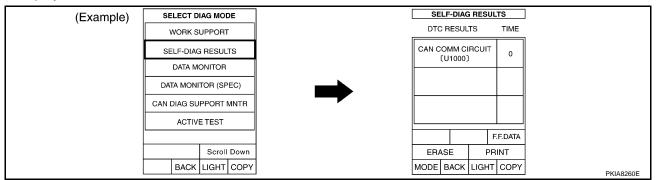
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Work Flow

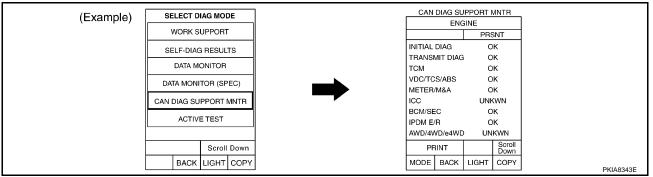
1. When there are no indications of "BCM", "HVAC" or "IPDM E/R" on "SELECT SYSTEM" display of CON-SULT-II, print the "SELECT SYSTEM".



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



3. Print all the data of "CAN DIAG SUPPORT MNTR" for "ENGINE", "A/T", "BCM", "HVAC", "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 LAN-30, "CHECK SHEET".
- Based on the indications of "SELECT SYSTEM" and the results of "CAN DIAG SUPPORT MNTR", puts a check mark onto the items with "No indication", "NG", or "UNKWN" in the check sheet table. Refer to <u>LAN-30</u>, "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.
- According to the check sheet results (example), start inspection. Refer to <u>LAN-32</u>, "CHECK SHEET <u>RESULTS (EXAMPLE)"</u>.

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## **CHECK SHEET**

### NOTE:

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

				CAN DI	IAG SUPPOR	T MNTR			
SELECT SY	/STEM screen	Initial	Transmit		R	eceive diagno	sis		
OLLLOT O	TOTEM OUTCOM	diagnosis	diagnosis	ECM	тсм	METER /M&A	BCM/SEC	VDC/TCS/ ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	-	_	UNKWN	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	_	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_
Symptoms :									
Symptoms :									
Symptoms :									
Symptoms :									
Symptoms :									
Symptoms :									
Symptoms :		Att SELI	tach copy of ECT SYSTEM		S	Attach copy o	f EM		

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Attach copy of ENGINE SELF-DIAG RESULTS	Attach copy of A/T SELF-DIAG RESULTS	Attach copy of BCM SELF-DIAG RESULTS
Attach copy of HVAC SELF-DIAG RESULTS	Attach copy of ABS SELF-DIAG RESULTS	Attach copy of IPDM E/R SELF-DIAG RESULTS
Attach copy of ENGINE CAN DIAG SUPPORT MNTR	Attach copy of A/T CAN DIAG SUPPORT MNTR	Attach copy of BCM CAN DIAG SUPPORT MNTR
Attach copy of HVAC CAN DIAG SUPPORT MNTR	Attach copy of ABS CAN DIAG SUPPORT MNTR	Attach copy of IPDM E/R CAN DIAG SUPPORT MNTR
	Attach copy of HVAC SELF-DIAG RESULTS  Attach copy of ENGINE CAN DIAG SUPPORT MNTR  Attach copy of HVAC CAN DIAG SUPPORT HVAC CAN DIAG SUPPORT	Attach copy of HVAC CAN DIAG SUPPORT  Attach copy of Attach copy of ATT CAN DIAG SUPPORT  Attach copy of ANT CAN DIAG SUPPORT  ACAN DIAG SUPPORT  ATTACH COPY OF ANT CAN DIAG SUPPORT

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

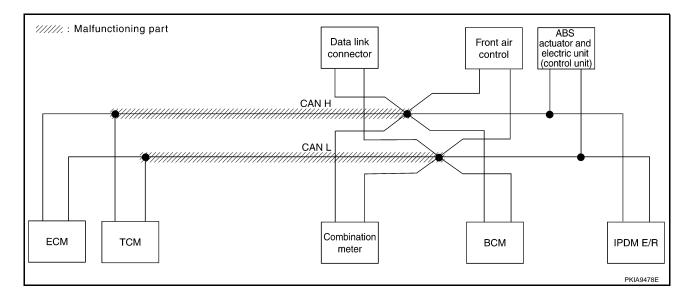
### NOTE:

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

### Case 1

Check harness between TCM and data link connector. Refer to <u>LAN-43</u>, "Circuit Check Between TCM and <u>Data Link Connector"</u>.

				CAN DI	AG SUPPOR	T MNTR						
SELECT SY	STEM screen	Initial	Transmit	Receive diagnosis								
02220101	312W 3313311	diagnosis	diagnosis	diagnosis	diagnosis	diagnosis	ECM	ТСМ	METER /M&A	BCM/SEC	VDC/TCS/ ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNK WN			
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	-	-	_			
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN			
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_			
ABS	_	NG	UNKWN	UNKWN	-	-	-	_	_			
IPDM E/R	No indication	_	UNKWN	UNKWN	-	_	UNKWN	_	_			



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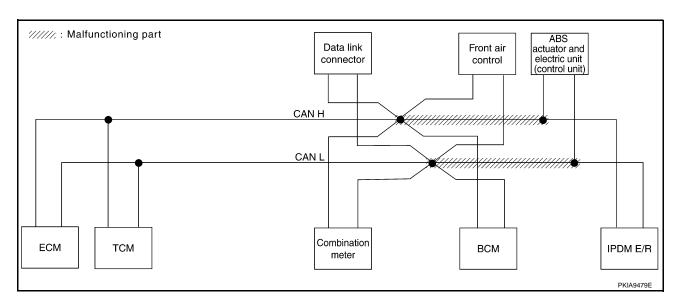
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Case 2

Check harness between data link connector and IPDM E/R. Refer to <u>LAN-44</u>, "Circuit Check Between <u>Data Link Connector and IPDM E/R"</u>.

			ı	CAN DI	AG SUPPOR					
SELECT SY	/STEM screen	Initial	Transmit	nemit		Receive diagnosis				
		diagnosis	diagnosis	ECM	TCM	METER /M&A	BCM/SEC	VDC/TCS/ ABS	IPDM E/R	
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN	
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN	
HVAC	No indication	_	UNKWN	UNKWN	-	_	UNKWN	UNKWN	_	
ABS	_	NG	UNKWN	UNKWN	-	-	_	-	_	
IPDM E/R	No indication	_	UNKWN	UNKWN	-	_	UNKWN	_	_	

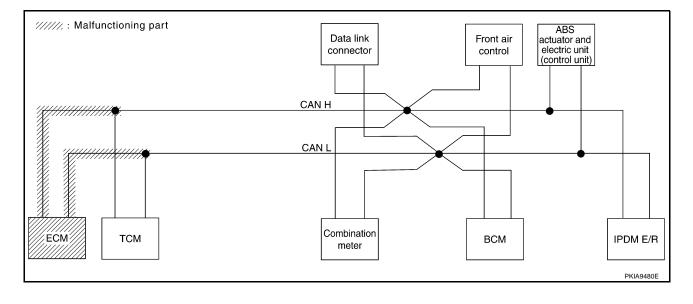


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Case 3
Check ECM circuit. Refer to <u>LAN-45</u>, "ECM Circuit Check".

			CAN DIAG SUPPORT MNTR							
SELECT SY	STEM screen	Initial	Transmit	Receive di		eceive diagno	diagnosis			
02220101	012W 00100H	diagnosis	diagnosis	ECM	ТСМ	METER /M&A	BCM/SEC	VDC/TCS/ ABS	IPDM E/R	
ENGINE	_	NG	UNK WN	_	UNKWN	UNKWN	UNKWN	_	UNKWN	
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	-	_	
ВСМ	No indication	NG	UNKWN	UNIOWN	_	UNKWN	_	_	UNKWN	
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_	
ABS	_	NG	UNKWN	UNKWN	_	_	_	-	_	
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	



# **CAN SYSTEM (TYPE 1)**

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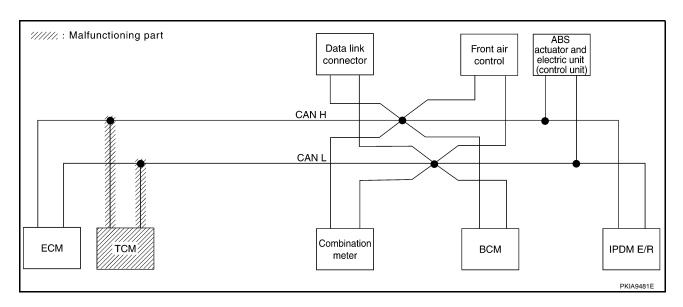
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Case 4
Check TCM circuit. Refer to <u>LAN-46</u>, "TCM Circuit Check".

				CAN DI	AG SUPPOR	T MNTR			
SELECT SY	STEM screen	Initial	Transmit		Re	eceive diagno	sis		
02220101	diagnosis	diagnosis diagnos		ECM	ТСМ	METER /M&A	BCM/SEC	VDC/TCS/ ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	_
всм	No indication	NG	UNKWN	UNKWN	ı	UNKWN	_	-	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	1	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_



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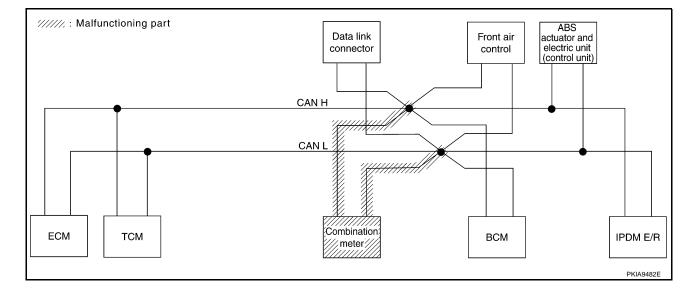
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Case 5
Check combination meter circuit. Refer to <u>LAN-46</u>, "Combination Meter Circuit Check" .

		CAN DIAG SUPPORT MNTR							
SELECT SYSTEM screen		Initial diagnosis	Transmit diagnosis	Receive diagnosis					
				ECM	ТСМ	METER /M&A	BCM/SEC	VDC/TCS/ ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	-	-	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	_	-	-	-	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_

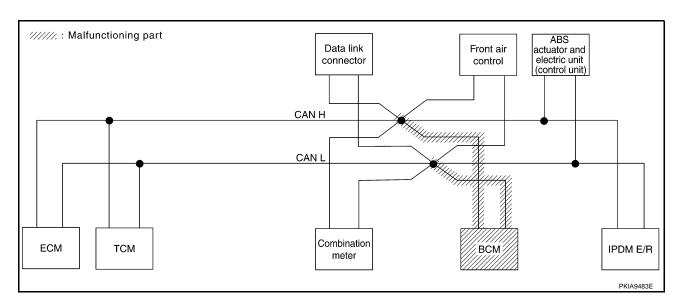


# **CAN SYSTEM (TYPE 1)**

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Case 6
Check BCM circuit. Refer to <u>LAN-47</u>, "BCM Circuit Check" .

				CAN DI	AG SUPPOR	T MNTR			
SELECT SY	STEM screen	Initial	Transmit		Re	eceive diagnos	sis		
02220101	CTEM COLOGIA	diagnosis	diagnosis	ECM	ТСМ	METER /M&A	BCM/SEC	VDC/TCS/ ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	_
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	_	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_



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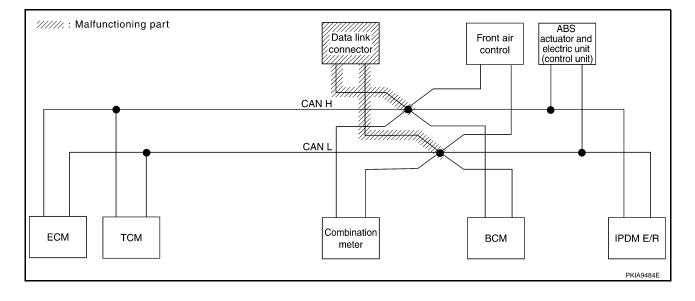
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Case 7
Check data link connector circuit. Refer to <u>LAN-47</u>, "<u>Data Link Connector Circuit Check</u>" .

				CAN D	AG SUPPOR	T MNTR			
SELECT SY	STEM screen	Initial	Transmit		R	eceive diagno:	sis		
02220101	012m 0010011	diagnosis	diagnosis	ECM	ТСМ	METER /M&A	BCM/SEC	VDC/TCS/ ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	_
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	_	_	_	-	_
IPDM E/R	No indication	_	UNKWN	UNKWN	-	_	UNKWN	_	_



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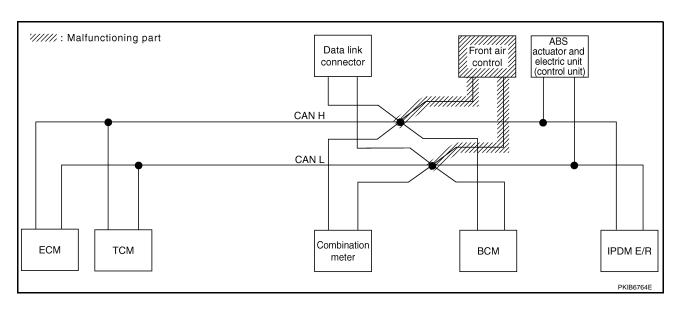
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Case 8

Check front air control circuit. Refer to LAN-48, "Front Air Control Circuit Check" .

				CAN D	AG SUPPOR	T MNTR			
SELECT SY	YSTEM screen	Initial	Transmit		R	eceive diagno:	sis		
OLLLO1 C	TOTEW SOLCEN	diagnosis	diagnosis	ECM	ТСМ	METER /M&A	BCM/SEC	VDC/TCS/ ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	-	-	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	-	-	-	-	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_

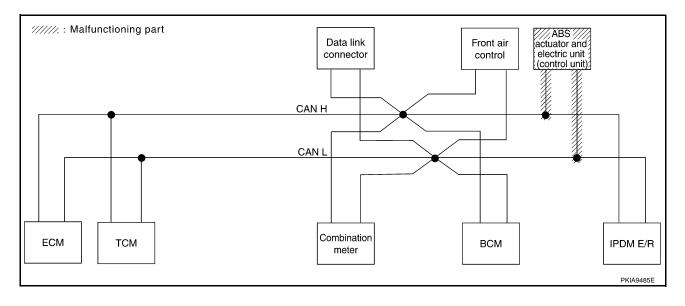


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Case 9

Check ABS actuator and electric unit (control unit) circuit. Refer to <u>LAN-48</u>, "ABS Actuator and Electric Unit (Control Unit) Circuit Check".

				CAN DI	AG SUPPOR	T MNTR			
SELECT SY	STEM screen	Initial	Transmit		R	eceive diagnos	sis		
00		diagnosis	diagnosis	ECM	ТСМ	METER /M&A	BCM/SEC	VDC/TCS/ ABS	IPDM E/R
ENGINE	-	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_
ABS	_	W	UNKWN	UNKWN	_	-	-	-	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_



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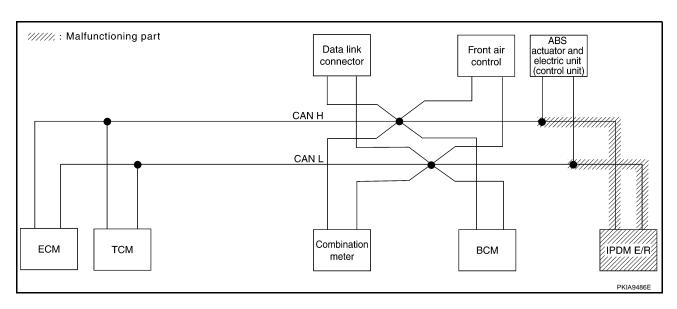
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Case 10

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

				CAN D	AG SUPPOR	T MNTR			
SELECT SY	YSTEM screen	Initial	Transmit		R	eceive diagno:	sis		
32223131	1012111 0010011	diagnosis	diagnosis	ECM	ТСМ	METER /M&A	BCM/SEC	VDC/TCS/ ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNK WN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	-	-	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	_	-	-	-	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_



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Case 11

Check CAN communication circuit. Refer to <a href="LAN-50">LAN-50</a>, "CAN Communication Circuit Check"</a>.

				CAN DI	AG SUPPOR	T MNTR			
SELECT SY	STEM screen	Initial	Transmit		R	eceive diagnos	sis		
OLLEO1 O1	CTEN SOICCIT	diagnosis	diagnosis	ECM	ТСМ	METER /M&A	BCM/SEC	VDC/TCS/ ABS	IPDM E/R
ENGINE	_	NG	UNKWN	-	UNKWN	UNKWN	UNWWN	_	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_
ABS	_	N.	UNKWN	UNKWN	_	_	-	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_

### Case 12

Check IPDM E/R ignition relay circuit continuously sticks "OFF". Refer to <u>LAN-50, "IPDM E/R Ignition Relay Circuit Check"</u>.

				CAN DI	AG SUPPOR	T MNTR			
SELECT SYS	STEM screen	Initial	Transmit		R	eceive diagno:	sis		
322231313	31 E.W. 3313311	diagnosis	diagnosis	ECM	ТСМ	METER /M&A	BCM/SEC	VDC/TCS/ ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN
A/T	_	NG	UNKWN	UNKWN	-	UNKWN	_	_	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_
ABS	_	NG	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 "ON". Refer to LAN-50, "IPDM E/R Ignition Relay Circuit Check".

				CAN DI	IAG SUPPOR	T MNTR			
SELECT SY	STEM screen	Initial	Transmit		R	eceive diagnos	sis		
00	0 1 <u>1</u> 111 0 0 1 0 0 1 1	diagnosis	diagnosis	ECM	ТСМ	METER /M&A	BCM/SEC	VDC/TCS/ ABS	IPDM E/R
ENGINE	_	NG	UNKWN	-	UNKWN	UNKWN	UNKWN	-	UNKWN
A/T	_	NG	UNKWN	UNKWN	-	UNKWN	-	=	_
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	-	-	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	_	_	-	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	-	_

### Circuit Check Between TCM and Data Link Connector

# 1. CHECK CONNECTOR

Turn ignition switch OFF.

- 2. Disconnect the negative battery terminal.
- Check following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector F33
- Harness connector E19
- Harness connector E34
- Harness connector B40
- Harness connector B69
- Harness connector M40

### 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 F33.
- Check continuity between A/T assembly harness connector F9 terminals 3 (L), 8 (P) and harness connector F33 terminals 12 (L), 11 (P).

3 (L) - 12 (L)

: Continuity should exist.

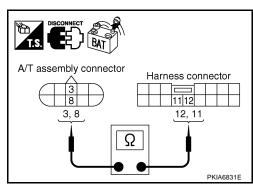
8 (P) - 11 (P)

: Continuity should exist.

#### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



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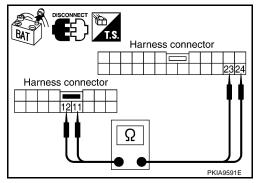
# 3. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect harness connector E34.
- Check continuity between harness connector E19 terminals 12 (L), 11 (P) and harness connector E34 terminals 24 (L), 23 (P).

12 (L) - 24 (L) 11 (P) - 23 (P) : Continuity should exist.: Continuity should exist.

OK or NG

OK >> GO TO 4. NG >> Repair harness.



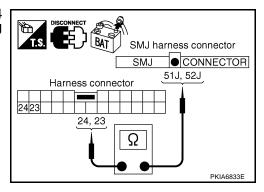
## 4. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect harness connector B69.
- Check continuity between harness connector B40 terminals 24 (L), 23 (P) and harness connector B69 terminals 51J (L), 52J (P).

24 (L) - 51J (L) 23 (P) - 52J (P) : Continuity should exist.: Continuity should exist.

OK or NG

OK >> GO TO 5. NG >> Repair harness.



## 5. CHECK HARNESS FOR OPEN CIRCUIT

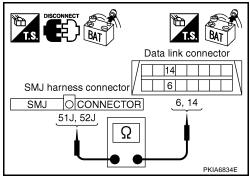
Check continuity between harness connector M40 terminals 51J (L), 52J (P) and data link connector M22 terminals 6 (L), 14 (P).

51J (L) - 6 (L) 52J (P) - 14 (P) : Continuity should exist. : Continuity should exist.

OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-29, "Work Flow"</u>.

NG >> Repair harness.



## Circuit Check Between Data Link Connector and IPDM E/R

UKS001AQ

# 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector M31
- Harness connector E152

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

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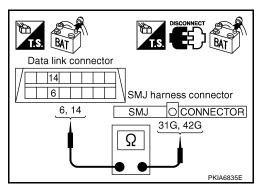
# 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect harness connector M31.
- Check continuity between data link connector M22 terminals 6
  (L), 14 (P) and harness connector M31 terminals 31G (L), 42G
  (P).

6 (L) - 31G (L) : Continuity should exist. 14 (P) - 42G (P) : Continuity should exist.

### OK or NG

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



# 3. CHECK HARNESS FOR OPEN CIRCUIT

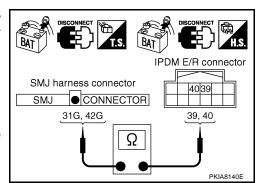
- 1. Disconnect IPDM E/R connector.
- Check continuity between harness connector E152 terminals 31G (L), 42G (P) and IPDM E/R harness connector E122 terminals 19 (L), 40 (P).

31G (L) - 39 (L) : Continuity should exist. 42G (P) - 40 (P) : Continuity should exist.

### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to LAN-29, "Work Flow".

NG >> Repair harness.



UKS001AR

### **ECM Circuit Check**

### 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (control module side and harness side).
- ECM connector
- Harness connector E19
- Harness connector F33

### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

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# 2. CHECK HARNESS FOR OPEN CIRCUIT

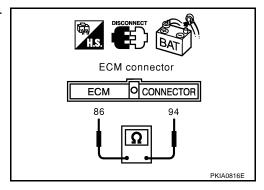
- 1. Disconnect ECM connector.
- Check resistance between ECM harness connector E16 terminals 94 (L) and 86 (P).

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

#### OK or NG

OK >> Replace ECM.

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



UKS001AS

### **TCM Circuit Check**

### CHECK CONNECTOR

- Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 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.
- Check resistance between A/T assembly harness connector F9 terminals 3 (L) and 8 (P).

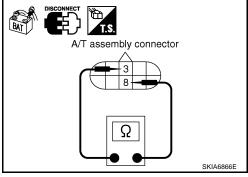
**3 (L) - 8 (P)** : Approx. 54 - 66 
$$\Omega$$

#### OK or NG

NG

OK >> Replace A/T assembly.

> >> Repair harness between A/T assembly and harness connector F33.



### **Combination Meter Circuit Check**

### 1. CHECK CONNECTOR

- Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- Check terminals and connector of combination meter for damage, bend and loose connection (meter side and harness side).

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector. UKS001AT

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# 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect combination meter connector.
- 2. Check resistance between combination meter harness connector M24 terminals 11 (L) and 12 (P).

: Approx. 54 - 66  $\Omega$ 

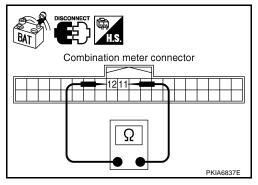
#### OK or NG

OK

>> Replace combination meter.

NG

>> Repair harness between combination meter and data link connector.



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**BCM Circuit Check** 

### 1. CHECK CONNECTOR

1. Turn ignition switch OFF.

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

OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect BCM connector.
- 2. Check resistance between BCM harness connector M18 terminals 39 (L) and 40 (P).

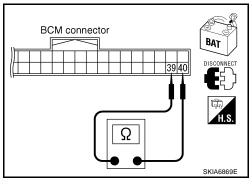
: Approx. 54 - 66  $\Omega$ 

#### OK or NG

OK >

>> Replace BCM. Refer to <u>BCS-20, "Removal and Installation of BCM"</u> .

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



UKS001AV

### **Data Link Connector Circuit Check**

### 1. CHECK CONNECTOR

- Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- Check the 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 M22 terminals 6 (L) and 14 (P).

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

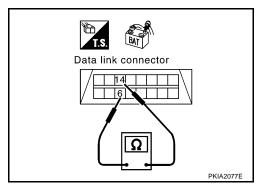
### OK or NG

OK

>> Diagnose again. Refer to LAN-29, "Work Flow".

NG

>> Repair harness between data link connector and combination meter.



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### Front Air Control Circuit Check

### 1. CHECK CONNECTOR

Turn ignition switch OFF. 1.

- 2. Disconnect the negative battery terminal.
- Check terminals and connector of front air control for damage, bend and loose connection (unit side and harness side).

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

- Disconnect front air control connector.
- Check resistance between front air control harness connector M50 terminals 34 (L) and 35 (P).

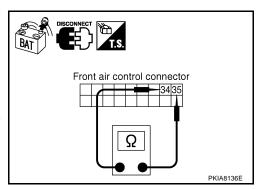
**34 (L) - 35 (P)** : Approx. **54 - 66** 
$$\Omega$$

#### OK or NG

OK >> Replace front air control.

NG

>> Repair harness between front air control and data link connector.



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

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### 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.
- 2. Check resistance between ABS actuator and electric unit (control unit) harness connector E125 terminals 11 (L) and 15 (P).

: Approx. 54 - 66  $\Omega$ 

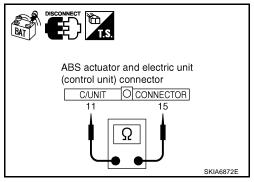
#### OK or NG

OK

>> Replace ABS actuator and electric unit (control unit).

NG

>> Repair harness between ABS actuator and electric unit (control unit) and harness connector E152.



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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

Disconnect IPDM E/R connector.

2. Check resistance between IPDM E/R harness connector E122 terminals 39 (L) and 40 (P).

: Approx. 108 - 132  $\Omega$ 

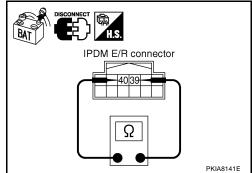
OK or NG

OK >

>> Replace IPDM E/R.

NG

>> Repair harness between IPDM E/R and harness connector E152.



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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.
- Disconnect the following module and control unit connectors and check terminals for deformation, disconnection, looseness or damage.
- ECM
- A/T assembly
- Combination meter
- BCM
- Front air control
- ABS actuator and electric unit (control unit)
- IPDM E/R

#### OK or NG

OK >> GO TO 2.

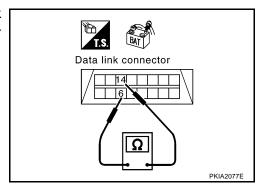
NG >> Repair or replace as necessary.

## 2. CHECK HARNESS FOR SHORT CIRCUIT

With all module and control unit connectors disconnected, check continuity between data link connector M22 terminals 6 (L) and 14 (P).

### OK or NG

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



### 3. CHECK HARNESS FOR SHORT CIRCUIT

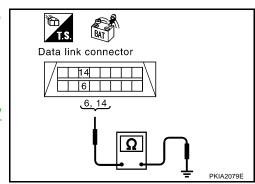
Check continuity between data link connector M22 terminals 6 (L), 14 (P) and ground.

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

### OK or NG

OK >> Check ECM and IPDM E/R. Refer to <u>LAN-51</u>, "ECM/ <u>IPDM E/R INTERNAL CIRCUIT INSPECTION"</u>.

NG >> Repair harness.



# IPDM E/R Ignition Relay Circuit Check

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

- IPDM E/R power supply circuit. Refer to PG-26, "IPDM E/R Power/Ground Circuit Inspection".
- Ignition power supply circuit. Refer to <u>PG-13</u>, "IGNITION POWER SUPPLY IGNITION SW. IN ON AND/OR START".

## **CAN SYSTEM (TYPE 1)**

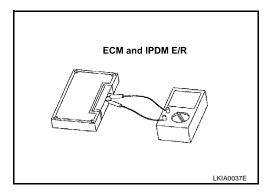
[CAN]

UKS001B1

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 39 and 40.

Unit	Terminal	Resistance value (Ω) (Approx.)
ECM	94 - 86	108 - 132
IPDM E/R	39 - 40	100 - 132



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### [CAN]

# **CAN SYSTEM (TYPE 2)**

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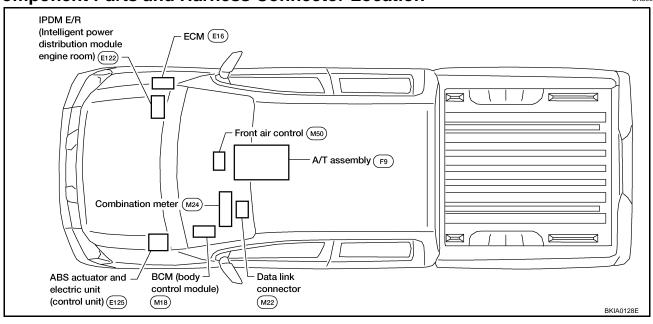
## **System Description**

UKS003AO

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**

UKS003AP



[CAN]

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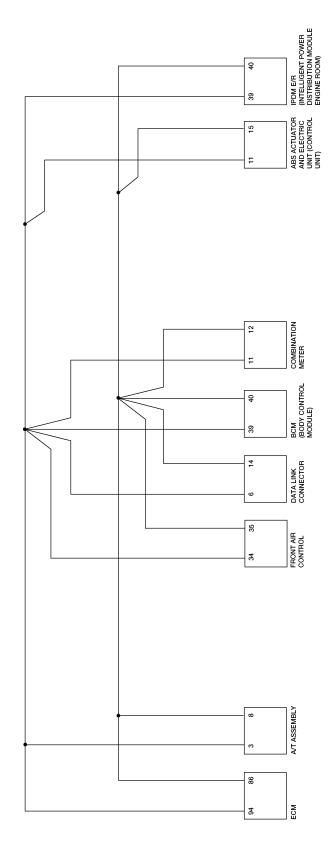
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Schematic UKS003AQ



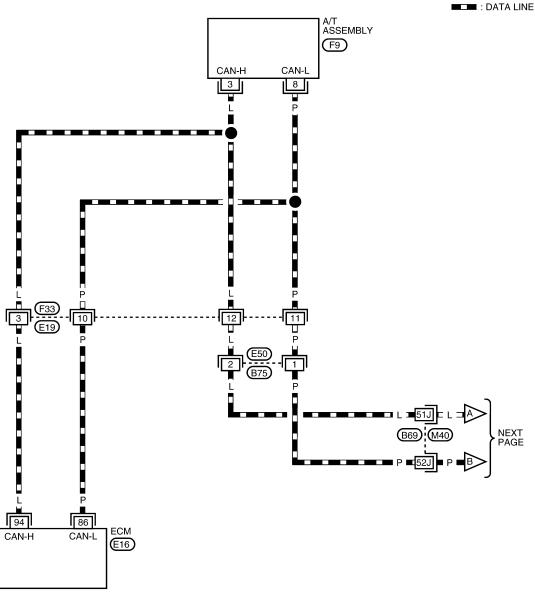
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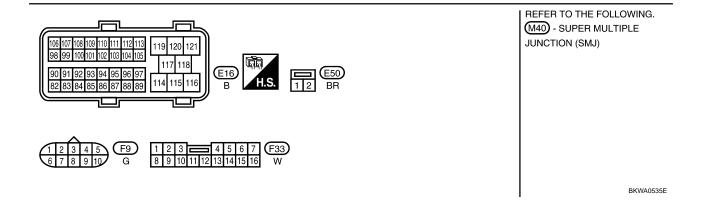
M

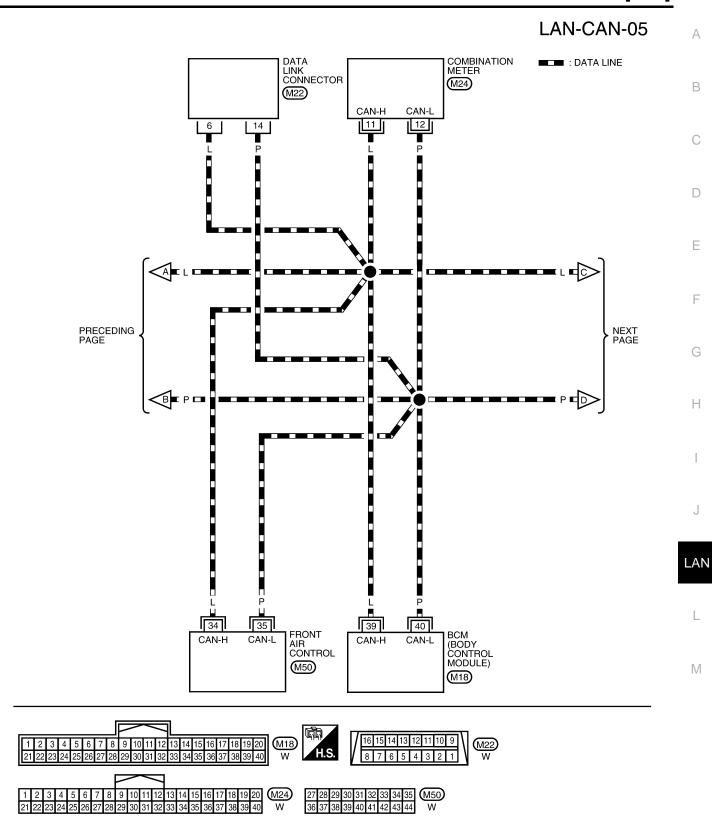
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Wiring Diagram - CAN -

### LAN-CAN-04



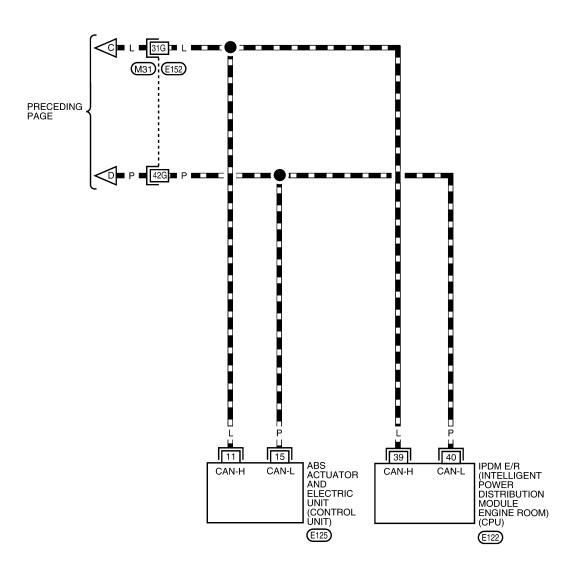


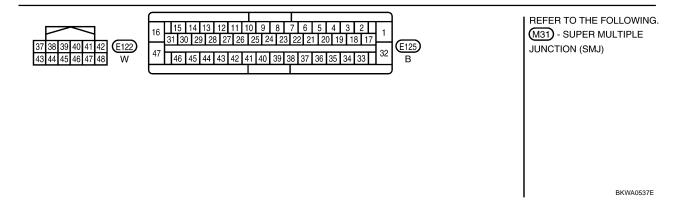


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### LAN-CAN-06

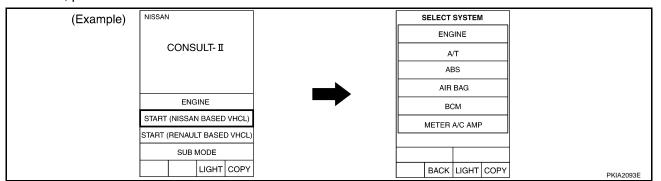
■■■: DATA LINE



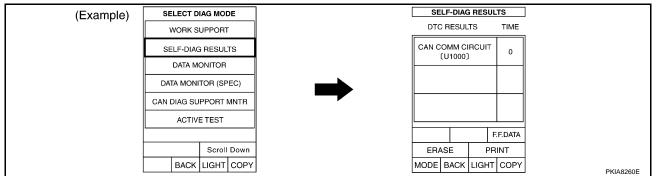


**Work Flow** 

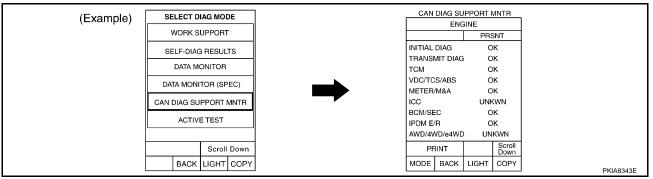
1. When there are no indications of "BCM", "HVAC" or "IPDM E/R" on "SELECT SYSTEM" display of CON-SULT-II, print the "SELECT SYSTEM".



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



Print all the data of "CAN DIAG SUPPORT MNTR" for "ENGINE", "A/T", "BCM", "HVAC", "ABS" and 3. "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 LAN-58, "CHECK SHEET".
- Based on the indications of "SELECT SYSTEM" and the results of "CAN DIAG SUPPORT MNTR", puts a check mark onto the items with "No indication", "NG", or "UNKWN" in the check sheet table. Refer to LAN-58, "CHECK SHEET".

#### NOTE:

Revision: October 2005

- 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.
- According to the check sheet results (example), start inspection. Refer to LAN-60, "CHECK SHEET RESULTS (EXAMPLE)".

**LAN-57** 

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### **CHECK SHEET**

### NOTE:

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

				CA	AN DIAG SU	PPORT MN	TR		
SELECT SYS	STEM screen	Initial	Transmit			Receive	diagnosis		
OLLLO1 O10	TEN SCIECT	diagnosis	diagnosis	ECM	ТСМ	METER /M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	_
BCM	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	-	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	-
	•	•							

Attach copy of SELECT SYSTEM	Attach copy of SELECT SYSTEM	

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Attach copy of ENGINE SELF-DIAG RESULTS	Attach copy of A/T SELF-DIAG RESULTS	Attach copy of BCM SELF-DIAG RESULTS
Attach copy of HVAC SELF-DIAG RESULTS	Attach copy of ABS SELF-DIAG RESULTS	Attach copy of IPDM E/R SELF-DIAG RESULTS
Attach copy of ENGINE CAN DIAG SUPPORT MNTR	Attach copy of A/T CAN DIAG SUPPORT MNTR	Attach copy of BCM CAN DIAG SUPPORT MNTR
Attach copy of HVAC CAN DIAG SUPPORT MNTR	Attach copy of ABS CAN DIAG SUPPORT MNTR	Attach copy of IPDM E/R CAN DIAG SUPPORT MNTR
	Attach copy of HVAC SELF-DIAG RESULTS  Attach copy of ENGINE CAN DIAG SUPPORT MNTR  Attach copy of HVAC CAN DIAG SUPPORT HVAC CAN DIAG SUPPORT	Attach copy of HVAC CAN DIAG SUPPORT  Attach copy of Attach copy of ATT CAN DIAG SUPPORT  Attach copy of ANT CAN DIAG SUPPORT  ACAN DIAG SUPPORT  ATTACH COPY OF ANT CAN DIAG SUPPORT

Revision: October 2005 LAN-59 2005 Titan

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

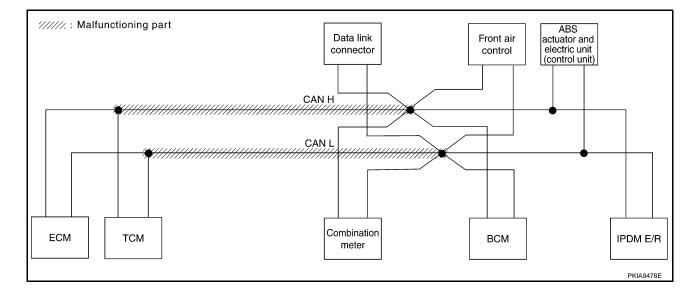
### NOTE:

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

### Case 1

Check harness between TCM and data link connector. Refer to <u>LAN-71</u>, "Circuit Check Between TCM and <u>Data Link Connector"</u>.

				C/	AN DIAG SU	PPORT MN	TR		
SELECT S	YSTEM screen	Initial	Transmit			Receive d	iagnosis		
0222010	TOTEM COLOCIT	diagnosis	diagnosis	ECM	TCM	METER /M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNK <b>W</b> N	UNK WN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNK <b>W</b> N	_	UNKWN	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	-	UNKWN	UNKWN	_	_	UNKWN	_	_



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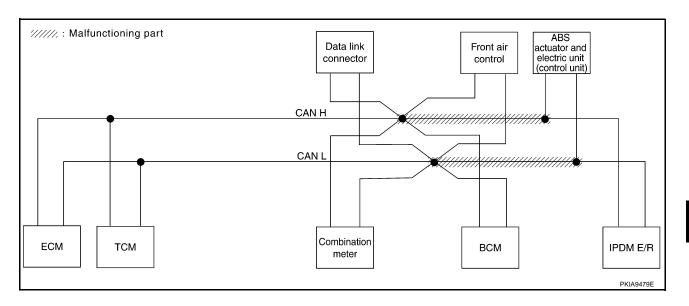
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Case 2

Check harness between data link connector and IPDM E/R. Refer to <u>LAN-72</u>, "Circuit Check Between <u>Data Link Connector and IPDM E/R"</u>.

				C	AN DIAG SU	PPORT MN	TR		
CELECT C	YSTEM screen			- Oi	(IV DI) (G G G		diagnosis		
SELECT S	YSTEM Screen	Initial diagnosis	Transmit diagnosis	ECM	ТСМ	METER /M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNK/WN	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	пикми
HVAC	No indication	_	UNKWN	UNKWN	-	_	UNKWN	UNKWN	_
ABS	_	NG	UNKWN	UNK/WN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_



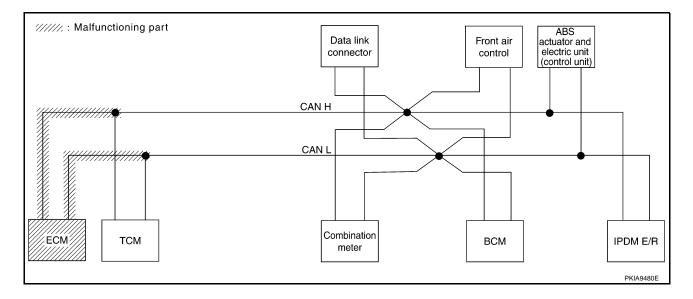
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Case 3
Check ECM circuit. Refer to <u>LAN-73</u>, "ECM Circuit Check" .

					AN DIAG SU	DDODT MNI	TD		
051505.0	NOTEM				IN DIAG 50		diagnosis		
SELECTS	YSTEM screen	Initial diagnosis	Transmit diagnosis	ECM	тсм	METER /M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/F
ENGINE	-	NG	UNKWN	-	UNK WN	UNK <b>W</b> N	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNK/WN	_	UNKWN	_	UNKWN	_
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNK/WN	_	_	UNKWN	_	_

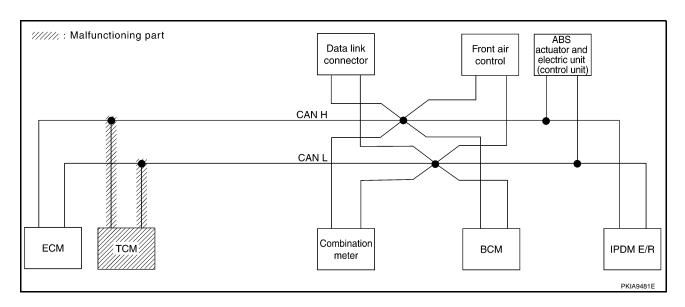


# **CAN SYSTEM (TYPE 2)**

[CAN]

Case 4
Check TCM circuit. Refer to <u>LAN-74</u>, "TCM Circuit Check".

				C	AN DIAG SU	PPORT MN	TR		
SELECT SV	/STEM screen	Initial	Transmit			Receive	diagnosis		
SELECT ST	TOTEM Scieen	diagnosis	diagnosis	ECM	TCM	METER /M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNK <b>W</b> N	_	UNK <b>W</b> N	_	UNK <b>I</b> VN	_
ВСМ	No indication	NG	UNKWN	UNKWN	-	UNKWN	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	-	_	UNKWN	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNK <b>W</b> N	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_



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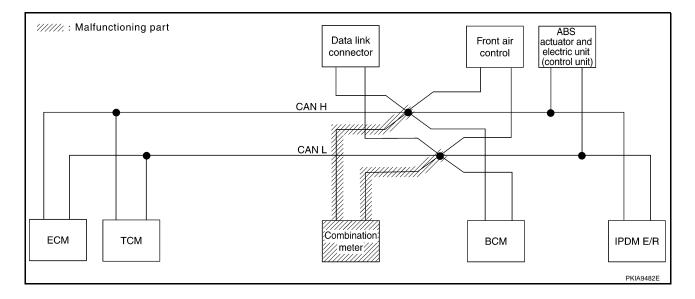
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Case 5
Check combination meter circuit. Refer to <u>LAN-74</u>, "Combination Meter Circuit Check" .

				C	AN DIAG SU	PPORT MN	TR		
SELECT S	YSTEM screen	Initial	Transmit			Receive di	iagnosis		
OLLLOTO	TOTEW SCIECT	diagnosis	diagnosis	ECM	ТСМ	METER /M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNK WN	_	UNKWN	_
всм	No indication	NG	UNKWN	UNKWN	_	UNK WN	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_

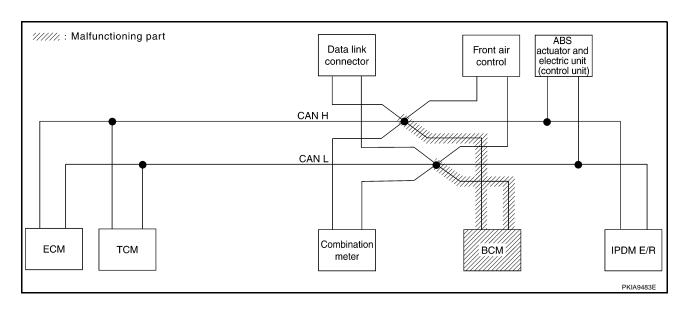


# **CAN SYSTEM (TYPE 2)**

[CAN]

Case 6
Check BCM circuit. Refer to <u>LAN-75</u>, "BCM Circuit Check" .

				C	AN DIAG SU	PPORT MN	TR		
SELECT SV	YSTEM screen	Initial	Transmit			Receive	diagnosis		
SELECT ST	TOTEW Screen	diagnosis	diagnosis	ECM	TCM	METER /M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	-	UNKWN	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	-	_	UNIWN	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNK/WN	_	_



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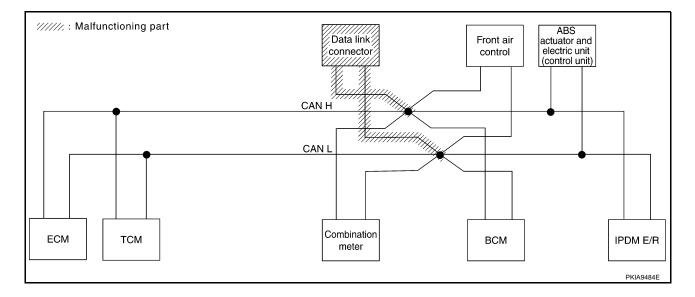
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Case 7
Check data link connector circuit. Refer to <u>LAN-75</u>, "<u>Data Link Connector Circuit Check"</u>.

				C	AN DIAG SU	PPORT MN	TR		
SELECT S	YSTEM screen	Initial	Transmit			Receive	diagnosis		
OLLLO1 0	TOTEW Screen	diagnosis	diagnosis	ECM	TCM	METER /M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	-	UNKWN	_	UNKWN	_
всм	No indication	NG	UNKWN	UNKWN	-	UNKWN	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_



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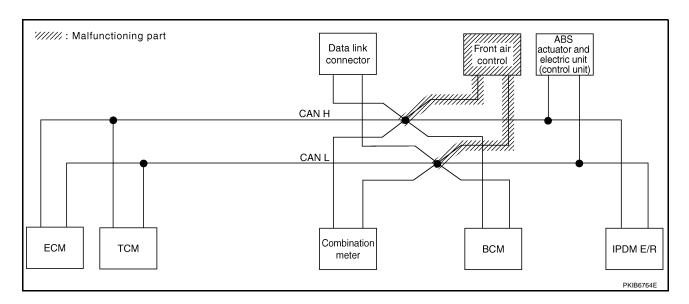
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Case 8
Check front air control circuit. Refer to <u>LAN-76</u>, "Front Air Control Circuit Check" .

				C.F	N DIAG SU				
SELECT SY	STEM screen	Initial	Transmit				diagnosis	Γ	ı
		diagnosis	diagnosis	ECM	TCM	METER /M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	1	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	_
BCM	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_

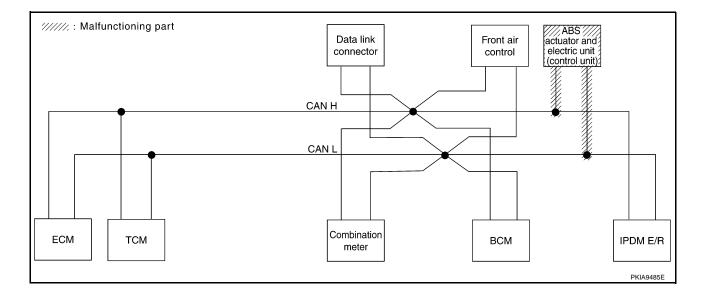


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Case 9

Check ABS actuator and electric unit (control unit) circuit. Refer to <u>LAN-76</u>, "ABS Actuator and Electric Unit (Control Unit) Circuit Check".

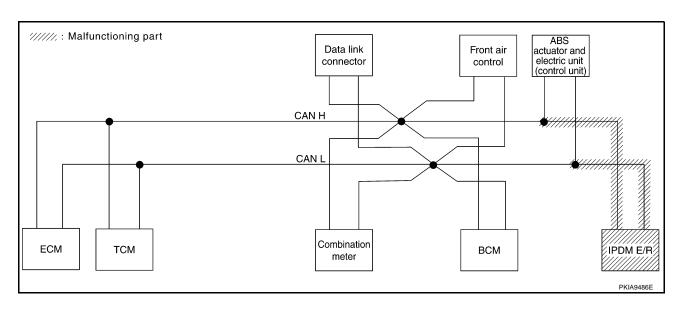
				C	AN DIAG SU	PPORT MN	TR		
SELECT SYS	CTEM coroon	Later - I	T	<u>.                                    </u>			diagnosis		
SELECT STS	o i Eivi Scieeii	Initial diagnosis	Transmit diagnosis	ECM	TCM	METER /M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	-	UNKWN	_	UNK/WN	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	-	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_
ABS	_	<b>₩</b>	UNKWN	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	ı	_



Case 10

Check IPDM E/R circuit. Refer to LAN-77, "IPDM E/R Circuit Check" .

				CA	N DIAG SU	PPORT MN	TR		
SELECT S	YSTEM screen		Transmit			Receive	diagnosis		
SELECT S	TOTEW Screen	Initial diagnosis	diagnosis	ECM	ТСМ	METER /M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNK/WN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_



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Case 11

Check CAN communication circuit. Refer to <a href="LAN-78">LAN-78</a>, "CAN Communication Circuit Check"</a>.

				C/	AN DIAG SU	PPORT MN	TR		
SELECT S	YSTEM screen	Initial	Transmit			Receive	diagnosis		
OLLEO I O	TOTEW SCIECT	diagnosis	diagnosis	ECM	ТСМ	METER /M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/R
ENGINE	-	NG	UNKWN	-	UNK/WN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_
ABS	_	<b>₩</b>	UNKWN	UNKWN	UNK/WN	-	_	-	-
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_

### Case 12

Check IPDM E/R ignition relay circuit continuously sticks "OFF". Refer to <u>LAN-78</u>, "IPDM E/R Ignition Relay <u>Circuit Check"</u>.

				CA	AN DIAG SU	PPORT MN	TR		
SELECT SY	STEM screen	Initial	Transmit			Receive	diagnosis		
OLLLO1 O	TOTEM SOLCCIT	diagnosis	diagnosis	ECM	TCM	METER /M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	NNRWN	UNKWN	UNKWN	∩ <b>NR</b> WN	UNKWN
A/T	_	NG	UNKWN	UNKWN	-	UNKWN	_	UNKWN	_
BCM	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_
ABS	_	NG	UNKWN	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 "ON". Refer to <u>LAN-78</u>, "IPDM E/R Ignition Relay Circuit Check".

SELECT SYSTEM screen		CAN DIAG SUPPORT MNTR							
		Initial diagnosis	Transmit diagnosis	Receive diagnosis					
				ECM	ТСМ	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	_
BCM	No indication	NG	UNKWN	UNKWN	_	UNKWN			UNKWN
HVAC	No indication	1	UNKWN	UNKWN	_	-	UNKWN	UNKWN	_
ABS	_	NG	UNKWN	UNK WN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_

**Circuit Check Between TCM and Data Link Connector** 

1. CHECK CONNECTOR

- Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- Check following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector F33
- Harness connector E19
- Harness connector E34
- Harness connector B40
- Harness connector B69
- Harness connector M40

#### 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 F33.
- Check continuity between A/T assembly harness connector F9 terminals 3 (L), 8 (P) and harness connector F33 terminals 12 (L), 11 (P).

3 (L) - 12 (L)

: Continuity should exist.

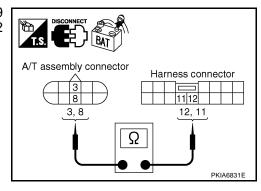
8 (P) - 11 (P)

: Continuity should exist.

#### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



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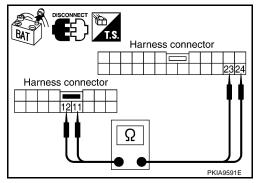
# 3. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect harness connector E34.
- Check continuity between harness connector E19 terminals 12 (L), 11 (P) and harness connector E34 terminals 24 (L), 23 (P).

12 (L) - 24 (L) 11 (P) - 23 (P) : Continuity should exist.: Continuity should exist.

OK or NG

OK >> GO TO 4. NG >> Repair harness.



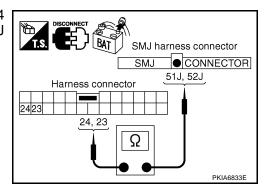
## 4. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect harness connector B69.
- Check continuity between harness connector B40 terminals 24 (L), 23 (P) and harness connector B69 terminals 51J (L), 52J (P).

24 (L) - 51J (L) 23 (P) - 52J (P) : Continuity should exist. : Continuity should exist.

OK or NG

OK >> GO TO 5. NG >> Repair harness.



## 5. CHECK HARNESS FOR OPEN CIRCUIT

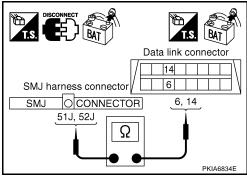
Check continuity between harness connector M40 terminals 51J (L), 52J (P) and data link connector M22 terminals 6 (L), 14 (P).

51J (L) - 6 (L) 52J (P) - 14 (P) : Continuity should exist. : Continuity should exist.

OK or NG

OK >> Connect all the connectors and diagnose again. Refer to LAN-57, "Work Flow".

NG >> Repair harness.



## Circuit Check Between Data Link Connector and IPDM E/R

UKS003AU

# 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector M31
- Harness connector E152

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

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## 2. CHECK HARNESS FOR OPEN CIRCUIT

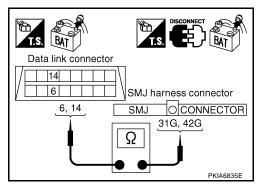
- 1. Disconnect harness connector M31.
- Check continuity between data link connector M22 terminals 6 (L), 14 (P) and harness connector M31 terminals 31G (L), 42G (P).

6 (L) - 31G (L) 14 (P) - 42G (P) : Continuity should exist.

: Continuity should exist.

### OK or NG

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



## 3. CHECK HARNESS FOR OPEN CIRCUIT

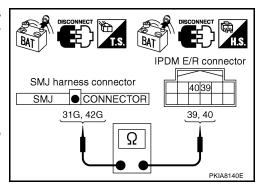
- 1. Disconnect IPDM E/R connector.
- Check continuity between harness connector E152 terminals 31G (L), 42G (P) and IPDM E/R harness connector E122 terminals 39 (L), 40 (P).

: Continuity should exist. 31G (L) - 39 (L) 42G (P) - 40 (P) : Continuity should exist.

### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to LAN-57, "Work Flow".

NG >> Repair harness.



UKS003AV

### **ECM Circuit Check**

### 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- Check following terminals and connectors for damage, bend and loose connection (control module side and harness side).
- ECM connector
- Harness connector E19
- Harness connector F33

### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector. LAN

## 2. CHECK HARNESS FOR OPEN CIRCUIT

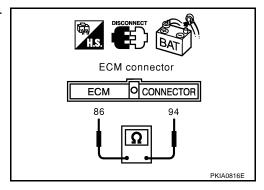
- 1. Disconnect ECM connector.
- Check resistance between ECM harness connector E16 terminals 94 (L) and 86 (P).

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

### OK or NG

OK >> Replace ECM.

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



UKS003AW

### **TCM Circuit Check**

## CHECK CONNECTOR

- Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 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.
- Check resistance between A/T assembly harness connector F9 terminals 3 (L) and 8 (P).

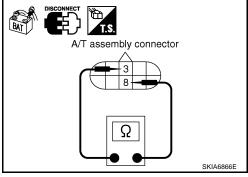
**3 (L) - 8 (P)** : Approx. 54 - 66 
$$\Omega$$

#### OK or NG

NG

OK >> Replace A/T assembly.

> >> Repair harness between A/T assembly and harness connector F33.



### **Combination Meter Circuit Check**

## 1. CHECK CONNECTOR

- Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- Check terminals and connector of combination meter for damage, bend and loose connection (meter side and harness side).

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector. UKS003AX

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## 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect combination meter connector.
- 2. Check resistance between combination meter harness connector M24 terminals 11 (L) and 12 (P).

: Approx. 54 - 66  $\Omega$ 

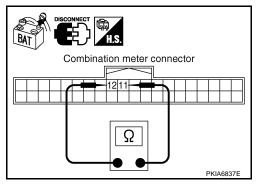
#### OK or NG

OK

>> Replace combination meter.

NG

>> Repair harness between combination meter and data link connector.



UKS003AY

**BCM Circuit Check** 

1. CHECK CONNECTOR

1. Turn ignition switch OFF.

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

OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

## 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect BCM connector.
- 2. Check resistance between BCM harness connector M18 terminals 39 (L) and 40 (P).

: Approx. 54 - 66  $\Omega$ 

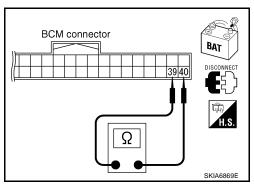
#### OK or NG

NG

OK >

>> Replace BCM. Refer to <u>BCS-20, "Removal and Installation of BCM"</u>.

>> Repair harness between BCM and data link connector.



UKS003AZ

### **Data Link Connector Circuit Check**

## 1. CHECK CONNECTOR

- Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- Check the 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 M22 terminals 6 (L) and 14 (P).

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

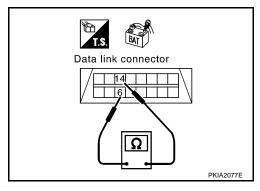
### OK or NG

OK

>> Diagnose again. Refer to LAN-57, "Work Flow".

NG

>> Repair harness between data link connector and combination meter.



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### Front Air Control Circuit Check

### 1. CHECK CONNECTOR

Turn ignition switch OFF. 1.

- 2. Disconnect the negative battery terminal.
- Check terminals and connector of front air control for damage, bend and loose connection (unit side and harness side).

### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

## 2. CHECK HARNESS FOR OPEN CIRCUIT

- Disconnect front air control connector.
- Check resistance between front air control harness connector M50 terminals 34 (L) and 35 (P).

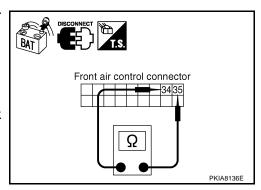
**34 (L) - 35 (P)** : Approx. **54 - 66** 
$$\Omega$$

#### OK or NG

OK >> Replace front air control.

NG

>> Repair harness between front air control and data link connector.



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

UKS003B0

## 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.
- 2. Check resistance between ABS actuator and electric unit (control unit) harness connector E125 terminals 11 (L) and 15 (P).

: Approx. 54 - 66  $\Omega$ 

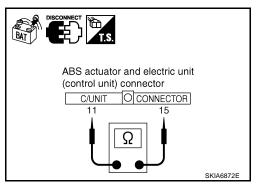
#### OK or NG

OK

>> Replace ABS actuator and electric unit (control unit).

NG >> Re

>> Repair harness between ABS actuator and electric unit (control unit) and harness connector E152.



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### **IPDM E/R Circuit Check**

## 1. CHECK CONNECTOR

1. 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.
- 2. Check resistance between IPDM E/R harness connector E122 terminals 39 (L) and 40 (P).

: Approx. 108 - 132  $\Omega$ 

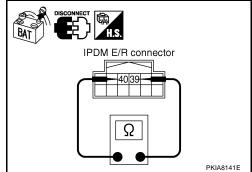
### OK or NG

OK

>> Replace IPDM E/R.

NG

>> Repair harness between IPDM E/R and harness connector E152.



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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.
- Disconnect the following module and control unit connectors and check terminals for deformation, disconnection, looseness or damage.
- ECM
- A/T assembly
- Combination meter
- BCM
- Front air control
- ABS actuator and electric unit (control unit)
- IPDM E/R

#### OK or NG

OK >> GO TO 2.

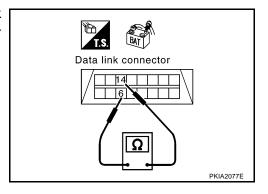
NG >> Repair or replace as necessary.

## 2. CHECK HARNESS FOR SHORT CIRCUIT

With all module and control unit connectors disconnected, check continuity between data link connector M22 terminals 6 (L) and 14 (P).

### OK or NG

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



## 3. CHECK HARNESS FOR SHORT CIRCUIT

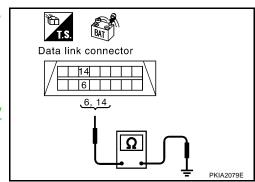
Check continuity between data link connector M22 terminals 6 (L), 14 (P) and ground.

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

### OK or NG

OK >> Check ECM and IPDM E/R. Refer to <u>LAN-79</u>, "ECM/ <u>IPDM E/R INTERNAL CIRCUIT INSPECTION"</u>.

NG >> Repair harness.



UKS003B3

## **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-26, "IPDM E/R Power/Ground Circuit Inspection".
- Ignition power supply circuit. Refer to <u>PG-13</u>, "IGNITION POWER SUPPLY IGNITION SW. IN ON AND/OR START".

## **CAN SYSTEM (TYPE 2)**

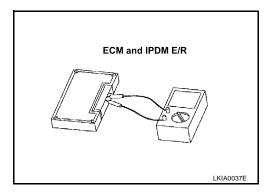
[CAN]

UKS003B4

# 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 39 and 40.

Unit	Terminal	Resistance value (Ω) (Approx.)
ECM	94 - 86	108 - 132
IPDM E/R	39 - 40	100 - 132



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## **CAN SYSTEM (TYPE 3)**

PFP:23710

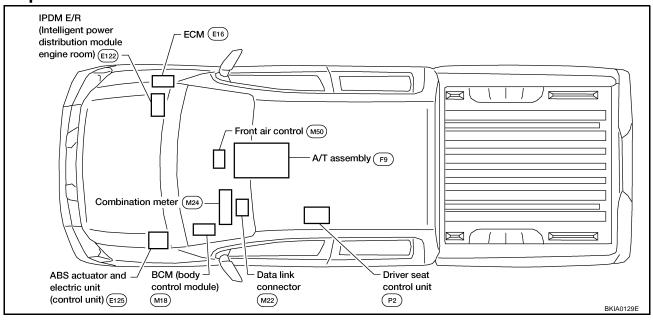
## **System Description**

UKS003A5

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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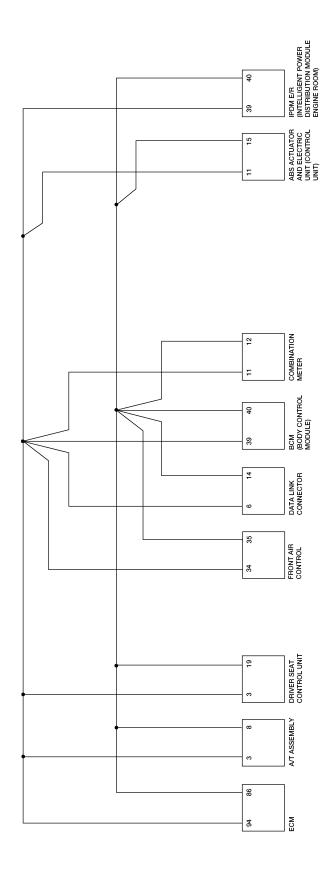
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Schematic UKS003A7



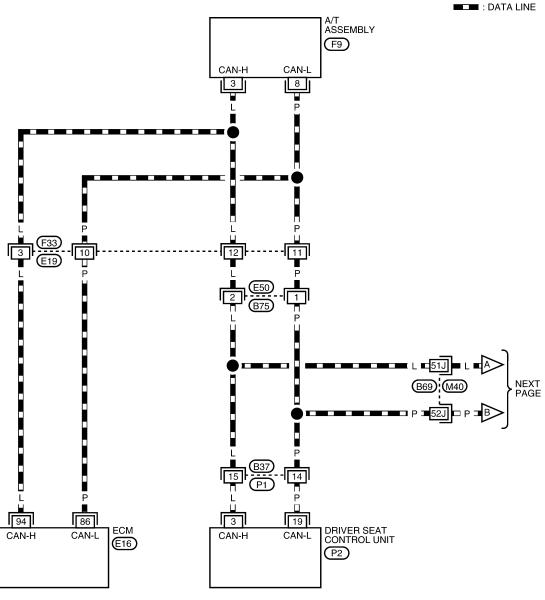
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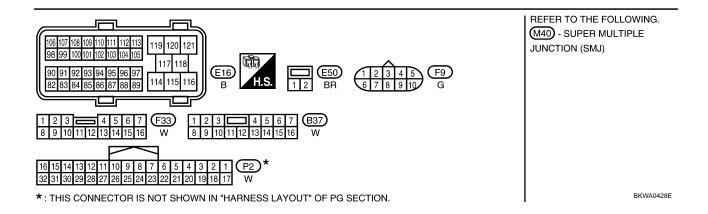
M

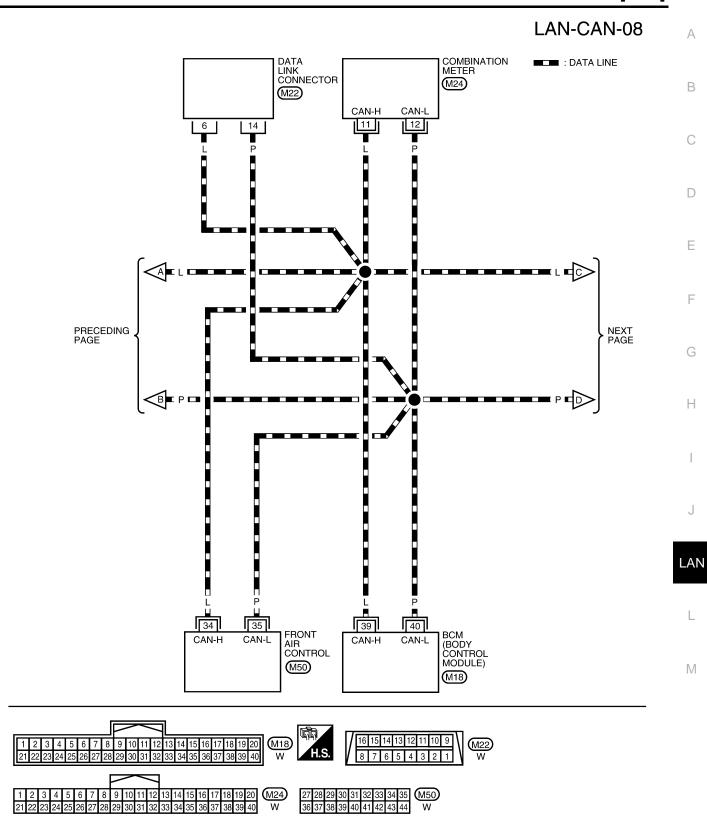
BKWA0132E

Wiring Diagram - CAN -

## LAN-CAN-07



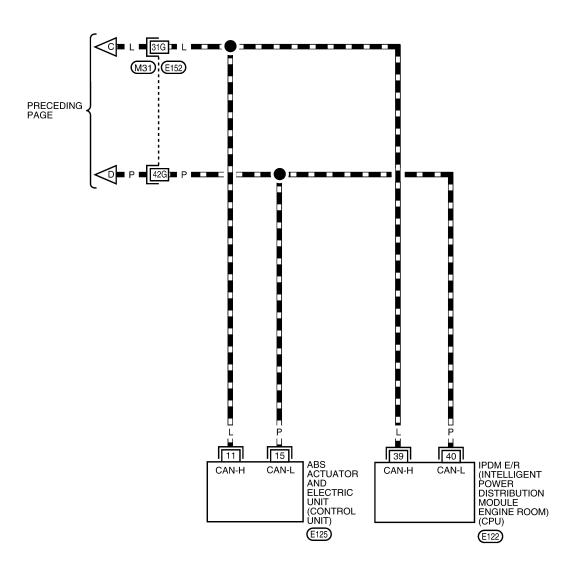


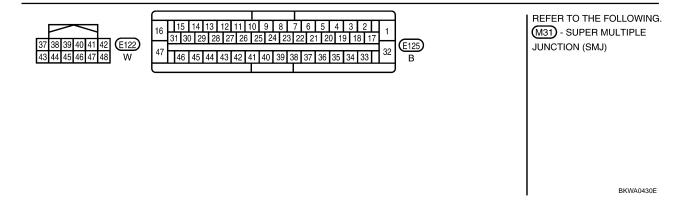


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## LAN-CAN-09

■■■: DATA LINE

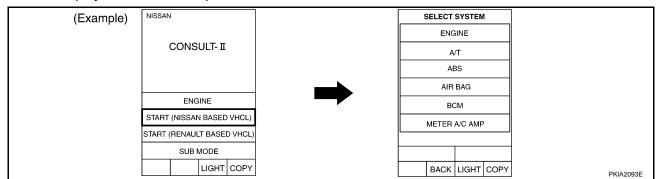




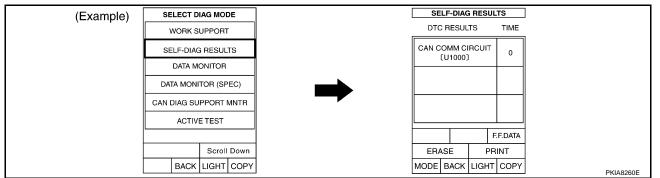
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Work Flow

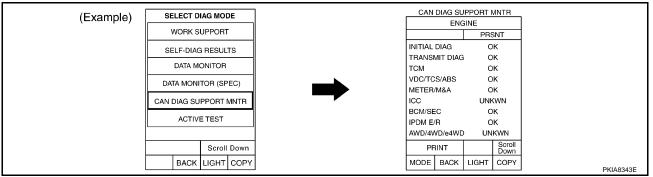
1. When there are no indications of "AUTO DRIVE POS.", "BCM", "HVAC" or "IPDM E/R" on "SELECT SYSTEM" display of CONSULT-II, print the "SELECT SYSTEM".



 Print all the data of "SELF-DIAG RESULTS" for "ENGINE", "A/T", "AUTO DRIVE POS.", "BCM", "HVAC", "ABS" and "IPDM E/R" displayed on CONSULT-II.



3. Print all the data of "CAN DIAG SUPPORT MNTR" for "ENGINE", "A/T", "AUTO DRIVE POS.", "BCM", "HVAC", "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 LAN-86, "CHECK SHEET".
- Based on the indications of "SELECT SYSTEM" and the results of "CAN DIAG SUPPORT MNTR", puts a check mark onto the items with "No indication", "NG", or "UNKWN" in the check sheet table. Refer to <u>LAN-86, "CHECK SHEET"</u>.

#### 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.
- According to the check sheet results (example), start inspection. Refer to <u>LAN-88</u>, "CHECK SHEET <u>RESULTS (EXAMPLE)"</u>.

Revision: October 2005 LAN-85 2005 Titan

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### **CHECK SHEET**

### NOTE:

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

				C/	AN DIAG SU				
SELECT SYST	EM screen	Initial	Transmit			Receive	diagnosis		
		diagnosis	diagnosis	ECM	TCM	METER /M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	1	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	-	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	-	-	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_
							1	1	
Symptoms :									

Attach copy of SELECT SYSTEM

Attach copy of SELECT SYSTEM

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Attach copy of ENGINE SELF-DIAG RESULTS	Attach copy of A/T SELF-DIAG RESULTS	Attach copy of AUTO DRIVE POS. SELF-DIAG RESULTS	Attach copy of BCM SELF-DIAG RESULTS
Attach copy of HVAC SELF-DIAG RESULTS	Attach copy of ABS SELF-DIAG RESULTS	Attach copy of IPDM E/R SELF-DIAG RESULTS	
Attach copy of	Attach copy of	Attach copy of	Attach copy of
ENGINE	A/T	AUTO DRIVE POS.	BCM
CAN DIAG SUPPORT	CAN DIAG SUPPORT	CAN DIAG SUPPORT	CAN DIAG SUPPORT
MNTR	MNTR	MNTR	MNTR
Attach copy of	Attach copy of	Attach copy of	
HVAC	ABS	IPDM E/R	
CAN DIAG SUPPORT	CAN DIAG SUPPORT	CAN DIAG SUPPORT	
MNTR	MNTR	MNTR	

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

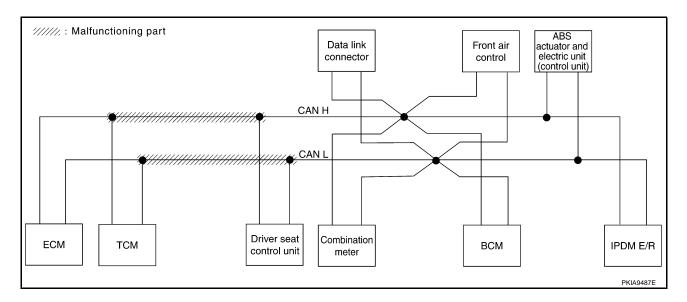
### NOTE:

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

### Case 1

Check harness between TCM and driver seat control unit. Refer to <u>LAN-101</u>, "Circuit Check Between TCM and <u>Driver Seat Control Unit"</u>.

					AN DIAG SU	DDODT MN	TD		
05, 505 0, 65				<i>\</i>	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	UNKWN	-	UNKWN	UNKWN	UNKWN	UNK/WN	UNKWN
A/T	_	NG	UNKWN	UNKWN	-	UNKWN	_	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UN <b>K</b> WN	UNKWN	UNKWN	_	_
всм	No indication	NG	UNKWN	UNK/WN	_	UNKWN	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNK WN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_



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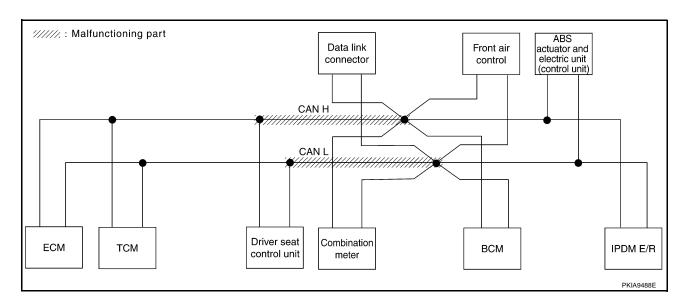
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Case 2

Check harness between driver seat control unit and data link connector. Refer to <u>LAN-102</u>, "Circuit Check <u>Between Driver Seat Control Unit and Data Link Connector"</u>.

				C/	AN DIAG SU	PPORT MN	TR		
SELECT SYST	FM screen	Initial	Transmit			Receive	diagnosis		
0222010101	EIVI GOIGGII	diagnosis	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	_
AUTO DRIVE POS.	No invication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_
ABS	-	NG	UNKWN	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	ı	_	UNKWN	ı	_



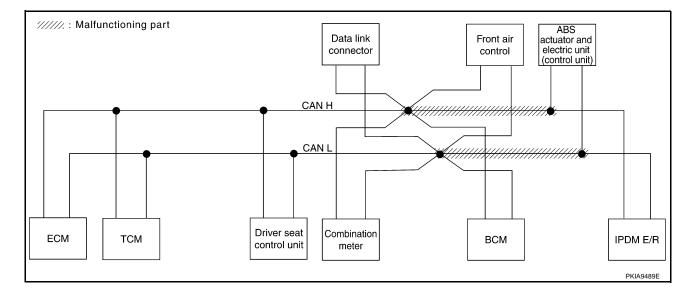
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Case 3

Check harness between data link connector and IPDM E/R. Refer to  $\underline{\text{LAN-103}}$ , "Circuit Check Between Data  $\underline{\text{Link Connector}}$  and  $\underline{\text{IPDM E/R}}$ ".

				C/	AN DIAG SU	PPORT MN	TR		
SELECT SYST	EM screen	Initial	Transmit			Receive	diagnosis		
SELECT STOT	LIVI SCIECTI	Initial diagnosis	Transmit diagnosis	ECM	TCM	METER /M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN
HVAC	No indication	-	UNKWN	UNKWN	_	-	UNKWN	UNK WN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_



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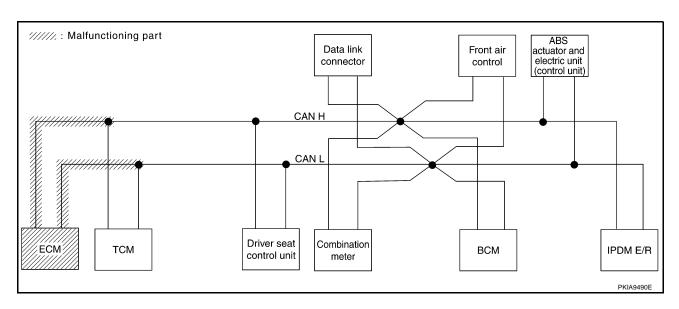
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Case 4
Check ECM circuit. Refer to <u>LAN-104</u>, "<u>ECM Circuit Check</u>" .

				C/	N DIAG SU				
SELECT SYST	FM screen	Initial	Transmit	Receive diagnosis					
0222010101	2111 0010011	diagnosis	diagnosis	ECM	ТСМ	METER /M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNK WN	UNKWN	UNKWN	UNKWN	UN <b>K</b> ₩N
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	-	UNKWN	UNKWN	UNKWN	_	_
BCM	No indication	NG	UNKWN	UNK WN	_	UNKWN	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_



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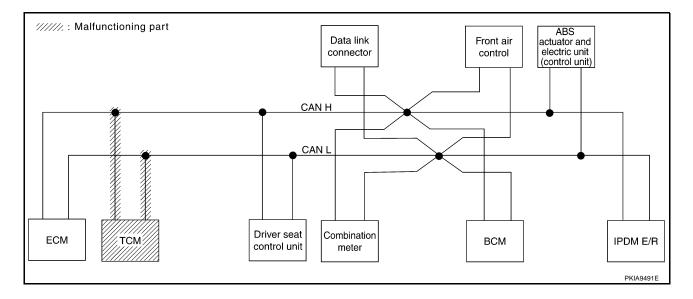
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Case 5
Check TCM circuit. Refer to <u>LAN-104, "TCM Circuit Check"</u>.

				C	AN DIAG SU	PPORT MN	TR		
SELECT SYST	EM screen	Initial	Transmit			Receive	diagnosis		
OLLLO1 O101	LIW SCIECTI	diagnosis	diagnosis	ECM	TCM	METER /M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNK WN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	-	UNKWN	UNKWN	UNKWN	_	_
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_
ABS	-	NG	UNKWN	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_



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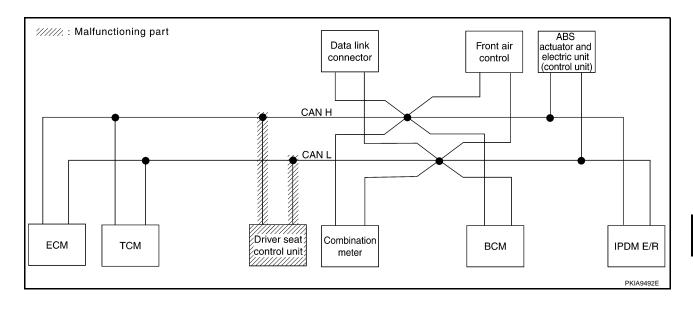
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Case 6

Check driver seat control unit circuit. Refer to <u>LAN-105</u>, "Driver Seat Control Unit Circuit Check".

				C/	AN DIAG SU				
SELECT SYST	FM screen	Initial	Transmit			Receive	diagnosis		
0222010101	2111 0010011	diagnosis	diagnosis	ECM	TCM	METER /M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/P
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	_
AUTO DRIVE POS.	No invication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN
HVAC	No indication	-	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_



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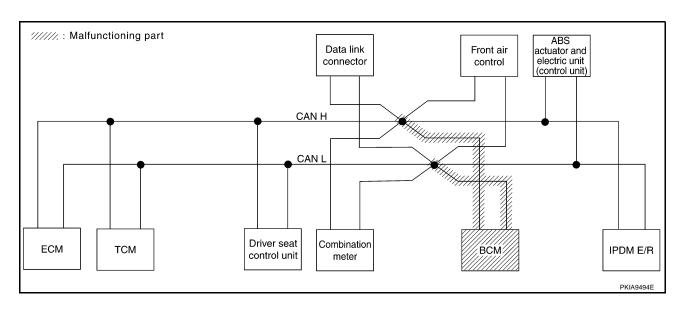
Case 7
Check combination meter circuit. Refer to <u>LAN-105</u>, "Combination Meter Circuit Check" .

				C	AN DIAG SU	PPORT MN	TR		
SELECT SYST	FM screen	Initial	Transmit			Receive	diagnosis		
0222010101	LIVI SOLCOIT	diagnosis	diagnosis	ECM	ТСМ	METER /M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	-	_

/////.: Malfunctioning part ABS actuator and Data link Front air electric unit (control unit) connector control CAN H Driver seat Combination ECM TCM IPDM E/R BCM control unit //meter// PKIA9493E

Case 8
Check BCM circuit. Refer to <u>LAN-106, "BCM Circuit Check"</u>.

			1	C/	AN DIAG SU	PPORT MN			
SELECT SYST	EM screen	Initial	Transmit		Receive diagnosis				
		diagnosis	diagnosis	ECM	TCM	METER /M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	-	UNKWN	UNKWN	UNKWN	_	_
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN
HVAC	No indication	-	UNKWN	UNKWN	_	-	UNKWN	UNKWN	_
ABS	-	NG	UNKWN	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_



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Case 9
Check data link connector circuit. Refer to <u>LAN-106</u>, "<u>Data Link Connector Circuit Check"</u>.

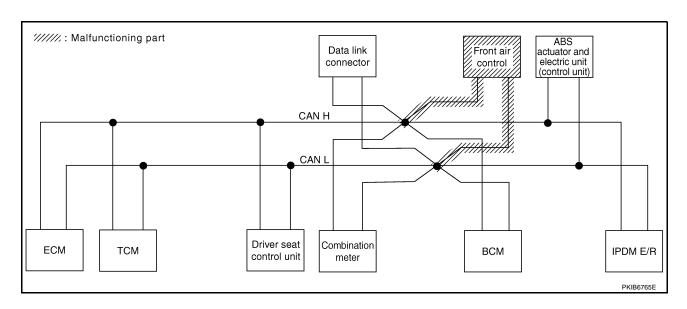
				C	AN DIAG SU	PPORT MN	TR		
SELECT SYST	FM screen	Initial	Transmit			Receive d	iagnosis		
0222010101	2111 0010011	diagnosis	diagnosis	ECM	TCM	METER /M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN
HVAC	No indication	-	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_

/////.: Malfunctioning part ABS actuator and Data link Front air electric unit (control unit) connector control CAN H CAN L Driver seat Combination ECM TCM BCM IPDM E/R control unit meter PKIA9495E

Case 10

Check front air control circuit. Refer to LAN-107, "Front Air Control Circuit Check" .

SELECT SYSTEM screen			CAN DIAG SUPPORT MNTR								
		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	UNKWN	UNKWN		
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	_		
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	-	_		
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN		
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_		
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	-	_		
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_		



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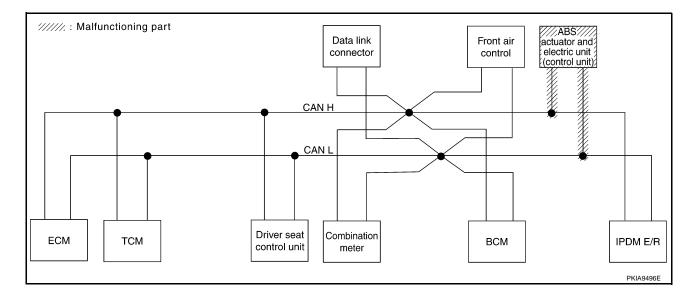
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Case 11

Check ABS actuator and electric unit (control unit) circuit. Refer to <u>LAN-107</u>, "ABS Actuator and Electric Unit (Control Unit) Circuit Check".

		CAN DIAG SUPPORT MNTR								
SELECT SYSTEM screen		Initial	Transmit - diagnosis	Receive diagnosis						
		diagnosis		ECM	TCM	METER /M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/F	
ENGINE	_	NG	UNKWN	-	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN	
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNK/WN	_	
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN	
HVAC	No indication	-	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_	
ABS	_	<b>V</b> s	UNKWN	UNKWN	UNKWN	_	_	_	_	
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	



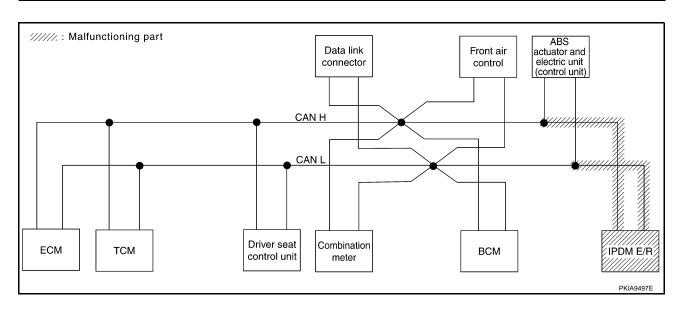
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Case 12
Check IPDM E/R circuit. Refer to <u>LAN-108</u>, "IPDM E/R Circuit Check" .

SELECT SYSTEM screen			CAN DIAG SUPPORT MNTR									
		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	UNKWN	UNKWN			
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	_			
AUTO DRIVE POS.	No indication	NG	UNKWN	-	UNKWN	UNKWN	UNKWN	_	_			
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN			
HVAC	No indication	-	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_			
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_			
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_			



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Case 13

Check CAN communication circuit. Refer to <a href="LAN-108">LAN-108</a>, "CAN Communication Circuit Check"</a> .

SELECT SYSTEM screen		CAN DIAG SUPPORT MNTR									
		Initial diagnosis	Transmit diagnosis	Receive diagnosis							
				ECM	TCM	METER /M&A	BCM/SEC	VDC/TCS /ABS	IPDM E/R		
ENGINE	_	NG	UNKWN	_	UNK/WN	UNKWN	UNKWN	∩ <b>M</b> MN	UNK WN		
A/T	_	NG	UNKWN	UNK/WN	_	UN <b>W</b> WN	_	UNK WN	_		
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_		
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN		
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_		
ABS	_	<b>V</b> s	UNKWN	UNK/WN	UNK/WN	_	_	_	_		
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_		

### Case 14

Check IPDM E/R ignition relay circuit continuously sticks "OFF". Refer to LAN-109, "IPDM E/R Ignition Relay Circuit Check" .

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

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### Case 15

Check IPDM E/R ignition relay circuit continuously sticks "ON". Refer to <u>LAN-109</u>, "IPDM E/R Ignition Relay <u>Circuit Check"</u>.

SELECT SYSTEM screen		CAN DIAG SUPPORT MNTR									
		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	UNKWN	UNKWN		
A/T	_	NG	UNKWN	UNKWN	-	UNKWN	_	UNKWN	-		
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_		
ВСМ	No indication	NG	UNKWN	UNKWN	1	UNKWN	_	_	UNKWN		
HVAC	No indication	_	UNKWN	UNKWN	-	_	UNKWN	UNKWN	_		
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_		
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_		

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## **Circuit Check Between TCM and Driver Seat Control Unit**

## 1. CHECK CONNECTOR

Turn ignition switch OFF.

- 2. Disconnect the negative battery terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector F33
- Harness connector E19
- Harness connector E50
- Harness connector B75

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

## 2. CHECK HARNESS FOR OPEN CIRCUIT

- Disconnect A/T assembly connector and harness connector F33.
- Check continuity between A/T assembly harness connector F9 terminals 3 (L), 8 (P) and harness connector F33 terminals 12 (L), 11 (P).

3 (L) - 12 (L)

: Continuity should exist.

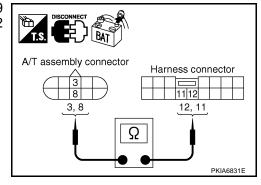
8 (P) - 11 (P)

: Continuity should exist.

### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



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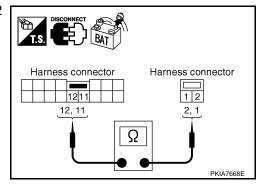
## 3. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect harness connector E50.
- Check continuity between harness connector E19 terminals 12 (L), 11 (P) and harness connector E50 terminals 2 (L), 1 (P).

12 (L) - 2 (L) 11 (P) - 1 (P) : Continuity should exist. : Continuity should exist.

OK or NG

OK >> GO TO 4. NG >> Repair harness.



## 4. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect harness connector B37.
- Check continuity between harness connector B75 terminals 2 (L), 1 (P) and harness connector B37 terminals 15 (L), 14 (P).

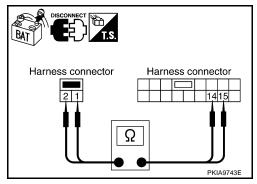
2 (L) - 15 (L) 1 (P) - 14 (P) : Continuity should exist.

: Continuity should exist.

OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-85, "Work Flow"</u>.

NG >> Repair harness.



## Circuit Check Between Driver Seat Control Unit and Data Link Connector

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### 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector B69
- Harness connector M40

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

## 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect harness connector B37 and harness connector B69.
- Check continuity between harness connector B37 terminals 15 (L), 14 (P) and harness connector B69 terminals 51J (L), 52J (P).

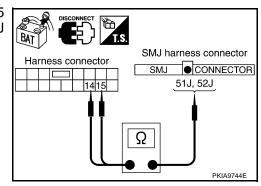
15 (L) - 51J (L) 14 (P) - 52J (P) : Continuity should exist.

: Continuity should exist.

### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



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## $3.\,$ check harness for open circuit

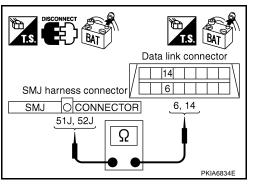
Check continuity between harness connector M40 terminals 51J (L), 52J (P) and data link connector M22 terminals 6 (L), 14 (P).

51J (L) - 6 (L) : Continuity should exist. 52J (P) - 14 (P) : Continuity should exist.

### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-85, "Work Flow"</u>.

NG >> Repair harness.



## Circuit Check Between Data Link Connector and IPDM E/R

1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector M31
- Harness connector E152

### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

## 2. CHECK HARNESS FOR OPEN CIRCUIT

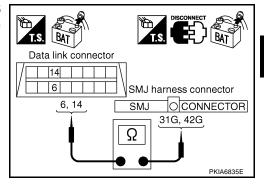
- 1. Disconnect harness connector M31.
- Check continuity between data link connector M22 terminals 6
   (L), 14 (P) and harness connector M31 terminals 31G (L), 42G
   (P).

6 (L) - 31G (L) : Continuity should exist. 14 (P) - 42G (P) : Continuity should exist.

#### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



## 3. CHECK HARNESS FOR OPEN CIRCUIT

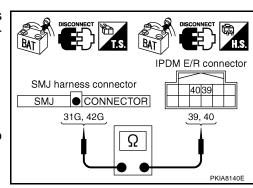
- Disconnect IPDM E/R connector.
- Check continuity between harness connector E152 terminals 31G (L), 42G (P) and IPDM E/R harness connector E122 terminals 19 (L), 40 (P).

31G (L) - 39 (L) : Continuity should exist. 42G (P) - 40 (P) : Continuity should exist.

### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-85, "Work Flow"</u>.

NG >> Repair harness.



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### **ECM Circuit Check**

## 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (control module side and harness side).
- ECM connector
- Harness connector E19
- Harness connector F33

### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

## 2. CHECK HARNESS FOR OPEN CIRCUIT

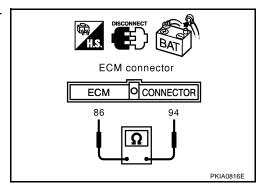
- 1. Disconnect ECM connector.
- Check resistance between ECM harness connector E16 terminals 94 (L) and 86 (P).

: Approx. 108 - 132  $\Omega$ 

### OK or NG

OK >> Replace ECM.

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



### **TCM Circuit Check**

## 1. CHECK CONNECTOR

- 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

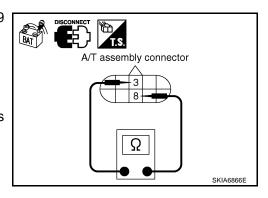
- 1. Disconnect A/T assembly connector.
- 2. Check resistance between A/T assembly harness connector F9 terminals 3 (L) and 8 (P).

: Approx. 54 - 66  $\Omega$ 

#### OK or NG

OK >> Replace A/T assembly.

NG >> Repair harness between A/T assembly and harness connector F33.



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## **Driver Seat Control Unit Circuit Check**

## 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (control unit side and harness side).
- Driver seat control unit connector
- Harness connector P1
- Harness connector B37

### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

## 2. CHECK HARNESS FOR OPEN CIRCUIT

- Disconnect driver seat control unit connector.
- 2. Check resistance between driver seat control unit harness connector P2 terminals 3 (L) and 19 (P).

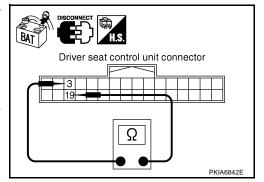
: Approx. 54 - 66  $\Omega$ 

#### OK or NG

OK >> Replace driver seat control unit.

NG

>> Repair harness between driver seat control unit and harness connector B69.



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### **Combination Meter Circuit Check**

## 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- Disconnect the negative battery terminal.
- Check terminals and connector of combination meter for damage, bend and loose connection (meter side and harness side).

**LAN-105** 

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

## 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect combination meter connector.
- Check resistance between combination meter harness connector M24 terminals 11 (L) and 12 (P).

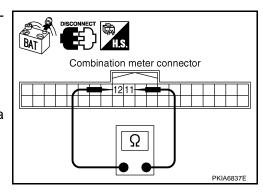
: Approx. 54 - 66  $\Omega$ 

### OK or NG

NG

OK >> Replace combination meter.

>> Repair harness between combination meter and data link connector.



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**BCM 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 BCM for damage, bend and loose connection (control module side and harness side).

OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

## 2. CHECK HARNESS FOR OPEN CIRCUIT

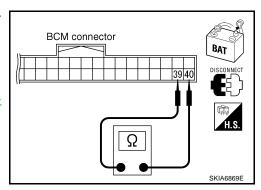
- 1. Disconnect BCM connector.
- 2. Check resistance between BCM harness connector M18 terminals 39 (L) and 40 (P).

: Approx. 54 - 66  $\Omega$ 

OK or NG

OK >> Replace BCM. Refer to BCS-20, "Removal and Installation of BCM".

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



## **Data Link Connector Circuit Check**

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### 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check the 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 M22 terminals 6 (L) and 14 (P).

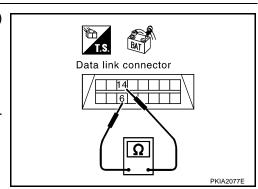
**6 (L) - 14 (P)** : Approx. 54 - 66 
$$\Omega$$

OK or NG

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OK >> Diagnose again. Refer to LAN-85, "Work Flow".

>> Repair harness between data link connector and combination meter.



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### **Front Air Control Circuit Check**

## 1. CHECK CONNECTOR

1. Turn ignition switch OFF.

- 2. Disconnect the negative battery terminal.
- 3. Check terminals and connector of front air control for damage, bend and loose connection (unit side and harness side).

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

## 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect front air control connector.
- 2. Check resistance between front air control harness connector M50 terminals 34 (L) and 35 (P).

: Approx. 54 - 66  $\Omega$ 

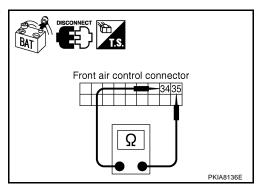
### OK or NG

OK

>> Replace front air control.

NG

>> Repair harness between front air control and data link connector.



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

### 1. CHECK CONNECTOR

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

### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

## 2. CHECK HARNESS FOR OPEN CIRCUIT

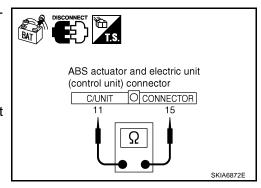
- 1. Disconnect ABS actuator and electric unit (control unit) connector.
- Check resistance between ABS actuator and electric unit (control unit) harness connector E125 terminals 11 (L) and 15 (P).

: 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 harness connector E152.



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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 E122 terminals 39 (L) and 40 (P).

: Approx. 108 - 132  $\Omega$ 

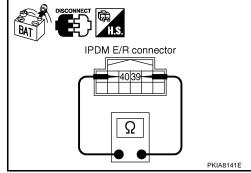
### OK or NG

OK

>> Replace IPDM E/R.

NG

>> Repair harness between IPDM E/R and harness connector E152.



### **CAN Communication Circuit Check**

UKS003AL

## 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Disconnect the following module and control unit connectors and check terminals for deformation, disconnection, looseness or damage.
- ECM
- A/T assembly
- Driver seat control unit
- Combination meter
- BCM
- Front air control
- ABS actuator and electric unit (control unit)
- IPDM E/R

#### OK or NG

OK >> GO TO 2.

NG >> Repair or replace as necessary.

# 2. CHECK HARNESS FOR SHORT CIRCUIT

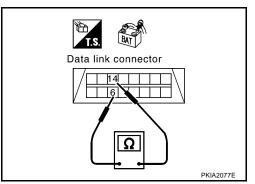
With all module and control unit connectors disconnected, check continuity between data link connector M22 terminals 6 (L) and 14 (P).

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

OK or NG

OK >> GO TO 3.

NG >> Repair harness.



# 3. CHECK HARNESS FOR SHORT CIRCUIT

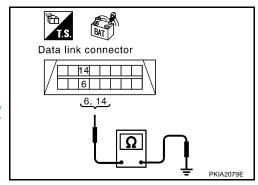
Check continuity between data link connector M22 terminals 6 (L), 14 (P) and ground.

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

OK or NG

OK >> Check ECM and IPDM E/R. Refer to <u>LAN-109</u>, "ECM/ IPDM E/R INTERNAL CIRCUIT INSPECTION".

NG >> Repair harness.



### IPDM E/R Ignition Relay Circuit Check

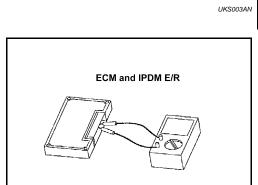
Check the following. If no malfunction is found, replace the IPDM E/R.

- IPDM E/R power supply circuit. Refer to <u>PG-26</u>, "IPDM E/R Power/Ground Circuit Inspection".
- Ignition power supply circuit. Refer to <u>PG-13</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 39 and 40.

Unit	Terminal	Resistance value (Ω) (Approx.)
ECM	94 - 86	108 - 132
IPDM E/R	39 - 40	100 - 132



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### [CAN]

# **CAN SYSTEM (TYPE 4)**

PFP:23710

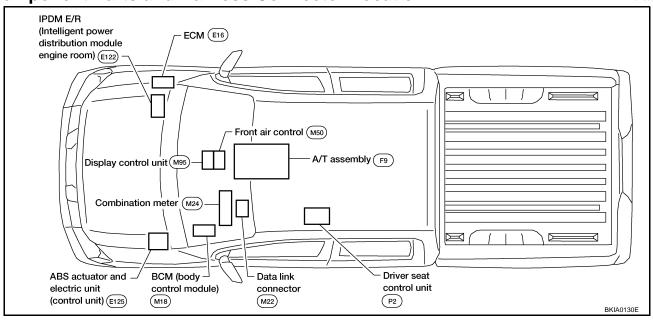
# **System Description**

LIKS0039k

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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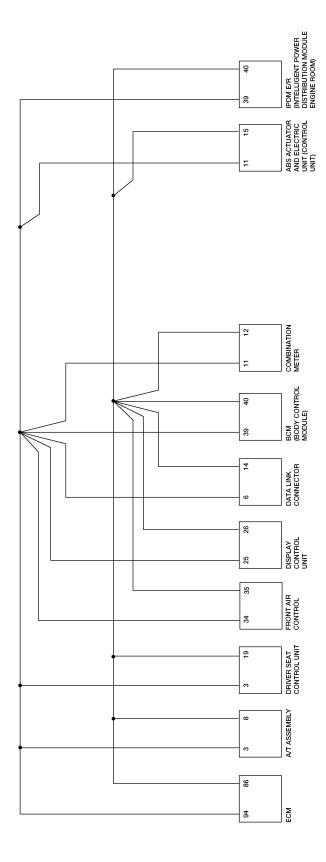
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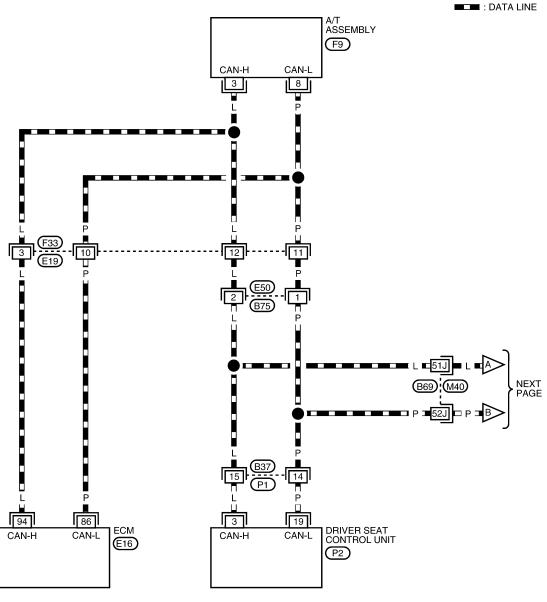
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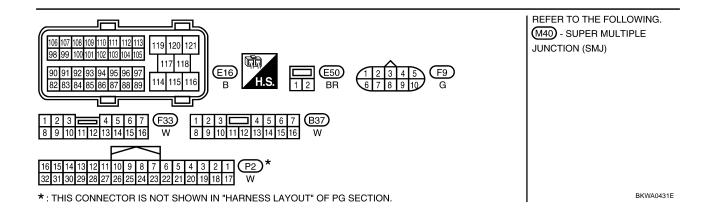
BKWA0134E

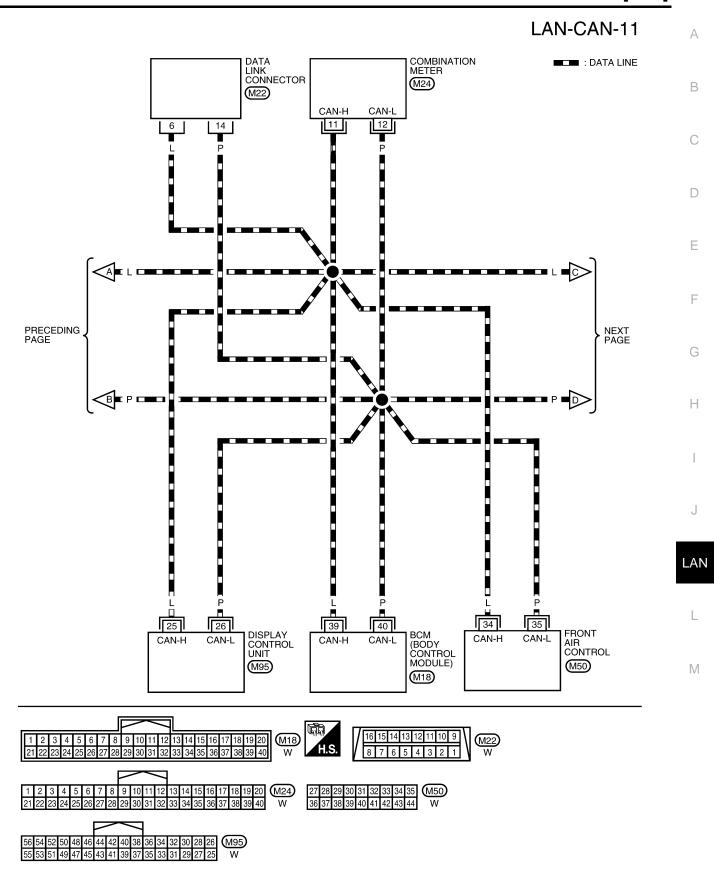
Wiring Diagram - CAN -

I IKSOO39N

### LAN-CAN-10



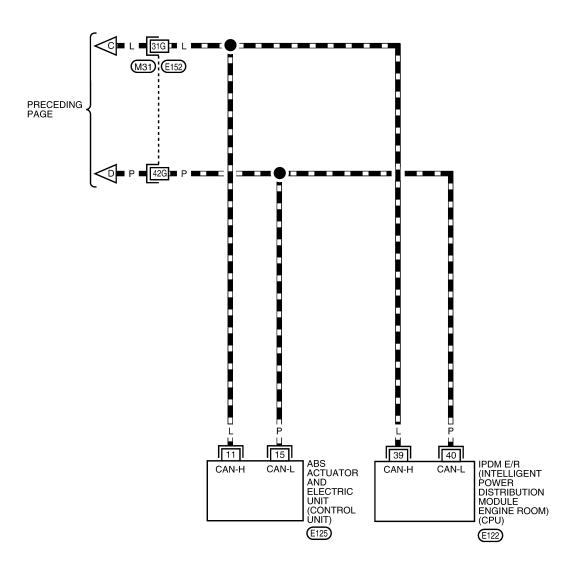


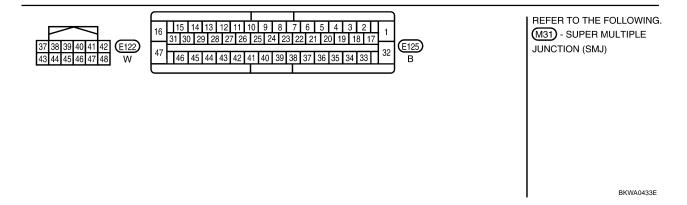


BKWA0432E

### LAN-CAN-12

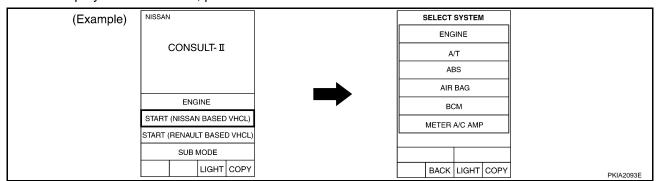
■■■: DATA LINE



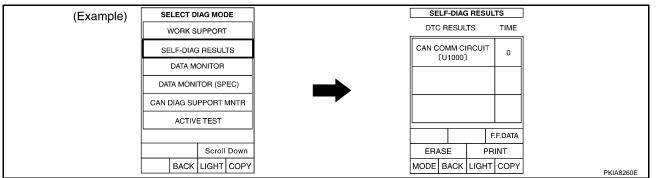


Work Flow

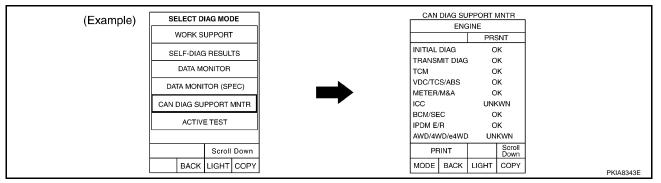
1. When there are no indications of "AUTO DRIVE POS.", "BCM", "HVAC" or "IPDM E/R" on "SELECT SYSTEM" display of CONSULT-II, print the "SELECT SYSTEM".



 Print all the data of "SELF-DIAG RESULTS" for "ENGINE", "A/T", "AUTO DRIVE POS.", "BCM", "HVAC", "ABS" and "IPDM E/R" displayed on CONSULT-II.



3. Print all the data of "CAN DIAG SUPPORT MNTR" for "ENGINE", "A/T", "AUTO DRIVE POS.", "BCM", "HVAC", "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-117</u>, "<u>CHECK SHEET</u>".
- Based on the indications of "SELECT SYSTEM" and the results of "CAN DIAG SUPPORT MNTR", puts a check mark onto the items with "No indication", "NG", or "UNKWN" in the check sheet table. Refer to <u>LAN-117</u>, "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.
- Check CAN communication line of the navigation system. Refer to <u>AV-148, "CAN Communication Line Check"</u>.
- Attach the CAN DIAG SUPPORT MONITOR check sheet onto the check sheet. Refer to <u>LAN-117</u>, <u>"CHECK SHEET"</u>.

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# **CAN SYSTEM (TYPE 4)**

[CAN]

8. Mark the "NG" or "UNKWN" item of the check sheet table with "v" from the result of CAN DIAG SUPPORT MONITOR check sheet. Refer to <u>LAN-117</u>, "CHECK SHEET" .

### NOTE:

- If "NG" is displayed on "CAN COMM" as "CAN DIAG SUPPORT MONITOR" for the diagnosed control unit, replace the control unit. Refer to <a href="AV-148">AV-148</a>, "CAN Communication Line Check".
- 9. According to the check sheet results (example), start inspection. Refer to <u>LAN-119, "CHECK SHEET RESULTS (EXAMPLE)"</u>.

# **CAN SYSTEM (TYPE 4)**

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### **CHECK SHEET**

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

					CA	N DIAG SU		NTR diagnosis			
SELECT SYST	EM screen	Initial diagnosis	Transmit diagnosis	ECM	ТСМ	METER /M&A	DISPLAY		Front air control	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	_	UNKWN	UNKWN
VT	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	_	_	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CIRC 3	_	CAN CIRC 5	_	CAN CIRC 2	CAN CIRC 4	_	CAN CIRC
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	_	_
PDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_
			Attach SELECT	copy of SYSTEM			Attach SELECT	copy of SYSTEM			
			CAN I	dis	uttach copy olay control PORT MON	of unit ITOR check	( sheet				

Attach copy of	Attach copy of	Attach copy of	Attach copy of
ENGINE	A/T	AUTO DRIVE POS.	BCM
SELF-DIAG RESULTS	SELF-DIAG RESULTS	SELF-DIAG RESULTS	SELF-DIAG RESULTS
Attach copy of HVAC SELF-DIAG RESULTS	Attach copy of ABS SELF-DIAG RESULTS	Attach copy of IPDM E/R SELF-DIAG RESULTS	
Attach copy of	Attach copy of	Attach copy of	Attach copy of
ENGINE	A/T	AUTO DRIVE POS.	BCM
CAN DIAG SUPPORT	CAN DIAG SUPPORT	CAN DIAG SUPPORT	CAN DIAG SUPPORT
MNTR	MNTR	MNTR	MNTR
Attach copy of	Attach copy of	Attach copy of	
HVAC	ABS	IPDM E/R	
CAN DIAG SUPPORT	CAN DIAG SUPPORT	CAN DIAG SUPPORT	
MNTR	MNTR	MNTR	

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

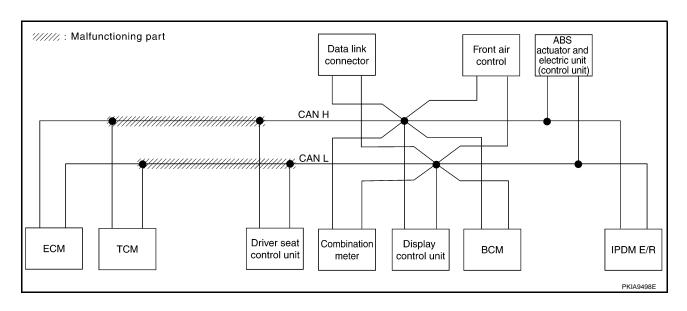
### NOTE:

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

### Case 1

Check harness between TCM and driver seat control unit. Refer to <u>LAN-133</u>, "Circuit Check Between TCM and Driver Seat Control Unit".

					CA	N DIAG SU	PPORT MI	NTR			
SELECT SYST	FM screen	Initial	Transmit				Receive (	diagnosis			
022201 01011	LIVI GOLGGII	diagnosis	diagnosis	ECM	ТСМ	METER /M&A	DISPLAY	BCM/SEC	Front air control	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	Π <b>ΝΚ</b> ΜΝ	_	∩ <b>ИК</b> МИ	_	Ω <b>ΝΚ</b> (ΜΝ	∩ <b>NK</b> WN
A/T	_	NG	UNKWN	UNKWN	_	Ω <b>ΝΚ</b> /WΝ	_	_	_	Π <b>ИΝ</b> ΜΝ	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	_	_	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN ORC 3	_	CAN CIRC 5	_	CAN CIRC 2	CAN CIRC 4	_	CAN CIRC
всм	No indication	NG	UNKWN	UNI <b>W</b> WN	_	UNKWN	_	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNI <b>W</b> N	_	_	UNKWN	UNKWN	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNK/WN	_	_	_	UNKWN	_	_	_

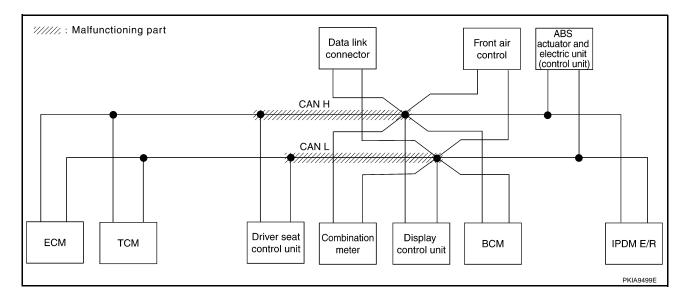


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Case 2

Check harness between driver seat control unit and data link connector. Refer to <u>LAN-134</u>, "Circuit Check <u>Between Driver Seat Control Unit and Data Link Connector"</u>.

					CAI	N DIAG SUI	PPORT MN	NTR			
SELECT SYST	FM screen	Initial	Tuomomit				Receive of	diagnosis			
OLLLO1 0101	LIVI SCIECTI	Initial diagnosis	Transmit diagnosis	ECM	ТСМ	METER /M&A	DISPLAY	BCM/SEC	Front air control	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	∩MAMN	_	∩ <b>NK</b> WN	_	Ω <b>ΝΚ</b> (ΜΝ	∩ <b>NK</b> WN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNK WN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	_	_	_
Display control unit	_	CAN COMM	CAN CIRC 1	CANORC 3	_	CAN CIRC 5	_	CAN CIRC 2	CAN CIRC 4	_	CAN CIRC 7
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNK WN	_	_	UNKWN	UNKWN	_	UNKWN	_
ABS	_	NG	UNKWN	UNK/WN	UNK WN	_	_	_	_	_	_
IPDM E/R	No indication	-	UNKWN	UNK <b>W</b> N	_	-	_	UNKWN	_	_	_



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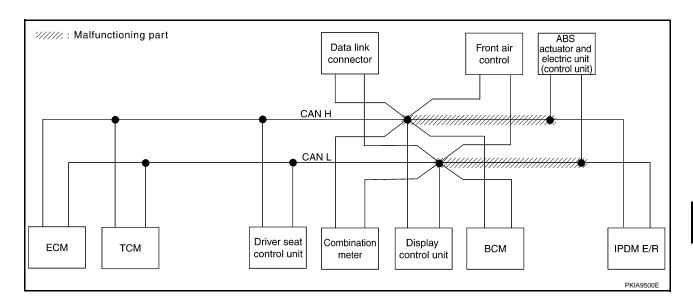
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Case 3

Check harness between data link connector and IPDM E/R. Refer to  $\underline{\text{LAN-135}}$ , "Circuit Check Between Data  $\underline{\text{Link Connector and IPDM E/R"}}$ .

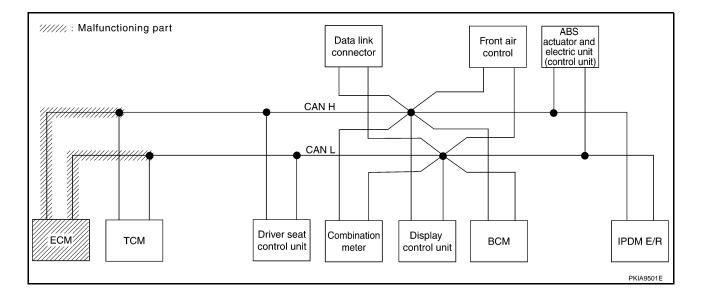
					CAI	N DIAG SUI	PPORT MI	NTR			
SELECT SYST	FM screen	Initial	Transmit				Receive of	diagnosis			
022201 0101	LIVI GOLGGII	diagnosis	diagnosis	ECM	ТСМ	METER /M&A	DISPLAY	BCM/SEC	Front air control	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	_	Ω <b>ΝΚ</b> ((MN	∩ <b>NK</b> WN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNK WN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	_	-	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CIRC 3	_	CAN CIRC 5	_	CAN CIRC 2	CAN CIRC 4	_	CANORC T
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	UNK WN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_	UNWWN	_
ABS	_	NG	UNKWN	∩ <b>NK</b> WN	Π <b>ИΚ</b> (ΜИ	_	_	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	-	_



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Case 4
Check ECM circuit. Refer to <u>LAN-136</u>, "ECM Circuit Check" .

					CAN DIA	G SUPPOF	RT MNTR				
SELECT SYST	FM screen	Initial	Transmit			Rec	eive diagno	osis			
022201 0101	LIVI GOLGGII	diagnosis		ECM	ТСМ	METER /M&A	DISPLAY	BCM/SEC	Front air control	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	∩ <b>иК</b> (МИ	_	∩ <b>M</b> MN	∩ <b>NK</b> WN	_	<b>NNR</b> MN	_	Π <b>ΝΚ</b> ΜΝ	UNK WN
A/T	_	NG	UNKWN	∩ <b>NK</b> WN	-	UNKWN	_	_		UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	1	_	_
Display control unit	_	CAN COMM	CAN CIRC 1	CANORC 3	-	CAN CIRC 5	_	CAN CIRC 2	CAN CIRC 4	_	CAN CIRC 7
всм	No indication	NG	UNKWN	UNK WN	_	UNKWN	_	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	-	UNKWN	_
ABS	_	NG	UNKWN	∩ <b>NK</b> WN	UNKWN	_	_	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_



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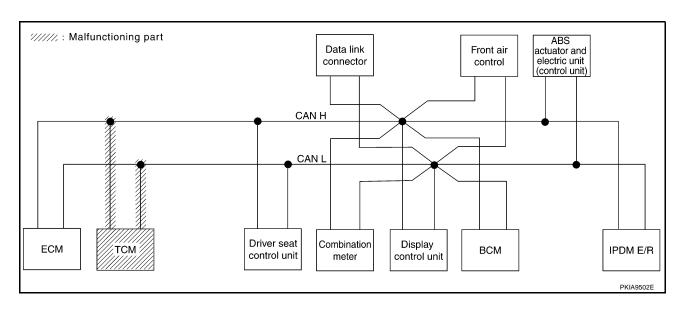
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Case 5
Check TCM circuit. Refer to <u>LAN-136</u>, "TCM Circuit Check" .

					CAN DIA	G SUPPOF	RT MNTR				
SELECT SYST	FM screen	Initial	Transmit			Rec	eive diagn	osis			
0222010101	LIVI GOIGGII	diagnosis		ECM	ТСМ	METER /M&A	DISPLAY	BCM/SEC	Front air control	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	Π <b>ИΚ</b> ΜИ	UNKWN	_	UNKWN	_	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNK WN	_	∩ <b>M</b> MN	_	_	_	UNIXWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	_	_	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CIRC 3	_	CAN CIRC 5	_	CAN CIRC 2	CAN CIRC 4	_	CAN CIRC 7
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNK WN	_	_	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_
											SKIB2736E

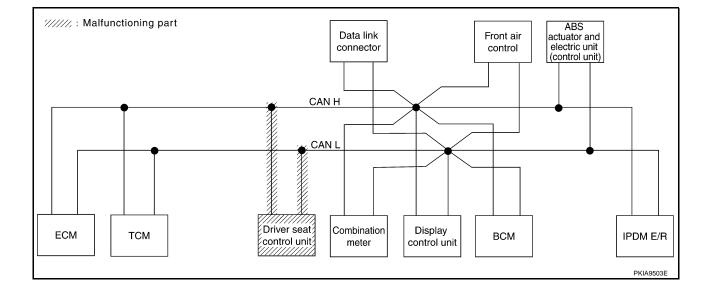


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Case 6
Check driver seat control unit circuit. Refer to <u>LAN-137</u>, "<u>Driver Seat Control Unit Circuit Check</u>" .

					CAN DIA	G SUPPOF	RT MNTR				
SELECT SYST	FM screen	Initial	Transmit			Rec	eive diagno	osis			
022201 01011	LIWI GOLGGII	diagnosis	diagnosis	ECM	TCM	METER /M&A	DISPLAY	BCM/SEC	Front air control	VDC/TCS /ABS	IPDM E/F
ENGINE	-	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	-	UNKWN	UNKWN
A/T	-	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	-	_	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CIRC 3	_	CAN CIRC 5	_	CAN CIRC 2	CAN CIRC 4	_	CAN CIRC
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	_	_
IPDM E/R	No indication		UNKWN	UNKWN	_	_	_	UNKWN	_	_	_



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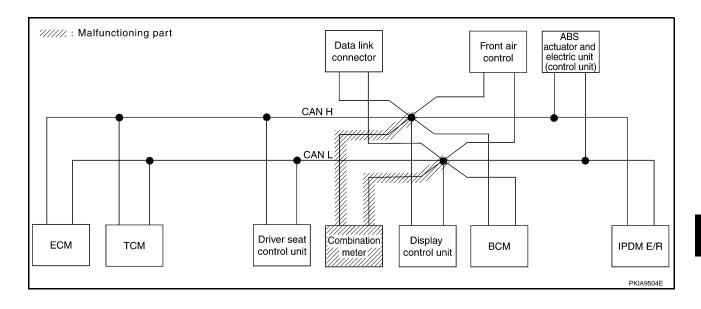
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Case 7
Check combination meter circuit. Refer to <u>LAN-137</u>, "Combination Meter Circuit Check" .

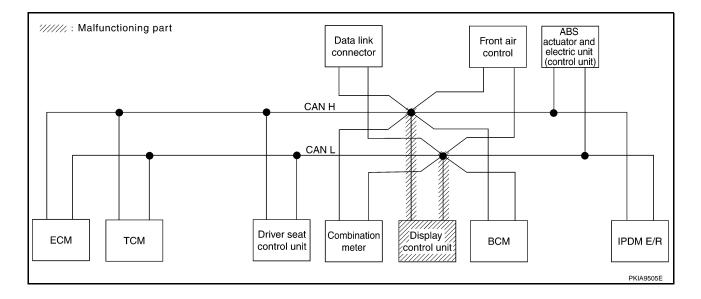
					CAN DIA	G SUPPOF	RT MNTR				
SELECT SYST	FM screen	Initial	Transmit			Rec	eive diagno	osis			
022201 0101	LIW GOICCIT	diagnosis	diagnosis	ECM	ТСМ	METER /M&A	DISPLAY	BCM/SEC	Front air control	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	∩ <b>NR</b> WN	_	UNKWN	_	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNK WN	_	_	_	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	∩ <b>NR</b> WN	_	UNKWN	_	-	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CIRC 3	_	CANORC 5	_	CAN CIRC 2	CAN CIRC 4	-	CAN CIRC
всм	No indication	NG	UNKWN	UNKWN	_	∩ <b>NK</b> WN	_	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	-	_	UNKWN	_	-	_



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Case 8
Check display control unit circuit. Refer to <u>LAN-138</u>, "<u>Display Control Unit Circuit Check"</u>.

					CAN DIA	G SUPPOF	RT MNTR				
SELECT SYSTI	FM screen	Initial	Transmit			Rec	eive diagno	osis			
0222010101	2111 001 0011	diagnosis	diagnosis	ECM	ТСМ	METER /M&A	DISPLAY	BCM/SEC	Front air control	VDC/TCS /ABS	IPDM E/I
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	_	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	_	_	_
Display control unit	_	CAN COMM	CANORC 1	CAN ORC 3	_	CAN ORC 5	_	CANORC 2	CANORC 4	_	CANORC
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	-	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNK <b>W</b> N	UNKWN	-	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	-	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	-	UNKWN	_	_	_



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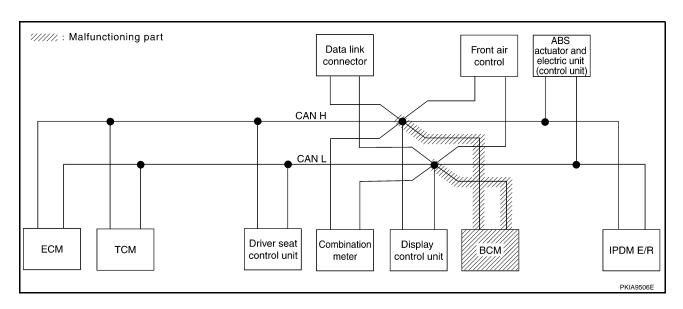
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Case 9 Check BCM circuit. Refer to <u>LAN-138</u>, "BCM Circuit Check" .

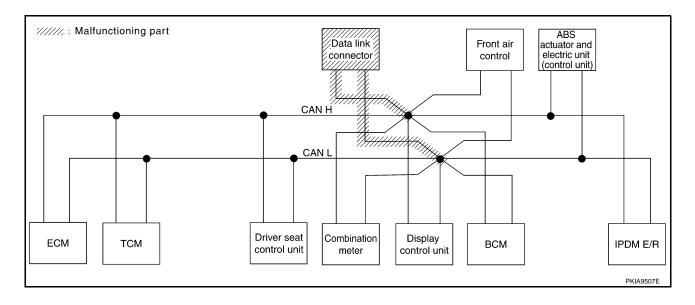
					CAI	N DIAG SUI	PPORT MN	NTR			
SELECT SYST	FM screen	Initial	Transmit				Receive of	diagnosis			
322313131	LIN GOLGGII	diagnosis	diagnosis	ECM	ТСМ	METER /M&A	DISPLAY	BCM/SEC	Front air control	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	_	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	_	UNK WN	_	_	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CIRC 3	_	CAN CIRC 5	_	CANORC 2	CAN CIRC 4	_	CAN CIRC 7
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNK WN	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	-	_	Π <b>ΛΚ</b> ΜΝ	_	_	_



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Case 10
Check data link connector circuit. Refer to LAN-139, "Data Link Connector Circuit Check" .

					CAI	N DIAG SUI	PPORT MI	NTR						
SELECT SYST	FM screen	Initial	Transmit	Receive diagnosis										
022201 0101	LIVI GOLGGII	diagnosis	diagnosis	ECM	ТСМ	METER /M&A	DISPLAY	BCM/SEC	Front air control	VDC/TCS /ABS	IPDM E/R			
ENGINE	-	NG	UNKWN	_	UNKWN	UNKWN	1	UNKWN	_	UNKWN	UNKWN			
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN	_			
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	_	_	_			
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CIRC 3	_	CAN CIRC 5	_	CAN CIRC 2	CAN CIRC 4	_	CAN CIRC 7			
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	UNKWN			
HVAC	No indication	Ì	UNKWN	UNKWN	_	_	UNKWN	UNKWN	-	UNKWN	_			
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	_	-			
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_			



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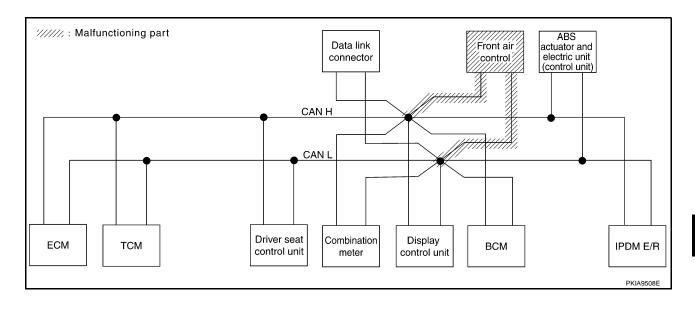
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Case 11
Check front air control circuit. Refer to <u>LAN-139</u>, "Front Air Control Circuit Check" .

					CAN DIA	G SUPPOF	RT MNTR							
SELECT SYSTEM screen		Initial	Transmit		Receive diagnosis									
0222010101	LIN GOLGGII	diagnosis	diagnosis	ECM	ТСМ	METER /M&A	DISPLAY	BCM/SEC	Front air control	VDC/TCS /ABS	IPDM E/F			
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	_	UNKWN	UNKWN			
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	-	UNKWN	_			
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	-	1	_			
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CIRC 3	_	CAN CIRC 5	_	CAN CIRC 2	CANORC 4	_	CAN CIRC			
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	UNKWN			
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_	UNKWN	_			
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	_	_			
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	1	_			

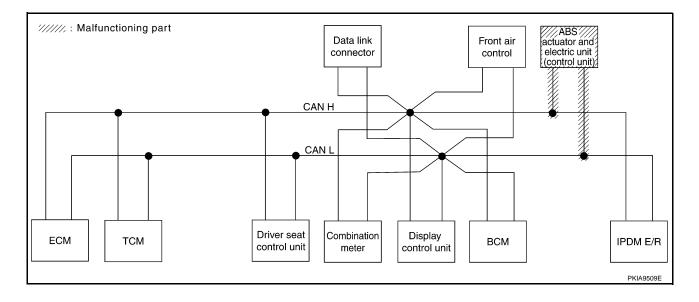


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Case 12

Check ABS actuator and electric unit (control unit) circuit. Refer to <u>LAN-140</u>, "ABS Actuator and Electric Unit (Control Unit) Circuit Check".

			CAN DIAG SUPPORT MNTR										
SELECT SYST	FM screen	Initial	Transmit	Receive diagnosis									
0222010101	2111 001 0011	diagnosis	diagnosis	ECM	TCM	METER /M&A	DISPLAY	BCM/SEC	Front air control	VDC/TCS /ABS	IPDM E/R		
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	_	UNK WN	UNKWN		
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNK WN	_		
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	_	_	_		
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CIRC 3	_	CAN CIRC 5	_	CAN CIRC 2	CAN CIRC 4	_	CAN CIRC 7		
всм	No indication	NG	UNKWN	UNKWN	-	UNKWN	_	_	_	_	UNKWN		
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_	UNKWN	_		
ABS	_	W	Ω <b>ΝΚ</b> ΜΝ	UNK WN	UNK WN	_	_	_	_	_	_		
IPDM E/R	No indication	_	UNKWN	UNKWN	-	_	_	UNKWN	_	_	_		



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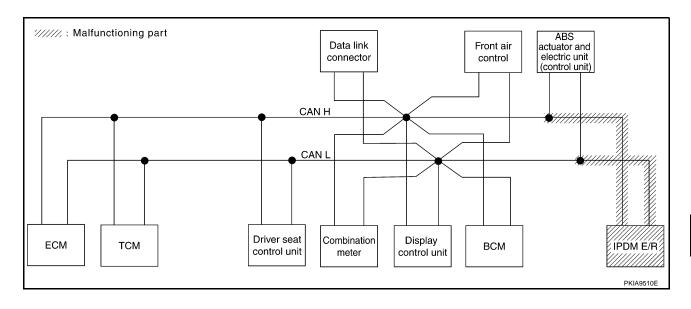
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Case 13
Check IPDM E/R circuit. Refer to <u>LAN-140, "IPDM E/R Circuit Check"</u>.

					CAN DIA	AG SUPPORT MNTR							
SELECT SYSTEM screen		Initial	Transmit		Receive diagnosis								
011101		diagnosis	diagnosis	ECM	TCM	METER /M&A	DISPLAY	BCM/SEC	Front air control	VDC/TCS /ABS	IPDM E/I		
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	_	UNKWN	UNKWN		
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	1	_	_	UNKWN	_		
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	_	_	_		
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CIRC 3	_	CAN CIRC 5	_	CAN CIRC 2	CAN CIRC 4	_	CANORC		
BCM	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	UNKWN		
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_	UNKWN	_		
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	_	_		
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_		



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Case 14

Check CAN communication circuit. Refer to LAN-141, "CAN Communication Circuit Check" .

			CAN DIAG SUPPORT MNTR										
SELECT SYST	SYSTEM screen Initial		Transmit		Receive diagnosis								
3222313131	LIN GOLGGII	diagnosis	diagnosis	ECM	TCM	METER /M&A	DISPLAY	BCM/SEC	Front air control	VDC/TCS /ABS	IPDM E/R		
ENGINE	_	NG	∩ <b>NK</b> WN	_	UNK WN	UNK WN	_	UN <b>K</b> ₩N	_	NNK WN	Π <b>ΝΚ</b> ΜΝ		
A/T	_	NG	UNKWN	Ω <b>ΝΚ</b> ₩Ν	-	∩ <b>M</b> MN	_	_	-	Ω <b>ΝΚ</b> ⁄ΜΝ	_		
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	_	_	_		
Display control unit	_	CAN COMM	CANORC 1	CANORC 3	-	CAN ORC 5	_	CANORC 2	CANORC 4	_	CANORC 7		
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	UNKWN		
HVAC	No indication	_	UNKWN	UNKWN	-	_	UNKWN	UNKWN	-	UNKWN	_		
ABS	_	W	∩ <b>NR</b> WN	UNI <b>W</b> N	UNKWN	_	_	_	_	_	_		
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	-	_	_		

### Case 15

Check IPDM E/R ignition relay circuit continuously sticks "OFF". Refer to <u>LAN-141, "IPDM E/R Ignition Relay Circuit Check"</u>.

					CAN DIA	G SUPPOF	RT MNTR				
SELECT SYST	STEM screen Initial		Transmit	Receive diagnosis							
3222373737		diagnosis	diagnosis	ECM	TCM	METER /M&A	DISPLAY	BCM/SEC	Front air control	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNK WN	UNKWN	_	UNKWN	_	Ω <b>ΝΚ</b> ΜΝ	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNK WN	UNKWN	_	UNKWN	_	-	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CIRC 3	_	CAN CIRC 5	_	CAN CIRC 2	CAN CIRC 4	-	CAN CIRC 7
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	1	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	-	_	_
											SKIB2747E

### Case 16

Check IPDM E/R ignition relay circuit continuously sticks "ON". Refer to <u>LAN-141, "IPDM E/R Ignition Relay Circuit Check"</u>.

					CAN DIA	G SUPPOF	RT MNTR							
SELECT SYST	SVSTEM screen		Transmit		Receive diagnosis									
3222013131	LIN GOIGON	Initial diagnosis	diagnosis	ECM	TCM	METER /M&A	DISPLAY	BCM/SEC	Front air control	VDC/TCS /ABS	IPDM E/R			
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	_	UNKWN	UNKWN			
A/T	_	NG	UNKWN	∩ <b>NK</b> WN	_	Π <b>ΝΚ</b> ΜΝ	_	_	_	UNKWN	_			
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	_	-	_			
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CIRC 3	_	CAN CIRC 5	_	CAN CIRC 2	CAN CIRC 4	_	CAN CIRC 7			
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	ı	UNKWN			
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	-	UNKWN	_			
ABS	_	NG	UNKWN	∩ <b>NK</b> WN	UNKWN	_	_	_	_	1	_			
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_			
						•					SKIB2748E			

### Circuit Check Between TCM and Driver Seat Control Unit

# 1. CHECK CONNECTOR

- Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- Check following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector F33
- Harness connector E19
- Harness connector E50
- Harness connector B75

### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

- Disconnect A/T assembly connector and harness connector F33.
- Check continuity between A/T assembly harness connector F9 terminals 3 (L), 8 (P) and harness connector F33 terminals 12 (L), 11 (P).

3 (L) - 12 (L)

: Continuity should exist.

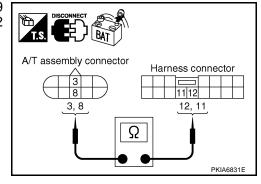
8 (P) - 11 (P)

: Continuity should exist.

### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



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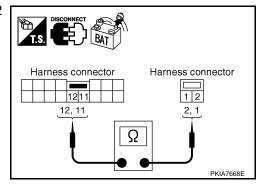
# 3. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect harness connector E50.
- Check continuity between harness connector E19 terminals 12 (L), 11 (P) and harness connector E50 terminals 2 (L), 1 (P).

12 (L) - 2 (L) 11 (P) - 1 (P) : Continuity should exist. : Continuity should exist.

OK or NG

OK >> GO TO 4. NG >> Repair harness.



# 4. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect harness connector B37.
- 2. Check continuity between harness connector B75 terminals 2 (L), 1 (P) and harness connector B37 terminals 15 (L), 14 (P).

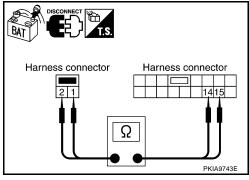
2 (L) - 15 (L) 1 (P) - 14 (P) : Continuity should exist.

: Continuity should exist.

OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-115, "Work Flow"</u>.

NG >> Repair harness.



# Circuit Check Between Driver Seat Control Unit and Data Link Connector

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### 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector B69
- Harness connector M40

### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

- Disconnect harness connector B37 and harness connector B69.
- Check continuity between harness connector B37 terminals 15 (L), 14 (P) and harness connector B69 terminals 51J (L), 52J (P).

15 (L) - 51J (L)

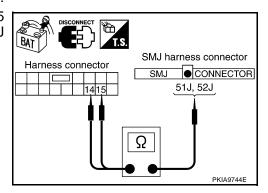
: Continuity should exist. : Continuity should exist.

14 (P) - 52J (P)

OK or NG

OK >> GO TO 3.

NG >> Repair harness.



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# 3. check harness for open circuit

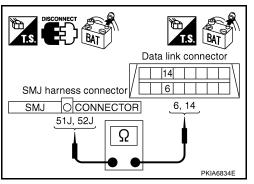
Check continuity between harness connector M40 terminals 51J (L), 52J (P) and data link connector M22 terminals 6 (L), 14 (P).

51J (L) - 6 (L) : Continuity should exist. 52J (P) - 14 (P) : Continuity should exist.

### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-115, "Work Flow"</u>.

NG >> Repair harness.



# Circuit Check Between Data Link Connector and IPDM E/R

1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector M31
- Harness connector E152

### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

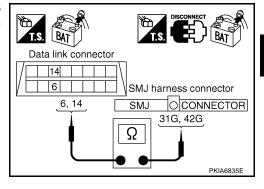
- 1. Disconnect harness connector M31.
- Check continuity between data link connector M22 terminals 6
   (L), 14 (P) and harness connector M31 terminals 31G (L), 42G
   (P).

6 (L) - 31G (L) : Continuity should exist. 14 (P) - 42G (P) : Continuity should exist.

### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



# 3. CHECK HARNESS FOR OPEN CIRCUIT

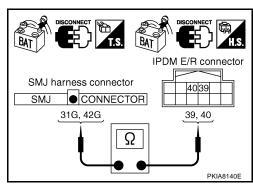
- Disconnect IPDM E/R connector.
- Check continuity between harness connector E152 terminals 31G (L), 42G (P) and IPDM E/R harness connector E122 terminals 19 (L), 40 (P).

31G (L) - 39 (L) : Continuity should exist. 42G (P) - 40 (P) : Continuity should exist.

### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-115, "Work Flow"</u>.

NG >> Repair harness.



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### **ECM 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 connectors for damage, bend and loose connection (control module side and harness side).
- ECM connector
- Harness connector E19
- Harness connector F33

### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

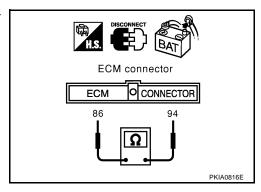
- 1. Disconnect ECM connector.
- 2. Check resistance between ECM harness connector E16 terminals 94 (L) and 86 (P).

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

### OK or NG

OK >> Replace ECM.

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



### **TCM Circuit Check**

### 1. CHECK CONNECTOR

- 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

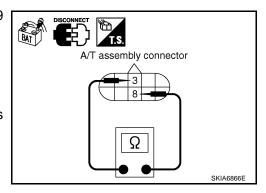
- Disconnect A/T assembly connector.
- 2. Check resistance between A/T assembly harness connector F9 terminals 3 (L) and 8 (P).

**3 (L) - 8 (P)** : Approx. 54 - 66 
$$\Omega$$

### OK or NG

OK >> Replace A/T assembly.

NG >> Repair harness between A/T assembly and harness connector F33.



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### **Driver Seat Control Unit Circuit Check**

### 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (control unit side and harness side).
- Driver seat control unit connector
- Harness connector P1
- Harness connector B37

### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect driver seat control unit connector.
- 2. Check resistance between driver seat control unit harness connector P2 terminals 3 (L) and 19 (P).

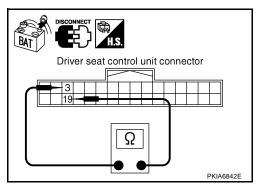
: Approx. 54 - 66  $\Omega$ 

### OK or NG

OK >> Replace driver seat control unit.

NG

>> Repair harness between driver seat control unit and harness connector B69.



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### **Combination Meter Circuit Check**

### 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- Disconnect the negative battery terminal.
- Check terminals and connector of combination meter for damage, bend and loose connection (meter side and harness side).

### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

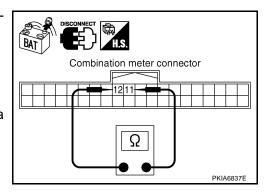
- 1. Disconnect combination meter connector.
- Check resistance between combination meter harness connector M24 terminals 11 (L) and 12 (P).

: Approx. 54 - 66  $\Omega$ 

### OK or NG

OK >> Replace combination meter.

NG >> Repair harness between combination meter and data link connector.



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**Display Control Unit Circuit Check** 

### 1. CHECK CONNECTOR

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

### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect display control unit connector.
- 2. Check resistance between display control unit harness connector M95 terminals 25 (L) and 26 (P).

: Approx. 54 - 66  $\Omega$ 

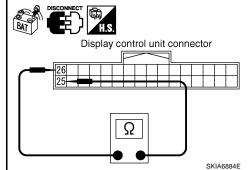
### OK or NG

OK :

>> Replace display control unit.

NG

>> Repair harness between display control unit and data link connector.



### **BCM Circuit Check**

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### 1. CHECK CONNECTOR

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

### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

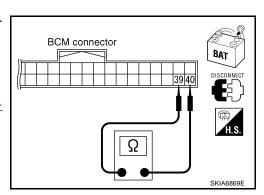
- 1. Disconnect BCM connector.
- 2. Check resistance between BCM harness connector M18 terminals 39 (L) and 40 (P).

: Approx. 54 - 66  $\Omega$ 

### OK or NG

OK >> Replace BCM. Refer to <u>BCS-20</u>, "Removal and Installation of <u>BCM"</u>.

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



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### **Data Link Connector Circuit Check**

### 1. CHECK CONNECTOR

1. Turn ignition switch OFF.

- 2. Disconnect the negative battery terminal.
- 3. Check the 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 M22 terminals 6 (L) and 14 (P).

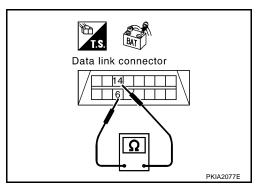
6 (L) - 14 (P) : Approx. 54 - 66 
$$\Omega$$

### OK or NG

OK >> Diagnose again. Refer to <u>LAN-115</u>, "Work Flow" .

NG >> Repair harness between data link connector and

>> Repair harness between data link connector and combination meter.



### **Front Air Control Circuit Check**

### 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- Check terminals and connector of front air control for damage, bend and loose connection (unit side and harness side).

### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

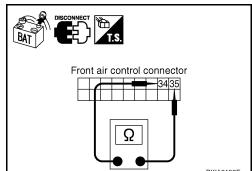
- 1. Disconnect front air control connector.
- 2. Check resistance between front air control harness connector M50 terminals 34 (L) and 35 (P).

**34 (L) - 35 (P)** : Approx. **54 - 66** 
$$\Omega$$

### OK or NG

OK >> Replace front air control.

NG >> Repair harness between front air control and data link connector.



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# **ABS Actuator and Electric Unit (Control Unit) Circuit Check**

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### 1. CHECK CONNECTOR

- Turn ignition switch OFF.
- Disconnect the negative battery terminal. 2.
- 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 E125 terminals 11 (L) and 15 (P).

: Approx. 54 - 66  $\Omega$ 

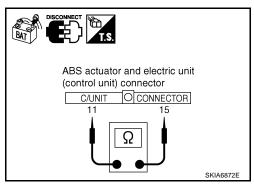
### OK or NG

OK

>> Replace ABS actuator and electric unit (control unit).

NG

>> Repair harness between ABS actuator and electric unit (control unit) and harness connector E152.



# **IPDM E/R Circuit Check**

UKS003A1

### 1. CHECK CONNECTOR

- Turn ignition switch OFF.
- 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

- Disconnect IPDM E/R connector.
- Check resistance between IPDM E/R harness connector E122 terminals 39 (L) and 40 (P).

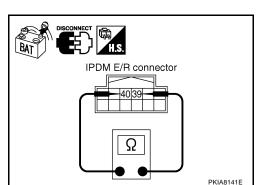
: Approx. 108 - 132  $\Omega$ 

### OK or NG

OK >> Replace IPDM E/R.

NG

>> Repair harness between IPDM E/R and harness connector E152.



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### **CAN Communication Circuit Check**

### 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Disconnect the following module and control unit connectors and check terminals for deformation, disconnection, looseness or damage.
- ECM
- A/T assembly
- Driver seat control unit
- Combination meter
- Display control unit
- BCM
- Front air control
- ABS actuator and electric unit (control unit)
- IPDM E/R

### OK or NG

OK >> GO TO 2.

NG >> Repair or replace as necessary.

# 2. CHECK HARNESS FOR SHORT CIRCUIT

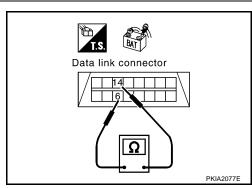
With all module and control unit connectors disconnected, check continuity between data link connector M22 terminals 6 (L) and 14 (P).

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

### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



# 3. CHECK HARNESS FOR SHORT CIRCUIT

Check continuity between data link connector M22 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 >> Check ECM and IPDM E/R. Refer to <u>LAN-142, "ECM/IPDM E/R INTERNAL CIRCUIT INSPECTION"</u>.

NG >> Repair harness.

# Data link connector 14 6,14 6,14 PKIA2079E

UKS003A3

# 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 <u>PG-26</u>, "IPDM E/R Power/Ground Circuit Inspection".
- Ignition power supply circuit. Refer to <u>PG-13</u>, "IGNITION POWER SUPPLY IGNITION SW. IN ON AND/OR START".

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# **CAN SYSTEM (TYPE 4)**

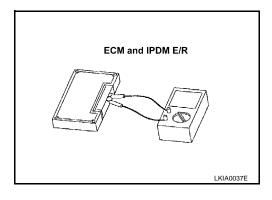
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UKS003A4

# 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 39 and 40.

Unit	Terminal	Resistance value (Ω) (Approx.)		
ECM	94 - 86	108 - 132		
IPDM E/R	39 - 40	100 - 132		



# **CAN SYSTEM (TYPE 5)**

### PFP:23710

# **System Description**

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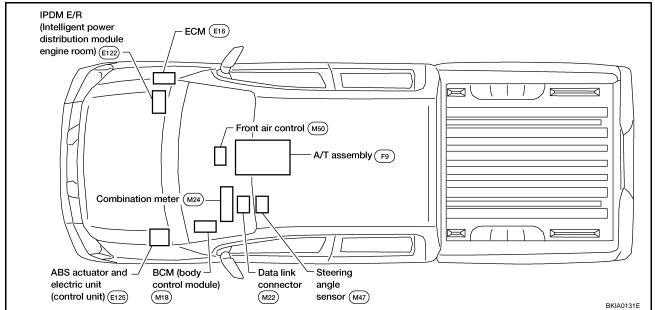
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CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped 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.

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

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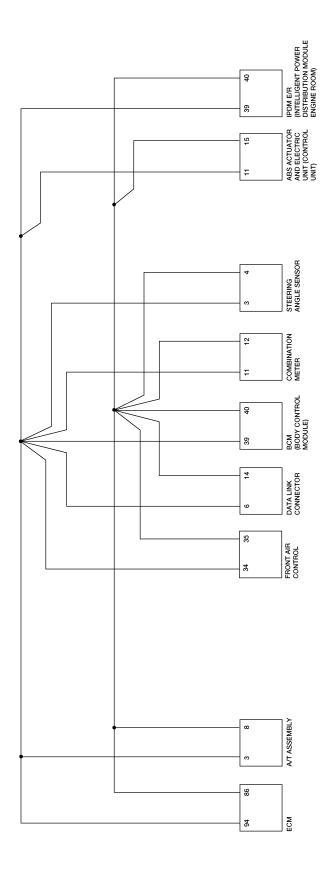


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Revision: October 2005 LAN-143 2005 Titan

Schematic UKS00394



Wiring Diagram - CAN -

JKS00395

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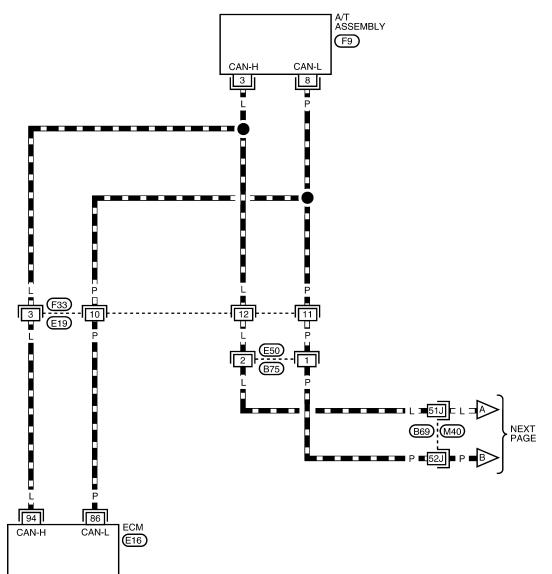
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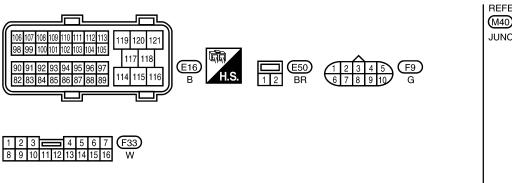
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## LAN-CAN-13

■□■ : DATA LINE





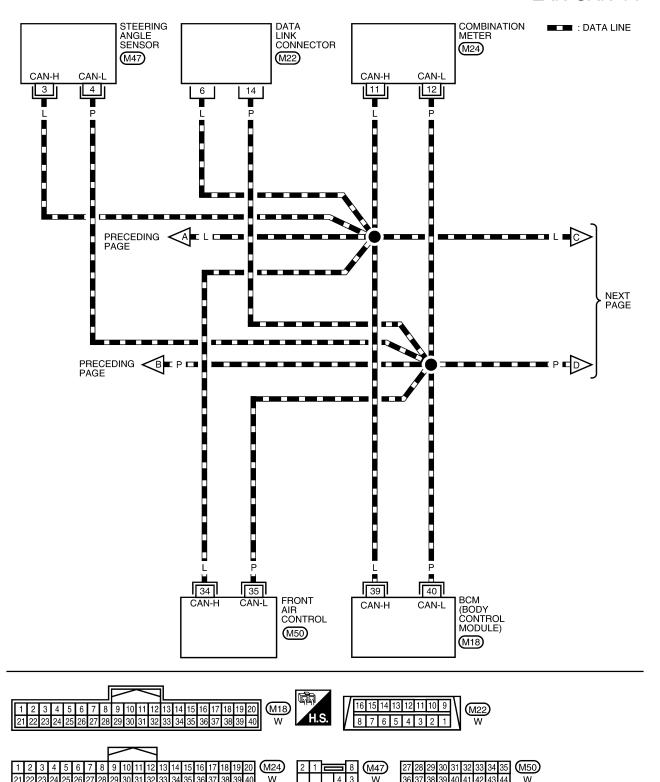
REFER TO THE FOLLOWING.

(M40) - SUPER MULTIPLE

JUNCTION (SMJ)

BKWA0434E

## LAN-CAN-14



BKWA0435E

## LAN-CAN-15

■□■ : DATA LINE

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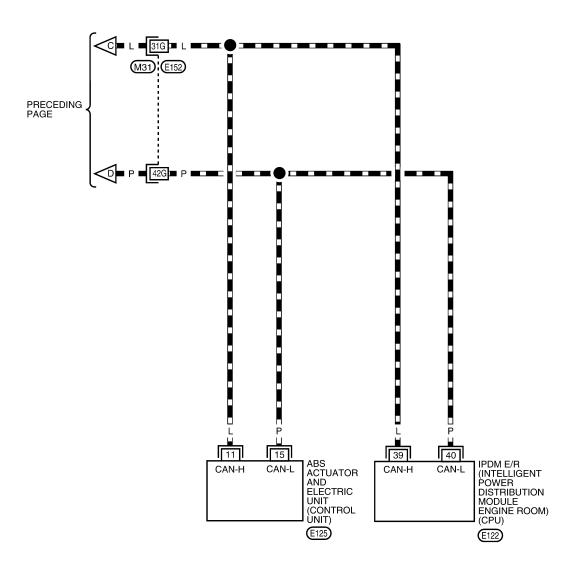
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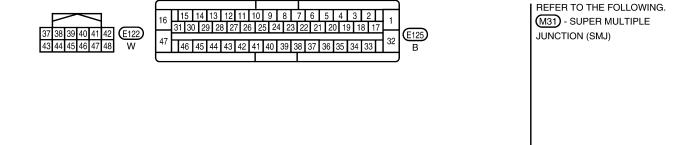
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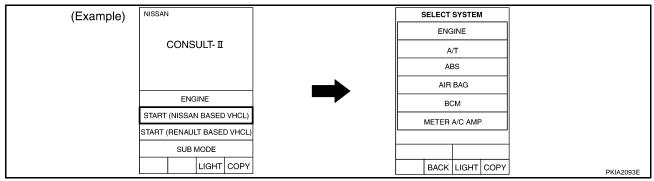
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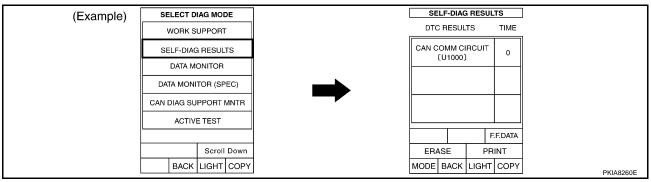
BKWA0436E

Work Flow

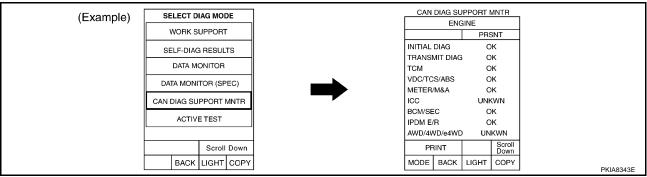
 When there are no indications of "BCM", "HVAC" or "IPDM E/R" on "SELECT SYSTEM" display of CON-SULT-II, print the "SELECT SYSTEM".



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



3. Print all the data of "CAN DIAG SUPPORT MNTR" for "ENGINE", "A/T", "BCM", "HVAC", "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 LAN-149, "CHECK SHEET".
- 5. Based on the indications of "SELECT SYSTEM" and the results of "CAN DIAG SUPPORT MNTR", puts a check mark onto the items with "No indication", "NG", or "UNKWN" in the check sheet table. Refer to <a href="LAN-149">LAN-149</a>, "CHECK SHEET"</a>.

#### 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-151</u>, "CHECK SHEET <u>RESULTS (EXAMPLE)"</u>.

## **CAN SYSTEM (TYPE 5)**

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## **CHECK SHEET**

### NOTE:

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

					CAN DIA	G SUPPOI				
SELECT SYS	STEM screen	Initial diagnosis	Transmit diagnosis	ECM	TCM	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_
		Attach o					copy of SYSTEM			

PKIB6642E

Attach copy of	Attach copy of	Attach copy of	Attach copy of
ENGINE	A/T	AUTO DRIVE POS.	BCM
SELF-DIAG RESULTS	SELF-DIAG RESULTS	SELF-DIAG RESULTS	SELF-DIAG RESULTS
Attach copy of HVAC SELF-DIAG RESULTS	Attach copy of ABS SELF-DIAG RESULTS	Attach copy of IPDM E/R SELF-DIAG RESULTS	
Attach copy of	Attach copy of	Attach copy of	Attach copy of
ENGINE	A/T	AUTO DRIVE POS.	BCM
CAN DIAG SUPPORT	CAN DIAG SUPPORT	CAN DIAG SUPPORT	CAN DIAG SUPPORT
MNTR	MNTR	MNTR	MNTR
Attach copy of	Attach copy of	Attach copy of	
HVAC	ABS	IPDM E/R	
CAN DIAG SUPPORT	CAN DIAG SUPPORT	CAN DIAG SUPPORT	
MNTR	MNTR	MNTR	

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

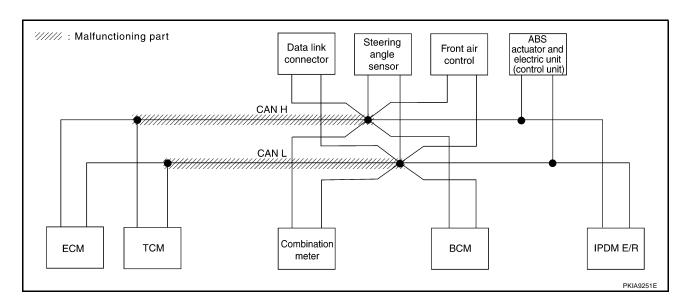
#### NOTE:

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

#### Case 1

Check harness between TCM and data link connector. Refer to <u>LAN-163</u>, "Circuit Check Between TCM and <u>Data Link Connector"</u>.

					CAN DIA	G SUPPOI	RT MNTR			
SELECT S	YSTEM screen	Initial	Transmit			Red	ceive diagno	osis		
OLLLO1 O	TO TENT SOLCOT	diagnosis		ECM	тсм	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNK/WN	_
BCM	No indication	NG	UNKWN	UNIWN	_	UNKWN	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNIWN	_	_	UNKWN	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_



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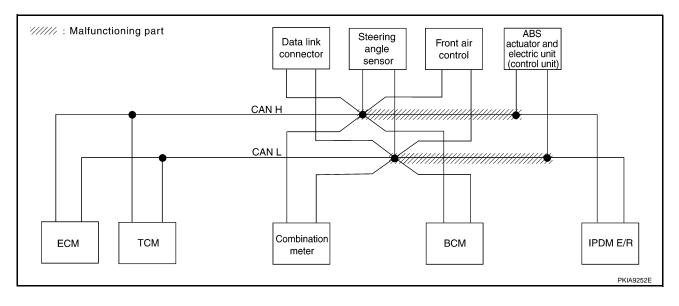
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Case 2

Check harness between data link connector and IPDM E/R. Refer to  $\underline{\text{LAN-164}}$ , "Circuit Check Between Data  $\underline{\text{Link Connector and IPDM E/R"}}$ .

					CAN DIA	G SUPPO	RT MNTR				
SELECT SY	STEM screen	Initial	Transmit			Red	ceive diagno	osis			
OLLLO1 O1	OTEN SOICCIT	diagnosis		ECM	тсм	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/F	
ENGINE	_	– NG – NG	<ul><li>NG</li><li>NG</li></ul>	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNK/WN	_	
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN	
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	UNK WN	-	
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_	
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	



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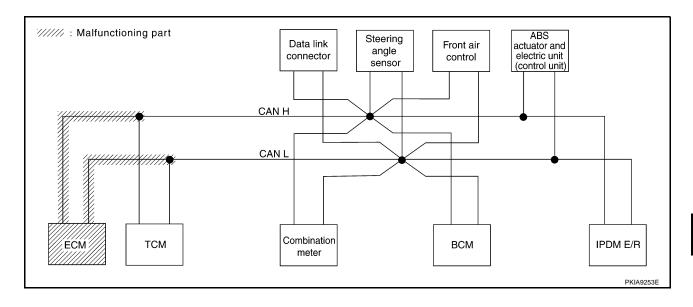
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Case 3
Check ECM circuit. Refer to <u>LAN-165</u>, "<u>ECM Circuit Check"</u>.

					CAN DIA	G SUPPO	RT MNTR			
SELECT S	YSTEM screen	Initial	Transmit			Red	ceive diagno	osis		
OLLLOTO	TO TEIW SOICEIT	diagnosis	diagnosis	ECM	тсм	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNK WN	_	UNK WN	UNKWN	UNK/WN	_	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNIOWN	_	UNKWN	-	_	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNIOWN	_	_	UNKWN	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_



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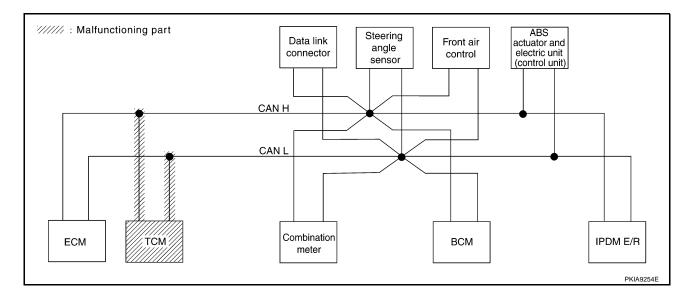
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Case 4
Check TCM circuit. Refer to <u>LAN-166, "TCM Circuit Check"</u>.

					CAN DIA	G SUPPOI	RT MNTR			
SELECT SY	'STEM screen	Initial	Transmit			Red	eive diagno	osis		
OLLLO1 01	OTEN SOICEN	diagnosis	diagnosis	ECM	тсм	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNIMN	_	UNK/WN	_	_	UNKWN	_
BCM	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	-	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNK/WN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_



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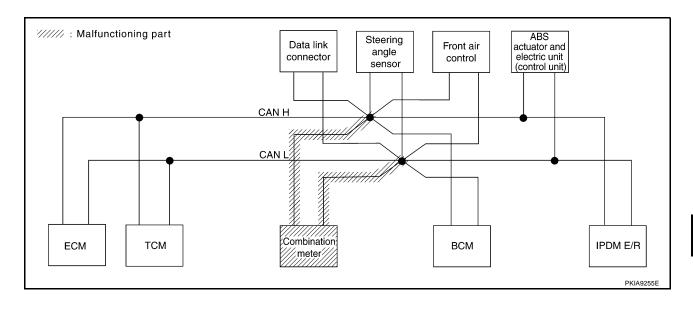
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Case 5
Check combination meter circuit. Refer to <u>LAN-166</u>, "Combination Meter Circuit Check" .

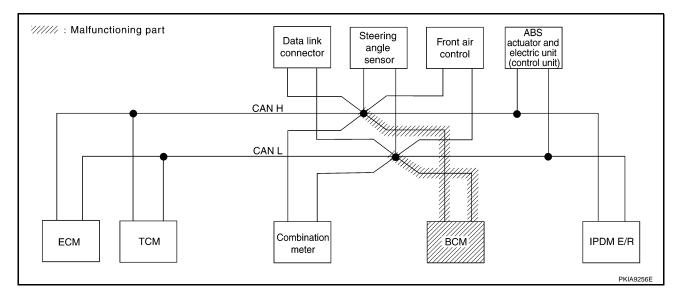
					CAN DIA	G SUPPOI	RT MNTR			
SELECT S	YSTEM screen	Initial	Transmit			Red	ceive diagno	osis		
OLLLO1 O	TOTENT SOLCCIT	diagnosis		ECM	тсм	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNK/WN	_	_	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	-	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_



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Case 6
Check BCM circuit. Refer to <u>LAN-167, "BCM Circuit Check"</u>.

					CAN DIA	G SUPPO	RT MNTR			
SELECT SY	'STEM screen	Initial	Transmit			Red	ceive diagno	osis		
OLLLO1 O1	CTENT COTOCIT	diagnosis		ECM	тсм	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNK WN	_	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_



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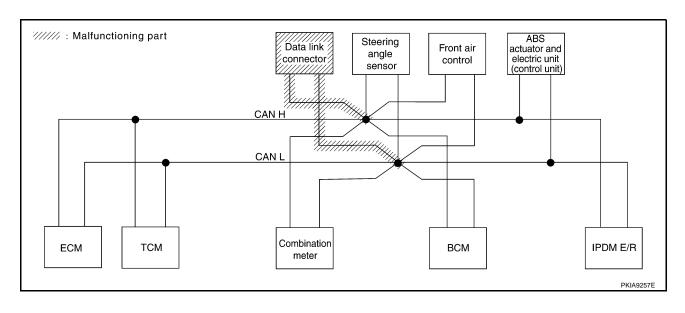
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Case 7

Check data link connector circuit. Refer to <a href="LAN-167">LAN-167</a>, "Data Link Connector Circuit Check" .

					CAN DIA	G SUPPOI	RT MNTR			
SELECT SY	/STEM screen	Initial	Transmit			Red	ceive diagno	osis		
02220101	1012W 00100H	diagnosis		ECM	тсм	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	-	_	UNKWN	_
BCM	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_



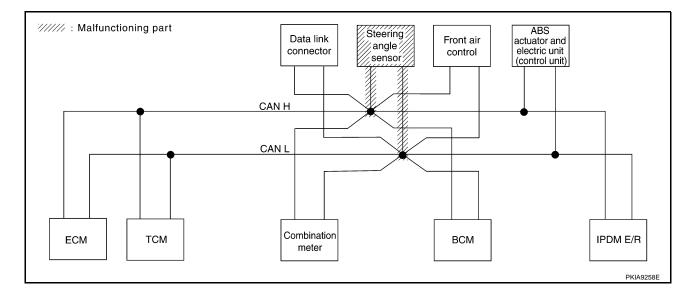
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Case 8
Check steering angle sensor circuit. Refer to <u>LAN-168</u>, "Steering Angle Sensor Circuit Check" .

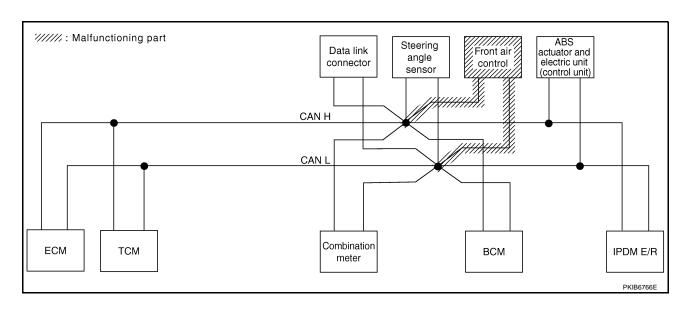
					CAN DIA	G SUPPO	RT MNTR			
SELECT S	YSTEM screen	Initial	Transmit			Red	ceive diagno	osis		
OLLLOTO	TO TEIN SOICEIT	diagnosis		ECM	тсм	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	-	_	UNKWN	_
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_



Case 9

Check front air control circuit. Refer to LAN-168, "Front Air Control Circuit Check" .

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYS	TEM screen	Initial	Transmit			Red	ceive diagno	osis		
OLLLO1 010	TEIW SOICCIT			ECM	ТСМ	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN	_
BCM	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_



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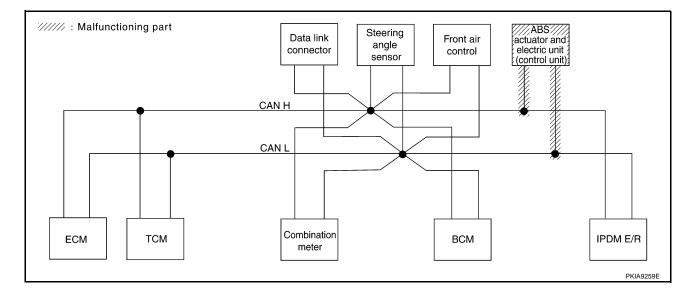
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Case 10

Check ABS actuator and electric unit (control unit) circuit. Refer to <u>LAN-169</u>, "ABS Actuator and Electric Unit (Control Unit) Circuit Check".

					CAN DIA	G SUPPO	RT MNTR			
SELECT ST	YSTEM screen	Initial	Transmit			Red	ceive diagno	osis		
OLLLO1 O	TO TEIN SOICEIT	diagnosis		ECM	тсм	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNK <b>W</b> N	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	_
ABS	_	V	UNKWN	UNK/WN	UNK/WN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_



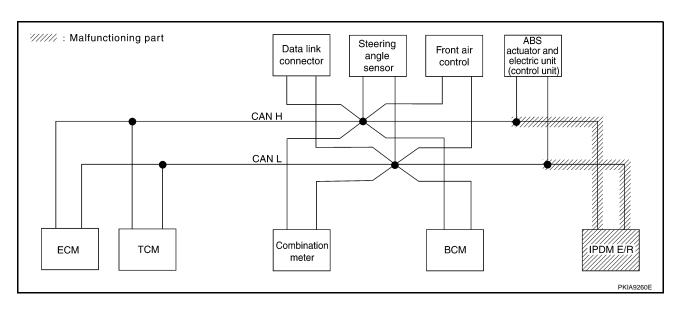
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Case 11
Check IPDM E/R circuit. Refer to LAN-169, "IPDM E/R Circuit Check" .

			CAN DIAG SUPPORT MNTR										
SELECT S	YSTEM screen	Initial	Transmit			Red	ceive diagno						
SELECT STSTEM SCIEUT		diagnosis		ECM	тсм	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/F			
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN	UNK WN			
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN	_			
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNK WN			
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	_			
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_			
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_			



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Case 12

Check CAN communication circuit. Refer to LAN-170, "CAN Communication Circuit Check" .

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYSTEM screen		Initial	Tue			Red	ceive diagno	osis		
022201 0101	12141 0010011	diagnosis diagnosis FCM TCM METER RCM/SEC STRG VDC					VDC/TCS /ABS	IPDM E/F		
ENGINE	_	NG	UNK WN	_	UNKWN	UNKWN	UNK WN	_	UNK WN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNK/WN	_	_	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	_
ABS	_	V	UNK/WN	UNK WN	UNKWN	_	_	UNK WN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_

### Case 13

Check IPDM E/R ignition relay circuit continuously sticks "OFF". Refer to LAN-171, "IPDM E/R Ignition Relay Circuit Check" .

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYS	TEM screen	Initial	T			Re	ceive diagno	osis		
SELECTORS	LIVI SCIECTI	Initial Transmit diagnosis		ECM	тсм	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNK WN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	UNK WN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_

#### Case 14

Check IPDM E/R ignition relay circuit continuously sticks "ON". Refer to LAN-171, "IPDM E/R Ignition Relay Circuit Check".

					CAN DIA	G SUPPOI	RT MNTR			
SELECT SYS	TEM screen	Initial	Transmit			Red	ceive diagno	osis		
OLLLOT OTC	TEN SOLCCIT	diagnosis	diagnosis	ECM	ТСМ	METER /M&A	BCM/SEC	STRG	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	-	UNKWN	UNKWN	UNKWN	_	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	_
ABS	_	NG	UNKWN	UNK WN	UNKWN	_	_	UNK WN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_

**Circuit Check Between TCM and Data Link Connector** 

1. CHECK CONNECTOR

Turn ignition switch OFF.

2. Disconnect the negative battery terminal.

3. Check following terminals and connectors for damage, bend and loose connection (connector side and harness side).

Harness connector F33

Harness connector E19

Harness connector E50

Harness connector B75

Harness connector B69

Harness connector M40

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 F33.
- Check continuity between A/T assembly harness connector F9 terminals 3 (L), 8 (P) and harness connector F33 terminals 12 (L), 11 (P).

3 (L) - 12 (L)

: Continuity should exist.

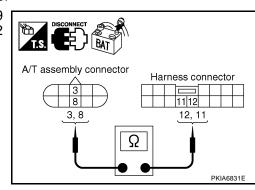
8 (P) - 11 (P)

: Continuity should exist.

OK or NG

OK >> GO TO 3.

NG >> Repair harness.



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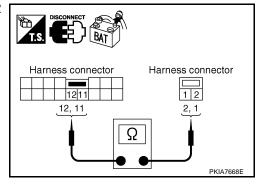
## 3. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect harness connector E50.
- 2. Check continuity between harness connector E19 terminals 12 (L), 11 (P) and harness connector E50 terminals 2 (L), 1 (P).

12 (L) - 2 (L) 11 (P) - 1 (P) : Continuity should exist. : Continuity should exist.

OK or NG

OK >> GO TO 4. NG >> Repair harness.



## 4. CHECK HARNESS FOR OPEN CIRCUIT

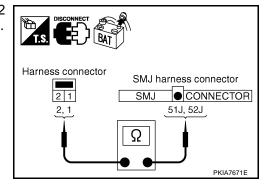
- 1. Disconnect harness connector B69.
- Check continuity between harness connector B75 terminals 2 (L), 1 (P) and harness connector B69 terminals 51J (L), 52J (P).

2 (L) - 51J (L) 1 (P) - 52J (P) : Continuity should exist.

: Continuity should exist.

OK or NG

OK >> GO TO 5. NG >> Repair harness.



## 5. CHECK HARNESS FOR OPEN CIRCUIT

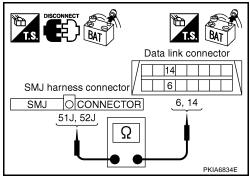
Check continuity between harness connector M40 terminals 51J (L), 52J (P) and data link connector M22 terminals 6 (L), 14 (P).

51J (L) - 6 (L) 52J (P) - 14 (P) : Continuity should exist. : Continuity should exist.

OK or NG

OK >> Connect all the connectors and diagnose again. Refer to LAN-148, "Work Flow".

NG >> Repair harness.



## Circuit Check Between Data Link Connector and IPDM E/R

UKS00398

## 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector M31
- Harness connector E152

#### OK or NG

OK >> GO TO 2.

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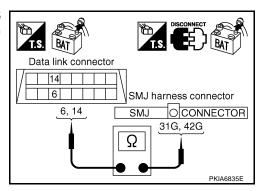
## 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect harness connector M31.
- Check continuity between data link connector M22 terminals 6 (L), 14 (P) and harness connector M31 terminals 31G (L), 42G (P).

6 (L) - 31G (L) : Continuity should exist. 14 (P) - 42G (P) : Continuity should exist.

#### OK or NG

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



## 3. CHECK HARNESS FOR OPEN CIRCUIT

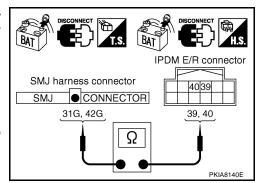
- 1. Disconnect IPDM E/R connector.
- Check continuity between harness connector E152 terminals 31G (L), 42G (P) and IPDM E/R harness connector E122 terminals 39 (L), 40 (P).

31G (L) - 39 (L) : Continuity should exist. 42G (P) - 40 (P) : Continuity should exist.

#### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to LAN-148, "Work Flow".

NG >> Repair harness.



UKS00399

### **ECM Circuit Check**

## 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (control module side and harness side).
- ECM connector
- Harness connector E19
- Harness connector F33

### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

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# 2. CHECK HARNESS FOR OPEN CIRCUIT

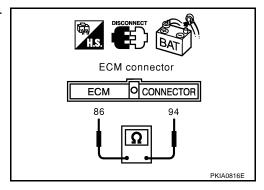
- 1. Disconnect ECM connector.
- Check resistance between ECM harness connector E16 terminals 94 (L) and 86 (P).

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

#### OK or NG

OK >> Replace ECM.

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



UKS0039A

### **TCM Circuit Check**

## CHECK CONNECTOR

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

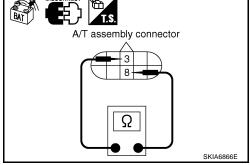
- 1. Disconnect A/T assembly connector.
- Check resistance between A/T assembly harness connector F9 terminals 3 (L) and 8 (P).

**3 (L) - 8 (P)** : Approx. 54 - 66 
$$\Omega$$

#### OK or NG

OK >> Replace A/T assembly.

NG >> Repair harness between A/T assembly and harness connector F33.



#### **Combination Meter Circuit Check**

## 1. CHECK CONNECTOR

- Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- Check terminals and connector of combination meter for damage, bend and loose connection (meter side and harness side).

#### OK or NG

OK >> GO TO 2.

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# 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect combination meter connector.
- 2. Check resistance between combination meter harness connector M24 terminals 11 (L) and 12 (P).

: Approx. 54 - 66  $\Omega$ 

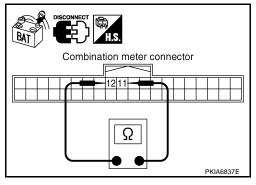
#### OK or NG

OK

>> Replace combination meter.

NG

>> Repair harness between combination meter and data link connector.



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**BCM Circuit Check** 

## 1. CHECK CONNECTOR

1. Turn ignition switch OFF.

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

OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

## 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect BCM connector.
- 2. Check resistance between BCM harness connector M18 terminals 39 (L) and 40 (P).

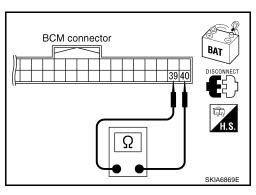
: Approx. 54 - 66  $\Omega$ 

#### OK or NG

OK

>> Replace BCM. Refer to <u>BCS-20</u>, "Removal and Installation of <u>BCM"</u>.

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



UKS0039D

### **Data Link Connector Circuit Check**

## 1. CHECK CONNECTOR

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

## 2. CHECK HARNESS FOR OPEN CIRCUIT

Check resistance between data link connector M22 terminals 6 (L) and 14 (P).

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

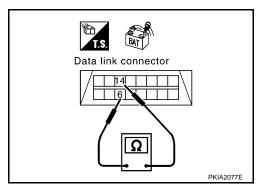
### OK or NG

OK

>> Diagnose again. Refer to LAN-148, "Work Flow".

NG

>> Repair harness between data link connector and combination meter.



UKS0039E

## **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 M47 terminals 3 (L) and 4 (P).

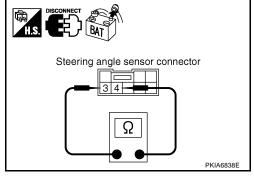
**3 (L) - 4 (P)** : Approx. 54 - 66 
$$\Omega$$

#### OK or NG

OK >> Replace steering angle sensor.

NG

>> Repair harness between steering angle sensor and data link connector.



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#### Front Air Control Circuit Check

### 1. CHECK CONNECTOR

- Turn ignition switch OFF.
- Disconnect the negative battery terminal.
- 3. Check terminals and connector of front air control for damage, bend and loose connection (unit side and harness side).

#### OK or NG

OK >> GO TO 2.

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# 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect front air control connector.
- 2. Check resistance between front air control harness connector M50 terminals 34 (L) and 35 (P).

: Approx. 54 - 66  $\Omega$ 

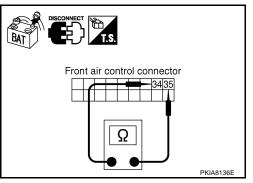
#### OK or NG

OK

>> Replace front air control.

NG

>> Repair harness between front air control and data link connector.



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

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## 1. CHECK CONNECTOR

1. Turn ignition switch OFF.

2. Disconnect the negative battery terminal.

3. Check terminals and connector of ABS actuator and electric unit (control unit) for damage, bend and loose connection (control unit side and harness side).

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

## 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect ABS actuator and electric unit (control unit) connector.
- 2. Check resistance between ABS actuator and electric unit (control unit) harness connector E125 terminals 11 (L) and 15 (P).

: Approx. 54 - 66  $\Omega$ 

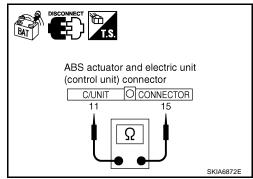
#### OK or NG

OK

>> Replace ABS actuator and electric unit (control unit).

NG

>> Repair harness between ABS actuator and electric unit (control unit) and harness connector E152.



UKS0039G

### **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.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

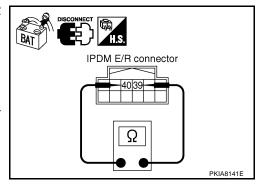
- 1. Disconnect IPDM E/R connector.
- 2. Check resistance between IPDM E/R harness connector E122 terminals 39 (L) and 40 (P).

**39 (L) - 40 (P)** : Approx. 108 - 132 
$$\Omega$$

#### OK or NG

OK >> Replace IPDM E/R.

NG >> Repair harness between IPDM E/R and harness connector E152.



UKS0039H

## **CAN Communication Circuit Check**

### 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Disconnect the following module and control unit connectors and check terminals for deformation, disconnection, looseness or damage.
- ECM
- A/T assembly
- Combination meter
- BCM
- Steering angle sensor
- Front air control
- ABS actuator and electric unit (control unit)
- IPDM E/R

### OK or NG

OK >> GO TO 2.

NG >> Repair or replace as necessary.

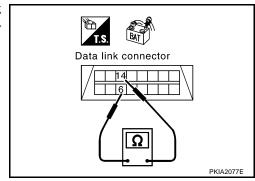
## 2. CHECK HARNESS FOR SHORT CIRCUIT

With all module and control unit connectors disconnected, check continuity between data link connector M22 terminals 6 (L) and 14 (P).

### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



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## 3. CHECK HARNESS FOR SHORT CIRCUIT

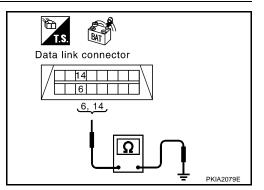
Check continuity between data link connector M22 terminals 6 (L), 14 (P) and ground.

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

#### OK or NG

OK >> Check ECM and IPDM E/R. Refer to <u>LAN-171, "ECM/IPDM E/R INTERNAL CIRCUIT INSPECTION"</u>.

NG >> Repair harness.



## IPDM E/R Ignition Relay Circuit Check

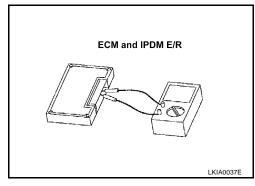
Check the following. If no malfunction is found, replace the IPDM E/R.

- IPDM E/R power supply circuit. Refer to PG-26, "IPDM E/R Power/Ground Circuit Inspection".
- Ignition power supply circuit. Refer to <u>PG-13, "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 39 and 40.

Unit	Terminal	Resistance value (Ω) (Approx.)
ECM	94 - 86	108 - 132
IPDM E/R	39 - 40	100 - 132



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## **CAN SYSTEM (TYPE 6)**

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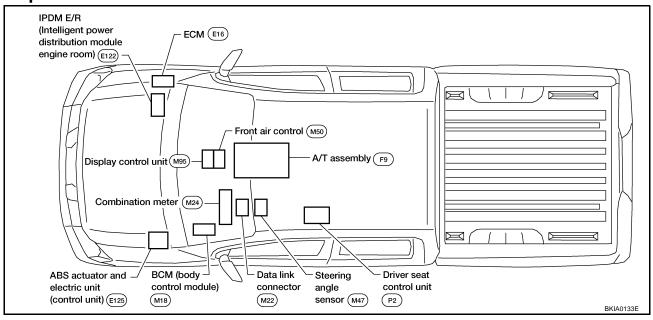
## **System Description**

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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.

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

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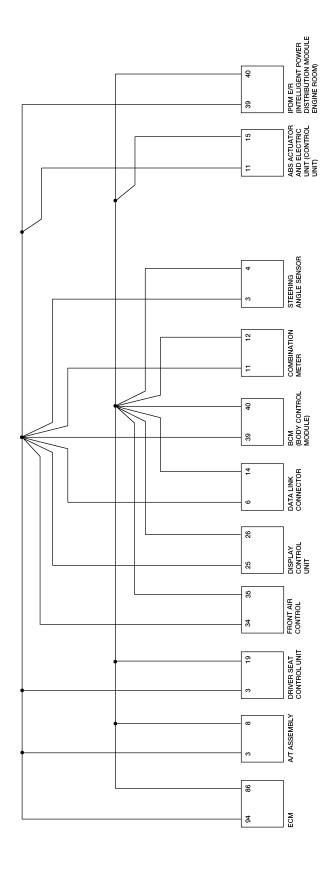
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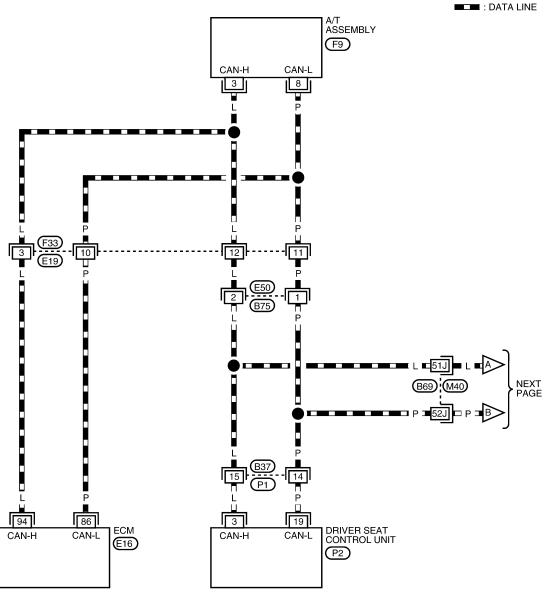
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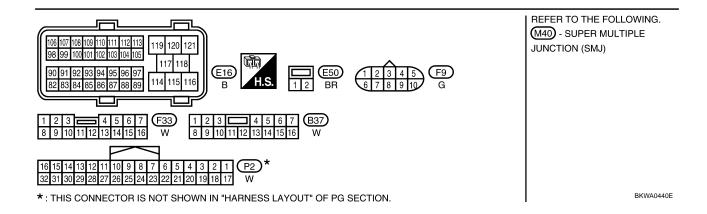
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Wiring Diagram - CAN -

### LAN-CAN-16





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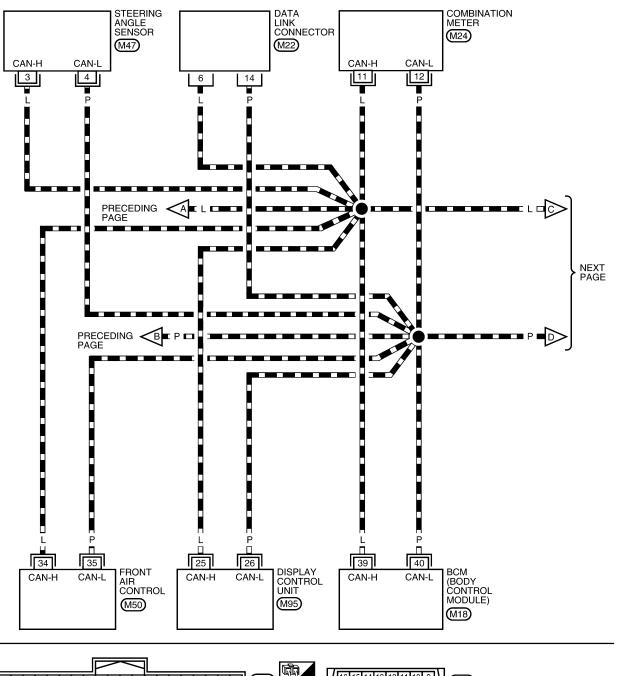
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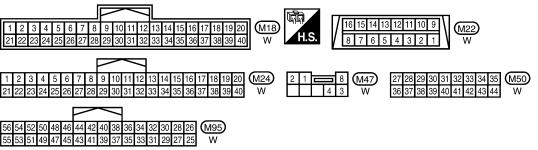
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## LAN-CAN-17



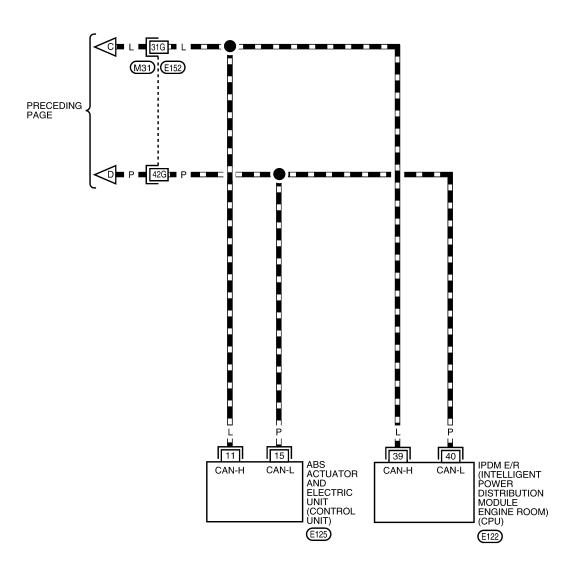


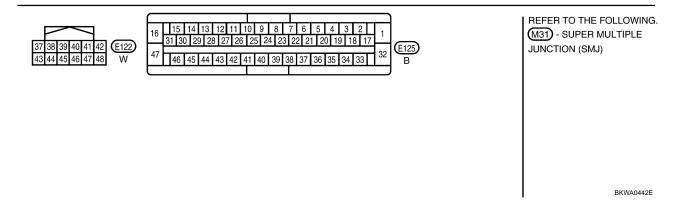


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## LAN-CAN-18

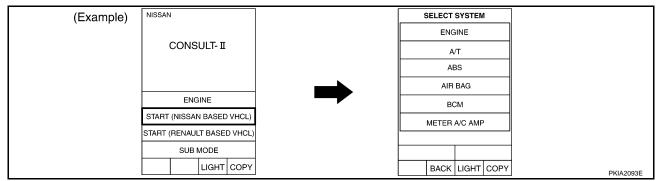
■■■: DATA LINE



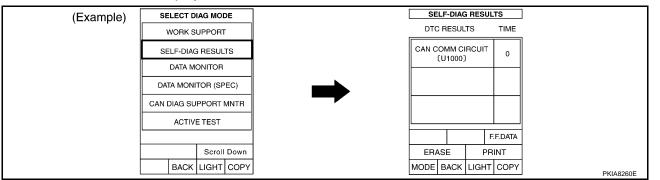


Work Flow

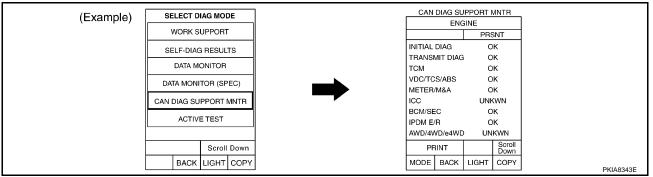
1. When there are no indications of "AUTO DRIVE POS.", "BCM", "HVAC" or "IPDM E/R" on "SELECT SYSTEM" display of CONSULT-II, print the "SELECT SYSTEM".



 Print all the data of "SELF-DIAG RESULTS" for "ENGINE", "A/T", "AUTO DRIVE POS.", "BCM", "HVAC", "ABS" and "IPDM E/R" displayed on CONSULT-II.



3. Print all the data of "CAN DIAG SUPPORT MNTR" for "ENGINE", "A/T", "AUTO DRIVE POS.", "BCM", "HVAC", "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 LAN-179, "CHECK SHEET".
- Based on the indications of "SELECT SYSTEM" and the results of "CAN DIAG SUPPORT MNTR", puts a check mark onto the items with "No indication", "NG", or "UNKWN" in the check sheet table. Refer to <u>LAN-179</u>, "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.
- Check CAN communication line of the navigation system. Refer to <u>AV-148, "CAN Communication Line Check"</u>.
- Attach the CAN DIAG SUPPORT MONITOR check sheet onto the check sheet. Refer to <u>LAN-179</u>, "CHECK SHEET".

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## **CAN SYSTEM (TYPE 6)**

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8. Mark the "NG" or "UNKWN" item of the check sheet table with "v" from the result of CAN DIAG SUPPORT MONITOR check sheet. Refer to <u>LAN-179</u>, "CHECK SHEET".

#### NOTE:

- If "NG" is displayed on "CAN COMM" as "CAN DIAG SUPPORT MONITOR" for the diagnosed control unit, replace the control unit. Refer to <a href="AV-148">AV-148</a>, "CAN Communication Line Check".
- 9. According to the check sheet results (example), start inspection. Refer to <u>LAN-181, "CHECK SHEET RESULTS (EXAMPLE)"</u>.

## **CAN SYSTEM (TYPE 6)**

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### **CHECK SHEET**

#### NOTE:

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

Check sheet table						CAN DIA	G SUPPOI	RT MNTR				
SELECT SYSTE	M screen	Initial	Transmit				Rec	eive diagn	osis		_	
	W 3010011		diagnosis	ECM	TCM	METER /M&A	DISPLAY	BCM/SEC	STRG	Front air control	VDC/TCS /ABS	IPDM E
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN	UNKWI
<b>4/T</b>	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	-	_	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	_	_	_	_
Display control unit		CAN COMM	CAN CIRC 1	CAN CIRC 3	_	CAN CIRC 5	_	CAN CIRC 2	_	CAN CIRC 4	_	CAN CIRC
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	_	UNKW
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_
IPDM E/R	No indication	ı	UNKWN	UNKWN	-	_	_	UNKWN	I	_	_	_
Symptoms :												
Symptoms:			Attach o	copy of SYSTEM			Attac SELEC	ch copy of CT SYSTEI	М			

Attach copy of display control unit CAN DIAG SUPPORT MONITOR check sheet

PKIB6657E

Attach copy of ENGINE SELF-DIAG RESULTS	Attach copy of A/T SELF-DIAG RESULTS	Attach copy of AUTO DRIVE POS. SELF-DIAG RESULTS
Attach copy of BCM SELF-DIAG RESULTS	Attach copy of ABS SELF-DIAG RESULTS	Attach copy of IPDM E/R SELF-DIAG RESULTS
Attach copy of ENGINE CAN DIAG SUPPORT MNTR	Attach copy of A/T CAN DIAG SUPPORT MNTR	Attach copy of AUTO DRIVE POS. CAN DIAG SUPPORT MNTR
Attach copy of BCM CAN DIAG SUPPORT MNTR	Attach copy of ABS CAN DIAG SUPPORT MNTR	Attach copy of IPDM E/R CAN DIAG SUPPORT MNTR

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

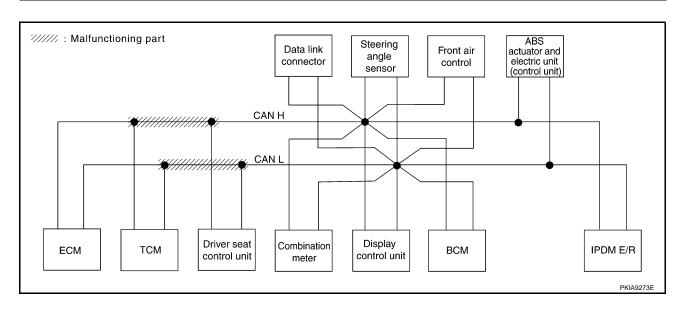
### NOTE:

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

### Case 1

Check harness between TCM and driver seat control unit. Refer to <u>LAN-196</u>, "Circuit Check Between TCM and Driver Seat Control Unit".

						CAN DIA	G SUPPOF	RT MNTR				
SELECT SYSTE	M screen	Initial	Transmit				Rec	eive diagn	osis			
SELECT STOTE	W 3016611		diagnosis	ECM	тсм	METER /M&A	DISPLAY	BCM/SEC	STRG	Front air control	VDC/TCS /ABS	IPDM E/
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	_	UNK WN	_	1	UNKWN	UNK WI
A/T	_	NG	UNKWN	UNKWN	_	UNK WN	_	-	_	-	UNK WN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNK WN	UNKWN	_	UNKWN	_	_	_	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CINC 3	_	CAN CIRC 5	_	CAN CIRC 2	_	CAN CIRC 4	_	CAN CIRC 7
ВСМ	No indication	NG	UNKWN	UNK WN	_	UNKWN	-	_	-	ı	ı	UNKWI
HVAC	No indication		UNKWN	UNKWN	_	ı	UNKWN	UNKWN	1	ı	UNKWN	_
ABS	_	NG	UNKWN	UNK WN	UN <b>K</b> ₩N	_	_	_	UNKWN	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_	_



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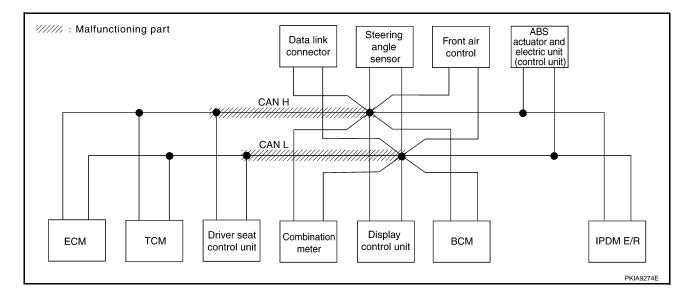
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Case 2
Check harness between driver seat control unit and data link connector. Refer to <u>LAN-197</u>, "Circuit Check <u>Between Driver Seat Control Unit and Data Link Connector"</u>.

						CAN DIA	G SUPPOF	RT MNTR				
SELECT SYSTE	Miccroon	Initial	Transmit				Rec	eive diagn	osis			
OLLLO1 STOTE	W 3016611		diagnosis	ECM	ТСМ	METER /M&A	DISPLAY	BCM/SEC	STRG	Front air control	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	ı	UNKWN	UNK WN	_	UNK WN	ı	ı	UNK WN	UNK <b>W</b> N
A/T	_	NG	UNKWN	UNKWN	_	UNK WN	_	_	-	1	UNK WN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	_	_	_	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CINC 3	_	CAN CIRC 5	-	CAN CIRC 2	ı	CAN CIRC 4	ı	CAN CIRC 7
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	1	1	1	1	1	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	ı	1	UNKWN	_
ABS	_	NG	UNKWN	UNK WN	UNKWN	_	_	_	UNKWN	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	-	_	UNKWN	_	-	_	_



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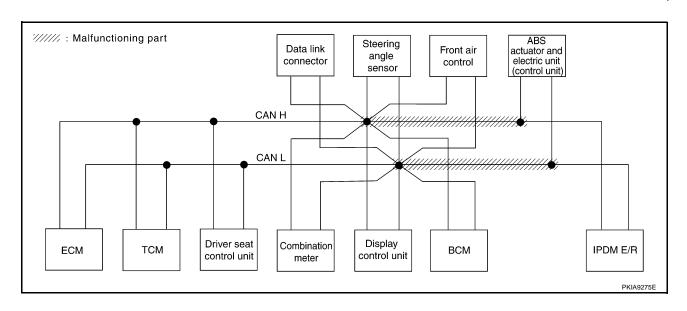
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Case 3

Check harness between data link connector and IPDM E/R. Refer to <u>LAN-198</u>, "Circuit Check Between <u>Data Link Connector and IPDM E/R"</u>.

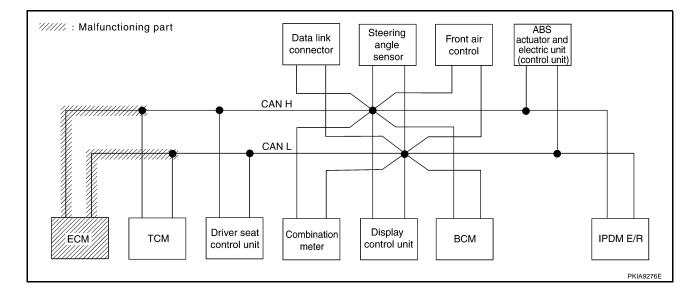
						CAN DIA	G SUPPOF	RT MNTR				
SELECT SYSTE	M coroon	Initial	Transmit				Rec	eive diagn	osis			
SELECT STOTE	vi screen	diagnosis		ECM	ТСМ	METER /M&A	DISPLAY	BCM/SEC	STRG	Front air control	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	-	UNKWN	UNKWN	_	UNKWN	_	-	UNK WN	UNK WN
A/T	_	NG	UNKWN	UNKWN	ı	UNKWN	_	-	_	_	UNK WN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	_	_	_	_
Display control unit	-	CAN COMM	CAN CIRC 1	CAN CIRC 3	1	CAN CIRC 5	1	CAN CIRC 2	ı	CAN CIRC 4	_	CAN CINC 7
ВСМ	No indication	NG	UNKWN	UNKWN	ı	UNKWN	-	-	_	_	_	UNK WN
HVAC	No indication	-	UNKWN	UNKWN	ı		UNKWN	UNKWN	-	ı	UNK WN	_
ABS	_	NG	UNKWN	UNK WN	UN <b>K</b> ₩N	_	_	_	UNK WN	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_	_



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Case 4
Check ECM circuit. Refer to <u>LAN-199</u>, "ECM Circuit Check" .

						CAN DIA	G SUPPOI	RT MNTR				
SELECT SYSTE	M coroon	Initial	Transmit				Red	eive diagn	osis			
SELECT STOTE	ivi screen		diagnosis	ECM	тсм	METER /M&A	DISPLAY	BCM/SEC	STRG	Front air control	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNK WN	-	UNK WN	UNK WN	_	UN <b>K</b> ₩N	_	-	UNK WN	UNK WN
A/T	_	NG	UNKWN	UNK WN	_	UNKWN	_	_	_	_	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	_	_	_	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CINC 3	_	CAN CIRC 5	_	CAN CIRC 2	-	CAN CIRC 4	ı	CAN CIRC 7
ВСМ	No indication	NG	UNKWN	UNK WN	_	UNKWN	_	-	_	_	ı	UNKWN
HVAC	No indication	-	UNKWN	UNK WN	_	ı	UNKWN	UNKWN	-	ı	UNKWN	1
ABS	_	NG	UNKWN	UNK WN	UNKWN	_	_	_	UNKWN	_	_	_
IPDM E/R	No indication	_	UNKWN	∩ <b>NK</b> WN	_	_	_	UNKWN	_	_	_	_



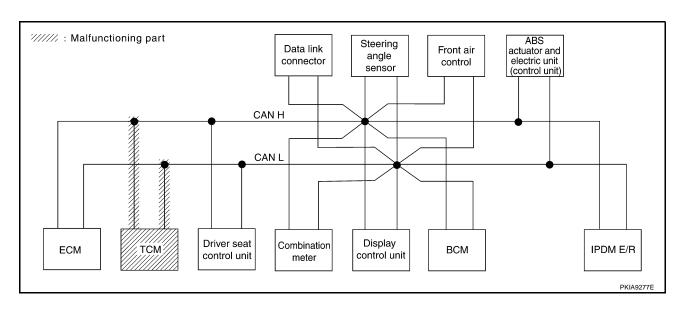
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Case 5
Check TCM circuit. Refer to <u>LAN-199</u>, "TCM Circuit Check" .

		I				CANIDIA	G SUPPOI	DT MNITD				
						CAN DIA		eive diagn	osis			
SELECT SYSTE	M screen	Initial diagnosis	Transmit diagnosis	ECM	ТСМ	METER /M&A		BCM/SEC	STRG	Front air control	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	-	Ω <b>ΝΚW</b> N	UNKWN	_	UNKWN	_	_	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNK WN	1	UNK WN	_	_	_	_	UNK WN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNK WN	UNKWN	_	UNKWN	_	_	_	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CIRC 3	-	CAN CIRC 5	_	CAN CIRC 2	_	CAN CIRC 4	_	CAN CIRC 7
всм	No indication	NG	UNKWN	UNKWN	1	UNKWN	-	_	ı	_	1	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	1	ı	UNKWN	UNKWN	1	_	UNKWN	1
ABS	_	NG	UNKWN	UNKWN	UNK WN	_	_	_	UNKWN	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	-		_	UNKWN	_	_	_	-
												PKIB6663E

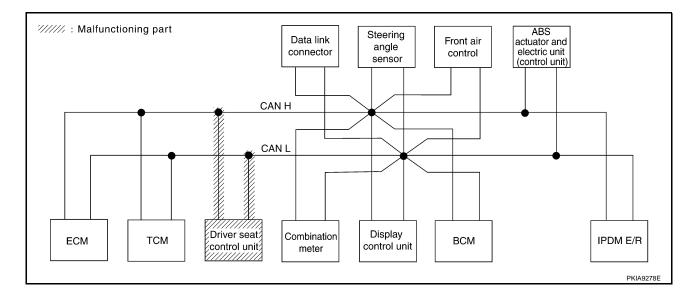


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Case 6
Check driver seat control unit circuit. Refer to <u>LAN-200, "Driver Seat Control Unit Circuit Check"</u>.

						CAN DIA	G SUPPOR	RT MNTR				
SELECT SYSTE	Mooroon	Initial	Transmit				Rec	eive diagn	osis			
SELECT STSTE	w screen		Transmit diagnosis	ECM	ТСМ	METER /M&A	DISPLAY	BCM/SEC	STRG	Front air control	VDC/TCS /ABS	IPDM E/F
ENGINE	İ	NG	UNKWN	ı	UNKWN	UNKWN	1	UNKWN	1	ı	UNKWN	UNKWN
A/T	-	NG	UNKWN	UNKWN	_	UNKWN	_	-	_	_	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	_	_	_	_
Display control unit	ı	CAN COMM	CAN CIRC 1	CAN CIRC 3	_	CAN CIRC 5	-	CAN CIRC 2	-	CAN CIRC 4	_	CAN CIRC 7
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	-	-	1	_	_	UNKWN
HVAC	No indication	-	UNKWN	UNKWN	_	1	UNKWN	UNKWN	1	-	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_	_



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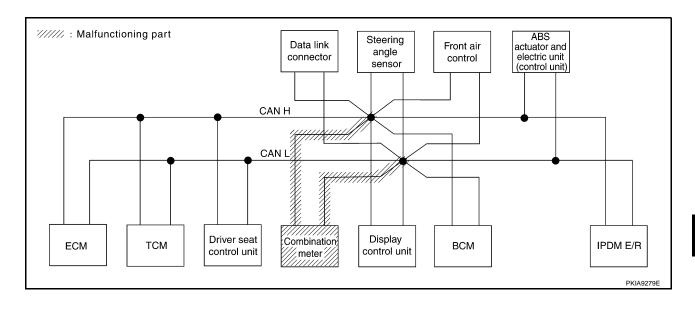
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Case 7
Check combination meter circuit. Refer to <u>LAN-200</u>, "Combination Meter Circuit Check" .

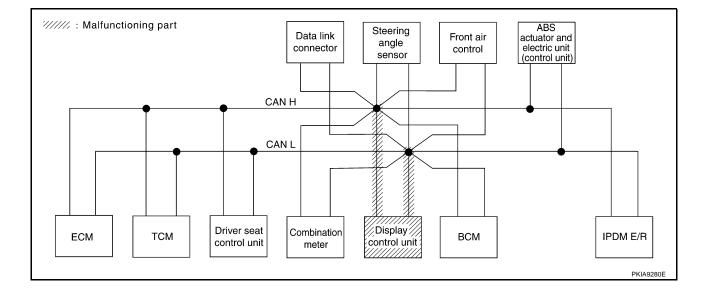
						CAN DIA	G SUPPOR	RT MNTR				
SELECT SYSTE	M coroon	Initial	Transmit				Rec	eive diagn	osis			
SELECT STOTE	IVI SCIEETI	diagnosis		ECM	ТСМ	METER /M&A	DISPLAY	BCM/SEC	STRG	Front air control	VDC/TCS /ABS	IPDM E/I
ENGINE	_	NG	UNKWN	-	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNK WN	_	_	_	_	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNK WN	_	UNKWN	_	_	_	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CIRC 3	1	CAN CINC 5	1	CAN CIRC 2	-	CAN CIRC 4	1	CAN CIRC 7
ВСМ	No indication	NG	UNKWN	UNKWN	1	UNKWN	1	1	-	1	1	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	1	ı	UNKWN	UNKWN	_	_	UNKWN	-
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_	_



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Case 8
Check display control unit circuit. Refer to <u>LAN-201, "Display Control Unit Circuit Check"</u>.

						CAN DIA	G SUPPOI	RT MNTR				
SELECT SYSTE	M coroon	Initial	Transmit				Red	eive diagn	osis			
SELECT STSTE		diagnosis	Transmit diagnosis	ECM	ТСМ	METER /M&A	DISPLAY	BCM/SEC	STRG	Front air control	VDC/TCS /ABS	IPDM E/F
ENGINE	-	NG	UNKWN	ı	UNKWN	UNKWN	_	UNKWN	1	ı	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	-	_	_	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	_	_	_	-
Display control unit	_	CAN COMM	CAN CINC 1	CAN CINC 3	_	CAN CINC 5	_	CAN CINC 2	-	CAN CINC 4	_	CAN CIAC 7
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	-	-	-	_	UNKWN
HVAC	No indication	1	UNKWN	UNKWN	_	1	UNK/WN	UNKWN	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_	_



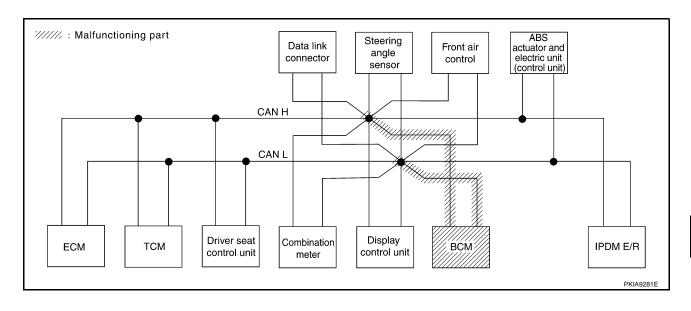
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Case 9
Check BCM circuit. Refer to <u>LAN-201, "BCM Circuit Check"</u>.

		I				OANI DIA	0.0110001	DT MAITD				
						CAN DIA	G SUPPOI					
SELECT SYSTE	M ecroon	Initial	Transmit				Red	eive diagn	osis			
SELECT STOTE	VI SCIECTI		diagnosis	ECM	ТСМ	METER /M&A	DISPLAY	BCM/SEC	STRG	Front air control	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	1	UNKWN	UNKWN	_	UNKWN	ı	_	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	_	UNK WN	1	_	_	-
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CIRC 3	ı	CAN CIRC 5	_	CAN CINC 2	ı	CAN CIRC 4	_	CAN CIRC 7
всм	No indi <b>X</b> ation	NG	UNKWN	UNKWN	ı	UNKWN	_	_	ı	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	1	1	UNKWN	UNKWN	ı	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNK <b>W</b> N	-	_	_	_
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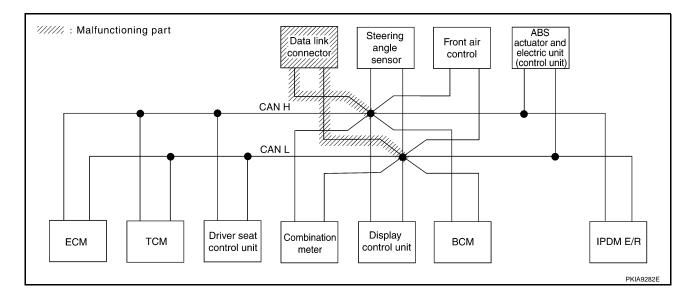
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Case 10
Check data link connector circuit. Refer to LAN-202, "Data Link Connector Circuit Check" .

						CAN DIA	G SUPPOI	RT MNTR				
SELECT SYSTE		1 - 111 - 1	<b>T</b>					eive diagn	osis			
SELECT SYSTE	w screen	Initial diagnosis	Transmit diagnosis	ECM	TCM	METER /M&A	DISPLAY	BCM/SEC	STRG	Front air control	VDC/TCS /ABS	IPDM E/R
ENGINE	ı	NG	UNKWN	ı	UNKWN	UNKWN	-	UNKWN	ı	ı	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	1	UNKWN	_	_	_	_	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	_	_	_	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CIRC 3	I	CAN CIRC 5	_	CAN CIRC 2	-	CAN CIRC 4	_	CAN CIRC 7
всм	No indi <b>v</b> ation	NG	UNKWN	UNKWN	1	UNKWN	-	ı	ı	ı	1	UNKWN
HVAC	No indi <b>v</b> ation	_	UNKWN	UNKWN	ı	ı	UNKWN	UNKWN	-	ı	UNKWN	1
ABS		NG	UNKWN	UNKWN	UNKWN	_		_	UNKWN	_	_	
IPDM E/R	No indi <b>X</b> ation	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_	_
												PKIB6668E



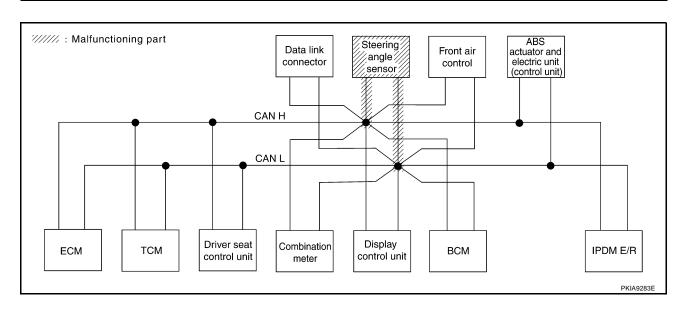
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Case 11
Check steering angle sensor circuit. Refer to <u>LAN-202</u>, "Steering Angle Sensor Circuit Check".

						CAN DIA	G SUPPOF	RT MNTR				
SELECT SYSTE	M coroon	Initial	Transmit				Rec	eive diagn	osis			
SELECT STOTE	IVI SCIEETI		diagnosis	ECM	тсм	METER /M&A	DISPLAY	BCM/SEC	STRG	Front air control	VDC/TCS /ABS	IPDM E
ENGINE	_	NG	UNKWN	ı	UNKWN	UNKWN	1	UNKWN	-	1	UNKWN	UNKWI
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	-	-	-	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	_	-	_	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CIRC 3	-	CAN CIRC 5	1	CAN CIRC 2	-	CAN CIRC 4	ı	CAN CIRC 7
ВСМ	No indication	NG	UNKWN	UNKWN	-	UNKWN	1	1	-	1	1	UNKWI
HVAC	No indication	_	UNKWN	UNKWN	_	-	UNKWN	UNKWN	-	1	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	-	UNK WN	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_	_



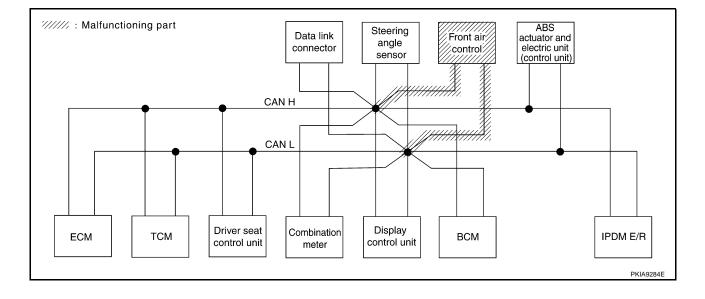
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Case 12
Check front air control circuit. Refer to <u>LAN-203</u>, "Front Air Control Circuit Check" .

						CAN DIA	G SUPPOF	RT MNTR				
SELECT SYSTE	Mecroon	Initial	Transmit				Rec	eive diagn	osis			
SELECT STOTE	W SCIEET		diagnosis	ECM	тсм	METER /M&A	DISPLAY	BCM/SEC	STRG	Front air control	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN		UNKWN	ı	1	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	-	-	-	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	ı	-	ı	_
Display control unit	ı	CAN COMM	CAN CIRC 1	CAN CIRC 3	-	CAN CIRC 5	1	CAN CIRC 2	1	CAN CINC 4	1	CAN CIRC 7
ВСМ	No indication	NG	UNKWN	UNKWN	-	UNKWN	1	1	1	1	1	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	ı	-	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_	_



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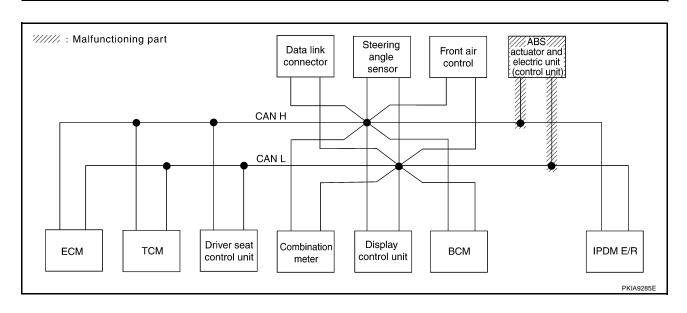
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Case 13

Check ABS actuator and electric unit (control unit) circuit. Refer to <u>LAN-203</u>, "ABS Actuator and Electric Unit (Control Unit) Circuit Check".

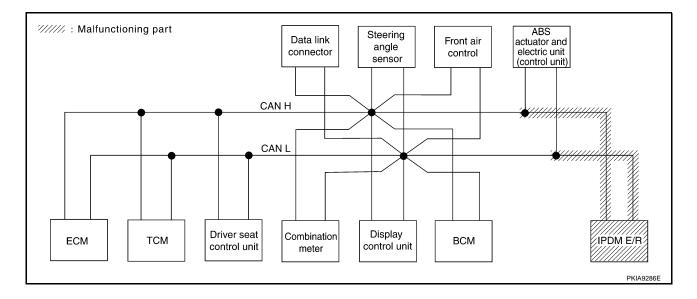
						CAN DIA	G SUPPOR	RT MNTR				
SELECT SYSTE	Magroon	Initial	Transmit				Rec	eive diagn	osis			
SELECT STSTE	ivi screen		Transmit diagnosis	ECM	тсм	METER /M&A	DISPLAY	BCM/SEC	STRG	Front air control	VDC/TCS /ABS	IPDM E/I
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	_	-	UNK WN	UNKWN
A/T	_	NG	UNKWN	UNKWN	-	UNKWN	_	-	-	1	UNK WN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	_	_	_	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CIRC 3	_	CAN CIRC 5	_	CAN CIRC 2	_	CAN CIRC 4	_	CAN CIRC 7
ВСМ	No indication	NG	UNKWN	UNKWN	ı	UNKWN	-	_	-	1	_	UNKWN
HVAC	No indication	-	UNKWN	UNKWN	ı		UNKWN	UNKWN	1	ı	UNKWN	ı
ABS	_	N <sub>k</sub>	UNK WN	UNK ₩N	UNK <b>W</b> N	_	_	_	UNK WN	-	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	-	_	_



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Case 14
Check IPDM E/R circuit. Refer to <u>LAN-204, "IPDM E/R Circuit Check"</u>.

						CAN DIA	G SUPPOR	RT MNTR				
SELECT SYSTE	Mooroon	Initial	Transmit				Rec	eive diagn	osis			
SELECT STSTE	w screen		diagnosis	ECM	TCM	METER /M&A	DISPLAY	BCM/SEC	STRG	Front air control	VDC/TCS /ABS	IPDM E/F
ENGINE	İ	NG	UNKWN	ı	UNKWN	UNKWN	1	UNKWN	1	ı	UNKWN	UNK WN
A/T	-	NG	UNKWN	UNKWN	1	UNKWN	_	-	-	_	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	_	_	_	_
Display control unit	l	CAN COMM	CAN CIRC 1	CAN CIRC 3	1	CAN CIRC 5	1	CAN CIRC 2	1	CAN CIRC 4	_	CAN CINC 7
ВСМ	No indication	NG	UNKWN	UNKWN	1	UNKWN	-	-	-	-	_	UN <b>K</b> ₩N
HVAC	No indication	_	UNKWN	UNKWN	1	_	UNKWN	UNKWN	1	-	UNKWN	_
ABS	1	NG	UNKWN	UNKWN	UNKWN	_	_	_	UNKWN		_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_	_



## **CAN SYSTEM (TYPE 6)**

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Case 15

Check CAN communication circuit. Refer to LAN-204, "CAN Communication Circuit Check" .

						CAN DIA	G SUPPOI	RT MNTR				
SELECT SYSTE	Mecroon	Initial	Transmit				Red	eive diagn	osis			
SELECT STOLE	W Screen		diagnosis	ECM	тсм	METER /M&A	DISPLAY	BCM/SEC	STRG	Front air control	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNK WN	ı	UNK WN	UNKWN	_	UNK WN	_	-	UNK WN	UNK WN
A/T	_	NG	UNKWN	UNK WN	_	UNK WN	_	-	-	-	UNKWN	1
AUTO DRIVE POS.	No indication	NG	UNKWN	ı	UNKWN	UNKWN	_	UNKWN	1	ı	_	ı
Display control unit	_	CAN COMM	CAN CINC 1	CAN CINC 3	-	CAN CINC 5	_	CAN CINC 2	1	CAN CINC 4	_	CAN CINC 7
ВСМ	No indication	NG	UNKWN	UNKWN	-	UNKWN	_	1	-	ı	_	UNKWN
HVAC	No indi <b>X</b> ation	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_	-	UNKWN	1
ABS		N <sub>k</sub>	UNK <b>W</b> N	UNK <b>W</b> N	UNK WN			_	UNK WN	_	_	_
IPDM E/R	No indi <b>X</b> ation	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_	_

### Case 16

Check IPDM E/R ignition relay circuit continuously sticks "OFF". Refer to  $\underline{\text{LAN-205}}$ , "IPDM E/R Ignition Relay  $\underline{\text{Circuit Check}}$ ".

SELECT SYSTEM				CAN DIAG SUPPORT MNTR									
SELECT STSTEM	SELECT SYSTEM screen	Initial	Transmit				Rec	eive diagn	osis				
			diagnosis	ECM	ТСМ	METER /M&A	DISPLAY	BCM/SEC	STRG	Front air control	VDC/TCS /ABS	IPDM E/F	
ENGINE	_	NG	UNKWN	_	UNK WN	UNKWN	ı	UNKWN	_	-	UNK WN	UNKWN	
A/T	_	NG	UNKWN	UNKWN	1	UNKWN	_				UNKWN	I	
AUTO DRIVE POS.	No indication	NG	UNKWN	1	UNK <b>W</b> N	UNKWN	1	UNKWN	-	-	_	-	
Display control unit	-	CAN COMM	CAN CIRC 1	CAN CIRC 3	1	CAN CIRC 5	1	CAN CIRC 2	-	CAN CIRC 4	_	CAN CIRC 7	
BCM	No indication	NG	UNKWN	UNKWN	ı	UNKWN	ı	1	-	ı	_	UNKWN	
HVAC ii	No indication	_	UNKWN	UNKWN	ı	ı	UNKWN	UNKWN	1	ı	UNK WN	I	
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_	
IPDM E/R	No indication	_	UNKWN	UNKWN	1	_	_	UNKWN	_	_	_	-	

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### Case 17

Check IPDM E/R ignition relay circuit continuously sticks "ON". Refer to <u>LAN-205, "IPDM E/R Ignition Relay Circuit Check"</u>.

						CAN DIA	G SUPPOR	RT MNTR				
SELECT SYSTE	M coroon	Initial	Transmit				Rec	eive diagn	osis			
SELECT STOTE	W SCIEET		diagnosis	ECM	тсм	METER /M&A	DISPLAY	BCM/SEC	STRG	Front air control	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	-	UNKWN	UNKWN	ı	UNKWN	_	-	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNI WN	_	Ω <b>ΝΚ</b> ₩Ν	1	1	_	_	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	_	_	_	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CIRC 3	_	CAN CIRC 5	-	CAN CIRC 2	_	CAN CIRC 4	_	CAN CIRC 7
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	ı	1	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_	_	UNKWN	_
ABS	_	NG	UNKWN	∩ <b>NK</b> WN	UNKWN	_	_	1	UNK WN	_	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_	_

## **Circuit Check Between TCM and Driver Seat Control Unit**

UKS0023H

## 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector F33
- Harness connector E19
- Harness connector E50
- Harness connector B75

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

## 2. CHECK HARNESS FOR OPEN CIRCUIT

- Disconnect A/T assembly connector and harness connector F33.
- Check continuity between A/T assembly harness connector F9 terminals 3 (L), 8 (P) and harness connector F33 terminals 12 (L), 11 (P).

3 (L) - 12 (L)

: Continuity should exist.

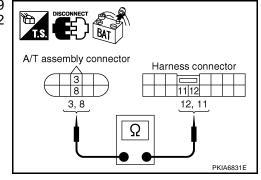
8 (P) - 11 (P)

: Continuity should exist.

### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



## 3. CHECK HARNESS FOR OPEN CIRCUIT

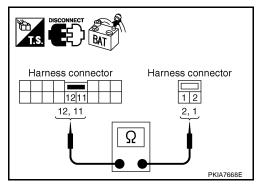
- 1. Disconnect harness connector E50.
- 2. Check continuity between harness connector E19 terminals 12 (L), 11 (P) and harness connector E50 terminals 2 (L), 1 (P).

12 (L) - 2 (L) 11 (P) - 1 (P) : Continuity should exist.

: Continuity should exist.

### OK or NG

OK >> GO TO 4. NG >> Repair harness.



## 4. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect harness connector B37.
- Check continuity between harness connector B75 terminals 2 (L), 1 (P) and harness connector B37 terminals 15 (L), 14 (P).

2 (L) - 15 (L)

: Continuity should exist.

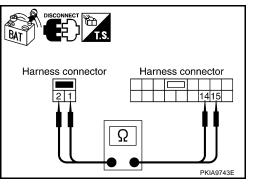
1 (P) - 14 (P)

: Continuity should exist.

### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to LAN-177, "Work Flow".

NG >> Repair harness.



## Circuit Check Between Driver Seat Control Unit and Data Link Connector

### 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- Check following terminals and connectors for damage, bend and loose connection (connector side and 3. harness side).
- Harness connector B69
- Harness connector M40

#### OK or NG

OK >> GO TO 2.

>> Repair terminal or connector.

NG

## 2. CHECK HARNESS FOR OPEN CIRCUIT

- Disconnect harness connector B37 and harness connector B69.
- Check continuity between harness connector B37 terminals 15 (L), 14 (P) and harness connector B69 terminals 51J (L), 52J (P).

15 (L) - 51J (L)

: Continuity should exist.

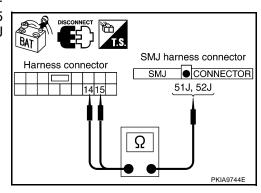
14 (P) - 52J (P)

: Continuity should exist.

#### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



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## 3. CHECK HARNESS FOR OPEN CIRCUIT

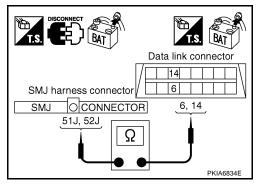
Check continuity between harness connector M40 terminals 51J (L), 52J (P) and data link connector M22 terminals 6 (L), 14 (P).

51J (L) - 6 (L) : Continuity should exist. 52J (P) - 14 (P) : Continuity should exist.

### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-177, "Work Flow"</u>.

NG >> Repair harness.



### Circuit Check Between Data Link Connector and IPDM E/R

UKS0023J

## 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector M31
- Harness connector E152

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

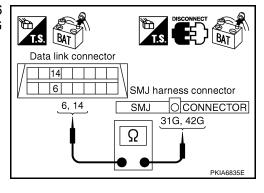
## 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect harness connector M31.
- Check continuity between data link connector M22 terminals 6
  (L), 14 (P) and harness connector M31 terminals 31G (L), 42G
  (P).

6 (L) - 31G (L) : Continuity should exist. 14 (P) - 42G (P) : Continuity should exist.

#### OK or NG

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



## 3. CHECK HARNESS FOR OPEN CIRCUIT

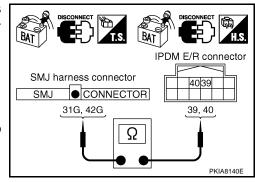
- Disconnect IPDM E/R connector.
- Check continuity between harness connector E152 terminals 31G (L), 42G (P) and IPDM E/R harness connector E122 terminals 19 (L), 40 (P).

31G (L) - 39 (L) : Continuity should exist. 42G (P) - 40 (P) : Continuity should exist.

### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-177, "Work Flow"</u>.

NG >> Repair harness.



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**ECM Circuit Check** 

## 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (control module side and harness side).
- ECM connector
- Harness connector E19
- Harness connector F33

### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

## 2. CHECK HARNESS FOR OPEN CIRCUIT

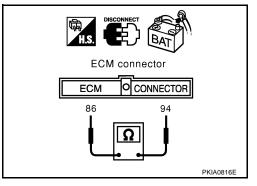
- 1. Disconnect ECM connector.
- 2. Check resistance between ECM harness connector E16 terminals 94 (L) and 86 (P).

: 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

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

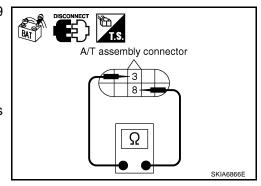
- Disconnect A/T assembly connector.
- Check resistance between A/T assembly harness connector F9 terminals 3 (L) and 8 (P).

: Approx. 54 - 66  $\Omega$ 

#### OK or NG

OK >> Replace A/T assembly.
NG >> Repair harness betwe

>> Repair harness between A/T assembly and harness connector F33.



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### **Driver Seat Control Unit Circuit Check**

### 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (control unit side and harness side).
- Driver seat control unit connector
- Harness connector P1
- Harness connector B37

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

## 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect driver seat control unit connector.
- 2. Check resistance between driver seat control unit harness connector P2 terminals 3 (L) and 19 (P).

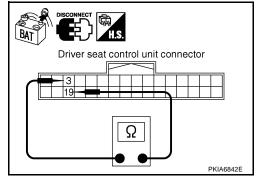
: Approx. 54 - 66  $\Omega$ 

#### OK or NG

OK >> Replace driver seat control unit.

NG

>> Repair harness between driver seat control unit and harness connector B69.



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## **Combination Meter Circuit Check**

## 1. CHECK CONNECTOR

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

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

## 2. CHECK HARNESS FOR OPEN CIRCUIT

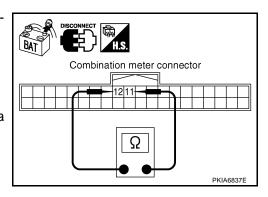
- 1. Disconnect combination meter connector.
- Check resistance between combination meter harness connector M24 terminals 11 (L) and 12 (P).

: Approx. 54 - 66  $\Omega$ 

### OK or NG

OK >> Replace combination meter.

NG >> Repair harness between combination meter and data link connector.



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## **Display Control Unit Circuit Check**

### 1. CHECK CONNECTOR

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

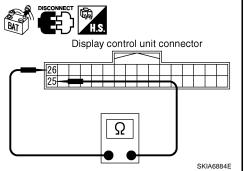
- Disconnect display control unit connector. 1.
- 2. Check resistance between display control unit harness connector M95 terminals 25 (L) and 26 (P).

: Approx. 54 - 66  $\Omega$ 

### OK or NG

OK >> Replace display control unit.

NG >> Repair harness between display control unit and data link connector.



### **BCM Circuit Check**

### 1. CHECK CONNECTOR

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

### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

## 2. CHECK HARNESS FOR OPEN CIRCUIT

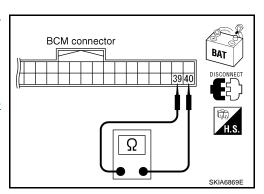
- 1. Disconnect BCM connector.
- 2. Check resistance between BCM harness connector M18 terminals 39 (L) and 40 (P).

: Approx. 54 - 66  $\Omega$ 

### OK or NG

OK >> Replace BCM. Refer to BCS-20, "Removal and Installation of BCM".

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



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### **Data Link Connector Circuit Check**

### 1. CHECK CONNECTOR

1. Turn ignition switch OFF.

- 2. Disconnect the negative battery terminal.
- 3. Check the 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

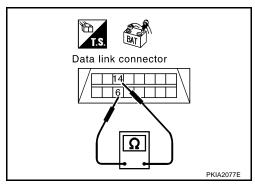
Check resistance between data link connector M22 terminals 6 (L) and 14 (P).

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

#### OK or NG

OK >> Diagnose again. Refer to <u>LAN-177</u>, "Work Flow".

NG >> Repair harness between data link connector and combination meter.



## **Steering Angle Sensor Circuit Check**

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## 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

- Disconnect steering angle sensor connector.
- 2. Check resistance between steering angle sensor harness connector M47 terminals 3 (L) and 4 (P).

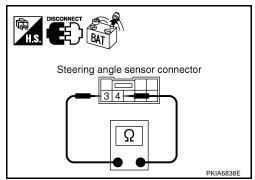
**3 (L) - 4 (P)** : Approx. 54 - 66 
$$\Omega$$

#### OK or NG

NG

OK >> Replace steering angle sensor.

>> Repair harness between steering angle sensor and data link connector.



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**Front Air Control Circuit Check** 

### 1. CHECK CONNECTOR

Turn ignition switch OFF.

- 2. Disconnect the negative battery terminal.
- 3. Check terminals and connector of front air control for damage, bend and loose connection (unit side and harness side).

OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

## 2. CHECK HARNESS FOR OPEN CIRCUIT

- Disconnect front air control connector. 1.
- 2. Check resistance between front air control harness connector M50 terminals 34 (L) and 35 (P).

: Approx. 54 - 66  $\Omega$ 

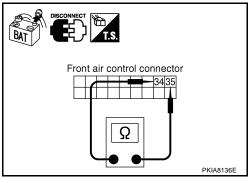
### OK or NG

OK

>> Replace front air control.

NG

>> Repair harness between front air control and data link connector.



## **ABS Actuator and Electric Unit (Control Unit) Circuit Check**

1. CHECK CONNECTOR

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

OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

## 2. CHECK HARNESS FOR OPEN CIRCUIT

- Disconnect ABS actuator and electric unit (control unit) connector. 1.
- Check resistance between ABS actuator and electric unit (control unit) harness connector E125 terminals 11 (L) and 15 (P).

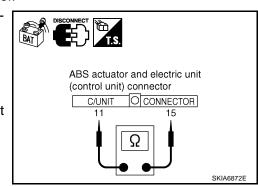
: Approx. 54 - 66  $\Omega$ 

OK or NG

OK >> Replace ABS actuator and electric unit (control unit).

NG

>> Repair harness between ABS actuator and electric unit (control unit) and harness connector E152.



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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 E122 terminals 39 (L) and 40 (P).

: Approx. 108 - 132  $\Omega$ 

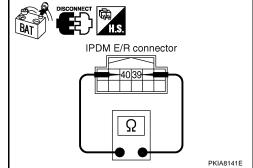
### OK or NG

OK >

>> Replace IPDM E/R.

NG

>> Repair harness between IPDM E/R and harness connector E152.



### **CAN Communication Circuit Check**

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## 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Disconnect the following module and control unit connectors and check terminals for deformation, disconnection, looseness or damage.
- ECM
- A/T assembly
- Driver seat control unit
- Combination meter
- Display control unit
- BCM
- Steering angle sensor
- Front air control
- ABS actuator and electric unit (control unit)
- IPDM E/R

#### OK or NG

OK >> GO TO 2.

NG >> Repair or replace as necessary.

## 2. CHECK HARNESS FOR SHORT CIRCUIT

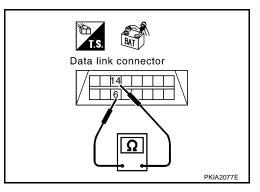
With all module and control unit connectors disconnected, check continuity between data link connector M22 terminals 6 (L) and 14 (P).

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

OK or NG

OK >> GO TO 3.

NG >> Repair harness.



## 3. CHECK HARNESS FOR SHORT CIRCUIT

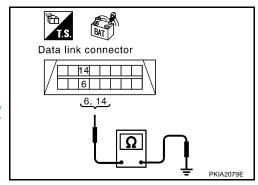
Check continuity between data link connector M22 terminals 6 (L), 14 (P) and ground.

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

OK or NG

OK >> Check ECM and IPDM E/R. Refer to <u>LAN-205, "ECM/IPDM E/R INTERNAL CIRCUIT INSPECTION"</u>.

NG >> Repair harness.



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## IPDM E/R Ignition Relay Circuit Check

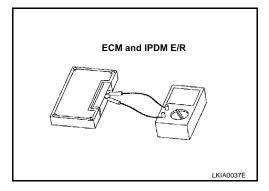
Check the following. If no malfunction is found, replace the IPDM E/R.

- IPDM E/R power supply circuit. Refer to PG-26, "IPDM E/R Power/Ground Circuit Inspection".
- Ignition power supply circuit. Refer to <u>PG-13</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 39 and 40.

Unit	Terminal	Resistance value (Ω) (Approx.)
ECM	94 - 86	108 - 132
IPDM E/R	39 - 40	100 - 132



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## **CAN SYSTEM (TYPE 7)**

PFP:23710

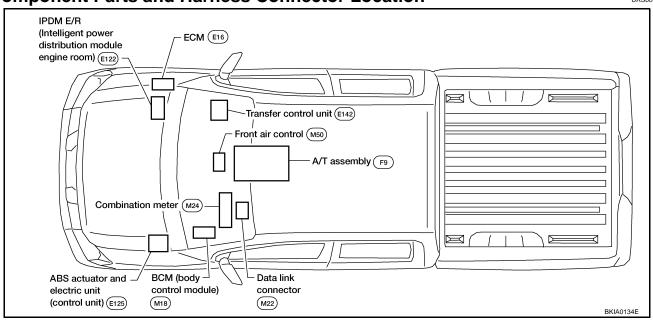
## **System Description**

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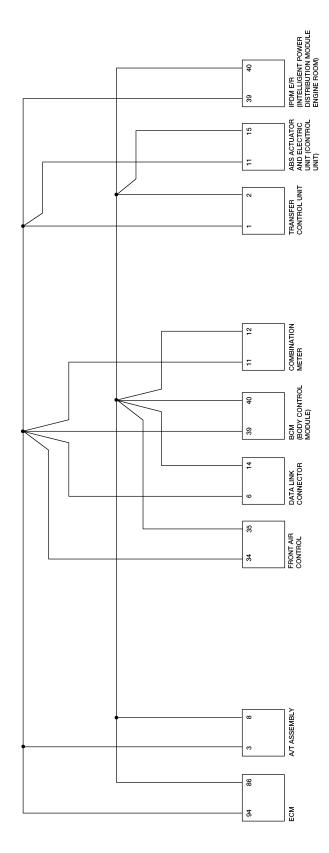
CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information 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.

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

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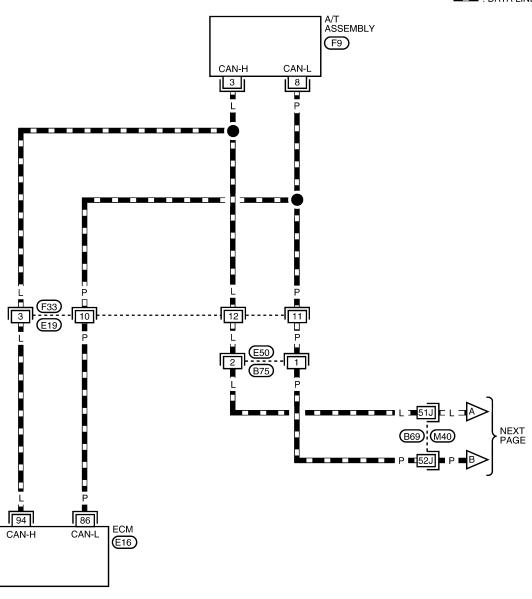
BKWA0142E

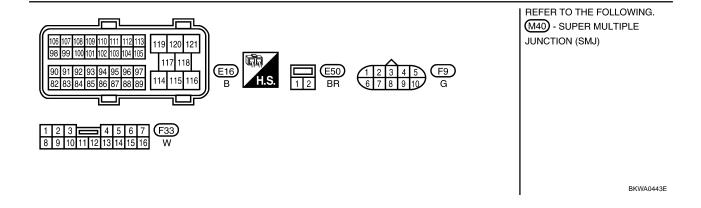
Wiring Diagram - CAN -

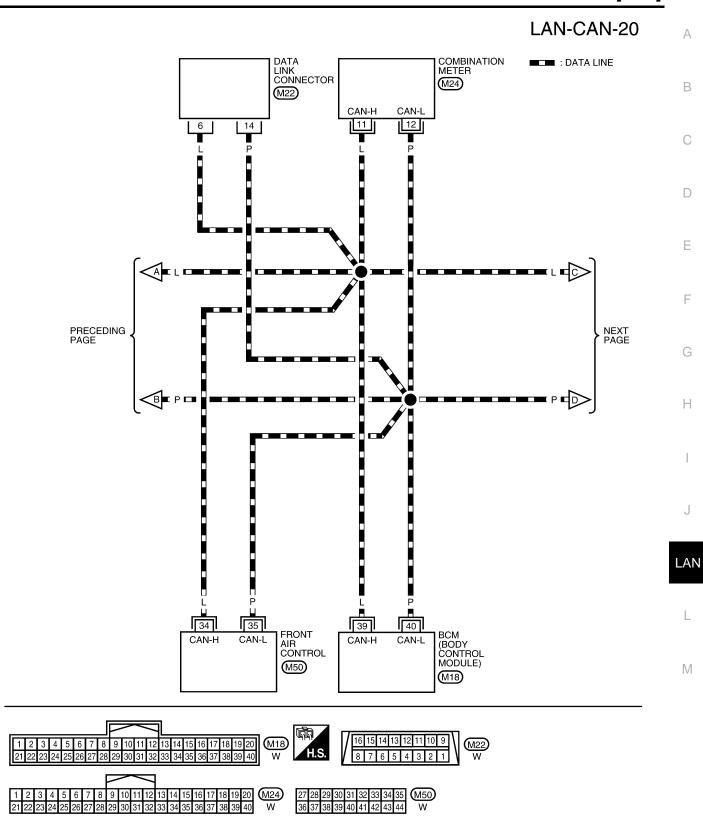
UKS001FQ

## LAN-CAN-19

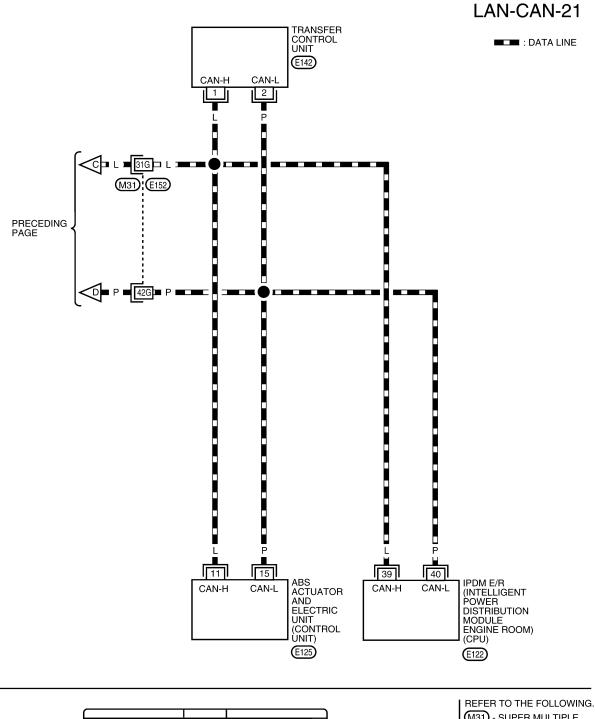
■■ : DATA LINE

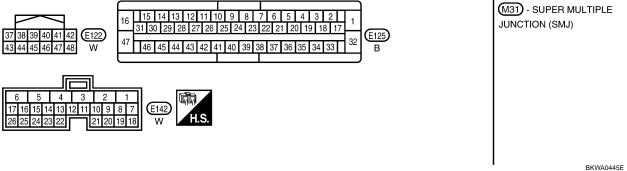






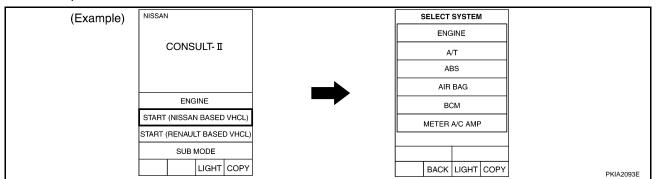
BKWA0444E



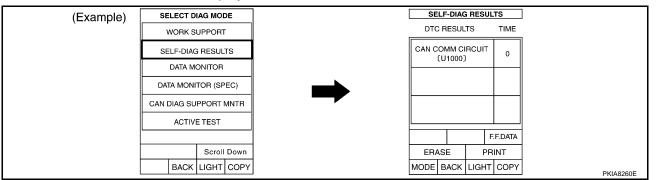


Work Flow

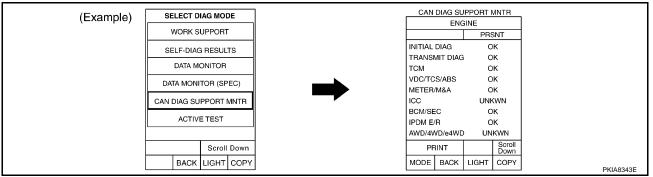
1. When there are no indications of "BCM", "HVAC" or "IPDM E/R" on "SELECT SYSTEM" display of CON-SULT-II, print the "SELECT SYSTEM".



 Print all the data of "SELF-DIAG RESULTS" for "ENGINE", "A/T", "BCM", "HVAC", "ALL MODE AWD/ 4WD", "ABS" and "IPDM E/R" displayed on CONSULT-II.



3. Print all the data of "CAN DIAG SUPPORT MNTR" for "ENGINE", "A/T", "BCM", "HVAC", "ALL MODE AWD/4WD", "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 LAN-212, "CHECK SHEET".
- Based on the indications of "SELECT SYSTEM" and the results of "CAN DIAG SUPPORT MNTR", puts a check mark onto the items with "No indication", "NG", or "UNKWN" in the check sheet table. Refer to <u>LAN-212</u>, "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.
- According to the check sheet results (example), start inspection. Refer to <u>LAN-214</u>, "CHECK SHEET <u>RESULTS</u> (EXAMPLE)".

Revision: October 2005 LAN-211 2005 Titan

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### **CHECK SHEET**

### NOTE:

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

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	EM screen	Initial	Transmit				ceive diagn			
		diagnosis	diagnosis	ECM	TCM	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	UNKWN	_
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	ı	_	UNKWN	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	-	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_
Symptoms :										
Symptoms :										
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### **CHECK SHEET RESULTS (EXAMPLE)**

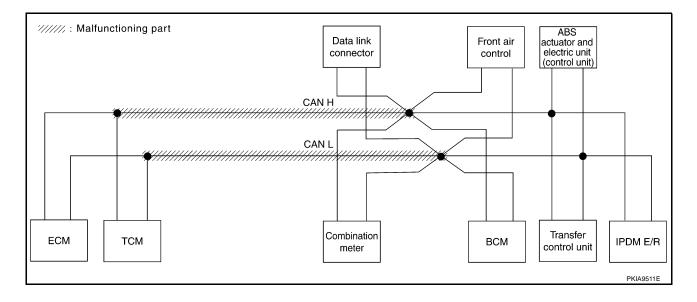
### NOTE:

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

### Case 1

Check harness between TCM and data link connector. Refer to <u>LAN-226, "Circuit Check Between TCM and Data Link Connector"</u>.

					CAN DIA	G SUPPOI	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit			Red	ceive diagn	osis		
		diagnosis	diagnosis	ECM	тсм	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	∩ <b>M</b> MN	UNK <b>W</b> N	UNKWN	η <b>νγ</b> ων
A/T	_	NG	UNKWN	UNKWN	_	UNION	_	UN <b>K</b> ₩N	UNKWN	_
всм	No indication	NG	UNKWN	<b>NUK</b> WN	_	UNKWN	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	_
ALL MODE AWD/4WD	-	NG	UNKWN	<b>NNKWN</b>	UNK/WN	_	-	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNK/WN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNK WN	_	_	UNKWN	_	_	_



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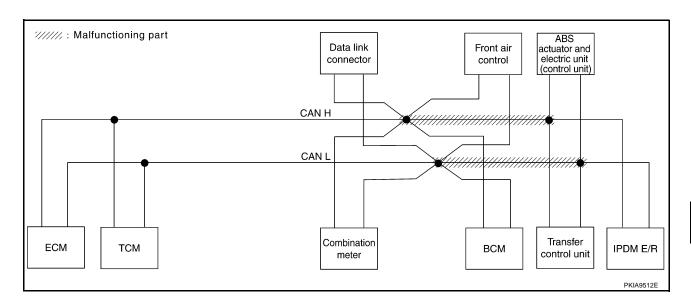
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Case 2

Check harness between data link connector and IPDM E/R. Refer to <u>LAN-227</u>, "Circuit Check Between Data <u>Link Connector and IPDM E/R"</u>.

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	   Transmit			Red	ceive diagn	osis		
OLLLO1 O101	LIVI SOICCIT	diagnosis		ECM	тсм	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNK <b>W</b> N	UNK <b>W</b> N	UN <b>A</b> WN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNK <b>W</b> N	UNK <b>W</b> N	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNK WN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	UNK/WN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNK WN	UNK/WN	-	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	-
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_



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Case 3
Check ECM circuit. Refer to <u>LAN-228, "ECM Circuit Check"</u>.

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit			Red	ceive diagn	osis		
3222313131		diagnosis	diagnosis	ECM	тсм	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	∩ <b>NK</b> WN	_	UNK WN	UNIXWN	UNI <b>W</b> N	UNK <b>W</b> N	UN <b>K</b> ₩N	UNI WN
A/T	_	NG	UNKWN	UNK/WN	_	UNKWN	_	UNKWN	UNKWN	_
ВСМ	No indication	NG	UNKWN	∩ <b>NK</b> WN	_	UNKWN	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNIOWN	_	_	UNKWN	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNIONN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNK/WN	_	_	UNKWN	_	_	_

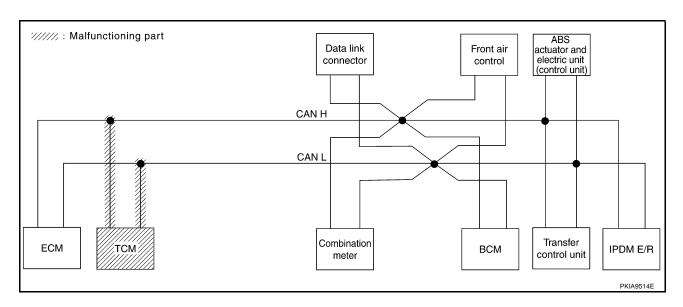
"/////,: Malfunctioning part ABS actuator and Data link Front air electric unit (control unit) connector control CAN H CAN L Combination Transfer ECM TCM BCM IPDM E/R control unit meter PKIA9513E

# **CAN SYSTEM (TYPE 7)**

[CAN]

Case 4
Check TCM circuit. Refer to <u>LAN-229</u>, "TCM Circuit Check" .

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	EM screen	Initial	Tuo no nois				ceive diagn			
SELECT STOT	LIWI SCIECTI	Initial diagnosis	Transmit diagnosis	ECM	ТСМ	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	-	UNK WN	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNK/WN	_	UNKWN	_	UNK <b>W</b> N	UNKWN	_
BCM	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	-
ALL MODE AWD/4WD	-	NG	UNKWN	UNKWN	UNK/WN	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNK/WN	_	_	UNKWN	-	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_



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Case 5
Check combination meter circuit. Refer to <u>LAN-229</u>, "Combination Meter Circuit Check" .

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit			Red	ceive diagn	osis		
022201 0101	LIVI GOICCII	diagnosis		ECM	тсм	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNK/WN	-	UNKWN	UNKWN	_
BCM	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_

"/////,: Malfunctioning part ABS actuator and Data link Front air electric unit (control unit) connector control CAN H CAN L Combination Transfer ECM TCM BCM IPDM E/R control unit meter PKIA9515E

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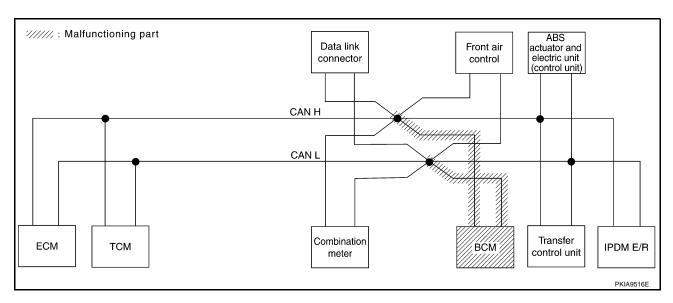
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Case 6
Check BCM circuit. Refer to <u>LAN-230, "BCM Circuit Check"</u>.

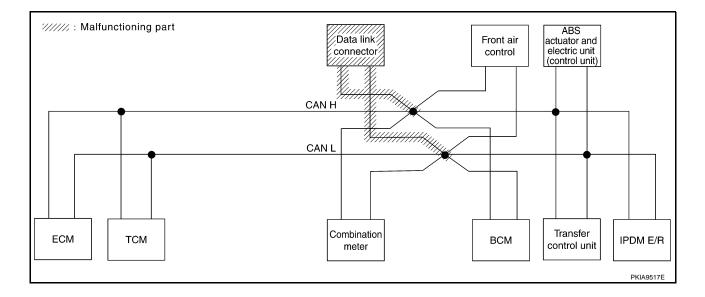
					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	EM screen	Initial	Tuo no nois			Red	ceive diagn	osis		
SELECT STST	LIVI SCIECTI	Initial diagnosis	Transmit diagnosis	ECM	TCM	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNK WN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	UNKWN	_
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNK/WN	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_



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Case 7
Check data link connector circuit. Refer to LAN-230, "Data Link Connector Circuit Check" .

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit			Re	ceive diagn	osis		
0222010101	2111 0010011	diagnosis	diagnosis	ECM	тсм	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	-	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	UNKWN	_
BCM	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	_
ALL MODE AWD/4WD	-	NG	UNKWN	UNKWN	UNKWN	_	_	_	UNKWN	_
ABS	-	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_



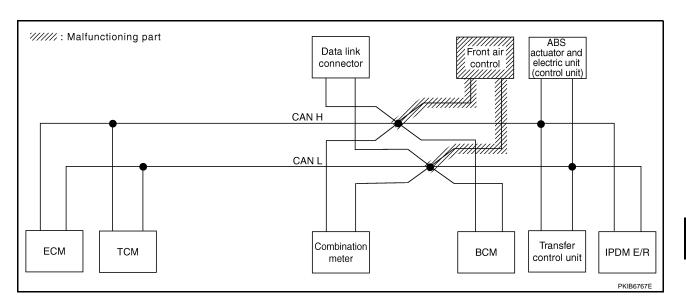
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Case 8
Check front air control circuit. Refer to LAN-231, "Front Air Control Circuit Check".

					CAN DIA	G SUPPO	RT MNTR				
SELECT SYST	FM screen	Initial	Transmit	Receive diagnosis							
022201 0101	LIVI SOICCII	diagnosis	diagnosis	ECM	TCM	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F	
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN	
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	UNKWN	-	
всм	No indication	NG	UNKWN	UNKWN	-	UNKWN	_	_	_	UNKWN	
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	_	
ALL MODE AWD/4WD	1	NG	UNKWN	UNKWN	UNKWN	_	_	-	UNKWN	_	
ABS	-	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_	
IPDM E/R	No indication	-	UNKWN	UNKWN	_	_	UNKWN	-	_	_	



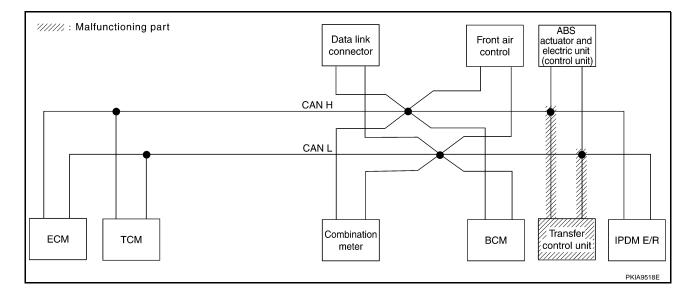
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Case 9
Check transfer control unit circuit. Refer to <u>LAN-231</u>, "Transfer Control Unit Circuit Check" .

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit			Red	ceive diagn	osis		
022201 0101	LIVI GOICCII	diagnosis		ECM	тсм	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNK <b>W</b> N	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	UNKWN	_
BCM	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	_
ALL MODE AWD/4WD	-	NG	UNK/WN	UNKWN	UNK/WN	_	_	_	UNK/WN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UN <b>K</b> ₩N	-	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_



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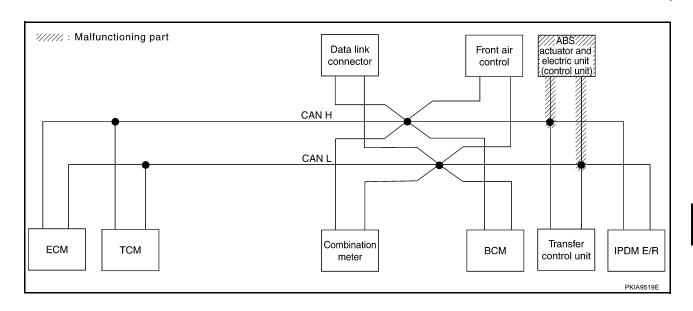
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Case 10

Check ABS actuator and electric unit (control unit) circuit. Refer to <u>LAN-232</u>, "ABS Actuator and Electric Unit (Control Unit) Circuit Check".

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit			Red	ceive diagn	osis		
OLLLO1 0101	LIW SCIECTI	diagnosis		ECM	ТСМ	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNK/WN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	UNK/WN	_
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	UN <b>K</b> ₩N	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	UNK/WN	_
ABS	_	N/E	UNK/WN	UNK/WN	UNK/WN	_	_	UNK/WN	_	-
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_

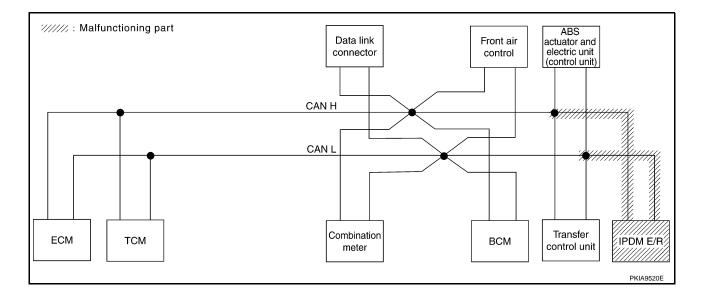


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Case 11
Check IPDM E/R circuit. Refer to <u>LAN-232</u>, "IPDM E/R Circuit Check" .

					CAN DIA	G SUPPO	RT MNTR				
SELECT SYST	FM screen	Initial	Transmit	Receive diagnosis							
0222010101		diagnosis	diagnosis	ECM	тсм	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/R	
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN	UNI <b>W</b> N	
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	UNKWN	_	
BCM	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UN <b>W</b> WN	
HVAC	No indication	-	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	_	
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	UNKWN	_	
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_	
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	



# **CAN SYSTEM (TYPE 7)**

[CAN]

Case 12

Check CAN communication circuit. Refer to LAN-233, "CAN Communication Circuit Check" .

					CAN DIA	G SUPPOI	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit				ceive diagn			
022201 0101	LIVI GOICCIT			ECM	тсм	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	Ω <b>ΝΚ</b> (ΜΝ	_	UNK/WN	UNIXWN	UNK/WN	UNK <b>∕</b> WN	UNK <b>W</b> N	UNKWN
A/T	_	NG	UNKWN	UNK/WN	_	UNION	-	UNK/WN	UNK/WN	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	_
ALL MODE AWD/4WD	-	NG	∩ <b>NK</b> WN	<b>NNKWN</b>	UNK/WN	_	-	-	UN <b>K</b> ₩N	_
ABS	_	N	UNKWN	UNKWN	UNIOWN	_	_	UNIMN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_

Case 13

Check IPDM E/R ignition relay circuit continuously sticks "OFF". Refer to LAN-234, "IPDM E/R Ignition Relay Circuit Check".

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit			Red	ceive diagn	osis		
3222313131	LIW GOTGOTT	diagnosis	diagnosis	ECM	ТСМ	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNK <b>W</b> N	UNKWN	UNKWN	UNKWN	UNK WN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	UNKWN	-
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	Ω <b>ΝΚ</b> /WΝ	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	UNK WN	-
ABS	_	NG	UNKWN	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-234, "IPDM E/R Ignition Relay Circuit Check".

					CAN DIA	G SUPPOI	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit			Red	ceive diagn	osis		
OLLLO1 G101	LIVI SOICCII	diagnosis	diagnosis	ECM	TCM	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNK WN	_	UNKWN	_	UNK <b>W</b> N	UNKWN	_
BCM	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNK WN	UNKWN	_	_	UNK/WN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_

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

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## 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector F33
- Harness connector E19
- Harness connector E50
- Harness connector B75
- Harness connector B69
- Harness connector M40

## OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

- Disconnect A/T assembly connector and harness connector F33.
- Check continuity between A/T assembly harness connector F9 terminals 3 (L), 8 (P) and harness connector F33 terminals 12 (L), 11 (P).

3 (L) - 12 (L)

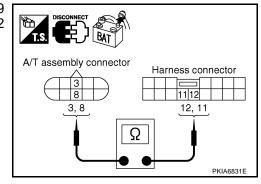
: Continuity should exist.

8 (P) - 11 (P)

: Continuity should exist.

### OK or NG

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



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# 3. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect harness connector E50.
- 2. Check continuity between harness connector E19 terminals 12 (L), 11 (P) and harness connector E50 terminals 2 (L), 1 (P).

12 (L) - 2 (L)

: Continuity should exist.

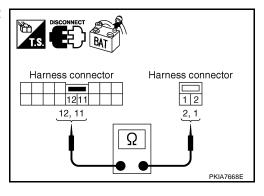
11 (P) - 1 (P)

: Continuity should exist.

### OK or NG

OK >> GO TO 4.

NG >> Repair harness.



# 4. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect harness connector B69.
- Check continuity between harness connector B75 terminals 2 (L), 1 (P) and harness connector B69 terminals 51J (L), 52J (P).

2 (L) - 51J (L)

: Continuity should exist.

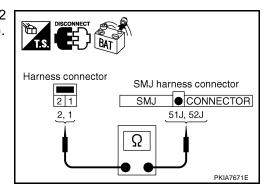
1 (P) - 52J (P)

: Continuity should exist.

### OK or NG

OK >> GO TO 5.

NG >> Repair harness.



# 5. CHECK HARNESS FOR OPEN CIRCUIT

Check continuity between harness connector M40 terminals 51J (L), 52J (P) and data link connector M22 terminals 6 (L), 14 (P).

51J(L)-6(L)

: Continuity should exist.

52J (P) - 14 (P)

: Continuity should exist.

### OK or NG

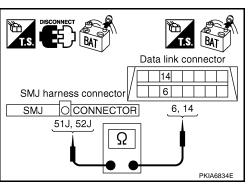
OK

NG

>> Connect all the connectors and diagnose again. Refer to

LAN-211, "Work Flow". >> Repair harness.

Circuit Check Between Data Link Connector and IPDM E/R



UKS001FT

# 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- Check following terminals and connectors for damage, bend and loose connection (connector side and 3. harness side).
- Harness connector M31
- Harness connector E152

#### OK or NG

OK >> GO TO 2.

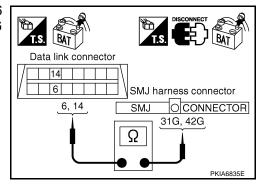
NG >> Repair terminal or connector.

- 1. Disconnect harness connector M31.
- Check continuity between data link connector M22 terminals 6
  (L), 14 (P) and harness connector M31 terminals 31G (L), 42G
  (P).

6 (L) - 31G (L) : Continuity should exist. 14 (P) - 42G (P) : Continuity should exist.

### OK or NG

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



# 3. CHECK HARNESS FOR OPEN CIRCUIT

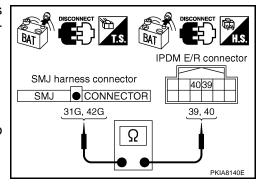
- 1. Disconnect IPDM E/R connector.
- Check continuity between harness connector E152 terminals 31G (L), 42G (P) and IPDM E/R harness connector E122 terminals 39 (L), 40 (P).

31G (L) - 39 (L) : Continuity should exist. 42G (P) - 40 (P) : Continuity should exist.

### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-211, "Work Flow"</u>.

NG >> Repair harness.



UKS001FU

## **ECM Circuit Check**

## 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (control module side and harness side).
- ECM connector
- Harness connector E19
- Harness connector F33

### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

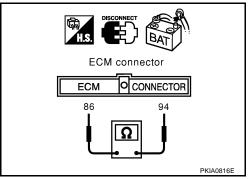
- 1. Disconnect ECM connector.
- 2. Check resistance between ECM harness connector E16 terminals 94 (L) and 86 (P).

: Approx. 108 - 132  $\Omega$ 

### OK or NG

OK >> Replace ECM.

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



TCM Circuit Check

1. CHECK CONNECTOR

1. Turn ignition switch OFF.

2. Disconnect the negative battery terminal.

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 F9 terminals 3 (L) and 8 (P).

: Approx. 54 - 66  $\Omega$ 

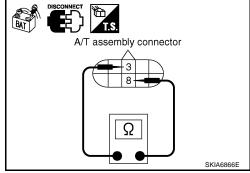
### OK or NG

OK

>> Replace A/T assembly.

NG

>> Repair harness between A/T assembly and harness connector F33.



UKS001FW

## **Combination Meter Circuit Check**

# 1. CHECK CONNECTOR

- Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- Check terminals and connector of combination meter 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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- 1. Disconnect combination meter connector.
- 2. Check resistance between combination meter harness connector M24 terminals 11 (L) and 12 (P).

: Approx. 54 - 66  $\Omega$ 

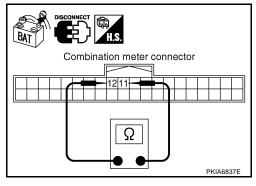
### OK or NG

OK

>> Replace combination meter.

NG

>> Repair harness between combination meter and data link connector.



UKS001FX

## **BCM Circuit Check**

## 1. CHECK CONNECTOR

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

### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

- Disconnect BCM connector.
- 2. Check resistance between BCM harness connector M18 terminals 39 (L) and 40 (P).

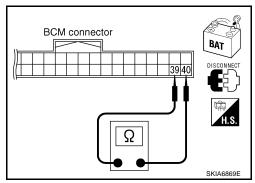
: Approx. 54 - 66  $\Omega$ 

### OK or NG

OK :

>> Replace BCM. Refer to <u>BCS-20</u>, "Removal and Installation of <u>BCM"</u>.

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



UKS001FY

## **Data Link Connector Circuit Check**

## 1. CHECK CONNECTOR

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

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# 2. CHECK HARNESS FOR OPEN CIRCUIT

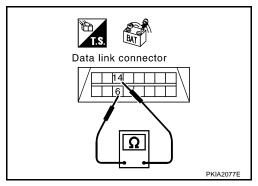
Check resistance between data link connector M22 terminals 6 (L) and 14 (P).

: Approx. 54 - 66  $\Omega$ 

## OK or NG

OK

- >> Diagnose again. Refer to LAN-211, "Work Flow".
- NG >> Repair harness between data link connector and combination meter.



## Front Air Control Circuit Check

## 1. CHECK CONNECTOR

- Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check terminals and connector of front air control for damage, bend and loose connection (unit side and harness side).

### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect front air control connector.
- 2. Check resistance between front air control harness connector M50 terminals 34 (L) and 35 (P).

: Approx. 54 - 66  $\Omega$ 

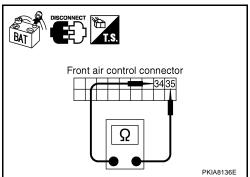
### OK or NG

OK

>> Replace front air control.

NG

>> Repair harness between front air control and data link connector.



# Transfer Control Unit Circuit Check

## 1. CHECK CONNECTOR

- Turn ignition switch OFF.
- Disconnect the negative battery terminal.
- Check terminals and connector of transfer 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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- 1. Disconnect transfer control unit connector.
- Check resistance between transfer control unit harness connector E142 terminals 1 (L) and 2 (P).

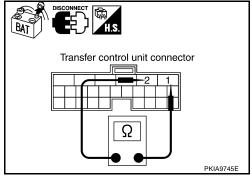
**1 (L) - 2 (P)** : Approx. 54 - 66 
$$\Omega$$

### OK or NG

OK

>> Replace transfer control unit.

NG >> Repair harness between transfer control unit and harness connector E152.



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

UKS001G1

## 1. CHECK CONNECTOR

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

### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 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 E125 terminals 11 (L) and 15 (P).

11 (L) - 15 (P) : Approx. 54 - 66 
$$\Omega$$

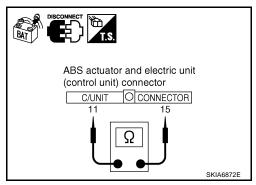
### OK or NG

OK

>> Replace ABS actuator and electric unit (control unit).

NG

>> Repair harness between ABS actuator and electric unit (control unit) and harness connector E152.



UKS001G2

## **IPDM E/R Circuit Check**

## 1. CHECK CONNECTOR

- 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.

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# 2. CHECK HARNESS FOR OPEN CIRCUIT

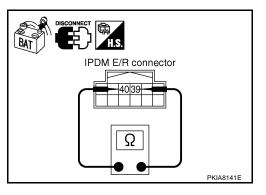
- 1. Disconnect IPDM E/R connector.
- 2. Check resistance between IPDM E/R harness connector E122 terminals 39 (L) and 40 (P).

**39 (L) - 40 (P)** : Approx. 108 - 132 
$$\Omega$$

### OK or NG

OK >> Replace IPDM E/R.

NG >> Repair harness between IPDM E/R and harness connector E152.



## **CAN Communication Circuit Check**

# 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- Disconnect the following module and control unit connectors and check terminals for deformation, disconnection, looseness or damage.
- ECM
- A/T assembly
- Combination meter
- BCM
- Front air control
- Transfer control unit
- ABS actuator and electric unit (control unit)
- IPDM E/R

### OK or NG

OK >> GO TO 2.

NG >> Repair or replace as necessary.

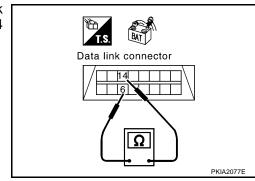
# 2. CHECK HARNESS FOR SHORT CIRCUIT

With all module and control unit connectors disconnected, check continuity between data link connector M22 terminals 6 (L) and 14 (P).

## OK or NG

OK >> GO TO 3.

NG >> Repair harness.



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# 3. CHECK HARNESS FOR SHORT CIRCUIT

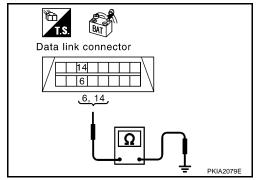
Check continuity between data link connector M22 terminals 6 (L), 14 (P) and ground.

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

### OK or NG

OK >> Check ECM and IPDM E/R. Refer to <u>LAN-234, "ECM/IPDM E/R INTERNAL CIRCUIT INSPECTION"</u>.

NG >> Repair harness.



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## IPDM E/R Ignition Relay Circuit Check

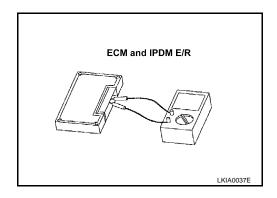
Check the following. If no malfunction is found, replace the IPDM E/R.

- IPDM E/R power supply circuit. Refer to PG-26, "IPDM E/R Power/Ground Circuit Inspection".
- Ignition power supply circuit. Refer to <u>PG-13</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 39 and 40.

Unit	Terminal	Resistance value (Ω) (Approx.)
ECM	94 - 86	108 - 132
IPDM E/R	39 - 40	100 - 132



# **CAN SYSTEM (TYPE 8)**

#### PFP:23710

## **System Description**

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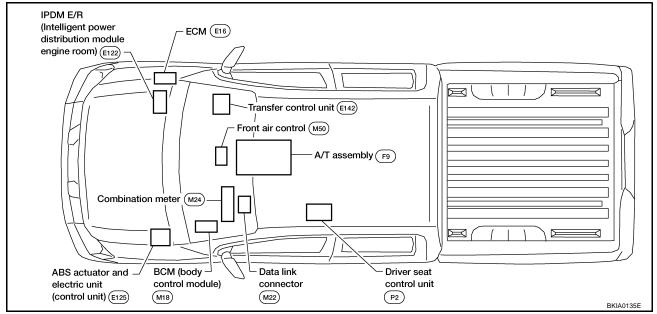
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CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped 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.

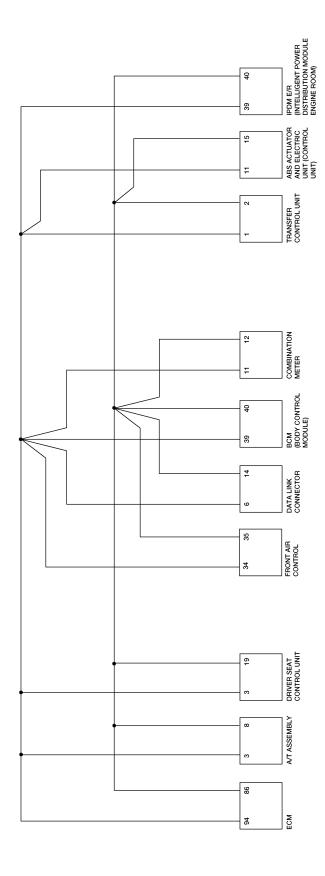
## **Component Parts and Harness Connector Location**

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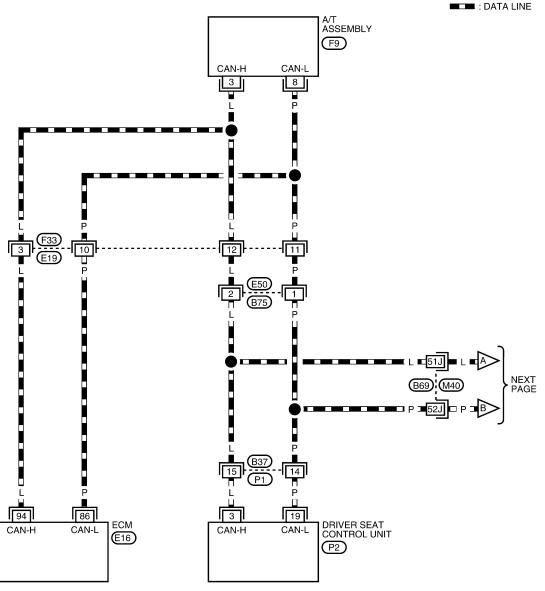
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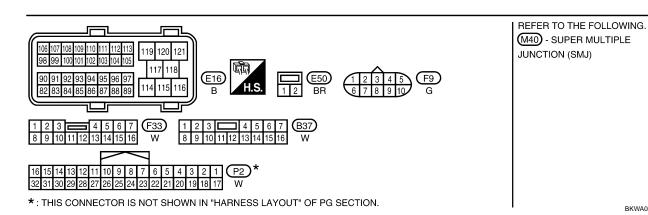
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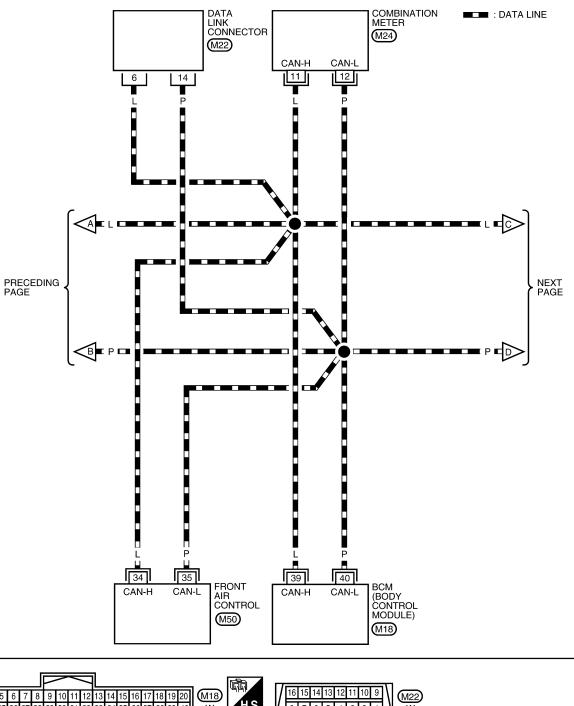
BKWA0446E

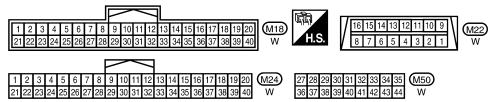
## LAN-CAN-22



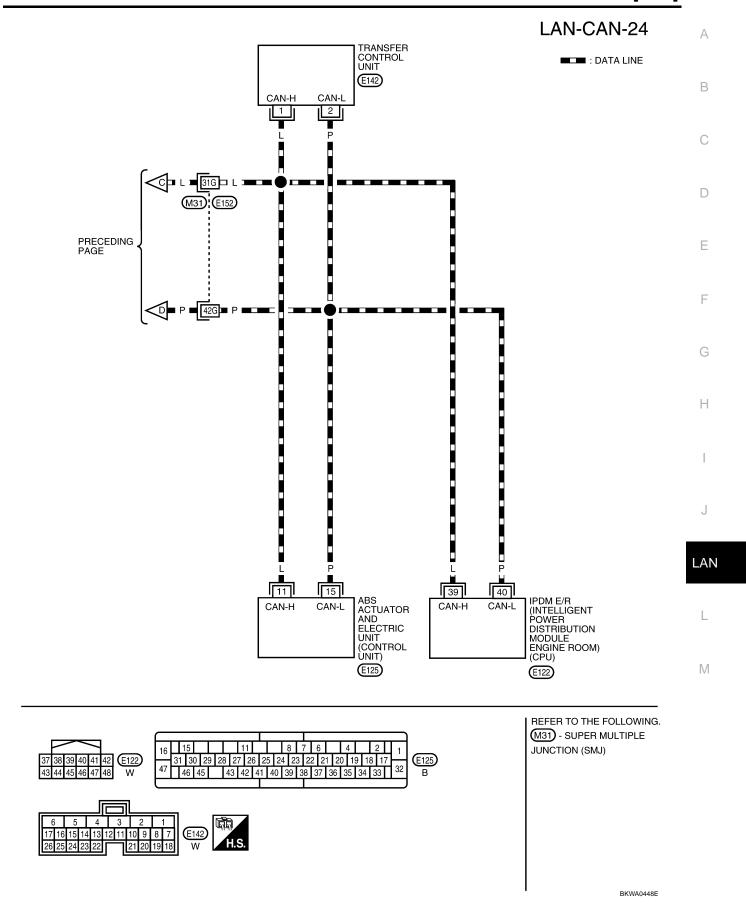


# LAN-CAN-23



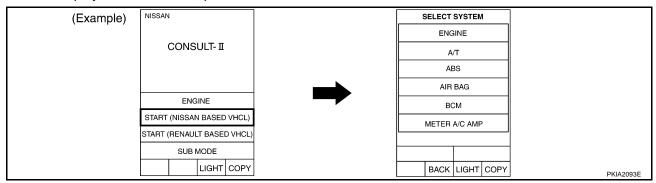


BKWA0447E

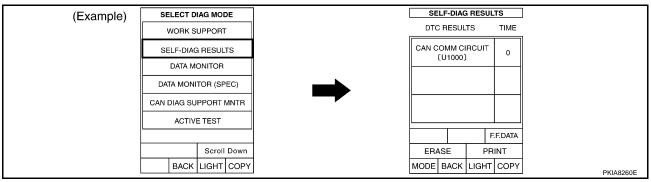


Work Flow

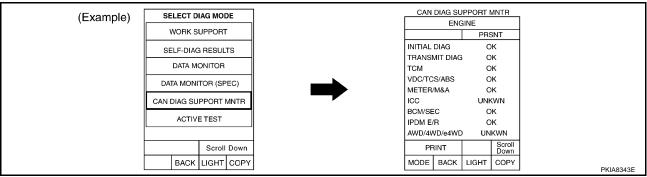
1. When there are no indications of "AUTO DRIVE POS.", "BCM", "HVAC" or "IPDM E/R" on "SELECT SYSTEM" display of CONSULT-II, print the "SELECT SYSTEM".



2. Print all the data of "SELF-DIAG RESULTS" for "ENGINE", "A/T", "AUTO DRIVE POS.", "BCM", "HVAC", "ALL MODE AWD/4WD", "ABS" and "IPDM E/R" displayed on CONSULT-II.



3. Print all the data of "CAN DIAG SUPPORT MNTR" for "ENGINE", "A/T", "AUTO DRIVE POS.", "BCM", "HVAC", "ALL MODE AWD/4WD", "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 LAN-241, "CHECK SHEET".
- Based on the indications of "SELECT SYSTEM" and the results of "CAN DIAG SUPPORT MNTR", puts a check mark onto the items with "No indication", "NG", or "UNKWN" in the check sheet table. Refer to <u>LAN-241</u>, "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-243</u>, "CHECK SHEET <u>RESULTS</u> (EXAMPLE)".

# **CAN SYSTEM (TYPE 8)**

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## **CHECK SHEET**

## NOTE:

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

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit				ceive diagn			
02220101011	LIW GOLGGII	diagnosis	diagnosis	ECM	тсм	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_
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	Attach copy of
ENGINE	A/T	AUTO DRIVE POS.	BCM
SELF-DIAG RESULTS	SELF-DIAG RESULTS	SELF-DIAG RESULTS	SELF-DIAG RESULTS
Attach copy of	Attach copy of	Attach copy of	Attach copy of
HVAC	ALL MODE AWD/4WD	ABS	IPDM E/R
SELF-DIAG RESULTS	SELF-DIAG RESULTS	SELF-DIAG RESULTS	SELF-DIAG RESULTS
Attach copy of	Attach copy of	Attach copy of	Attach copy of
ENGINE	A/T	AUTO DRIVE POS.	BCM
CAN DIAG SUPPORT	CAN DIAG SUPPORT	CAN DIAG SUPPORT	CAN DIAG SUPPORT
MNTR	MNTR	MNTR	MNTR
Attach copy of	Attach copy of	Attach copy of	Attach copy of
HVAC	ALL MODE AWD/4WD	ABS	IPDM E/R
CAN DIAG SUPPORT	CAN DIAG SUPPORT	CAN DIAG SUPPORT	CAN DIAG SUPPORT
MNTR	MNTR	MNTR	MNTR

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

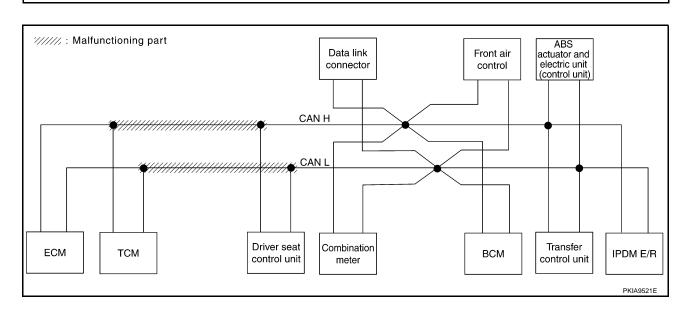
### NOTE:

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

### Case 1

Check harness between TCM and driver seat control unit. Refer to <u>LAN-257</u>, "Circuit Check Between TCM and Driver Seat Control Unit".

					CAN DIA	G SUPPOI	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit			Red	ceive diagn	osis		
0222010101	LIVI GOTCOTI	diagnosis		ECM	тсм	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UN <b>W</b> WN	UNK <b>W</b> N	UNK WN	UNK/WN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNK WN	UN <b>K</b> ₩N	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	Ω <b>ΝΚ</b> ΙΝΝ	UNKWN	UNKWN	_	_	_
BCM	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNK WN	_	_	UNKWN	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UN <b>K</b> ₩N	UNK <b>W</b> N	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNK/WN	NNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_



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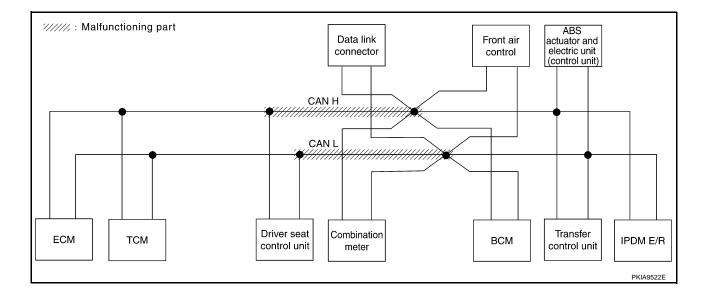
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Case 2

Check harness between driver seat control unit and data link connector. Refer to <u>LAN-258</u>, "Circuit Check <u>Between Driver Seat Control Unit and Data Link Connector"</u>.

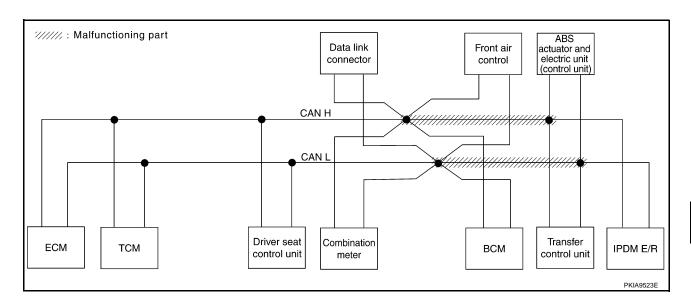
					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit			Red	ceive diagn	osis		
022201 0101	LIVI GOICCII	diagnosis	diagnosis	ECM	тсм	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNK WN	UNI WN	UNK <b>W</b> N	UNK <b>W</b> N	UNK WN
A/T	_	NG	UNKWN	UNKWN	_	UNK WN	_	UNKWN	UNK <b>W</b> N	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	_
BCM	No indication	NG	UNKWN	UNK <b>W</b> N	_	UNKWN	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UN <b>K</b> ₩N	Π <b>ΝΚ</b> ΛΝ	_	_	_	UNKWN	-
ABS	_	NG	UNKWN	UNKWN	UNK/VN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_



Case 3

Check harness between data link connector and IPDM E/R. Refer to <u>LAN-259</u>, "Circuit Check Between <u>Data Link Connector and IPDM E/R"</u>.

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit			Red	ceive diagn	osis		
022201 0101	LIVI GOICCII	diagnosis	diagnosis	ECM	тсм	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNK WN	Ω <b>ΝΚ</b> /WΝ	η <b>νκ</b> ⁄νν
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNK ₩N	Ω <b>ΝΚ</b> ₩Ν	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	_
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNK WN
HVAC	No indication	_	UNKWN	UNKWN	-	_	UNKWN	_	UN <b>K</b> ₩N	_
ALL MODE AWD/4WD	_	NG	UNKWN	UN <b>K</b> ₩N	Ω <b>ΝΚ</b> /WΝ	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNK/WN	UNK/WN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_



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Case 4
Check ECM circuit. Refer to <u>LAN-260</u>, "ECM Circuit Check" .

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit			Re	ceive diagn	osis		
022201 0101	LIW COLCOIT	diagnosis		ECM	тсм	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	-	Ω <b>ΝΚ</b> ⁄ΜΝ	UNKWN	UNWWN	UNK WN	UNK WN	UNK WN
A/T	_	NG	UNKWN	UNK WN	_	UNKWN	_	UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	-	UNKWN	UNKWN	UNKWN	_	_	_
всм	No indication	NG	UNKWN	UNK <b>W</b> N	_	UNKWN	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNK WN	_	_	UNKWN	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNK <b>W</b> N	UNKWN	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNK WN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_

"/////,: Malfunctioning part ABS actuator and Data link Front air electric unit (control unit) connector control CAN H CAN L Driver seat Combination Transfer ECM TCM BCM IPDM E/R control unit control unit meter PKIA9524E

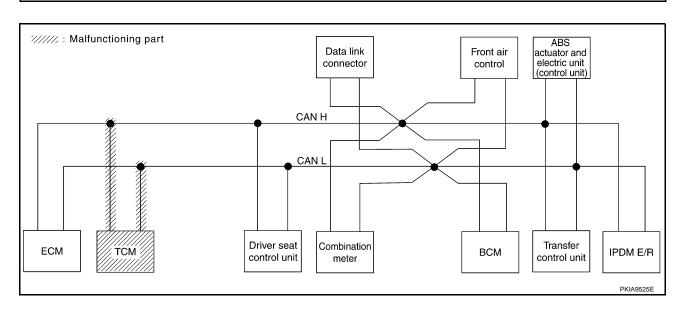
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Case 5
Check TCM circuit. Refer to <u>LAN-260, "TCM Circuit Check"</u>.

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit			Re	ceive diagn	osis		
022201 0101	LIVI GOICGII	diagnosis NG		ECM	тсм	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	NNR WN	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNK/WN	_	UN <b>K</b> ₩N	UN <b>K</b> ₩N	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	υν <b>έγ</b> νν	UNKWN	UNKWN	_	_	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	∩ <b>NR</b> WN	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNK/WN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_



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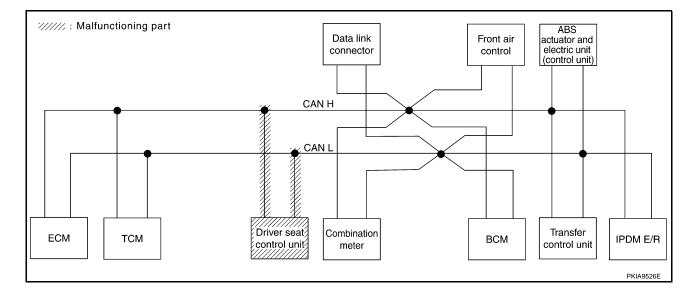
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Case 6
Check driver seat control unit circuit. Refer to <u>LAN-261</u>, "<u>Driver Seat Control Unit Circuit Check</u>" .

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit				ceive diagn			
022201 0101	LIVI GOTOGIT	diagnosis	diagnosis	ECM	TCM	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	_
BCM	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_

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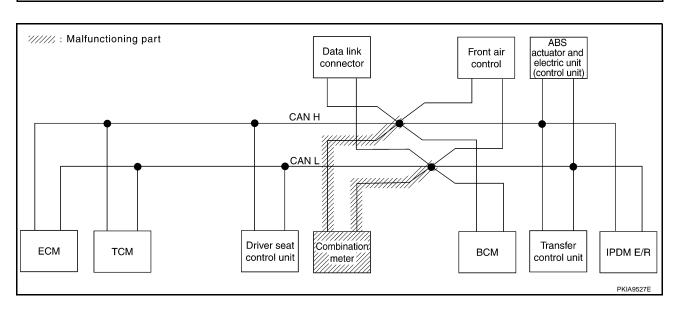
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Case 7
Check combination meter circuit. Refer to <u>LAN-261</u>, "Combination Meter Circuit Check" .

					CAN DIA	G SUPPO	RT MNTR					
SELECT SYST	FM screen	   Initial	Transmit		Receive diagnosis							
022201 0101	LIVI GOTCOTI	diagnosis		ECM	TCM	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F		
ENGINE	_	NG	UNKWN	-	UNKWN	Ω <b>ΝΚ</b> ⁄⁄ΩΝ	UNKWN	UNKWN	UNKWN	UNKWN		
A/T	_	NG	UNKWN	UNKWN	_	UN <b>K</b> ₩N	_	UNKWN	UNKWN	_		
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	_		
BCM	No indication	NG	UNKWN	UNKWN	_	Ω <b>ΝΚ</b> ₩Ν	_	_	_	UNKWN		
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	_		
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	UNKWN	_		
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_		
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_		



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Case 8
Check BCM circuit. Refer to <u>LAN-262</u>, "BCM Circuit Check" .

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit			Red	ceive diagn	osis		
0222010101	LIVI GOTCOTI	diagnosis	diagnosis	ECM	TCM	METER/ M&A BCM/SEC		AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNK WN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	Ω <b>ΝΚ</b> /ΜΝ	_	_	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNK WN	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_

"/////,: Malfunctioning part ABS actuator and Data link Front air electric unit (control unit) connector control CAN H CAN L Driver seat Combination Transfer ECM TCM ВСМ IPDM E/R control unit control unit meter PKIA9528E

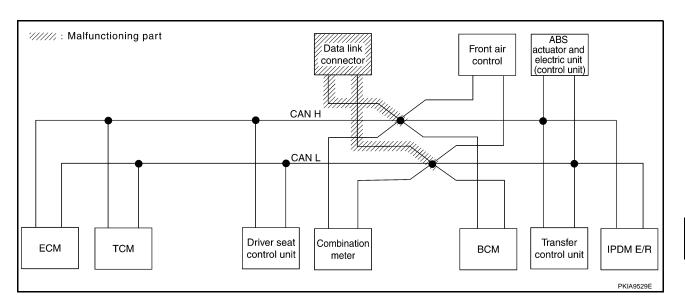
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Case 9
Check data link connector circuit. Refer to <u>LAN-262</u>, "<u>Data Link Connector Circuit Check</u>" .

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	EM screen	   Initial	Transmit			Red	ceive diagn	osis		
		diagnosis		ECM	TCM	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	ı	UNKWN	_	UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	_
BCM	No indication	NG	UNKWN	UNKWN	-	UNKWN	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_

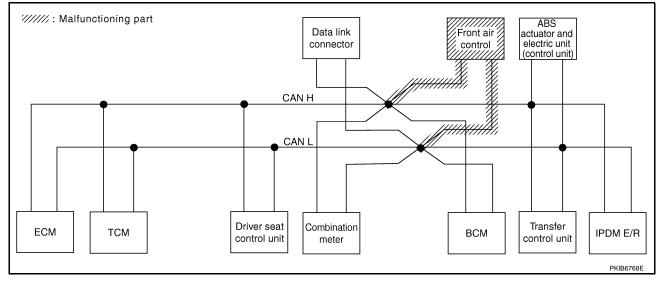


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Case 10 Check front air control circuit. Refer to <u>LAN-263</u>, "Front Air Control Circuit Check" .

	CAN DIAG SUPPORT MNTR									
SELECT SYSTEM screen		Initial diagnosis	Transmit diagnosis	Receive diagnosis						
				ECM	TCM	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	-
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_



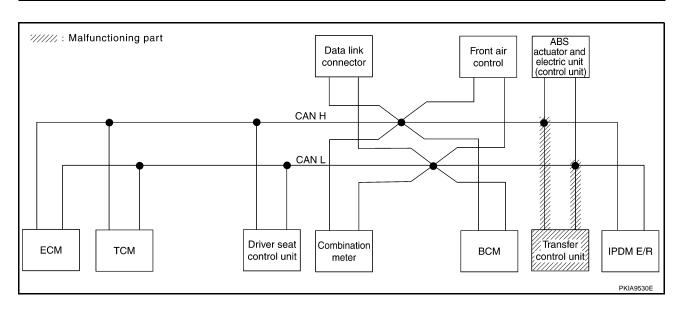
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Case 11
Check transfer control unit circuit. Refer to <u>LAN-263</u>, "Transfer Control Unit Circuit Check".

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit		osis					
022201 0101	2111 0010011	diagnosis		ECM	TCM	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNK WN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNK WN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	_
BCM	No indication	NG	UNKWN	UNKWN	-	UNKWN	_		_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UN <b>K</b> ₩N	Ω <b>ΝΚ</b> ΜΝ	UNI <b>K</b> WN	_	_		UN <b>K</b> ₩N	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNK WN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_



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Case 12

Check ABS actuator and electric unit (control unit) circuit. Refer to <u>LAN-264</u>, "ABS Actuator and Electric Unit (Control Unit) Circuit Check".

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit				ceive diagn			
022201 0101	LIVI COTOOTI	diagnosis		ECM	тсм	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNK WN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	UNK NN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	-	_	UNKWN	_	UNK WN	-
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	UNK <b>W</b> N	_
ABS	_	NE	UNKWN	UN <b>K</b> ₩N	UNKWN	_	_	UNKWN	_	-
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_

"///// : Malfunctioning part ABS/// actuator and electric unit Data link Front air connector control (control unit) CAN H CAN L Driver seat Combination Transfer **ECM** TCM всм IPDM E/R control unit control unit meter PKIA9531E

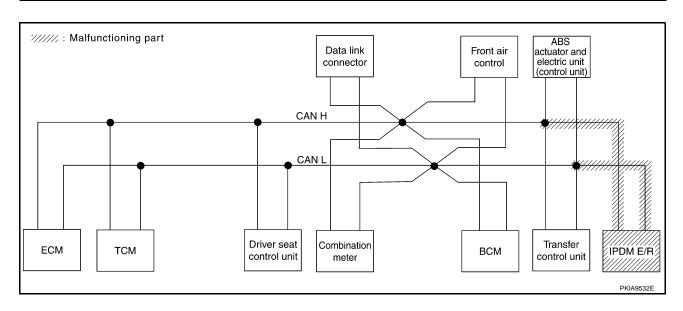
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Case 13
Check IPDM E/R circuit. Refer to <u>LAN-264, "IPDM E/R Circuit Check"</u>.

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit			Red	ceive diagn	osis		
0222010101	2111 0010011	diagnosis		ECM	тсм	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	-	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN	UNI WN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	∩ <b>M</b> WN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_



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Case 14

Check CAN communication circuit. Refer to LAN-265, "CAN Communication Circuit Check" .

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit			Re	ceive diagn	osis		
OLLLOT OTOT	LIVI SCIECTI	diagnosis		ECM	тсм	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNK WN	_	UNK WN	UNK WN	UNWWN	UN <b>K</b> ₩N	UNK <b>W</b> N	UNK WN
A/T	_	NG	UNKWN	UNKWN	_	UNK WN	_	UN <b>K</b> ₩N	UNK/WN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNK <b>W</b> N	UN <b>K</b> ₩N	_	_	_	UNK WN	_
ABS	-	<b>V</b> €	UNKWN	UNK/WN	UN <b>K</b> ₩N	_	_	UNK/WN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_

### Case 15

Check IPDM E/R ignition relay circuit continuously sticks "OFF". Refer to LAN-265, "IPDM E/R Ignition Relay Circuit Check" .

				CAN DIAG SUPPORT MNTR									
SELECT SYST	FM screen	Initial	Transmit			Re	ceive diagn	osis					
022201 0101	LIW SOICCIT	diagnosis diagno		ECM	TCM	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/R			
ENGINE	_	NG	UNKWN	-	η <b>νκ</b> γνν	UNKWN	UNKWN	UNKWN	∩ <b>NK</b> WN	UNKWN			
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	UNKWN	UNKWN	_			
AUTO DRIVE POS.	No indication	NG	UNKWN	_	Ω <b>ΝΚ</b> /WΝ	UNKWN	UNKWN	_	_	_			
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN			
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	∩ <b>NK</b> WN	_			
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	∩ <b>иК</b> \\\	_	_	_	UN <b>K</b> ₩N	_			
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_			
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_			

#### Case 16

Check IPDM E/R ignition relay circuit continuously sticks "ON". Refer to LAN-265, "IPDM E/R Ignition Relay Circuit Check".

					CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit			Red	ceive diagn	osis		
0122010101		diagnosis	diagnosis	ECM	TCM	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNK WN	_	UNK WN	_	UNK WN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	_
BCM	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	1	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	ı	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNK WN	UNKWN	_	_	UNK WN	_	_
IPDM E/R	No indication	-	UNKWN	UNKWN	_	_	UNKWN	_	_	_

# Circuit Check Between TCM and Driver Seat Control Unit

# 1. CHECK CONNECTOR

- Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- Check following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector F33
- Harness connector E19
- Harness connector E50
- Harness connector B75

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

- Disconnect A/T assembly connector and harness connector F33.
- Check continuity between A/T assembly harness connector F9 terminals 3 (L), 8 (P) and harness connector F33 terminals 12 (L), 11 (P).

3 (L) - 12 (L)

: Continuity should exist.

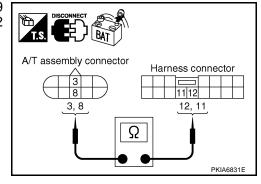
8 (P) - 11 (P)

: Continuity should exist.

### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



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# 3. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect harness connector E50.
- Check continuity between harness connector E19 terminals 12 (L), 11 (P) and harness connector E50 terminals 2 (L), 1 (P).

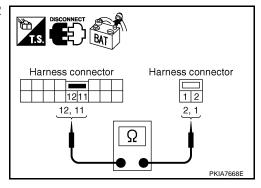
12 (L) - 2 (L)

: Continuity should exist.

11 (P) - 1 (P) : Continuity should exist.

OK or NG

OK >> GO TO 4. NG >> Repair harness.



# 4. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect harness connector B37.
- Check continuity between harness connector B75 terminals 2 (L), 1 (P) and harness connector B37 terminals 15 (L), 14 (P).

2 (L) - 15 (L)

: Continuity should exist.

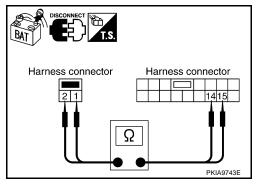
1 (P) - 14 (P)

: Continuity should exist.

OK or NG

OK >> Connect all the connectors and diagnose again. Refer to LAN-240, "Work Flow".

NG >> Repair harness.



# Circuit Check Between Driver Seat Control Unit and Data Link Connector

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### 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector B69
- Harness connector M40

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect harness connector B37 and harness connector B69.
- Check continuity between harness connector B37 terminals 15 (L), 14 (P) and harness connector B69 terminals 51J (L), 52J (P).

15 (L) - 51J (L)

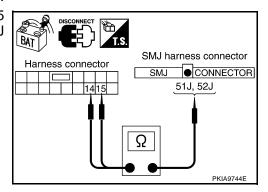
: Continuity should exist.

14 (P) - 52J (P) : Continuity should exist.

# OK or NG

OK >> GO TO 3.

NG >> Repair harness.



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# 3. check harness for open circuit

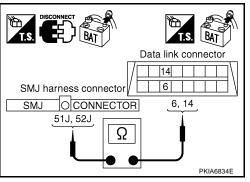
Check continuity between harness connector M40 terminals 51J (L), 52J (P) and data link connector M22 terminals 6 (L), 14 (P).

51J (L) - 6 (L) : Continuity should exist. 52J (P) - 14 (P) : Continuity should exist.

### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to LAN-240, "Work Flow".

NG >> Repair harness.



# Circuit Check Between Data Link Connector and IPDM E/R

# 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector M31
- Harness connector E152

### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

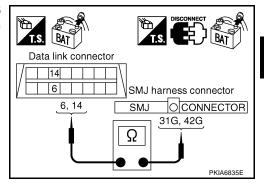
- 1. Disconnect harness connector M31.
- Check continuity between data link connector M22 terminals 6
   (L), 14 (P) and harness connector M31 terminals 31G (L), 42G
   (P).

6 (L) - 31G (L) : Continuity should exist. 14 (P) - 42G (P) : Continuity should exist.

### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



# 3. CHECK HARNESS FOR OPEN CIRCUIT

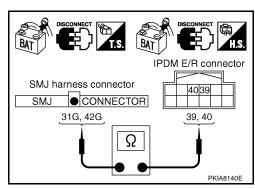
- Disconnect IPDM E/R connector.
- Check continuity between harness connector E152 terminals 31G (L), 42G (P) and IPDM E/R harness connector E122 terminals 19 (L), 40 (P).

31G (L) - 39 (L) : Continuity should exist. 42G (P) - 40 (P) : Continuity should exist.

### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-240, "Work Flow"</u>.

NG >> Repair harness.



### [CAN]

### **ECM 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 connectors for damage, bend and loose connection (control module side and harness side).
- ECM connector
- Harness connector E19
- Harness connector F33

### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

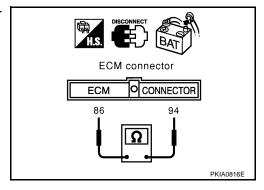
- 1. Disconnect ECM connector.
- 2. Check resistance between ECM harness connector E16 terminals 94 (L) and 86 (P).

: Approx. 108 - 132  $\Omega$ 

### OK or NG

OK >> Replace ECM.

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



### **TCM Circuit Check**

# 1. CHECK CONNECTOR

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

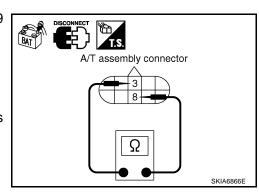
- Disconnect A/T assembly connector.
- Check resistance between A/T assembly harness connector F9 terminals 3 (L) and 8 (P).

: Approx. 54 - 66  $\Omega$ 

#### OK or NG

OK >> Replace A/T assembly.

NG >> Repair harness between A/T assembly and harness connector F33.



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## **Driver Seat Control Unit Circuit Check**

## 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (control unit side and harness side).
- Driver seat control unit connector
- Harness connector P1
- Harness connector B37

### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect driver seat control unit connector.
- 2. Check resistance between driver seat control unit harness connector P2 terminals 3 (L) and 19 (P).

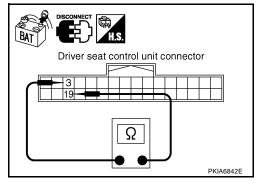
: Approx. 54 - 66  $\Omega$ 

#### OK or NG

OK >> Replace driver seat control unit.

NG

>> Repair harness between driver seat control unit and harness connector B69.



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### **Combination Meter Circuit Check**

# 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- Disconnect the negative battery terminal.
- Check terminals and connector of combination meter for damage, bend and loose connection (meter side and harness side).

### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect combination meter connector.
- Check resistance between combination meter harness connector M24 terminals 11 (L) and 12 (P).

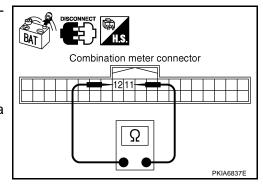
: Approx. 54 - 66  $\Omega$ 

### OK or NG

NG

OK >> Replace combination meter.

>> Repair harness between combination meter and data link connector.



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### **BCM Circuit Check**

## 1. CHECK CONNECTOR

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- 1. 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

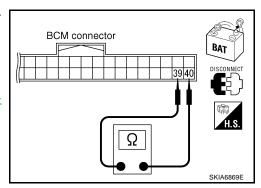
- 1. Disconnect BCM connector.
- Check resistance between BCM harness connector M18 terminals 39 (L) and 40 (P).

: Approx. 54 - 66  $\Omega$ 

#### OK or NG

OK >> Replace BCM. Refer to BCS-20, "Removal and Installation of BCM".

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



# **Data Link Connector Circuit Check**

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### 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check the 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 M22 terminals 6 (L) and 14 (P).

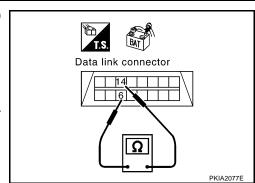
**6 (L) - 14 (P)** : Approx. 54 - 66 
$$\Omega$$

#### OK or NG

NG

OK >> Diagnose again. Refer to LAN-240, "Work Flow".

>> Repair harness between data link connector and combination meter.



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**Front Air Control Circuit Check** 

# 1. CHECK CONNECTOR

Turn ignition switch OFF.

- 2. Disconnect the negative battery terminal.
- 3. Check terminals and connector of front air control for damage, bend and loose connection (unit side and harness side).

OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

- Disconnect front air control connector. 1.
- Check resistance between front air control harness connector M50 terminals 34 (L) and 35 (P).

: Approx. 54 - 66  $\Omega$ 

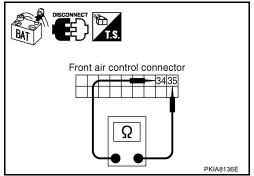
### OK or NG

OK

>> Replace front air control.

NG

>> Repair harness between front air control and data link connector.



## **Transfer Control Unit Circuit Check**

## 1. CHECK CONNECTOR

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

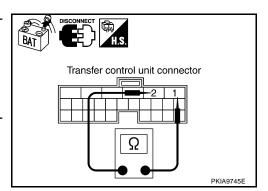
- Disconnect transfer control unit connector.
- Check resistance between transfer control unit harness connector E142 terminals 1 (L) and 2 (P).

: Approx. 54 - 66  $\Omega$ 

### OK or NG

OK >> Replace transfer control unit.

>> Repair harness between transfer control unit and har-NG ness connector E152.



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# **ABS Actuator and Electric Unit (Control Unit) Circuit Check**

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### 1. CHECK CONNECTOR

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

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect ABS actuator and electric unit (control unit) connector.
- 2. Check resistance between ABS actuator and electric unit (control unit) harness connector E125 terminals 11 (L) and 15 (P).

: Approx. 54 - 66  $\Omega$ 

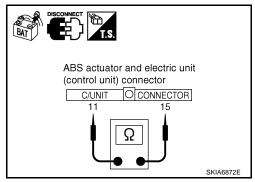
### OK or NG

OK :

>> Replace ABS actuator and electric unit (control unit).

NG

>> Repair harness between ABS actuator and electric unit (control unit) and harness connector E152.



# **IPDM E/R Circuit Check**

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### 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 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 E122 terminals 39 (L) and 40 (P).

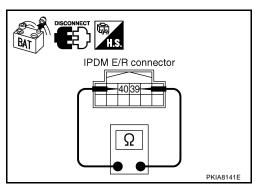
: **Approx. 108 - 132**  $\Omega$ 

### OK or NG

OK >> Replace IPDM E/R.

NG >> Repair harnes

>> Repair harness between IPDM E/R and harness connector E152.



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### **CAN Communication Circuit Check**

## 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Disconnect the following module and control unit connectors and check terminals for deformation, disconnection, looseness or damage.
- ECM
- A/T assembly
- Driver seat control unit
- Combination meter
- BCM
- Front air control
- Transfer control unit
- ABS actuator and electric unit (control unit)
- IPDM E/R

### OK or NG

OK >> GO TO 2.

NG >> Repair or replace as necessary.

# 2. CHECK HARNESS FOR SHORT CIRCUIT

With all module and control unit connectors disconnected, check continuity between data link connector M22 terminals 6 (L) and 14 (P).

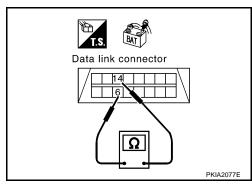
6 (L) - 14 (P)

: Continuity should not exist.

### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



# 3. CHECK HARNESS FOR SHORT CIRCUIT

Check continuity between data link connector M22 terminals 6 (L), 14 (P) and ground.

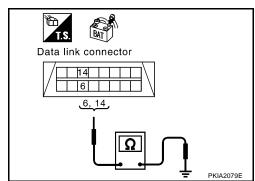
6 (L) - Ground : Continuity should not exist.

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

### OK or NG

OK >> Check ECM and IPDM E/R. Refer to <u>LAN-266, "ECM/IPDM E/R INTERNAL CIRCUIT INSPECTION"</u>.

NG >> Repair harness.



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# 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 <u>PG-26</u>, "IPDM E/R Power/Ground Circuit Inspection".
- Ignition power supply circuit. Refer to <u>PG-13</u>, "IGNITION POWER SUPPLY IGNITION SW. IN ON AND/OR START".

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# **CAN SYSTEM (TYPE 8)**

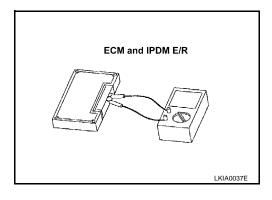
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# Component Inspection ECM/IPDM E/R INTERNAL CIRCUIT INSPECTION

- Remove ECM and IPDM E/R from vehicle.
- Check resistance between ECM terminals 94 and 86.
- Check resistance between IPDM E/R terminals 39 and 40.

Unit	Terminal	Resistance value (Ω) (Approx.)
ECM	94 - 86	108 - 132
IPDM E/R	39 - 40	100 - 132



### [CAN]

# **CAN SYSTEM (TYPE 9)**

#### PFP:23710

# **System Description**

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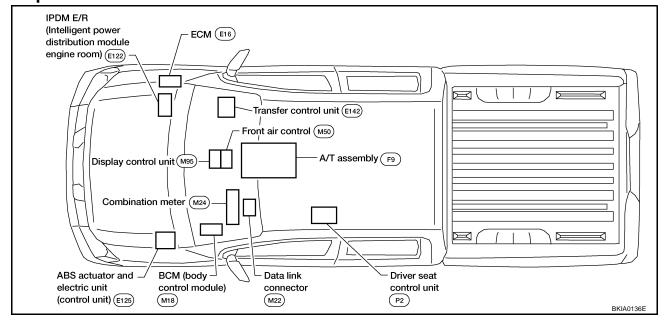
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CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped 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.

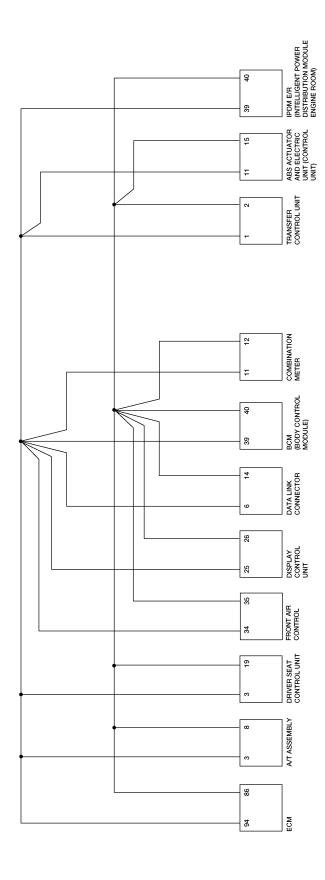
### **Component Parts and Harness Connector Location**

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Schematic UKS001GT



Wiring Diagram - CAN -

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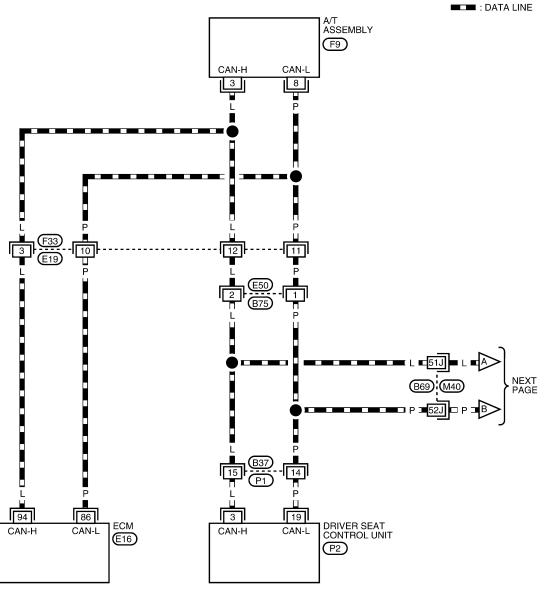
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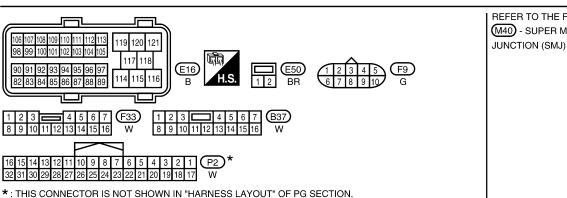
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# LAN-CAN-25

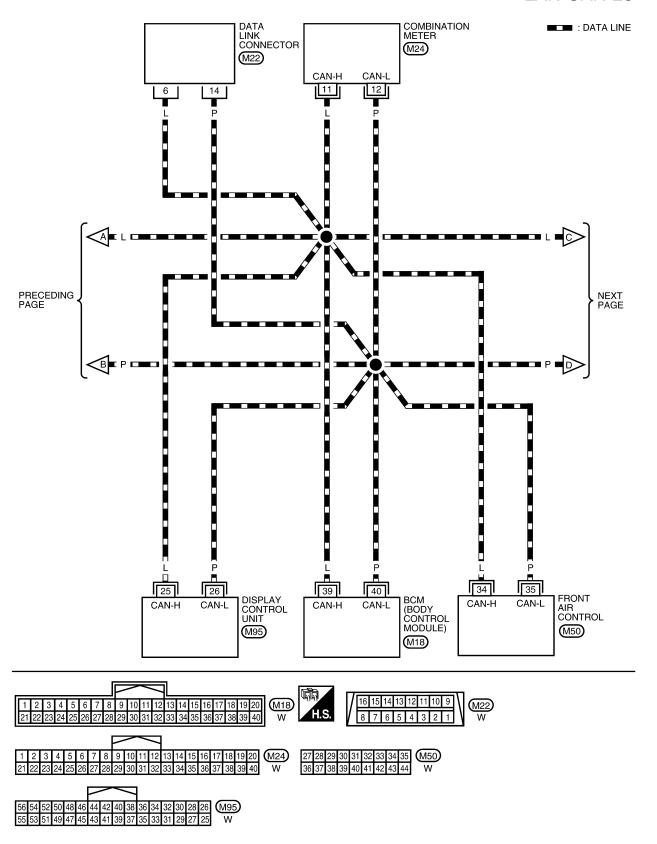




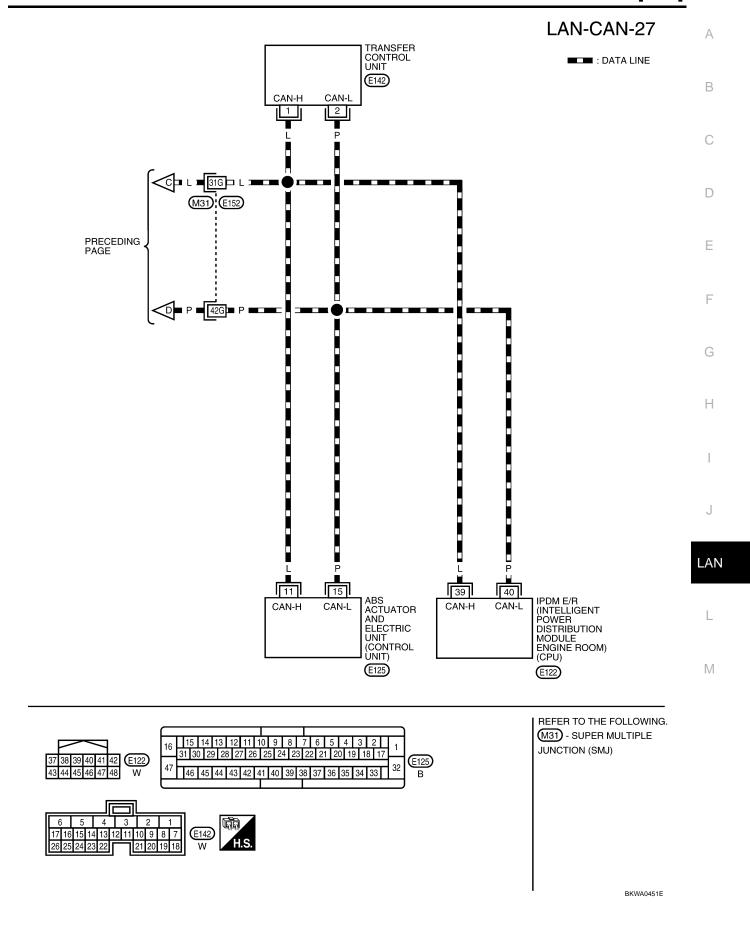
REFER TO THE FOLLOWING. M40 - SUPER MULTIPLE

BKWA0449E

# LAN-CAN-26

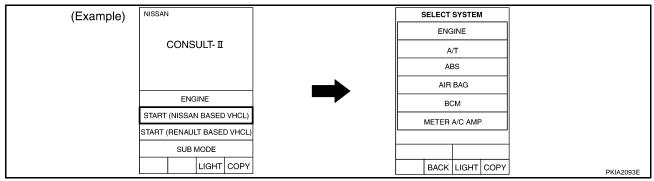


BKWA0450E

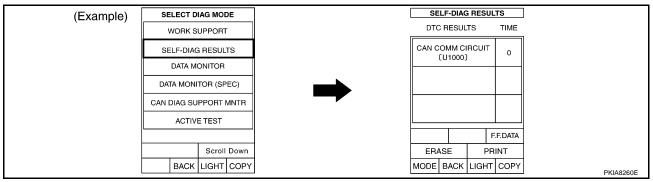


Work Flow

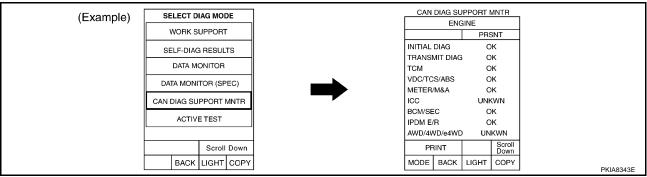
1. When there are no indications of "AUTO DRIVE POS.", "BCM", "HVAC" or "IPDM E/R" on "SELECT SYSTEM" display of CONSULT-II, print the "SELECT SYSTEM".



2. Print all the data of "SELF-DIAG RESULTS" for "ENGINE", "A/T", "AUTO DRIVE POS.", "BCM", "HVAC", "ALL MODE AWD/4WD", "ABS" and "IPDM E/R" displayed on CONSULT-II.



3. Print all the data of "CAN DIAG SUPPORT MNTR" for "ENGINE", "A/T", "AUTO DRIVE POS.", "BCM", "HVAC", "ALL MODE AWD/4WD", "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 LAN-274, "CHECK SHEET".
- Based on the indications of "SELECT SYSTEM" and the results of "CAN DIAG SUPPORT MNTR", puts a check mark onto the items with "No indication", "NG", or "UNKWN" in the check sheet table. Refer to <u>LAN-</u> 274, "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. Check CAN communication line of the navigation system. Refer to <u>AV-148, "CAN Communication Line Check"</u>.
- 7. Attach the CAN DIAG SUPPORT MONITOR check sheet onto the check sheet. Refer to <u>LAN-274</u>, <u>"CHECK SHEET"</u>.

# **CAN SYSTEM (TYPE 9)**

[CAN]

8. Mark the "NG" or "UNKWN" item of the check sheet table with "v" from the result of CAN DIAG SUPPORT MONITOR check sheet. Refer to <u>LAN-274</u>, "CHECK SHEET".

### NOTE:

If "NG" is displayed on "CAN COMM" as "CAN DIAG SUPPORT MONITOR" for the diagnosed control unit, replace the control unit. Refer to <u>AV-148</u>, "CAN Communication Line Check".

9. According to the check sheet results (example), start inspection. Refer to <u>LAN-276, "CHECK SHEET RESULTS (EXAMPLE)"</u>.

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### **CHECK SHEET**

### NOTE:

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

					CAN	N DIAG SU	IPPORT M	INTR				
SELECT SYST	EM screen	Initial	Transmit					diagnosis				
		diagnosis			ТСМ	METER /M&A	DISPLAY	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	_	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	ı	UNKWN	_	_	ı	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CIRC 3	-	CAN CIRC 5	ı	CAN CIRC 2	CAN CIRC 4	_	1	CAN CIRC
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	-	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN	ı	_
PDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_	_
			ttach copy LECT SYS					copy of SYSTEM				
			CAI	N DIAG SL	Attach c display co JPPORT N	ntrol unit	check she	et				

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Attach copy of	Attach copy of	Attach copy of	Attach copy of
ENGINE	A/T	AUTO DRIVE POS.	BCM
SELF-DIAG RESULTS	SELF-DIAG RESULTS	SELF-DIAG RESULTS	SELF-DIAG RESULTS
Attach copy of	Attach copy of	Attach copy of	Attach copy of IPDM E/R SELF-DIAG RESULTS
HVAC	ALL MODE AWD/4WD	ABS	
SELF-DIAG RESULTS	SELF-DIAG RESULTS	SELF-DIAG RESULTS	
Attach copy of	Attach copy of	Attach copy of	Attach copy of
ENGINE	A/T	AUTO DRIVE POS.	BCM
CAN DIAG SUPPORT	CAN DIAG SUPPORT	CAN DIAG SUPPORT	CAN DIAG SUPPORT
MNTR	MNTR	MNTR	MNTR
Attach copy of	Attach copy of	Attach copy of	Attach copy of
HVAC	ALL MODE AWD/4WD	ABS	IPDM E/R
CAN DIAG SUPPORT	CAN DIAG SUPPORT	CAN DIAG SUPPORT	CAN DIAG SUPPORT
MNTR	MNTR	MNTR	MNTR

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

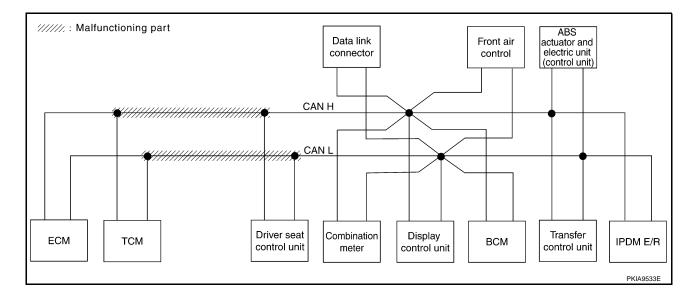
### NOTE:

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

### Case 1

Check harness between TCM and driver seat control unit. Refer to <u>LAN-291</u>, "Circuit Check Between TCM and Driver Seat Control Unit" .

		I			CA1	I DIAC CI	IDDODT N	4NITD				
05/507 0/07					CAN	I DIAG SL		diagnosis				
SELECT SYST	EM screen	Initial diagnosis	Transmit diagnosis	ECM	тсм	METER /M&A	DISPLAY	BCM /SEC		AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNK WN	-	UNK <b></b> ₩N	_	UNK/WN	UN <b>K</b> ₩N	UN <b>K</b> ₩N
A/T	_	NG	UNKWN	UNKWN	_	UNK WN	1	_	_	UN <b>K</b> ₩N	UNK WN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNK/WN	UNKWN	-	UNKWN	_	_	_	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CARC 3	_	CAN CIRC 5	_	CAN CIRC 2	CAN CIRC 4	_	_	CAN CIRC
всм	No indication	NG	UNKWN	UNK WN	_	UNKWN	-	_	-	-	-	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNK <b>W</b> N	UNK WN	_	_	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	-	UNKWN	_	_	-	-
												SKIB2783E



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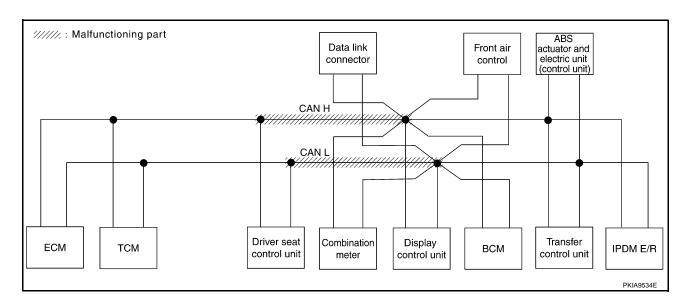
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Case 2

Check harness between driver seat control unit and data link connector. Refer to <u>LAN-292</u>, "Circuit Check <u>Between Driver Seat Control Unit and Data Link Connector"</u>.

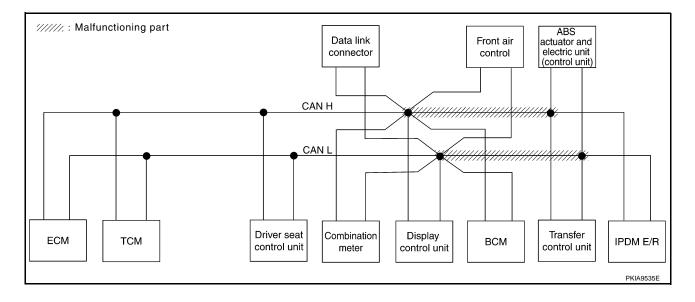
					CAN	I DIAG SU	IPPORT M	INTR				
SELECT SYST	FM screen	Initial	Transmit				Receive	diagnosis				
OLLLOT OTOT	LIW SOICCIT	diagnosis		ECM	ТСМ	METER /M&A	DISPLAY	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/I
ENGINE	_	NG	UNKWN	1	UNKWN	UNK WN	ı	UNK WN	_	UNK WN	UNK WN	UNK WI
A/T	_	NG	UNKWN	UNKWN	-	UN <b>K</b> ₩N	1	_	_	UNK WN	UNK WN	-
AUTO DRIVE POS.	No indication	NG	UNKWN	1	UNKWN	UNKWN	-	UNKWN	_	1	-	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CAC 3	ı	CAN CIRC 5	I	CAN CIRC 2	CAN CIRC 4	ı	-	CAN CIRC
ВСМ	No indication	NG	UNKWN	UNKWN	-	UNKWN	ı	_	-	1	_	UNKWN
HVAC	No indication	_	UNKWN	UNK WN	1	-	UNKWN	UNKWN	-	1	UNKWN	ı
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	∩ <b>NK</b> WN	_	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	NNK WN	UNKWN	_	_	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_	_



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Case 3
Check harness between data link connector and IPDM E/R. Refer to <u>LAN-293</u>, "Circuit Check Between Data <u>Link Connector and IPDM E/R"</u>.

					CAN	I DIAG SU	IPPORT M	INTR				
SELECT SYST	FM screen	Initial	Transmit				Receive	diagnosis				
0222010101	LIVI GOTGOTI	diagnosis		ECM	ТСМ	METER /M&A	DISPLAY	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	1	UNKWN	_	UN <b>K</b> ₩N	Ω <b>ΝΚ</b> ⁄⁄⁄⁄⁄ΝΝ	υ <b>νΚ</b> ⁄ΜΝ
A/T	_	NG	UNKWN	UNKWN	-	UNKWN	ı	-	_	UN <b>K</b> ₩N	UN <b>K</b> ₩N	-
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	1	UNKWN	_	_	_	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CIRC 3	_	CAN CIRC 5	-	CAN CIRC 2	CAN CIRC 4	_	_	CAN CARC 7
BCM	No indication	NG	UNKWN	UNKWN	_	UNKWN	1	-	-	_	_	UN <b>K</b> WN
HVAC	No indication	_	UNKWN	UNKWN	-	_	UNKWN	UNKWN	_	_	UN <b>K</b> ₩N	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNK WN	<b>NMANN</b>	_	-	-	-	_	UNKWN	_
ABS	_	NG	UNKWN	UNK <b>W</b> N	UNKWN	_	_	_	-	UNKWN	_	-
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_		UNKWN	_	_	_	_



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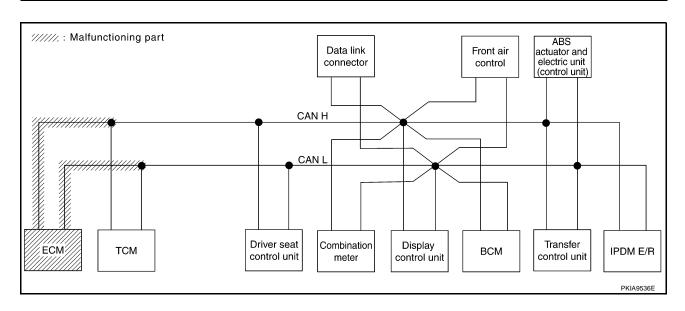
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Case 4
Check ECM circuit. Refer to <u>LAN-294, "ECM Circuit Check"</u>.

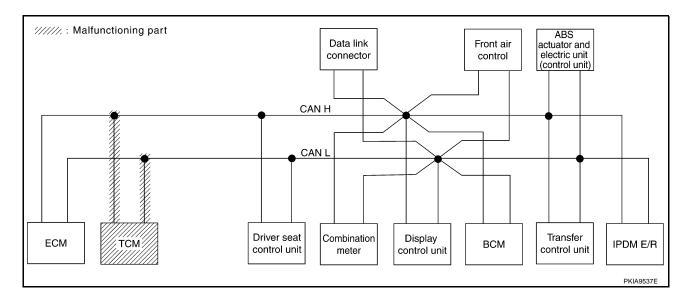
					CAN	I DIAG SU	IPPORT M	INTR				
SELECT SYST	FM screen	Initial	Transmit				Receive	diagnosis				
0222010101	LIW GOTGOTT	diagnosis		ECM	TCM	METER /M&A	DISPLAY	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/
ENGINE	-	NG	∩ <b>NK</b> WN	ı	UNKWN	UNK WN	ı	UNK WN	-	UNK WN	UNK WN	UNK WI
A/T	-	NG	UNKWN	UNK WN	ı	UNKWN	1	1	ı	UNKWN	UNKWN	ı
AUTO DRIVE POS.	No indication	NG	UNKWN	ı	UNKWN	UNKWN	ı	UNKWN	_	_	_	l
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CAC 3	-	CAN CIRC 5	ı	CAN CIRC 2	CAN CIRC 4	_	_	CAN CIRC
ВСМ	No indication	NG	UNKWN	UNK WN	I	UNKWN	I	ı	ı	-	-	UNKWI
HVAC	No indication	_	UNKWN	UNKWN	ı	ı	UNKWN	UNKWN	ı	_	UNKWN	ı
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	1	1	_	_	_	UNKWN	-
ABS	_	NG	UNKWN	UNK WN	UNKWN	_		_	_	UNKWN		_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_	_



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Case 5
Check TCM circuit. Refer to <u>LAN-294, "TCM Circuit Check"</u>.

					CAN	I DIAG SU	IPPORT N	INTR				
SELECT SYST	FM screen	Initial	Transmit				Receive	diagnosis				
0222010101	LIW GOTGOTT	diagnosis		ECM	TCM	METER /M&A	DISPLAY	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/
ENGINE	_	NG	UNKWN	_	UNK WN	UNKWN	_	UNKWN	_	UNKWN	UNKWN	UNKWI
A/T	_	NG	UNKWN	UNK WN	_	UNK WN	_	_	_	UN <b>K</b> ₩N	UNK WN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	1	UNKWN	UNKWN	_	UNKWN	_	_	-	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CIRC 3	-	CAN CIRC 5	_	CAN CIRC 2	CAN CIRC 4	_	-	CAN CIRC
ВСМ	No indication	NG	UNKWN	UNKWN	I	UNKWN	ı	_	ı	-	_	UNKWI
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	<b>NMMN</b>	_	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_	_



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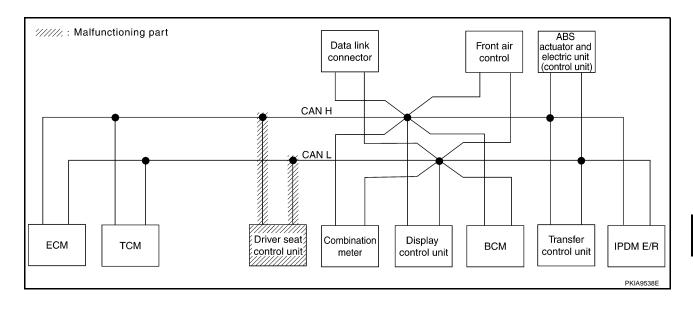
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Case 6
Check driver seat control unit circuit. Refer to <u>LAN-295</u>, "<u>Driver Seat Control Unit Circuit Check"</u>.

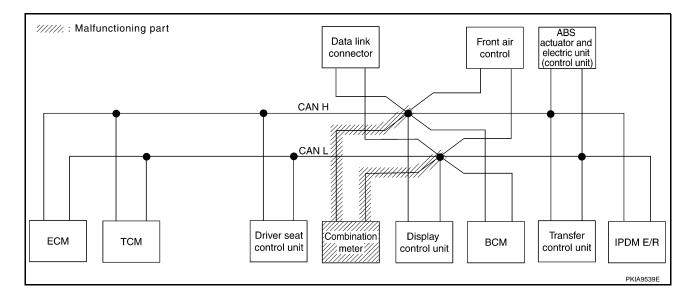
					CAN	I DIAG SU	PPORT M	INTR				
SELECT SYST	FM screen	Initial	Transmit				Receive	diagnosis				
022201 0101	2111 0010011	diagnosis		ECM	ТСМ	METER /M&A	DISPLAY	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	ı	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	ı	UNKWN	_	1	I	UNKWN	UNKWN	l
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	ı	_	_	ı
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CIRC 3	-	CAN CIRC 5	_	CAN CIRC 2	CAN CIRC 4	_	_	CAN CIRC
BCM	No indication	NG	UNKWN	UNKWN	I	UNKWN	_	ı	ı	ı	ı	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	-	_	_	ı	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_			_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_	_



LAN

Case 7
Check combination meter circuit. Refer to <u>LAN-295</u>, "Combination Meter Circuit Check" .

					CAN	I DIAG SU	IPPORT M	1NTR				
SELECT SYST	FM screen	Initial	Transmit				Receive	diagnosis				
0222010101	LIW GOTGOTT	diagnosis		ECM	TCM	METER /M&A	DISPLAY	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	-	NG	UNKWN	ı	UNKWN	UN <b>K</b> ₩N	ı	UNKWN	-	UNKWN	UNKWN	UNKWN
A/T	-	NG	UNKWN	UNKWN	ı	UNK WN	ĺ	1	ı	UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	ı	UNKWN	_	_	-	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CIRC 3	-	CAN CAC 5	ı	CAN CIRC 2	CAN CIRC 4	_	_	CAN CIRC 7
ВСМ	No indication	NG	UNKWN	UNKWN	ı	UNKWN	ı	ı	-	_	ı	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	ı	1	UNKWN	UNKWN	-	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	1	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	ı			_	UNKWN		_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_	_



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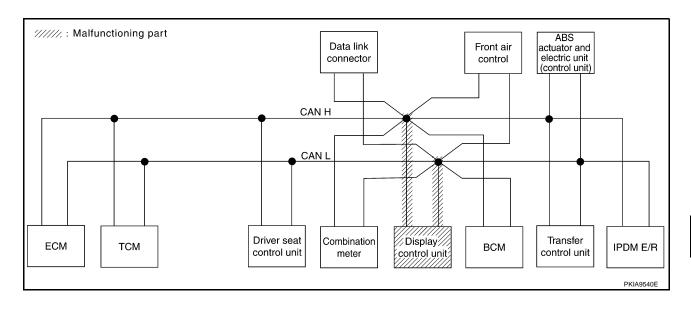
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Case 8
Check display control unit circuit. Refer to <u>LAN-296</u>, "<u>Display Control Unit Circuit Check"</u>.

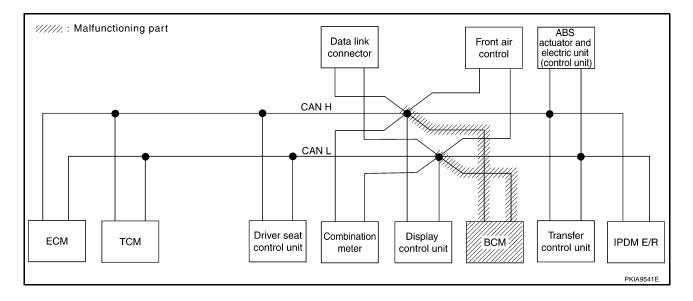
					CAN	I DIAG SU	IPPORT M	INTR				
SELECT SYST	FM screen	Initial	Transmit				Receive	diagnosis				
022201 0101	LIVI GOICCII	diagnosis		ECM	TCM	METER /M&A	DISPLAY	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	1	UNKWN	UNKWN	ı	UNKWN	-	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	ı	UNKWN	I	1	ı	UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	ı	UNKWN	UNKWN	ı	UNKWN	_	_	-	_
Display control unit	_	CAN COMM	CAN CRC 1	CAN CAC 3	ı	CAN CARC 5	I	CANORC 2	CAN CARC 4	_	ı	CANCERC
BCM	No indication	NG	UNKWN	UNKWN	_	UNKWN	ı	_	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	-	UNKWN	UNKWN	_	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	I	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	1		_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_	_



LAN

Case 9
Check BCM circuit. Refer to <u>LAN-296, "BCM Circuit Check"</u>.

					CAN	I DIAG SU	IPPORT M	1NTR				
SELECT SYST	FM screen	Initial	Transmit				Receive	diagnosis				
0222010101	LIVI GOLGGII	diagnosis		ECM	TCM	METER /M&A	DISPLAY	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/R
ENGINE	-	NG	UNKWN	ı	UNKWN	UNKWN	ı	UNK WN	-	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	-	UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	ı	UNKWN	UNKWN	ı	UNK WN	ı	1	ı	_
Display control unit	-	CAN COMM	CAN CIRC 1	CAN CIRC 3	-	CAN CIRC 5	_	CANORC 2	CAN CIRC 4	_	_	CAN CIRC 7
ВСМ	No indication	NG	UNKWN	UNKWN	ı	UNKWN	ı	ı	ı	ı	ı	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	ı	_	UNKWN	UNKWN	-	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	_	UNKWN	_
ABS	-	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN	_	_
IPDM E/R	No indication	-	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_	_



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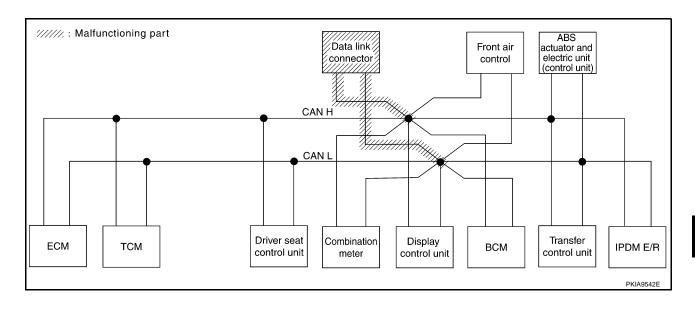
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Case 10
Check data link connector circuit. Refer to LAN-297, "Data Link Connector Circuit Check" .

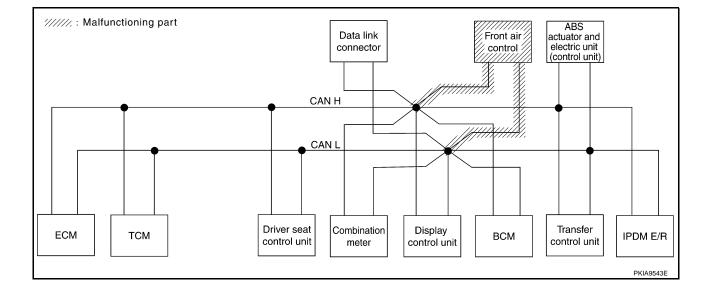
					CAN	I DIAG SU	PPORT N	INTR				
SELECT SYST	FM screen	Initial	Transmit				Receive	diagnosis				
022201 0101	LIW GOTGOTT	diagnosis		ECM	ТСМ	METER /M&A	DISPLAY	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/
ENGINE	-	NG	UNKWN	1	UNKWN	UNKWN	_	UNKWN	-	UNKWN	UNKWN	UNKWI
A/T	-	NG	UNKWN	UNKWN	ı	UNKWN	_	1	ı	UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	ı	UNKWN	UNKWN	_	UNKWN	_	_	_	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CIRC 3	-	CAN CIRC 5	_	CAN CIRC 2	CAN CIRC 4	_	-	CAN CIRC
ВСМ	No indication	NG	UNKWN	UNKWN	I	UNKWN	ı	ı	ı	-	_	UNKWI
HVAC	No indication	ı	UNKWN	UNKWN	ı	ı	UNKWN	UNKWN	_	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	ı	_	ı	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN		_	- 1	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_		_



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Case 11
Check front air control circuit. Refer to <u>LAN-297</u>, "Front Air Control Circuit Check" .

					CAN	I DIAG SU	IPPORT M	1NTR				
SELECT SYST	FM screen	Initial	Transmit				Receive	diagnosis				
0222010101	LIW GOTGOTT	diagnosis		ECM	TCM	METER /M&A	DISPLAY	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	-	NG	UNKWN	_	UNKWN	UNKWN	-	UNKWN	ı	UNKWN	UNKWN	UNKWN
A/T	-	NG	UNKWN	UNKWN	ı	UNKWN	ı	1	I	UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	1	_	-	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CIRC 3	_	CAN CIRC 5	_	CAN CIRC 2	CAN ARC 4	_	_	CAN CIRC 7
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	-	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	-		UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	-			UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	-	_	_	_



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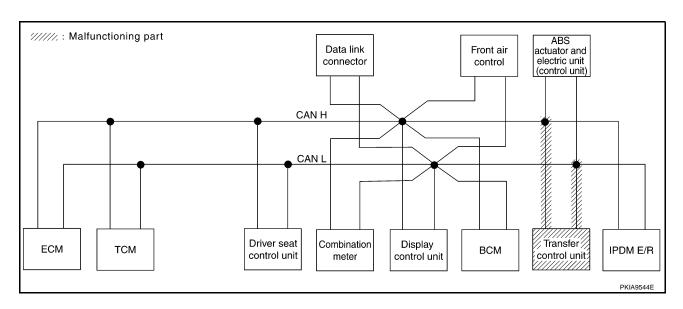
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Case 12
Check transfer control unit circuit. Refer to <u>LAN-298</u>, "Transfer Control Unit Circuit Check".

					CAN	I DIAG SU	IPPORT N	INTR				
SELECT SYST	FM screen	Initial	Transmit				Receive	diagnosis				
022201 0101	EIW GOICCIT	diagnosis		ECM	ТСМ	METER /M&A	DISPLAY	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	ı	UNKWN	UNKWN	ı	UNKWN	-	UNI <b>W</b> N	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UN <b>K</b> ₩N	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	1	UNKWN	UNKWN	_	UNKWN	_	_	-	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CIRC 3	-	CAN CIRC 5	_	CAN CIRC 2	CAN CIRC 4	_	-	CAN CIRC 1
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	-	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	-	-	UNKWN	UNKWN	_	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNK WN	UNK WN	_	_	_	_	_	UNK/WN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNK WN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_	_

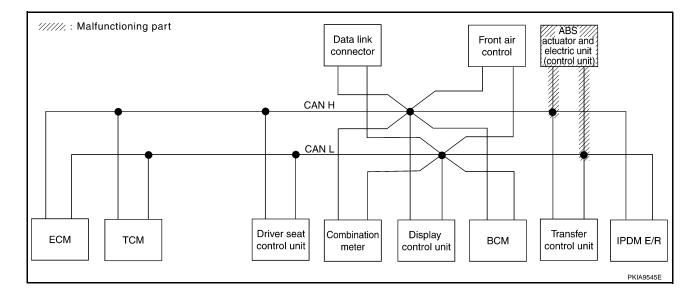


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Case 13
Check ABS actuator and electric unit (control unit) circuit. Refer to LAN-298. "ABS Actuator and Electric unit (control unit) circuit.

Check ABS actuator and electric unit (control unit) circuit. Refer to <u>LAN-298</u>, "ABS Actuator and Electric Unit (Control Unit) Circuit Check".

					CAN	I DIAG SU	IPPORT M	INTR				
SELECT SYST	FM screen	Initial	Transmit				Receive	diagnosis				
022201 0101	LIVI GOLGGII	diagnosis		ECM	ТСМ	METER /M&A	DISPLAY	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	1	NG	UNKWN	1	UNKWN	UNKWN	1	UNKWN	_	UNKWN	UNK WN	UNKWN
A/T	_	NG	UNKWN	UNKWN	-	UNKWN	-	_	_	UNKWN	UN <b>K</b> ₩N	_
AUTO DRIVE POS.	No indication	NG	UNKWN	1	UNKWN	UNKWN	-	UNKWN	_	_	1	_
Display control unit	-	CAN COMM	CAN CIRC 1	CAN CIRC 3	_	CAN CIRC 5	-	CAN CIRC 2	CAN CIRC 4	_	-	CAN CIRC 7
ВСМ	No indication	NG	UNKWN	UNKWN	-	UNKWN	ı	_	_	_	ı	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	-	-	UNKWN	UNKWN	_	_	UNK WN	_
ALL MODE AWD/4WD	ı	NG	UNKWN	UNKWN	UNKWN	-	ı	_	_	_	UNK/WN	_
ABS	_	N	UNKWN	UNKWN	UNK/WN	ı	ı	_	_	UNK WN		_
IPDM E/R	No indication	_	UNKWN	UNKWN	_		1	UNKWN	_	_	_	_



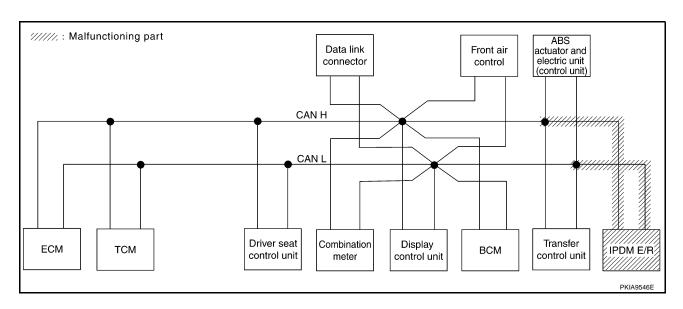
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Case 14
Check IPDM E/R circuit. Refer to <u>LAN-299</u>, "IPDM E/R Circuit Check" .

					CAN	I DIAG SU	IPPORT N	INTR				
SELECT SYST	FM screen	Initial	Transmit				Receive	diagnosis				
022201 0101	EIW GOICCIT	diagnosis		ECM	ТСМ	METER /M&A	DISPLAY	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	1	UNKWN	UNKWN	ı	UNKWN	ı	UNKWN	UNKWN	UNK WI
A/T	_	NG	UNKWN	UNKWN	ı	UNKWN	ı	-	I	UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	ı	UNKWN	UNKWN	ı	UNKWN	ı	_	ı	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CIRC 3	-	CAN CIRC 5	ı	CAN CIRC 2	CAN CIRC 4	_	ı	CANORC
ВСМ	No indication	NG	UNKWN	UNKWN	I	UNKWN	1	_	ı	_	ı	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	ı	ı	UNKWN	UNKWN	ı	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	-	1	_	1	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	ı		_		UNKWN		_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_	_



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Case 15

Check CAN communication circuit. Refer to <a href="LAN-299">LAN-299</a>, "CAN Communication Circuit Check"</a> .

					CAN	I DIAG SU	IPPORT M	1NTR				
SELECT SYST	FM screen	Initial	Transmit				Receive	diagnosis				
022201 0101	ZIVI GOLGGII		diagnosis	ECM	TCM	METER /M&A	DISPLAY	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/
ENGINE	_	NG	UNK WN	1	UNK WN	UNKWN	_	UNK WN	_	UN <b>K</b> ₩N	UNK WN	UNK WI
A/T	_	NG	UNKWN	UNK <b>W</b> N	_	Π <b>ΝΚ</b> (ΜΝ	_	_	_	Ω <b>ΝΚ</b> ⁄ΜΝ	UNK WN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	_	UNKWN	_	_	_	_
Display control unit	_	CAN COMM	CAN ORC 1	CAN CAC 3	_	CAN CAC 5	-	CAN ARC 2	CAN CAC 4	_	_	CANCAC
BCM	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	_	UNKWI
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNK WN	UNK WN	_	-	_	_	_	UNK WN	_
ABS	_	NE	UNK <b>W</b> N	UNK <b>W</b> N	UNK <b>W</b> N	_	_	_	_	UNK <b>W</b> N	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_	_

### Case 16

Check IPDM E/R ignition relay circuit continuously sticks "OFF". Refer to LAN-300, "IPDM E/R Ignition Relay Circuit Check".

					CAN	I DIAG SU	JPPORT N	1NTR				
SELECT SYST	FM screen	Initial	Transmit				Receive	diagnosis				
3222313131	2111 0010011	diagnosis		ECM	TCM	METER /M&A	DISPLAY	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNK WN	UNKWN	_	UNKWN	_	UNKWN	UN <b>K</b> ₩N	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	UNKWN	Π <b>ΝΚ</b> ΜΝ	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNK WN	UNKWN	_	UNKWN	_	_	_	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CIRC 3	-	CAN CIRC 5	_	CAN CIRC 2	CAN CIRC 4	_	_	CAN CIRC 7
всм	No indication	NG	UNKWN	UNKWN	I	UNKWN	_	ı	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	ı	1	UNKWN	UNKWN	_	_	Π <b>ΝΚ</b> ,ΜΝ	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	-	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_		_	UNKWN	_	_	_	
												SKIB2799E

### Case 17

Check IPDM E/R ignition relay circuit continuously sticks "ON". Refer to LAN-300, "IPDM E/R Ignition Relay Circuit Check".

					CAN	I DIAG SU	IPPORT M	1NTR				
SELECT SYST	FM screen	Initial	Transmit				Receive	diagnosis				
011101	00.00	diagnosis		ECM	TCM	METER /M&A	DISPLAY	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	-	UNKWN	_	UNKWN	UNKWN	UNKWN
A/T	-	NG	UNKWN	UN <b>K</b> ₩N	-	UNK WN	1	ı	_	UNK WN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	1	UNKWN	_	_	_	_
Display control unit	-	CAN COMM	CAN CIRC 1	CAN CIRC 3	ı	CAN CIRC 5	1	CAN CIRC 2	CAN CIRC 4	-	ı	CAN CIRC T
ВСМ	No indication	NG	UNKWN	UNKWN	-	UNKWN	1	ı	-	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	1	-	UNKWN	UNKWN	_	_	UNKWN	1
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	-	I	ı	_	_	UNKWN	-
ABS	_	NG	UNKWN	∩ <b>NK</b> WN	UNKWN	ı	- 1		_	UNK WN	_	
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_	_

## Circuit Check Between TCM and Driver Seat Control Unit

## 1. CHECK CONNECTOR

- Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- Check following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector F33
- Harness connector E19
- Harness connector E50
- Harness connector B75

### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

- Disconnect A/T assembly connector and harness connector F33.
- Check continuity between A/T assembly harness connector F9 terminals 3 (L), 8 (P) and harness connector F33 terminals 12 (L), 11 (P).

3 (L) - 12 (L)

: Continuity should exist.

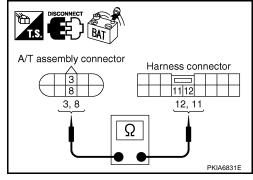
8 (P) - 11 (P)

: Continuity should exist.

### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



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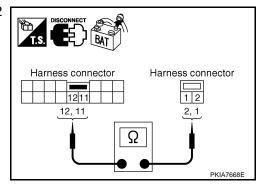
# 3. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect harness connector E50.
- Check continuity between harness connector E19 terminals 12 (L), 11 (P) and harness connector E50 terminals 2 (L), 1 (P).

12 (L) - 2 (L) 11 (P) - 1 (P) : Continuity should exist. : Continuity should exist.

OK or NG

OK >> GO TO 4. NG >> Repair harness.



## 4. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect harness connector B37.
- Check continuity between harness connector B75 terminals 2 (L), 1 (P) and harness connector B37 terminals 15 (L), 14 (P).

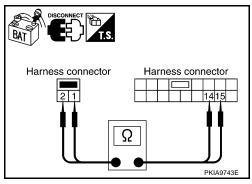
2 (L) - 15 (L) 1 (P) - 14 (P) : Continuity should exist.

: Continuity should exist.

OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-272, "Work Flow"</u>.

NG >> Repair harness.



## Circuit Check Between Driver Seat Control Unit and Data Link Connector

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## 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector B69
- Harness connector M40

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

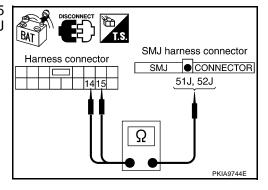
## 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect harness connector B37 and harness connector B69.
- Check continuity between harness connector B37 terminals 15 (L), 14 (P) and harness connector B69 terminals 51J (L), 52J (P).

15 (L) - 51J (L) : Continuity should exist. 14 (P) - 52J (P) : Continuity should exist.

### OK or NG

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



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## $3.\,$ check harness for open circuit

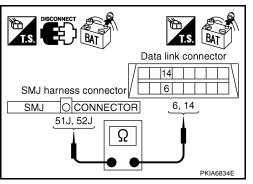
Check continuity between harness connector M40 terminals 51J (L), 52J (P) and data link connector M22 terminals 6 (L), 14 (P).

51J (L) - 6 (L) : Continuity should exist. 52J (P) - 14 (P) : Continuity should exist.

### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-272, "Work Flow"</u>.

NG >> Repair harness.



## Circuit Check Between Data Link Connector and IPDM E/R

## 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector M31
- Harness connector E152

### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

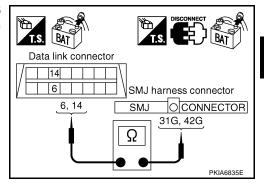
- 1. Disconnect harness connector M31.
- Check continuity between data link connector M22 terminals 6
   (L), 14 (P) and harness connector M31 terminals 31G (L), 42G
   (P).

6 (L) - 31G (L) : Continuity should exist. 14 (P) - 42G (P) : Continuity should exist.

### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



# 3. CHECK HARNESS FOR OPEN CIRCUIT

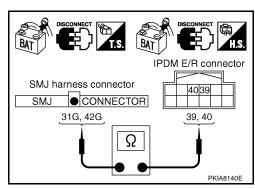
- Disconnect IPDM E/R connector.
- Check continuity between harness connector E152 terminals 31G (L), 42G (P) and IPDM E/R harness connector E122 terminals 19 (L), 40 (P).

31G (L) - 39 (L) : Continuity should exist. 42G (P) - 40 (P) : Continuity should exist.

### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-272</u>, "Work Flow".

NG >> Repair harness.



## **ECM 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 connectors for damage, bend and loose connection (control module side and harness side).
- ECM connector
- Harness connector E19
- Harness connector F33

### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

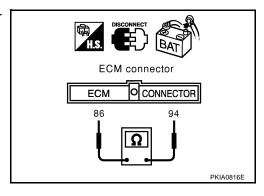
- 1. Disconnect ECM connector.
- 2. Check resistance between ECM harness connector E16 terminals 94 (L) and 86 (P).

: Approx. 108 - 132  $\Omega$ 

### OK or NG

OK >> Replace ECM.

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



### **TCM Circuit Check**

## 1. CHECK CONNECTOR

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

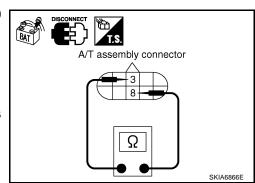
- Disconnect A/T assembly connector.
- 2. Check resistance between A/T assembly harness connector F9 terminals 3 (L) and 8 (P).

: Approx. 54 - 66  $\Omega$ 

#### OK or NG

OK >> Replace A/T assembly.

NG >> Repair harness between A/T assembly and harness connector F33.



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## **Driver Seat Control Unit Circuit Check**

## 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (control unit side and harness side).
- Driver seat control unit connector
- Harness connector P1
- Harness connector B37

### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect driver seat control unit connector.
- 2. Check resistance between driver seat control unit harness connector P2 terminals 3 (L) and 19 (P).

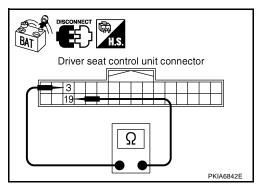
: Approx. 54 - 66  $\Omega$ 

### OK or NG

OK >> Replace driver seat control unit.

NG

>> Repair harness between driver seat control unit and harness connector B69.



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### **Combination Meter Circuit Check**

## 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- Disconnect the negative battery terminal.
- Check terminals and connector of combination meter for damage, bend and loose connection (meter side and harness side).

### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

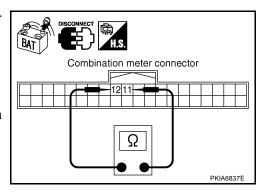
- 1. Disconnect combination meter connector.
- Check resistance between combination meter harness connector M24 terminals 11 (L) and 12 (P).

: Approx. 54 - 66  $\Omega$ 

### OK or NG

OK >> Replace combination meter.
NG >> Repair harness between co

>> Repair harness between combination meter and data link connector.



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## **Display Control Unit Circuit Check**

## 1. CHECK CONNECTOR

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

### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect display control unit connector.
- 2. Check resistance between display control unit harness connector M95 terminals 25 (L) and 26 (P).

: Approx. 54 - 66  $\Omega$ 

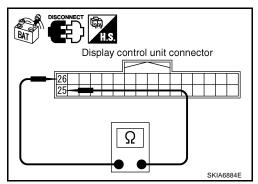
### OK or NG

OK >>

>> Replace display control unit.

NG

>> Repair harness between display control unit and data link connector.



## **BCM Circuit Check**

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## 1. CHECK CONNECTOR

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

### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

## 2. CHECK HARNESS FOR OPEN CIRCUIT

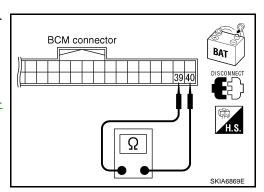
- 1. Disconnect BCM connector.
- 2. Check resistance between BCM harness connector M18 terminals 39 (L) and 40 (P).

: Approx. 54 - 66  $\Omega$ 

### OK or NG

OK >> Replace BCM. Refer to <u>BCS-20</u>, "Removal and Installation of <u>BCM"</u>.

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



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## **Data Link Connector Circuit Check**

## 1. CHECK CONNECTOR

1. Turn ignition switch OFF.

- 2. Disconnect the negative battery terminal.
- 3. Check the 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

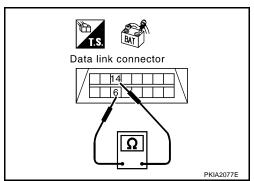
Check resistance between data link connector M22 terminals 6 (L) and 14 (P).

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

### OK or NG

OK >> Diagnose again. Refer to <u>LAN-272</u>, "Work Flow".

NG >> Repair harness between data link connector and combination meter.



## **Front Air Control Circuit Check**

## 1. CHECK CONNECTOR

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

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

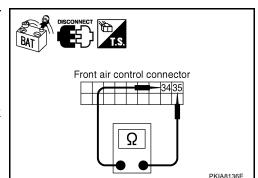
- 1. Disconnect front air control connector.
- 2. Check resistance between front air control harness connector M50 terminals 34 (L) and 35 (P).

**34 (L) - 35 (P)** : Approx. **54 - 66** 
$$\Omega$$

#### OK or NG

OK >> Replace front air control.

NG >> Repair harness between front air control and data link connector.



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## **Transfer Control Unit 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 transfer control unit for damage, bend and loose connection (control unit side and harness side).

### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect transfer control unit connector.
- 2. Check resistance between transfer control unit harness connector E142 terminals 1 (L) and 2 (P).

: Approx. 54 - 66  $\Omega$ 

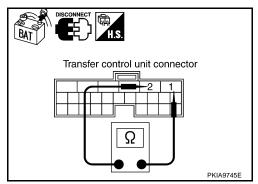
### OK or NG

OK

>> Replace transfer control unit.

NG

>> Repair harness between transfer control unit and harness connector E152.



## **ABS Actuator and Electric Unit (Control Unit) Circuit Check**

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### 1. CHECK CONNECTOR

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

### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect ABS actuator and electric unit (control unit) connector.
- 2. Check resistance between ABS actuator and electric unit (control unit) harness connector E125 terminals 11 (L) and 15 (P).

: Approx. 54 - 66  $\Omega$ 

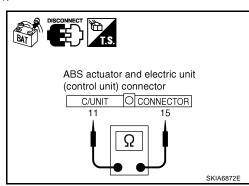
### OK or NG

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>> Replace ABS actuator and electric unit (control unit).

NG

>> Repair harness between ABS actuator and electric unit (control unit) and harness connector E152.



## **CAN SYSTEM (TYPE 9)**

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## **IPDM E/R Circuit Check**

## 1. CHECK CONNECTOR

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.
- Check resistance between IPDM E/R harness connector E122 terminals 39 (L) and 40 (P).

: Approx. 108 - 132  $\Omega$ 

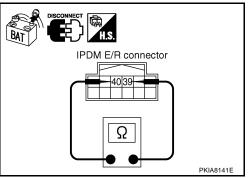
### OK or NG

OK

>> Replace IPDM E/R.

NG

>> Repair harness between IPDM E/R and harness connector E152.



## **CAN Communication Circuit Check**

## 1. CHECK CONNECTOR

- Turn ignition switch OFF. 1.
- 2. Disconnect the negative battery terminal.
- Disconnect the following module and control unit connectors and check terminals for deformation, disconnection, looseness or damage.
- **ECM**
- A/T assembly
- Driver seat control unit
- Combination meter
- Display control unit
- **BCM**
- Front air control
- Transfer control unit
- ABS actuator and electric unit (control unit)
- IPDM E/R

### OK or NG

OK >> GO TO 2.

NG >> Repair or replace as necessary.

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## 2. check harness for short circuit

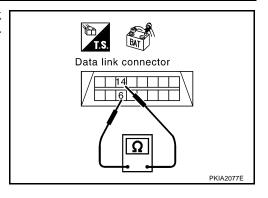
With all module and control unit connectors disconnected, check continuity between data link connector M22 terminals 6 (L) and 14 (P).

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

OK or NG

OK >> GO TO 3.

NG >> Repair harness.



## 3. CHECK HARNESS FOR SHORT CIRCUIT

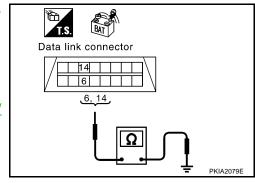
Check continuity between data link connector M22 terminals 6 (L), 14 (P) and ground.

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

OK or NG

OK >> Check ECM and IPDM E/R. Refer to <u>LAN-300</u>, <u>"ECM/IPDM E/R INTERNAL CIRCUIT INSPECTION"</u>.

NG >> Repair harness.



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## IPDM E/R Ignition Relay Circuit Check

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

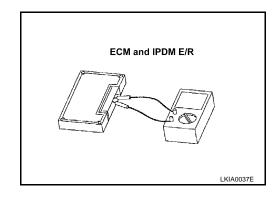
- IPDM E/R power supply circuit. Refer to PG-26, "IPDM E/R Power/Ground Circuit Inspection".
- Ignition power supply circuit. Refer to <u>PG-13</u>, "IGNITION POWER SUPPLY IGNITION SW. IN ON AND/OR START".

# Component Inspection ECM/IPDM E/R INTERNAL CIRCUIT INSPECTION

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- Remove ECM and IPDM E/R from vehicle.
- Check resistance between ECM terminals 94 and 86.
- Check resistance between IPDM E/R terminals 39 and 40.

Unit	Terminal	Resistance value ( $\Omega$ ) (Approx.)
ECM	94 - 86	108 - 132
IPDM E/R	39 - 40	100 - 132



## **CAN SYSTEM (TYPE 10)**

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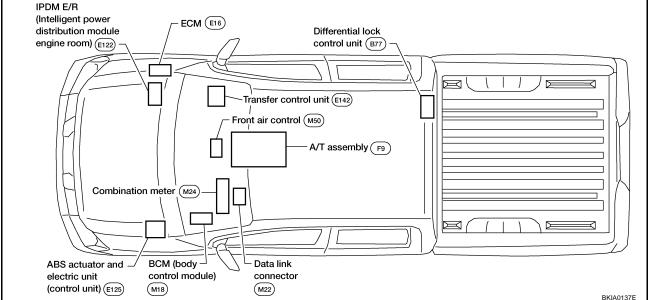
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## **System Description**

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

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





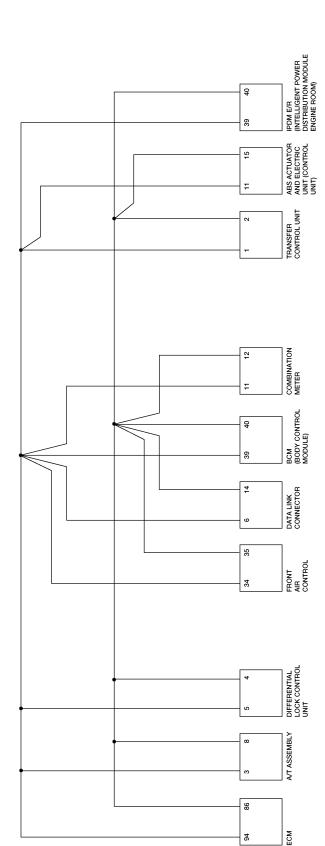
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Revision: October 2005

UKS001HG

Schematic



BKWA0148E

Wiring Diagram - CAN -

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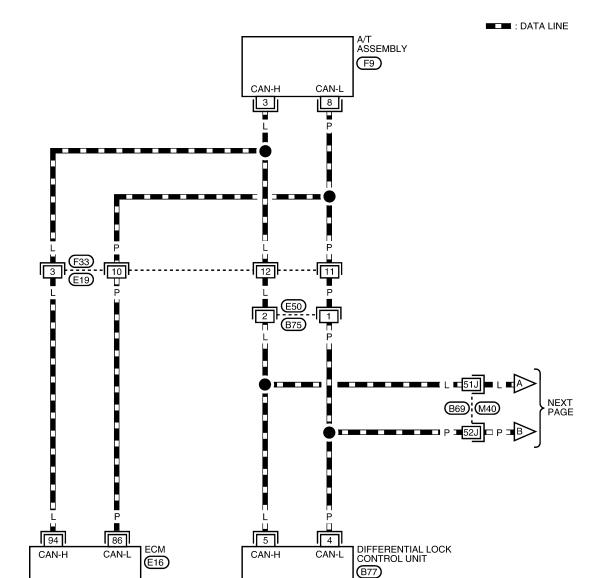
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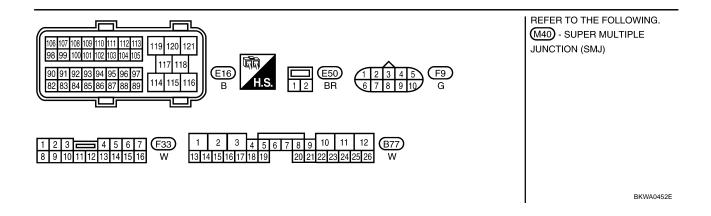
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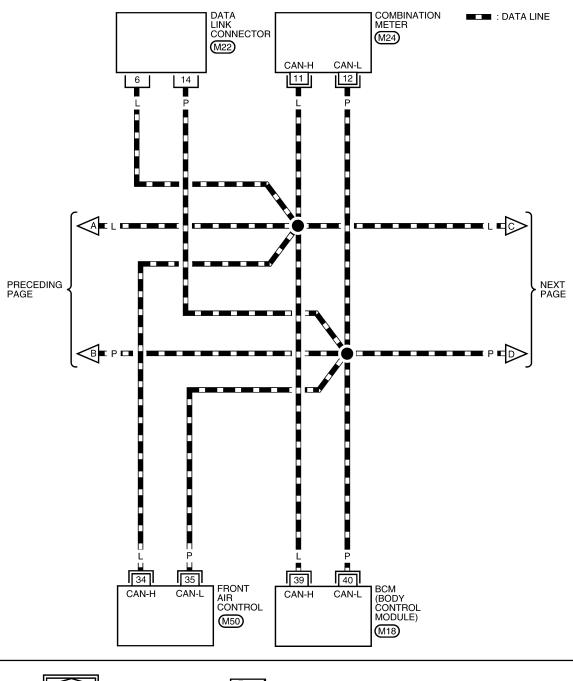
M

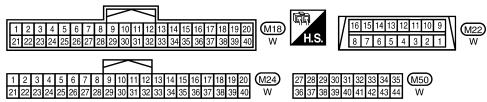
## LAN-CAN-28



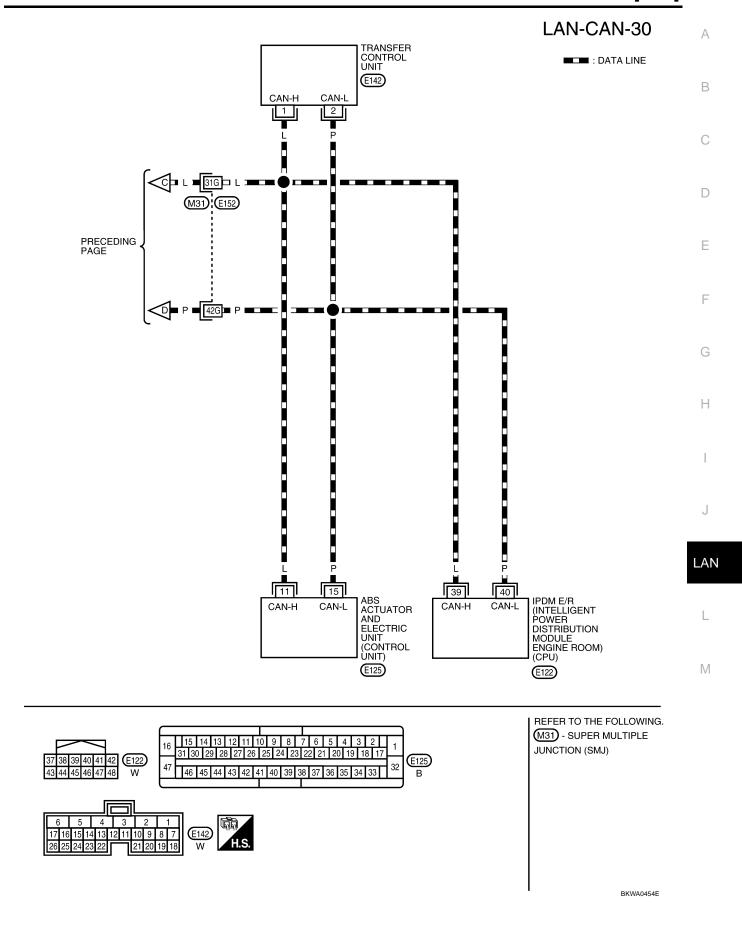


## LAN-CAN-29



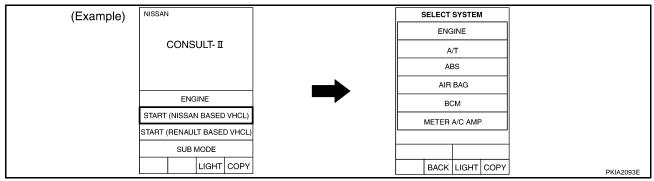


BKWA0453E

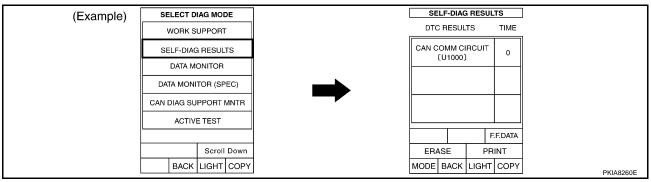


Work Flow

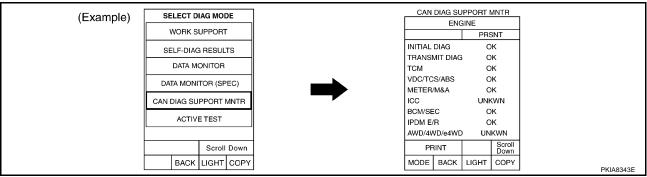
 When there are no indications of "BCM", "HVAC" or "IPDM E/R" on "SELECT SYSTEM" display of CON-SULT-II, print the "SELECT SYSTEM".



2. Print all the data of "SELF-DIAG RESULTS" for "ENGINE", "A/T", "DIFF LOCK", "BCM", "HVAC", "ALL MODE AWD/4WD", "ABS" and "IPDM E/R" displayed on CONSULT-II.



3. Print all the data of "CAN DIAG SUPPORT MNTR" for "ENGINE", "A/T", "DIFF LOCK", "BCM", "HVAC", "ALL MODE AWD/4WD", "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 LAN-307, "CHECK SHEET".
- Based on the indications of "SELECT SYSTEM" and the results of "CAN DIAG SUPPORT MNTR", puts a check mark onto the items with "No indication", "NG", or "UNKWN" in the check sheet table. Refer to <u>LAN-307</u>, "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-309</u>, "CHECK SHEET <u>RESULTS</u> (EXAMPLE)".

## **CAN SYSTEM (TYPE 10)**

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## **CHECK SHEET**

### NOTE:

If "NG" is displayed on "INITIAL DIAG (Initial diagnosis)" for the diagnosed control unit, replace the control un

Check sheet table											
						CAN DIA	G SUPPOI	RT MNTR diagnosis			
SELECT SYST	EM screen	Initial diagnosis	Transmit diagnosis	ECM	тсм	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
VT	-	NG	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	UNKWN	_
DIFF LOCK	_	NG	UNKWN	UNKWN	_	_	_	_	UNKWN	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	_	UNKWN	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	UNKWN	_
ALL MODE AWD/4WD	-	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_
PDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_
		A1 SEL	tach copy o ECT SYST	of EM		SE	Attach copy LECT SYS	of STEM			

Attach copy of ENGINE SELF-DIAG RESULTS	Attach copy of A/T SELF-DIAG RESULTS	Attach copy of DIFF LOCK SELF-DIAG RESULTS	Attach copy of BCM SELF-DIAG RESULTS
Attach copy of	Attach copy of	Attach copy of	Attach copy of
HVAC	ALL MODE AWD/4WD	ABS	IPDM E/R
SELF-DIAG RESULTS	SELF-DIAG RESULTS	SELF-DIAG RESULTS	SELF-DIAG RESULTS
Attach copy of ENGINE CAN DIAG SUPPORT MNTR	Attach copy of A/T CAN DIAG SUPPORT MNTR	Attach copy of DIFF LOCK CAN DIAG SUPPORT MNTR	Attach copy of BCM CAN DIAG SUPPORT MNTR
Attach copy of	Attach copy of	Attach copy of	Attach copy of
HVAC	ALL MODE AWD/4WD	ABS	IPDM E/R
CAN DIAG SUPPORT	CAN DIAG SUPPORT	CAN DIAG SUPPORT	CAN DIAG SUPPORT
MNTR	MNTR	MNTR	MNTR

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

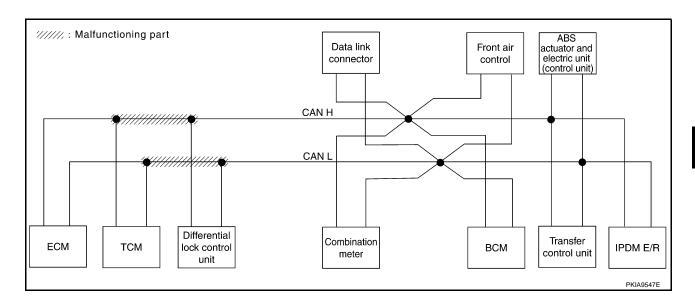
### NOTE:

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

### Case 1

Check harness between TCM and differential lock control unit. Refer to <u>LAN-323</u>, "Circuit Check Between <u>TCM and Differential Lock Control Unit"</u>.

						CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit					diagnosis			
3222313131	2111 0010011	diagnosis	diagnosis	ECM	ТСМ	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/
ENGINE	_	NG	UNKWN	_	UNKWN	_	UNK WN	UNK WN	UNK <b>W</b> N	UNK WN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	_	UNK WN	_	UNK WN	UNK WN	_
DIFF LOCK	_	NG	UNKWN	UNK WN	1	_	_	_	UNKWN	UNKWN	_
всм	No indication	NG	UNKWN	UNK WN	_	_	UNKWN	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNK WN	_	_	_	UNKWN	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNK WN	UNKWN	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	-	UNKWN	UNKWN	_	_	_	UNKWN	_	-	_



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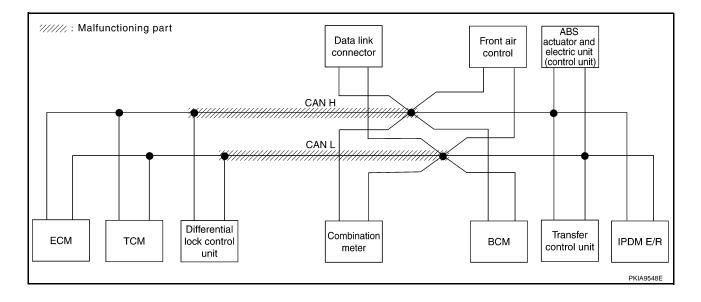
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Case 2

Check harness between differential lock control unit and data link connector. Refer to <u>LAN-324</u>, "Circuit Check <u>Between Differential Lock Control Unit and Data Link Connector"</u>.

						CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit				Receive	diagnosis			
022201 0101	LIVI SOFCOTI	diagnosis	diagnosis	ECM	ТСМ	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	_	UNK WN	UNK WN	UNKWN	UNK WN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	_	UNK WN	_	UNK WN	UNK WN	_
DIFF LOCK	_	NG	UNKWN	UNKWN	_	_	_	_	UNI WN	UNKWN	_
BCM	No indication	NG	UNKWN	UNK WN	_	_	UNKWN	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNK WN	_	_	_	UNKWN	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNK WN	UNKWN	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNK WN	_	_	_	UNKWN	_	_	_



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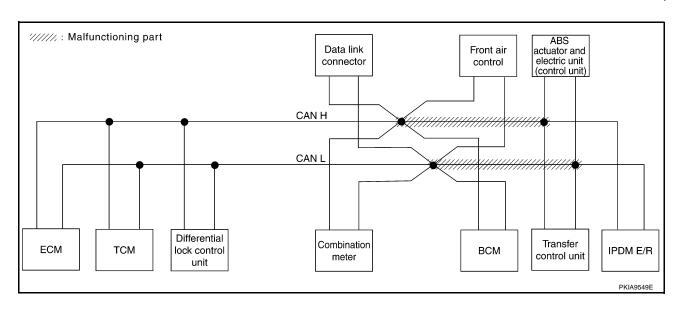
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Case 3

Check harness between data link connector and IPDM E/R. Refer to <u>LAN-325</u>, "Circuit Check Between <u>Data Link Connector and IPDM E/R"</u>.

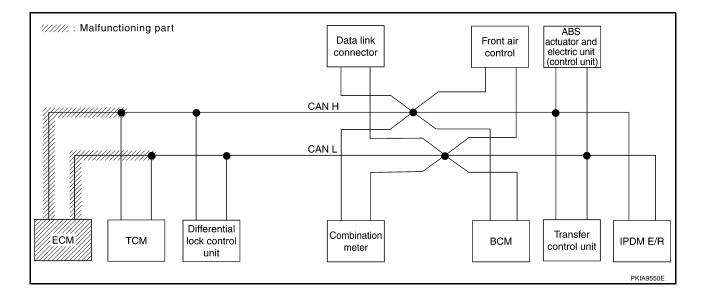
						CAN DIA	G SUPPO	RT MNTR			
SELECT SYSTI	FM screen	Initial	Transmit					diagnosis			
02220101011	LIVI GOLGGII	diagnosis	diagnosis	ECM	ТСМ	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/I
ENGINE	-	NG	UNKWN	_	UNKWN	_	UNKWN	UNKWN	UNK WN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	_	UNKWN	_	UNK WN	UNK WN	_
DIFF LOCK	_	NG	UNKWN	UNKWN	_	_	_	_	UNKWN	UNI WN	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	_	UNKWN	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNK WN	UNK/WN	_	_	_	_	UNKWN	-
ABS	_	NG	UNKWN	UNK WN	UNKWN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_



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Case 4
Check ECM circuit. Refer to <u>LAN-326</u>, "ECM Circuit Check" .

						CAN DIA	G SUPPOR	RT MNTR			
SELECT SYSTI	FM screen	Initial	Transmit				Receive	diagnosis			
022201 01011	2141 3010011		diagnosis	ECM	тсм	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/I
ENGINE	_	NG	UNK WN	_	UNKWN	_	UNK WN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNK WN	_	_	UNKWN	_	UNKWN	UNKWN	_
DIFF LOCK	_	NG	UNKWN	UNK WN	_ ]	_	_	_	UNKWN	UNKWN	_
всм	No indication	NG	UNKWN	UNK WN	_	_	UNKWN	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNK WN	UNKWN	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UMMU	_	_	_	UNKWN	_	_	_



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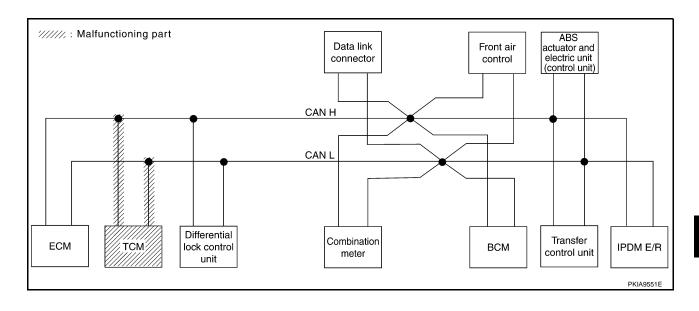
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Case 5
Check TCM circuit. Refer to <u>LAN-326</u>, "TCM Circuit Check" .

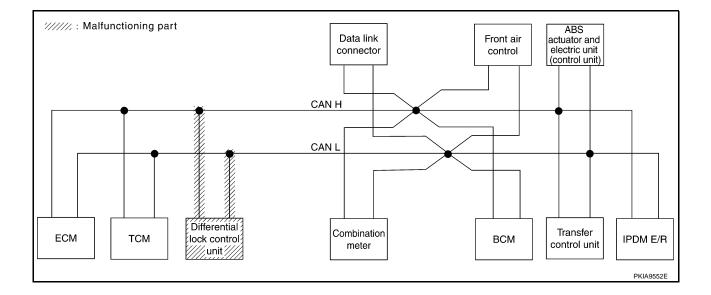
						CAN DIA	G SUPPO	RT MNTR			
SELECT SYSTI	FM screen	Initial	Transmit				Receive	diagnosis			
022201 01011	LIVI SOFCOTI	diagnosis	diagnosis	ECM	ТСМ	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/
ENGINE	_	NG	UNKWN	_	UNK WN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNK WN	_	_	UNK WN	_	UNK WN	UNK WN	_
DIFF LOCK	_	NG	UNKWN	UNKWN	-	_	-	_	UNKWN	UNKWN	_
всм	No indication	NG	UNKWN	UNKWN	_	_	UNKWN	_	_	_	UNKWI
HVAC	No indication	_	UNKWN	UNKWN		_	_	UNKWN	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNK WN	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	UNKWN	l	_	UNKWN	1	-
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_



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Case 6
Check differential lock control unit circuit. Refer to <u>LAN-327</u>, "<u>Differential Lock Control Unit Circuit Check</u>" .

						CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit				Receive	diagnosis			
022201 0101	LIVI GOLGGII		diagnosis	ECM	ТСМ	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	-	UNKWN	1	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	-	UNKWN	_	UNKWN	UNKWN	_
DIFF LOCK	_	NG	UNK WN	UNK WN	_	-	-	_	UNK WN	UNK WN	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	ı	UNKWN	_	_	-	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	-	_	UNKWN	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	-	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	UNK/WN	l	_	UNKWN	1	-
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_



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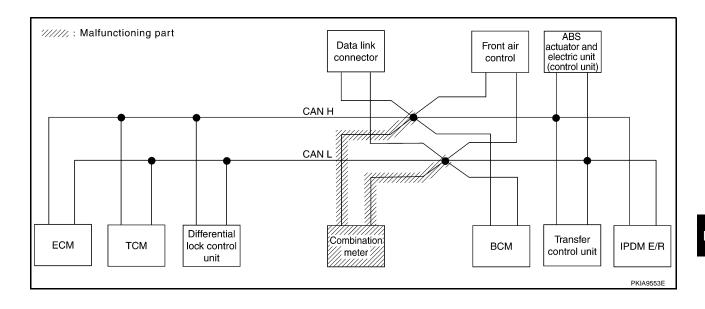
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Case 7
Check combination meter circuit. Refer to <u>LAN-327</u>, "Combination Meter Circuit Check" .

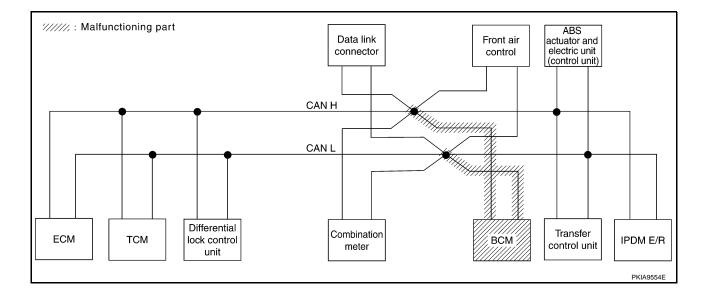
						CAN DIA	G SUPPO	RT MNTR							
SELECT SYST	FM screen	Initial	Transmit					diagnosis							
022201 0101		diagnosis	diagnosis	ECM	ТСМ	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/				
ENGINE	-	NG	UNKWN					_	UNKWN	_	UNK WN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	_	UNK WN	_	UNKWN	UNKWN	_				
DIFF LOCK	-	NG	UNKWN	UNKWN	_	_	-	_	UNKWN	UNKWN	-				
ВСМ	No indication	NG	UNKWN	UNKWN	_	_	UNK WN	_	_	-	UNKWN				
HVAC	No indication	1	UNKWN	UNKWN	_	ı	1	UNKWN	_	UNKWN	ı				
ALL MODE AWD/4WD	-	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN	_				
ABS	_	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_				
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_				



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Case 8
Check BCM circuit. Refer to <u>LAN-328</u>, "BCM Circuit Check" .

						CAN DIA	G SUPPOR	RT MNTR			
SELECT SYSTI	EM screen	Initial	Transmit				Receive	diagnosis			
OLLLOT GTOTI	LIVI SOICEII		diagnosis	ECM	тсм	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/I
ENGINE	_	NG	UNKWN	_	UNKWN	-	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	UNKWN	_
DIFF LOCK	_	NG	UNKWN	UNKWN	_ ]	_	_	_	UNKWN	UNKWN	_
всм	No indication	NG	UNKWN	UNKWN	_	_	UNKWN	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_



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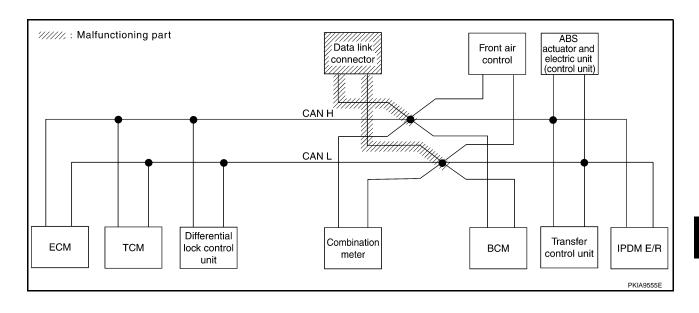
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Case 9

Check data link connector circuit. Refer to LAN-328, "Data Link Connector Circuit Check" .

						CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit					diagnosis			
022201 0101	LIVI SOLCOIT		diagnosis	ECM	ТСМ	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/
ENGINE	-	NG	UNKWN	_	UNKWN	-	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	-	UNKWN	_	UNKWN	UNKWN	_
DIFF LOCK	-	NG	UNKWN	UNKWN	1	I	_	_	UNKWN	UNKWN	-
всм	No indication	NG	UNKWN	UNKWN	_		UNKWN	_	_	_	UNKWN
HVAC	No indication	-	UNKWN	UNKWN	-	_	_	UNKWN	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	-	_	_	_	UNKWN	_
ABS	1	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	-
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_



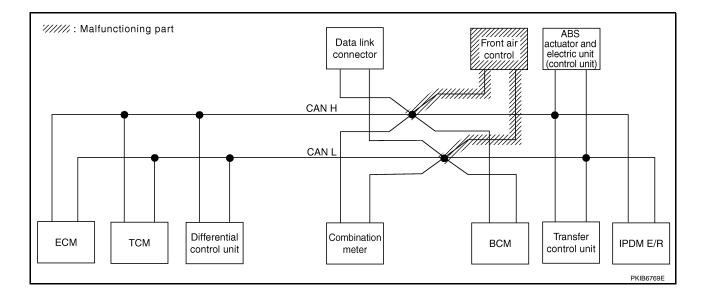
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Revision: October 2005 LAN-317 2005 Titan

Case 10 Check front air control circuit. Refer to <u>LAN-329</u>, "Front Air Control Circuit Check" .

						CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	EM screen	Initial	Transmit				Receive	diagnosis			
OLLLOT GTOT	LIVI SOICEII	diagnosis	diagnosis	ECM	ТСМ	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/I
ENGINE	_	NG	UNKWN	_	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	UNKWN	_
DIFF LOCK	_	NG	UNKWN	UNKWN	_	_	_	_	UNKWN	UNKWN	_
всм	No indication	NG	UNKWN	UNKWN	_	_	UNKWN	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	-	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	-	_



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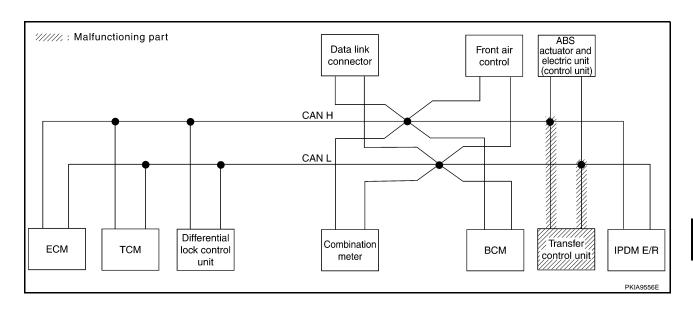
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Case 11
Check transfer control unit circuit. Refer to <u>LAN-329</u>, "Transfer Control Unit Circuit Check".

						CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit					diagnosis			
322313131	LINI GOLGGII		diagnosis	ECM	ТСМ	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/
ENGINE	-	NG	UNKWN	_	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	-	NG	UNKWN	UNKWN	_	-	UNKWN	_	UNK WN	UNKWN	-
DIFF LOCK	-	NG	UNKWN	UNKWN	_	-	-	_	UNK WN	UNKWN	-
всм	No indication	NG	UNKWN	UNKWN	_	ı	UNKWN	_	_	_	UNKWI
HVAC	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	-	UNKWN	_
ALL MODE AWD/4WD	-	NG	UNK WN	UNK WN	UNKWN	_	_	_	_	UNK WN	_
ABS	1	NG	UNKWN	UNKWN	UNKWN	UNKWN	1	_	UNKWN	_	ı
IPDM E/R	No indication	_	UNKWN	UNKWN	_	-	_	UNKWN	_	_	_

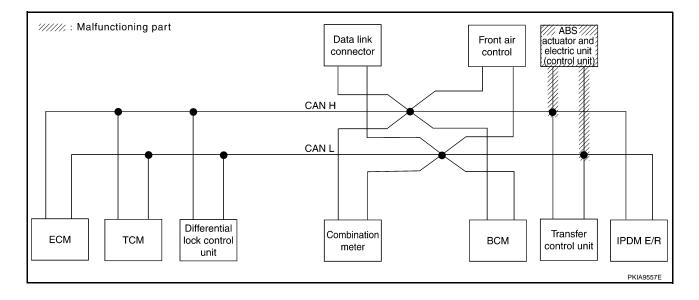


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Case 12

Check ABS actuator and electric unit (control unit) circuit. Refer to <u>LAN-330</u>, "ABS Actuator and Electric Unit (Control Unit) Circuit Check".

						CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit				Receive	diagnosis			
022201 0101	LIVI SOFCOTI	diagnosis		ECM	ТСМ	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	-	UNKWN	1	UNKWN	UNKWN	UNKWN	UNK WN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	Π <b>ΝΚ</b> ΜΝ	-
DIFF LOCK	_	NG	UNKWN	UNKWN		-		_	UNKWN	UNKWN	-
ВСМ	No indication	NG	UNKWN	UNKWN		_	UNKWN	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	-	_	_	UNKWN	_
ABS	_	¥	UNKWN	UNKWN	UNKWN	UNKWN	1	_	UNKWN	_	ı
IPDM E/R	No indication	-	UNKWN	UNKWN	_	-	_	UNKWN	_	_	_



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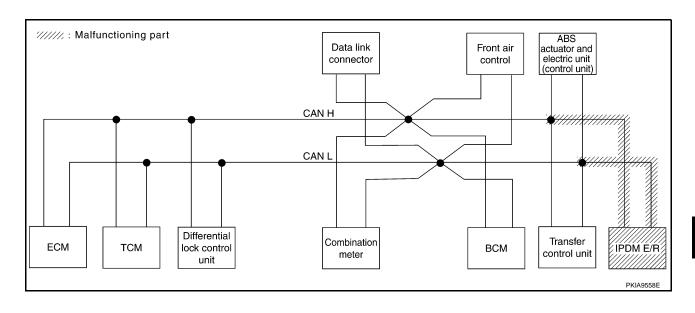
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Case 13
Check IPDM E/R circuit. Refer to <u>LAN-330</u>, "IPDM E/R Circuit Check" .

						CAN DIA	G SUPPOI	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit				Receive	diagnosis			
022201 01011	LIVI SOFCOTI		diagnosis	ECM	ТСМ	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/
ENGINE	_	NG	UNKWN	-	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	-	UNKWN	_	UNKWN	UNKWN	-
DIFF LOCK	_	NG	UNKWN	UNKWN	_	-	-	_	UNKWN	UNKWN	-
ВСМ	No indication	NG	UNKWN	UNKWN	_	-	UNKWN	_	_	_	UNK\\\
HVAC	No indication	1	UNKWN	UNKWN	_	1	1	UNKWN	_	UNKWN	ı
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	-	-	_	_	UNKWN	-
ABS	_	NG	UNKWN	UNKWN	UNKWN	UNKWN	I	_	UNKWN	_	ı
IPDM E/R	No indication	-	UNKWN	UNKWN	_	-	_	UNKWN	_	_	_



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Case 14

Check CAN communication circuit. Refer to <a href="LAN-331">LAN-331</a>, "CAN Communication Circuit Check" .

						CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit				Receive	diagnosis			
3222313131	2111 0010011	diagnosis	diagnosis	ECM	ТСМ	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNK WN	_	UNK WN	-	UNK WN	UNK WN	UNK WN	UNK WN	UNK WN
A/T	_	NG	UNKWN	UNK WN	_	_	UNK WN	_	UNKWN	UNK WN	_
DIFF LOCK	_	NG	UNK WN	UNK WN	_	_	_	_	∩ <b>NK</b> WN	UNKWN	_
всм	No indication	NG	UNKWN	UNKWN	_	_	UNKWN	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	UNKWN	-
ALL MODE AWD/4WD	_	NG	UNK WN	UNK WN	UNKWN	_	_	_	_	UNK WN	_
ABS	_	N	UNKWN	UNKWN	UNK WN	UNKWN	_	_	UNK WN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	-	_

### Case 15

Check IPDM E/R ignition relay circuit continuously sticks "OFF". Refer to LAN-331, "IPDM E/R Ignition Relay Circuit Check" .

						CAN DIA	G SUPPOI	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit				Receive	diagnosis			
		diagnosis	diagnosis	ECM	ТСМ	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	-	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN		_	UNKWN	_	UNKWN	UNKWN	_
DIFF LOCK	_	NG	UNKWN	UNKWN	1	_		_	UNKWN	UNK WN	1
всм	No indication	NG	UNKWN	UNKWN	_	_	UNKWN	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	-	_	_	UNKWN	_	UNK WN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNK WN	_	_	_	_	UNK WN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	UNKWN	I	_	UNKWN	_	1
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_

### Case 16

Check IPDM E/R ignition relay circuit continuously sticks "ON". Refer to <u>LAN-331, "IPDM E/R Ignition Relay Circuit Check"</u>.

						CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit				Receive	diagnosis			
022201 0101	LINI GOLGGII	diagnosis		ECM	ТСМ	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/R
ENGINE	-	NG	UNKWN	_	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	-	NG	UNKWN	UNKWN	_	_	UNKWN	_	UNK WN	UNKWN	_
DIFF LOCK	-	NG	UNKWN	UNKWN	_	_	_	_	UNKWN	UNKWN	_
ВСМ	No indication	NG	UNKWN	UNKWN		_	UNKWN	_	_	_	UNKWN
HVAC	No indication	ı	UNKWN	UNKWN	1	ı	_	UNKWN	_	UNKWN	1
ALL MODE AWD/4WD	-	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN	_
ABS	1	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	_	UNKWN	-	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_

## Circuit Check Between TCM and Differential Lock Control Unit

1. CHECK CONNECTOR

Turn ignition switch OFF.

- 2. Disconnect the negative battery terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector F33
- Harness connector E19
- Harness connector E50
- Harness connector B75

### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

- Disconnect A/T assembly connector and harness connector F33.
- Check continuity between A/T assembly harness connector F9 terminals 3 (L), 8 (P) and harness connector F33 terminals 12 (L), 11 (P).

3 (L) - 12 (L)

: Continuity should exist.

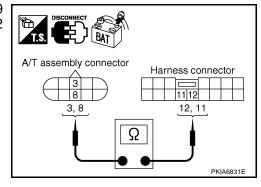
8 (P) - 11 (P)

: Continuity should exist.

### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



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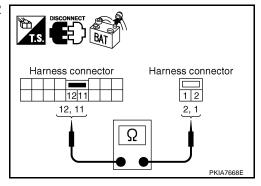
# 3. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect harness connector E50.
- 2. Check continuity between harness connector E19 terminals 12 (L), 11 (P) and harness connector E50 terminals 2 (L), 1 (P).

12 (L) - 2 (L) 11 (P) - 1 (P) : Continuity should exist. : Continuity should exist.

OK or NG

OK >> GO TO 4. NG >> Repair harness.



## 4. CHECK HARNESS FOR OPEN CIRCUIT

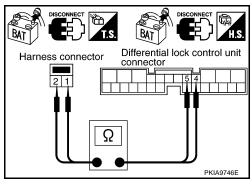
- 1. Disconnect differential lock control unit connector.
- 2. Check continuity between harness connector B75 terminals 2 (L), 1 (P) and differential lock control unit harness connector B77 terminals 5 (L), 4 (P).

2 (L) - 5 (L) 1 (P) - 4 (P) : Continuity should exist. : Continuity should exist.

OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-306, "Work Flow"</u>.

NG >> Repair harness.



## Circuit Check Between Differential Lock Control Unit and Data Link Connector

# 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector B69
- Harness connector M40

### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect differential lock control unit connector and harness connector B69.
- Check continuity between differential lock control unit harness connector B77 terminals 5 (L), 4 (P) and harness connector B69 terminals 51J (L), 52J (P).

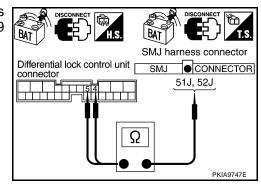
5 (L) - 51J (L)

: Continuity should exist.

4 (P) - 52J (P) : Continuity should exist.

### OK or NG

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



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## $3.\,$ check harness for open circuit

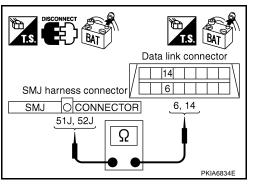
Check continuity between harness connector M40 terminals 51J (L), 52J (P) and data link connector M22 terminals 6 (L), 14 (P).

> : Continuity should exist. 51J (L) - 6 (L) 52J (P) - 14 (P) : Continuity should exist.

#### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to LAN-306, "Work Flow".

NG >> Repair harness.



### Circuit Check Between Data Link Connector and IPDM E/R

1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- Check following terminals and connectors for damage, bend and loose connection (connector side and 3. harness side).
- Harness connector M31
- Harness connector E152

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

## 2. CHECK HARNESS FOR OPEN CIRCUIT

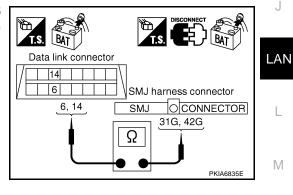
- Disconnect harness connector M31.
- Check continuity between data link connector M22 terminals 6 (L), 14 (P) and harness connector M31 terminals 31G (L), 42G (P).

6 (L) - 31G (L) : Continuity should exist. 14 (P) - 42G (P) : Continuity should exist.

#### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



## 3. CHECK HARNESS FOR OPEN CIRCUIT

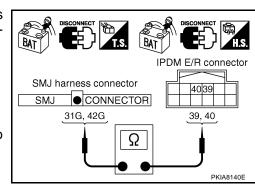
- Disconnect IPDM E/R connector. 1.
- Check continuity between harness connector E152 terminals 31G (L), 42G (P) and IPDM E/R harness connector E122 terminals 39 (L), 40 (P).

31G (L) - 39 (L) : Continuity should exist. 42G (P) - 40 (P) : Continuity should exist.

#### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to LAN-306, "Work Flow".

NG >> Repair harness.



#### **ECM 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 connectors for damage, bend and loose connection (control module side and harness side).
- ECM connector
- Harness connector E19
- Harness connector F33

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

## 2. CHECK HARNESS FOR OPEN CIRCUIT

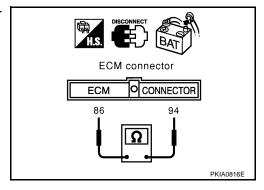
- 1. Disconnect ECM connector.
- Check resistance between ECM harness connector E16 terminals 94 (L) and 86 (P).

: Approx. 108 - 132  $\Omega$ 

#### OK or NG

OK >> Replace ECM.

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



#### **TCM Circuit Check**

## 1. CHECK CONNECTOR

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

- Disconnect A/T assembly connector.
- Check resistance between A/T assembly harness connector F9 terminals 3 (L) and 8 (P).

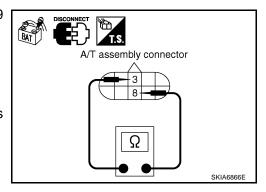
: Approx. 54 - 66  $\Omega$ 

#### OK or NG

NG

OK >> Replace A/T assembly.

>> Repair harness between A/T assembly and harness connector F33.



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### **Differential Lock Control Unit Circuit Check**

### 1. CHECK CONNECTOR

- Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check terminals and connector of differential lock 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 differential lock control unit connector. 1.
- 2. Check resistance between differential lock control unit harness connector B77 terminals 5 (L) and 4 (P).

: Approx. 54 - 66  $\Omega$ 

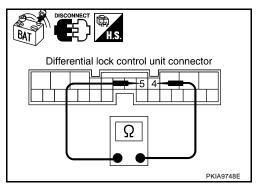
#### OK or NG

OK

>> Replace differential lock control unit.

NG

>> Repair harness between differential lock control unit and harness connector B75.



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## 1. CHECK CONNECTOR

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

Combination Meter Circuit Check

3. Check terminals and connector of combination meter 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

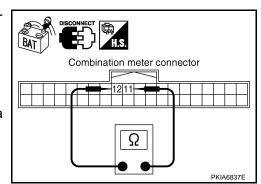
- Disconnect combination meter connector.
- Check resistance between combination meter harness connector M24 terminals 11 (L) and 12 (P).

: Approx. 54 - 66  $\Omega$ 

#### OK or NG

OK >> Replace combination meter. NG

>> Repair harness between combination meter and data link connector.



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### **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

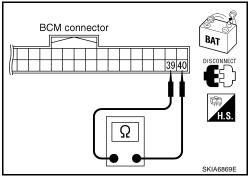
- Disconnect BCM connector.
- Check resistance between BCM harness connector M18 terminals 39 (L) and 40 (P).

: Approx. 54 - 66  $\Omega$ 

#### OK or NG

OK >> Replace BCM. Refer to BCS-20, "Removal and Installation of BCM".

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



### **Data Link Connector Circuit Check**

## 1. CHECK CONNECTOR

1. Turn ignition switch OFF.

- 2. Disconnect the negative battery terminal.
- 3. Check the 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 M22 terminals 6 (L) and 14 (P).

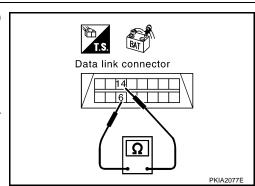
**6 (L) - 14 (P)** : Approx. 54 - 66 
$$\Omega$$

#### OK or NG

NG

OK >> Diagnose again. Refer to LAN-306, "Work Flow".

>> Repair harness between data link connector and combination meter.



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**Front Air Control Circuit Check** 

## 1. CHECK CONNECTOR

Turn ignition switch OFF.

- 2. Disconnect the negative battery terminal.
- 3. Check terminals and connector of front air control for damage, bend and loose connection (unit side and harness side).

OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

## 2. CHECK HARNESS FOR OPEN CIRCUIT

- Disconnect front air control connector. 1.
- Check resistance between front air control harness connector M50 terminals 34 (L) and 35 (P).

: Approx. 54 - 66  $\Omega$ 

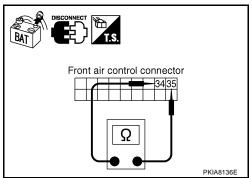
### OK or NG

OK

>> Replace front air control.

NG

>> Repair harness between front air control and data link connector.



## **Transfer Control Unit Circuit Check**

### 1. CHECK CONNECTOR

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

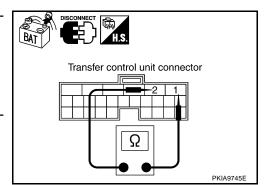
- Disconnect transfer control unit connector.
- Check resistance between transfer control unit harness connector E142 terminals 1 (L) and 2 (P).

: Approx. 54 - 66  $\Omega$ 

#### OK or NG

OK >> Replace transfer control unit.

>> Repair harness between transfer control unit and har-NG ness connector E152.



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## **ABS Actuator and Electric Unit (Control Unit) Circuit Check**

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### 1. CHECK CONNECTOR

- Turn ignition switch OFF.
- Disconnect the negative battery terminal. 2.
- 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 E125 terminals 11 (L) and 15 (P).

: Approx. 54 - 66  $\Omega$ 

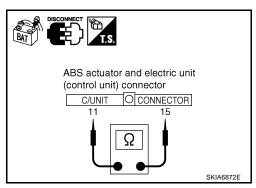
#### OK or NG

OK

>> Replace ABS actuator and electric unit (control unit).

NG

>> Repair harness between ABS actuator and electric unit (control unit) and harness connector E152.



## **IPDM E/R Circuit Check**

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### 1. CHECK CONNECTOR

- Turn ignition switch OFF.
- 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

- Disconnect IPDM E/R connector.
- Check resistance between IPDM E/R harness connector E122 terminals 39 (L) and 40 (P).

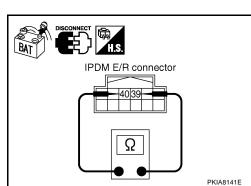
: Approx. 108 - 132  $\Omega$ 

#### OK or NG

OK >> Replace IPDM E/R.

NG

>> Repair harness between IPDM E/R and harness connector E152.



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### **CAN Communication Circuit Check**

### 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Disconnect the following module and control unit connectors and check terminals for deformation, disconnection, looseness or damage.
- ECM
- A/T assembly
- Differential lock control unit
- Combination meter
- BCM
- Front air control
- Transfer control unit
- ABS actuator and electric unit (control unit)
- IPDM E/R

#### OK or NG

OK >> GO TO 2.

NG >> Repair or replace as necessary.

## 2. CHECK HARNESS FOR SHORT CIRCUIT

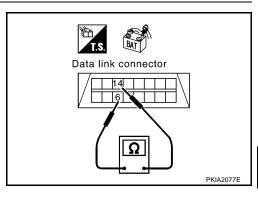
With all module and control unit connectors disconnected, check continuity between data link connector M22 terminals 6 (L) and 14 (P).

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

#### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



## 3. CHECK HARNESS FOR SHORT CIRCUIT

Check continuity between data link connector M22 terminals 6 (L), 14 (P) and ground.

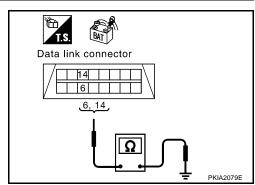
6 (L) - Ground : Continuity should not exist.

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

#### OK or NG

OK >> Check ECM and IPDM E/R. Refer to <u>LAN-332</u>, "ECM/ IPDM E/R INTERNAL CIRCUIT INSPECTION".

NG >> Repair harness.



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## 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 <u>PG-26</u>, "IPDM E/R Power/Ground Circuit Inspection".
- Ignition power supply circuit. Refer to <u>PG-13, "IGNITION POWER SUPPLY IGNITION SW. IN ON AND/OR START"</u>.

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## **CAN SYSTEM (TYPE 10)**

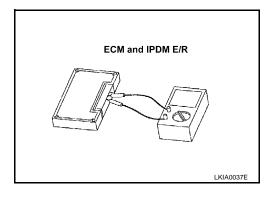
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# Component Inspection ECM/IPDM E/R INTERNAL CIRCUIT INSPECTION

- Remove ECM and IPDM E/R from vehicle.
- Check resistance between ECM terminals 94 and 86.
- Check resistance between IPDM E/R terminals 39 and 40.

Unit	Terminal	Resistance value (Ω) (Approx.)
ECM	94 - 86	108 - 132
IPDM E/R	39 - 40	100 - 132



## **CAN SYSTEM (TYPE 11)**

PFP:23710

## **System Description**

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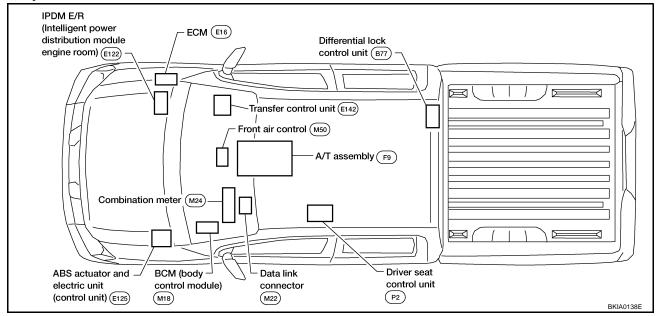
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CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped 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.

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

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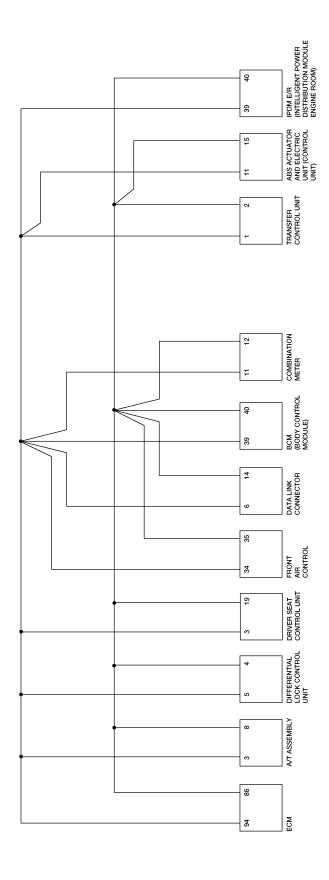


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Revision: October 2005 LAN-333 2005 Titan

Schematic UKS001HZ

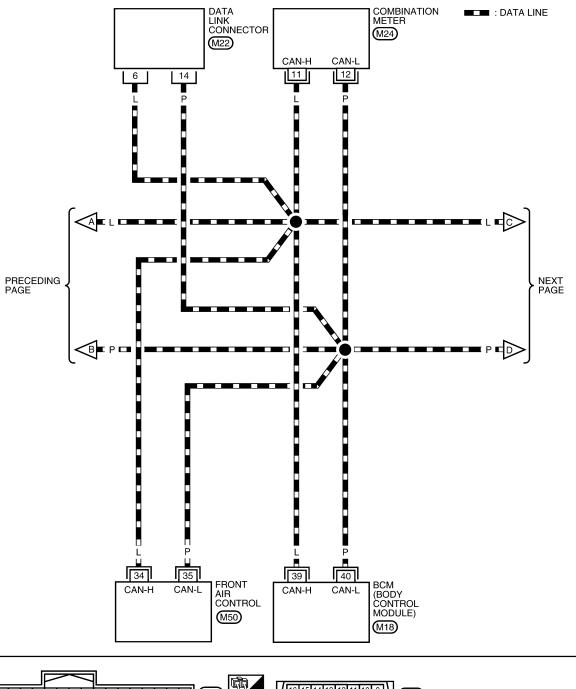


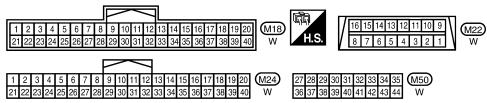
BKWA0455E

12 B77 5 26 W

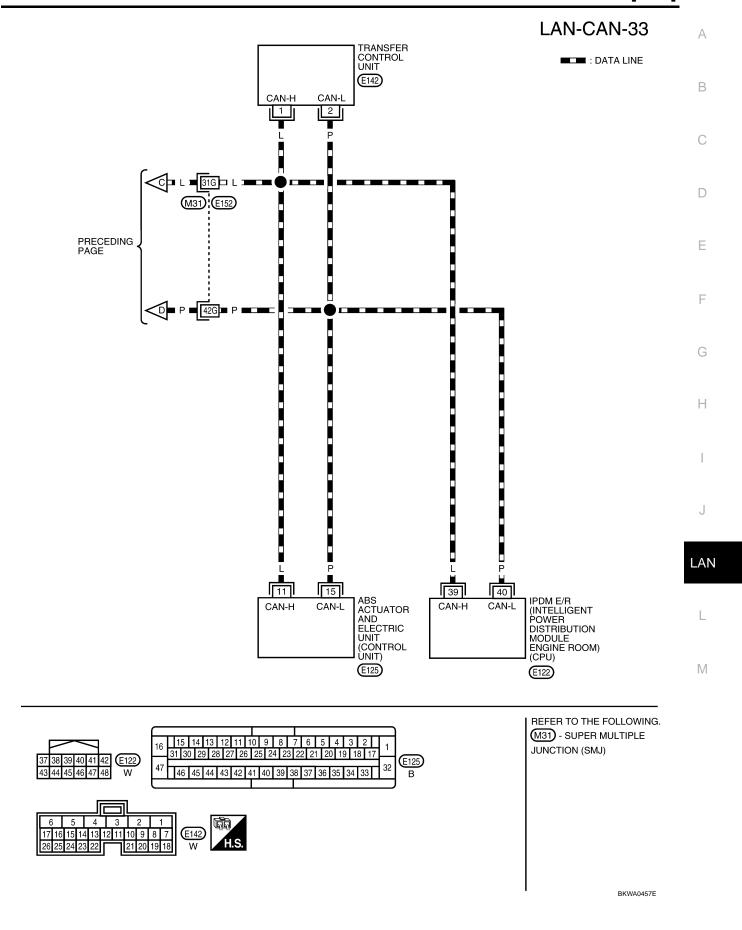
\*: THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT" OF PG SECTION.

## LAN-CAN-32



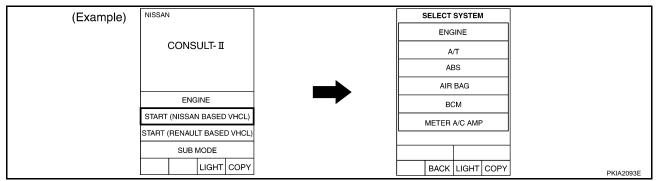


BKWA0456E

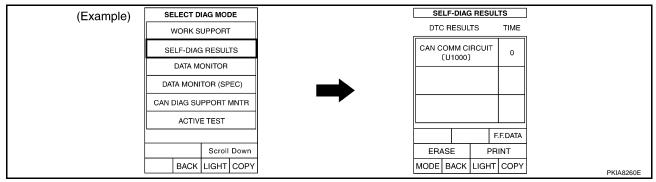


Work Flow

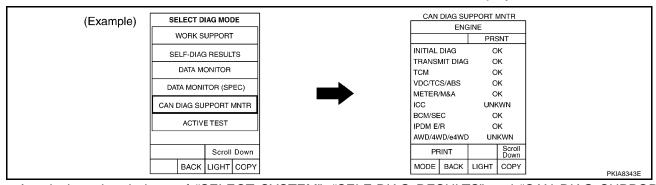
1. When there are no indications of "AUTO DRIVE POS.", "BCM", "HVAC" or "IPDM E/R" on "SELECT SYSTEM" display of CONSULT-II, print the "SELECT SYSTEM".



2. Print all the data of "SELF-DIAG RESULTS" for "ENGINE", "A/T", "DIFF LOCK", "AUTO DRIVE POS.", "BCM", "HVAC", "ALL MODE AWD/4WD", "ABS" and "IPDM E/R" displayed on CONSULT-II.



3. Print all the data of "CAN DIAG SUPPORT MNTR" for "ENGINE", "A/T", "DIFF LOCK", "AUTO DRIVE POS.", "BCM", "HVAC", "ALL MODE AWD/4WD", "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-339</u>, "CHECK SHEET".
- Based on the indications of "SELECT SYSTEM" and the results of "CAN DIAG SUPPORT MNTR", puts a check mark onto the items with "No indication", "NG", or "UNKWN" in the check sheet table. Refer to <u>LAN-</u> 339, "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-342</u>, "CHECK SHEET <u>RESULTS (EXAMPLE)"</u>.

## **CAN SYSTEM (TYPE 11)**

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### **CHECK SHEET**

#### NOTE:

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

						CAN DIA	G SUPPOI	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit					diagnosis			
3222313131	2141 0010011	diagnosis	diagnosis	ECM	тсм	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/I
ENGINE	_	NG	UNKWN	_	UNKWN	-	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	ı	NG	UNKWN	UNKWN	_	1	UNKWN	_	UNKWN	UNKWN	ı
DIFF LOCK	ı	NG	UNKWN	UNKWN	-	1	1	_	UNKWN	UNKWN	ı
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	1	UNKWN	UNKWN	_	_	-
всм	No indication	NG	UNKWN	UNKWN	_	_	UNKWN	_	_	_	UNKWN
HVAC	No indication	-	UNKWN	UNKWN	_	-	_	UNKWN	_	UNKWN	-
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	-	_	UNKWN	_	_	_

Attach copy of SELECT SYSTEM

Attach copy of SELECT SYSTEM

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Attach copy of ENGINE SELF-DIAG RESULTS	Attach copy of A/T SELF-DIAG RESULTS	Attach copy of DIFF LOCK SELF-DIAG RESULTS
Attach copy of AUTO DRIVE POS. SELF-DIAG RESULTS	Attach copy of BCM SELF-DIAG RESULTS	Attach copy of HVAC SELF-DIAG RESULTS
Attach copy of ALL MODE AWD/4WD SELF-DIAG RESULTS	Attach copy of ABS SELF-DIAG RESULTS	Attach copy of IPDM E/R SELF-DIAG RESULTS

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Attach copy of Attach copy of Attach copy of ENGINE A/T DIFF LOCK CAN DIAG SUPPORT CAN DIAG SUPPORT CAN DIAG SUPPORT MNTR MNTR MNTR Attach copy of Attach copy of Attach copy of AUTO DRIVE POS. HVAC ВСМ **CAN DIAG SUPPORT CAN DIAG SUPPORT** CAN DIAG SUPPORT MNTR MNTR MNTR Attach copy of Attach copy of Attach copy of ALL MODE AWD/4WD IPDM E/R ABS **CAN DIAG SUPPORT CAN DIAG SUPPORT CAN DIAG SUPPORT** MNTR MNTR MNTR

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

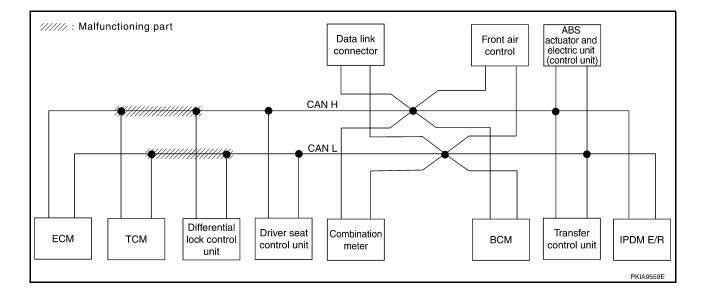
#### NOTE:

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

#### Case 1

Check harness between TCM and differential lock control unit. Refer to <u>LAN-358</u>, "Circuit Check Between <u>TCM and Differential Lock Control Unit"</u>.

						CAN DIA	G SUPPOF	RT MNTR			
SELECT SYSTI	FM screen	Initial	Transmit					diagnosis			
022201 01011	2141 3010011		diagnosis	ECM	ТСМ	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/
ENGINE	_	NG	UNKWN	_	UNKWN	_	UNKWN	UNK WN	Ω <b>ΝΚ</b> (WN	UN <b>K</b> ₩N	UNK WI
A/T	_	NG	UNKWN	UNKWN			UNK WN	_	UN <b>K</b> ₩N	UNK WN	_
DIFF LOCK	_	NG	UNKWN	UNKWN	_	_	_	_	UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN		UNKWN	UNKWN			_
всм	No indication	NG	UNKWN	UNK WN	_	_	UNKWN	_	_	_	UNKWI
HVAC	No indication	_	UNKWN	UNK WN				UNKWN		UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNK WN	UNK WN	_	_	_	_	UNKWN	
ABS	_	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNK WN			_	UNKWN			_



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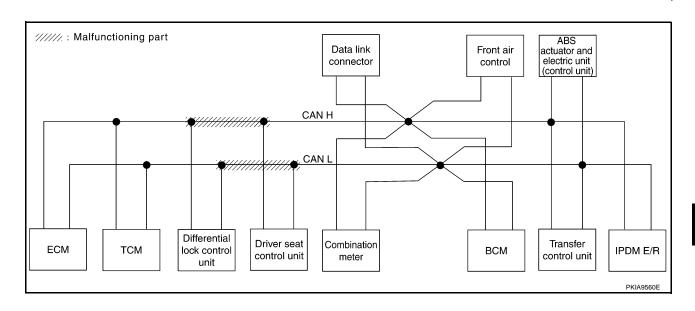
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Case 2

Check harness between differential lock control unit and driver seat control unit. Refer to <u>LAN-359</u>, "Circuit Check Between Differential Lock Control Unit and Driver Seat Control Unit".

						CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit				Receive	diagnosis			
3222313131	2111 0010011	diagnosis	diagnosis	ECM	ТСМ	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/
ENGINE	_	NG	UNKWN	_	UNKWN	_	UNK WN	UNK WN	UNKWN	UNK WN	UNKWN
A/T	_	NG	UNKWN	UNKWN	1	_	UNK WN	_	UNK WN	UNK WN	_
DIFF LOCK	_	NG	UNKWN	UNKWN	-	_	_	_	UNK WN	UNK WN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	_	UNKWN	UNKWN	_	_	_
всм	No indication	NG	UNKWN	UNK WN	1	_	UNKWN	_	-	_	UNKWN
HVAC	No indication	_	UNKWN	UNK WN	1	_	_	UNKWN	-	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNK WN	UNKWN	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNK WN	_	_	_	UNKWN	_	_	_

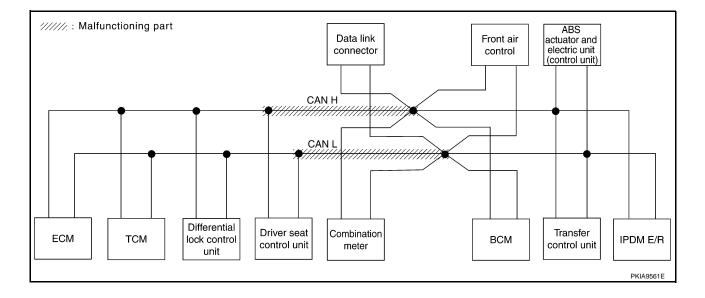


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Case 3

Check harness between driver seat control unit and data link connector. Refer to <u>LAN-360</u>, "Circuit Check <u>Between Driver Seat Control Unit and Data Link Connector"</u>.

						CAN DIA	G SUPPOR	RT MNTR				
SELECT SYST	FM screen	Initial	   Transmit				Receive	diagnosis				
02220101011	2101 0010011	diagnosis  NG  NG	diagnosis	ECM	ТСМ	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E	
ENGINE	_	NG	UNKWN		_	UNKWN	_	UNK WN	UNKWN	Π <b>ΝΚ</b> (ΜΝ	UNK WN	UNK <b>W</b> I
A/T	_	NG	UNKWN	UNKWN			UNKWN		UNKWN	UNKWN		
DIFF LOCK	_	NG	UNKWN	UNKWN	_	_	_	_	UNKWN	UNK WN	_	
AUTO DRIVE POS.	No indication	NG	UNKWN		UNKWN		UNKWN	UNKWN			_	
ВСМ	No indication	NG	UNKWN	UN <b>K</b> ₩N		_	UNKWN	_		_	UNKW	
HVAC	No indication		UNKWN	UNK WN	_			UNKWN		UNKWN	_	
ALL MODE AWD/4WD	_	NG	UNKWN	UNK WN	UNK WN		_	_	_	UNKWN	_	
ABS	_	NG	UNKWN	UNK WN	UNK WN	UNK WN	_	_	UNKWN	_		
IPDM E/R	No indication	_	UNKWN	UNK WN			_	UNKWN		_		



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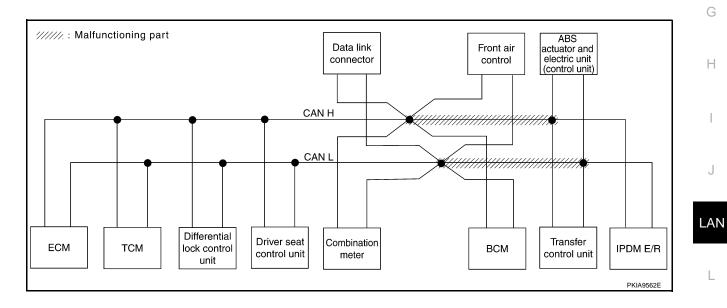
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Case 4

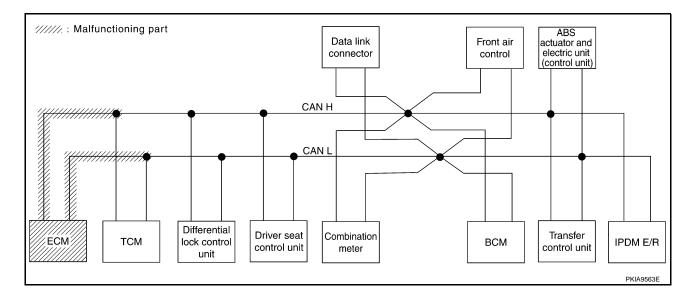
Check harness between data link connector and IPDM E/R. Refer to LAN-360, "Circuit Check Between Data Link Connector and IPDM E/R".

						CAN DIA	G SUPPOF	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit				Receive	diagnosis			
022201 0101	2111 2010011	diagnosis	diagnosis	ECM	ТСМ	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/
ENGINE	_	NG	UNKWN	1	UNKWN	_	UNKWN	UNKWN	UNKWN	UNK WN	UNK
A/T	_	NG	UNKWN	UNKWN	_	_	UNKWN	_	UNK WN	UNK WN	_
DIFF LOCK	_	NG	UNKWN	UNKWN	1	_	1	_	UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	1	UNKWN	_	UNKWN	UNKWN	_	_	_
ВСМ	No indication	NG	UNKWN	UNKWN	1	_	UNKWN	-	-	_	UNK
HVAC	No indication	_	UNKWN	UNKWN	1	_	1	UNKWN	-	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	1	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	UNKWN		_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_



Case 5
Check ECM circuit. Refer to <u>LAN-361</u>, "ECM Circuit Check" .

						CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit				Receive	diagnosis			
3222313131	2111 0010011	diagnosis	diagnosis	ECM	ТСМ	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/
ENGINE	_	NG	UNKWN	1	UNK WN	_	UNK WN	UNK WN	UNK WN	UNK WN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	UNKWN	-
DIFF LOCK	-	NG	UNKWN	UNK WN	_	1	_	-	UNKWN	UNKWN	ı
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	_	UNKWN	UNKWN	1	1	ı
ВСМ	No indication	NG	UNKWN	UNK WN	_	1	UNKWN	_	1	1	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	-	_	UNKWN	1	UNKWN	ı
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	1	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	_	UNKWN	1	ı
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_



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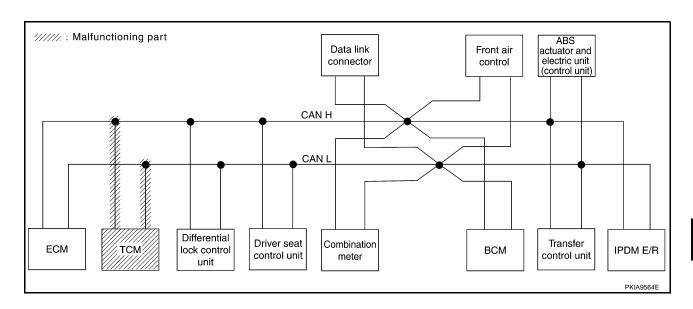
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Case 6
Check TCM circuit. Refer to <u>LAN-362</u>, "TCM Circuit Check" .

						CAN DIA	G SUPPOI	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit				Receive	diagnosis			
022201 0101	2111 0010011	diagnosis	diagnosis	ECM	ТСМ	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/
ENGINE	_	NG	UNKWN	_	UNK WN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWI
A/T	_	NG	UNKWN	UNK WN	_	_	UNK WN	_	UNKWN	UNK WN	_
DIFF LOCK	_	NG	UNKWN	UNKWN	_	_	_	_	UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNK/WN	_	UNKWN	UNKWN	_	-	_
BCM	No indication	NG	UNKWN	UNKWN	_	1	UNKWN	_	_	-	UNKWI
HVAC	No indication	_	UNKWN	UNKWN	_	-	_	UNKWN	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNK WN	UNKWN	_	_	UNKWN	-	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_

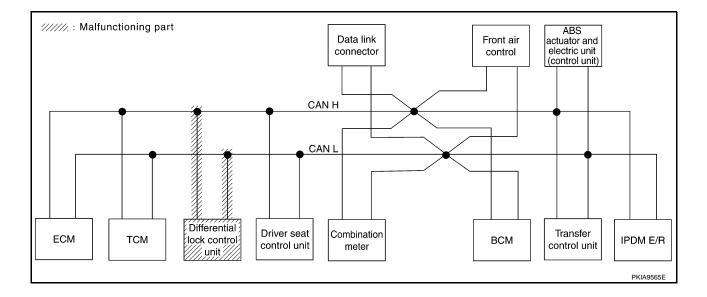


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Case 7
Check differential lock control unit circuit. Refer to <u>LAN-362</u>, "<u>Differential Lock Control Unit Circuit Check"</u>.

						CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit					diagnosis			
		diagnosis	diagnosis	ECM	ТСМ	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/
ENGINE	-	NG	UNKWN	-	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	1	_	UNKWN	_	UNKWN	UNKWN	_
DIFF LOCK	ı	NG	UNKWN	UNK WN		_	l	_	UNKWN	UNKWN	ı
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	_	UNKWN	UNKWN	1	_	_
BCM	No indication	NG	UNKWN	UNKWN	_	_	UNKWN	_	_	_	UNKWI
HVAC	No indication	_	UNKWN	UNKWN	-	_	l	UNKWN	_	UNKWN	_
ALL MODE AWD/4WD		NG	UNKWN	UNKWN	UNKWN	_	1	_	-	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	UNKWN		_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_



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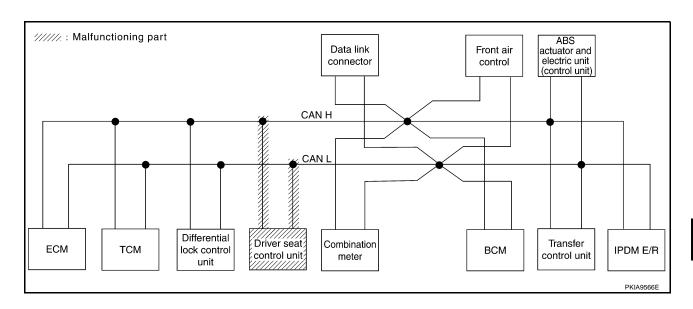
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Case 8
Check driver seat control unit circuit. Refer to <u>LAN-363</u>, "<u>Driver Seat Control Unit Circuit Check"</u>.

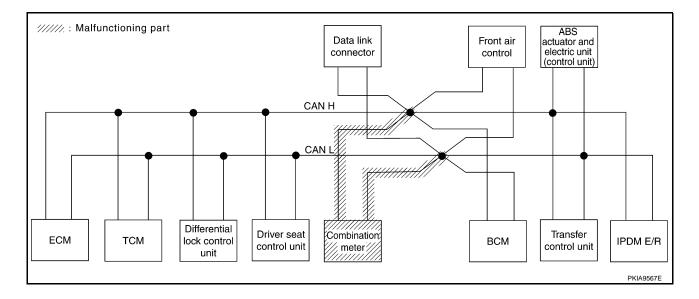
						CAN DIA	G SUPPOI	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit				Receive	diagnosis			
022201 0101	2111 0010011	diagnosis		ECM	ТСМ	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/
ENGINE	_	NG	UNKWN	_	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	UNKWN	_
DIFF LOCK	_	NG	UNKWN	UNKWN	_	1	_	_	UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	1	UNKWN	1	UNKWN	UNKWN	_	_	_
BCM	No indication	NG	UNKWN	UNKWN	_	1	UNKWN	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	-	_	UNKWN	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	1	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	_	UNKWN	-	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_



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Case 9
Check combination meter circuit. Refer to <u>LAN-363</u>, "Combination Meter Circuit Check" .

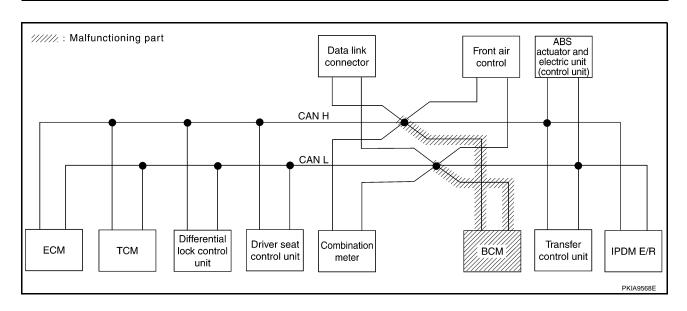
						CAN DIA	G SUPPO	RT MNTR				
SELECT SYST	FM screen	Initial	Transmit				Receive	diagnosis				
3222313131	2111 0010011	diagnosis	diagnosis	ECM	ТСМ	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E	
ENGINE	ı	NG	UNKWN		_	UNKWN	ı	UNK WN	UNKWN	UNKWN	UNKWN	UNKWI
A/T	_	NG	UNKWN	UNKWN	_	1	UNK WN	-	UNKWN	UNKWN	_	
DIFF LOCK	_	NG	UNKWN	UNKWN	_	1	_		UNKWN	UNKWN	_	
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	1	UNK WN	UNKWN	_	-	_	
BCM	No indication	NG	UNKWN	UNKWN	_	-	UNKWN	_	_	-	UNKW	
HVAC	No indication	-	UNKWN	UNKWN	_	-	_	UNKWN	_	UNKWN	_	
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	1	_		_	UNKWN	_	
ABS	_	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_	
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_	



Case 10

Check BCM circuit. Refer to LAN-364, "BCM Circuit Check" .

						CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit	Receive diagnosis							
022201 0101	LIVI SOFCCIT			ECM	тсм	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/
ENGINE	_	NG	UNKWN	_	UNKWN	_	UNKWN	UNK WN	UNKWN	UNKWN	UNKWN
A/T	-	NG	UNKWN	UNKWN	_	1	UNKWN	_	UNKWN	UNKWN	_
DIFF LOCK	_	NG	UNKWN	UNKWN	_	1	_	_	UNKWN	UNKWN	-
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	_	UNKWN	UNK WN	_	-	_
BCM	No indication	NG	UNKWN	UNKWN	_	1	UNKWN	_	-	-	UNKWI
HVAC	No indication	_	UNKWN	UNKWN	_	-	_	UNK WN	-	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	_	UNKWN	-	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_



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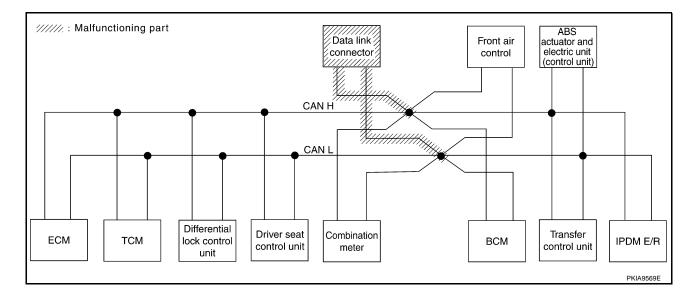
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Case 11
Check data link connector circuit. Refer to LAN-364, "Data Link Connector Circuit Check" .

						CAN DIA	G SUPPOI	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit	Receive diagnosis							
32231 3131	2111 0010011	diagnosis		ECM	ТСМ	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E
ENGINE	_	NG	UNKWN	_	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWI
A/T	_	NG	UNKWN	UNKWN	_	_	UNKWN	-	UNKWN	UNKWN	_
DIFF LOCK	_	NG	UNKWN	UNKWN	_	_	_		UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	_	UNKWN	UNKWN	_	_	_
BCM	No indication	NG	UNKWN	UNKWN	_	_	UNKWN	_	_		UNKWI
HVAC	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	UNKWN		_	UNKWN		_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_



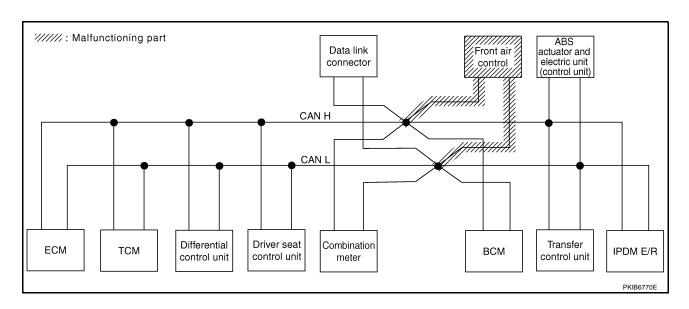
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Case 12
Check front air control circuit. Refer to <u>LAN-365</u>, "Front Air Control Circuit Check" .

						CAN DIA	G SUPPOI	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit	Receive diagnosis							
OLLEGI GIGI	LIVI SOFCOTI	diagnosis	diagnosis	ECM	тсм	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/
ENGINE	I	NG	UNKWN	_	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWN
A/T	1	NG	UNKWN	UNKWN	1	_	UNKWN	_	UNKWN	UNKWN	_
DIFF LOCK	_	NG	UNKWN	UNKWN	-	_	_	_	UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	_	UNKWN	UNKWN	_	-	_
всм	No indication	NG	UNKWN	UNKWN	-	_	UNKWN	_	_	-	UNKWN
HVAC	No indication	-	UNKWN	UNKWN	-	_	_	UNKWN	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN	_
ABS	1	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_



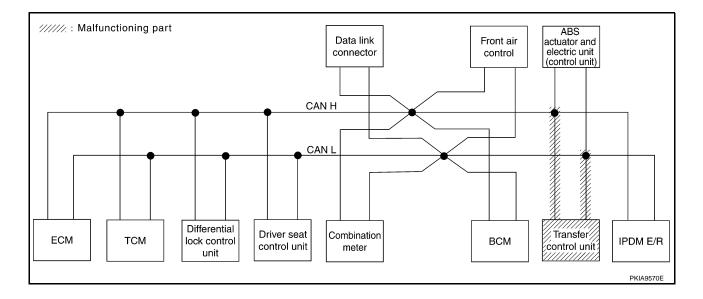
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Case 13
Check transfer control unit circuit. Refer to <u>LAN-365</u>, "Transfer Control Unit Circuit Check" .

						CAN DIA	G SUPPO	RT MNTR			
SELECT SYST	EM screen	Initial	Transmit	Receive diagnosis							
322231 3131	2111 0010011	Initial Transm diagnosis diagnos		ECM	ТСМ	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E
ENGINE	_	NG	UNKWN	_	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKWI
A/T	_	NG	UNKWN	UNKWN	_	_	UNKWN	_	UNK WN	UNKWN	-
DIFF LOCK	_	NG	UNKWN	UNKWN	_	_	_	_	UNK WN	UNKWN	-
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	_	UNKWN	UNKWN	_	_	-
ВСМ	No indication	NG	UNKWN	UNKWN	_	_	UNKWN	_	_	_	UNKWI
HVAC	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	UNKWN	-
ALL MODE AWD/4WD	_	NG	UNK WN	UNK WN	UNI <b>W</b> N	_	_	_	_	UNK WN	
ABS	_	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	_	UNK WN	_	ı
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	



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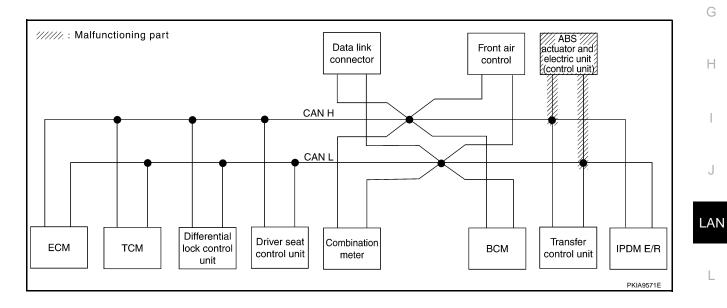
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Case 14

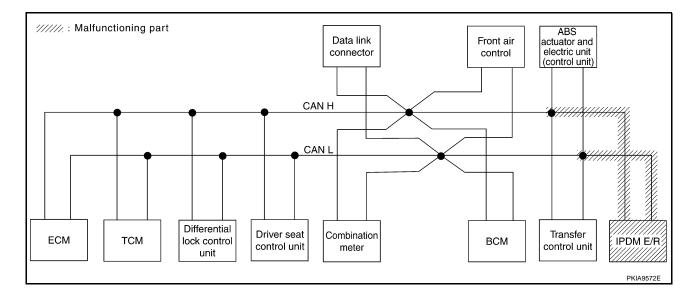
Check ABS actuator and electric unit (control unit) circuit. Refer to LAN-366, "ABS Actuator and Electric Unit (Control Unit) Circuit Check" .

						CAN DIA	G SUPPOI	RT MNTR					
SELECT SYST	FM screen	Initial	Transmit	Receive diagnosis									
3222313131	LIVI GOLGGII	diagnosis	diagnosis	ECM	ТСМ	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/		
ENGINE	1	NG	UNKWN	_	UNKWN	_	UNKWN	UNKWN	UNKWN	UNK WN	UNKWN		
A/T	I	NG	UNKWN	UNKWN	ı	1	UNKWN	_	UNKWN	UNK WN	_		
DIFF LOCK	_	NG	UNKWN	UNKWN	-	_	_		UNKWN	UNK WN	_		
AUTO DRIVE POS.	No indication	NG	UNKWN	1	UNKWN	1	UNKWN	UNKWN	_	_	_		
ВСМ	No indication	NG	UNKWN	UNKWN	1	1	UNKWN	_	_	_	UNKWN		
HVAC	No indication	_	UNKWN	UNKWN	1	-	_	UNKWN	_	UNK WN	_		
ALL MODE AWD/4WD	1	NG	UNKWN	UNKWN	UNKWN	_	_		_	UNK WK	_		
ABS	1	N	UNK WN	UNK WN	UNK WN	UNKWN	_	_	UNKWN	_	_		
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_		



Case 15
Check IPDM E/R circuit. Refer to <u>LAN-366</u>, "IPDM E/R Circuit Check" .

						CAN DIA	G SUPPOI	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit	Receive diagnosis							
3222313131	2111 2010011	diagnosis	diagnosis	ECM	ТСМ	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/
ENGINE	_	NG	UNKWN	_	UNKWN		UNKWN	UNKWN	UNKWN	UNKWN	UNK WI
A/T	_	NG	UNKWN	UNKWN	1	-	UNKWN	_	UNKWN	UNKWN	_
DIFF LOCK	_	NG	UNKWN	UNKWN	1	1	_	_	UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	_	UNKWN	UNKWN	_	_	_
ВСМ	No indication	NG	UNKWN	UNKWN	1	1	UNKWN	_	_	1	UNK WI
HVAC	No indication	_	UNKWN	UNKWN	1	_	_	UNKWN	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	-	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	_	UNKWN		_
IPDM E/R	No indication	_	UNKWN	UNKWN	-	_	_	UNKWN	_	_	_



## **CAN SYSTEM (TYPE 11)**

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Case 16

Check CAN communication circuit. Refer to <a href="LAN-367">LAN-367</a>, "CAN Communication Circuit Check"</a> .

						CAN DIA	G SUPPOI	RT MNTR					
SELECT SYST	FM screen	Initial	Transmit	Receive diagnosis									
0222010101	LIVI SOFCCIT	diagnosis	diagnosis	ECM	ТСМ	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/		
ENGINE	_	NG	UNK WN	_	UNK WN	_	UNKWN	UNKWN	UNKWN	UNK WN	UNKWN		
A/T	_	NG	UNKWN	UNK WN	_	_	UNK WN	_	UNKWN	UNK WN	_		
DIFF LOCK	_	NG	UNKWN	UNK WN	_	_	_	_	UNKWN	UNK WN	_		
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	_	UNKWN	UNKWN	_	-	_		
всм	No indication	NG	UNKWN	UNKWN	_	_	UNKWN	_	_	_	UNKWN		
HVAC	No indication	_	UNKWN	UNKWN	-	_	_	UNKWN	_	UNKWN	_		
ALL MODE AWD/4WD	_	NG	UNKWN	UNK WN	UNKWN	_	_	_	_	UNK WN	_		
ABS	_	N	UNK WN	UNK WN	UNK WN	UNKWN	_	_	UNK WN	_	_		
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_		

#### Case 17

Check IPDM E/R ignition relay circuit continuously sticks "OFF". Refer to <u>LAN-368</u>, "IPDM E/R Ignition Relay <u>Circuit Check"</u>.

						CAN DIA	G SUPPOI	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit								
022201 0101	EN SOICEN	diagnosis		ECM	тсм	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/
ENGINE	_	NG	UNKWN	_	UNK WN	_	UNKWN	UNKWN	UNKWN	UNK WN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	_	UNKWN	_	UNKWN	UNKWN	ı
DIFF LOCK	_	NG	UNKWN	UNKWN	_	_	_	_	UNKWN	UNKWN	
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNK/WN	_	UNKWN	UNKWN	_	-	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	_	UNKWN	_	_	-	UNKWI
HVAC	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	UNK WN	ı
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN	
ABS	_	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	_	UNKWN	-	
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN		_	_

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#### Case 18

Check IPDM E/R ignition relay circuit continuously sticks "ON". Refer to <u>LAN-368</u>, "IPDM E/R Ignition Relay <u>Circuit Check"</u>.

						CAN DIA	G SUPPOI	RT MNTR					
SELECT SYST	EM screen	Initial	Transmit	Receive diagnosis									
322231 3131	2111 0010011	diagnosis		ECM	ТСМ	DIFF LOCK	METER/ M&A	BCM/SEC	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E		
ENGINE	_	NG	UNKWN	_	UNKWN	_	UNKWN	UNKWN	UNKWN	UNKWN	UNKW		
A/T	_	NG	UNKWN	UNK WN	_	_	UNKWN	_	UN <b>K</b> ₩N	UNKWN	_		
DIFF LOCK	_	NG	UNKWN	UNKWN	_	_	-	_	UNKWN	UNKWN	_		
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	_	UNKWN	UNKWN	_	_	_		
ВСМ	No indication	NG	UNKWN	UNKWN	_	_	UNKWN	_	_	_	UNKW		
HVAC	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	UNKWN	_		
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_		UNKWN	_		
ABS	_	NG	UNKWN	UNK WN	UNKWN	UNKWN	_	_	UNK WN	_	_		
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	UNKWN	_	_	_		

### Circuit Check Between TCM and Differential Lock Control Unit

UKS0020K

## 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector F33
- Harness connector E19
- Harness connector E50
- Harness connector B75

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

## 2. CHECK HARNESS FOR OPEN CIRCUIT

- Disconnect A/T assembly connector and harness connector F33.
- Check continuity between A/T assembly harness connector F9 terminals 3 (L), 8 (P) and harness connector F33 terminals 12 (L), 11 (P).

3 (L) - 12 (L)

: Continuity should exist.

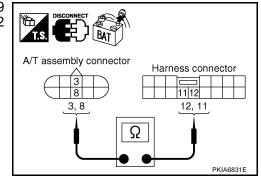
8 (P) - 11 (P)

: Continuity should exist.

#### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



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## 3. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect harness connector E50.
- Check continuity between harness connector E19 terminals 12 (L), 11 (P) and harness connector E50 terminals 2 (L), 1 (P).

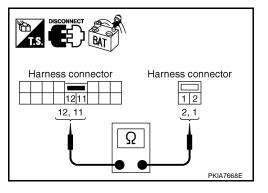
12 (L) - 2 (L) 11 (P) - 1 (P) : Continuity should exist.

: Continuity should exist.

OK or NG

OK >> GO TO 4.

NG >> Repair harness.



## 4. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect differential lock control unit connector.
- Check continuity between harness connector B75 terminals 2 (L), 1 (P) and differential lock control unit harness connector B77 terminals 5 (L), 4 (P).

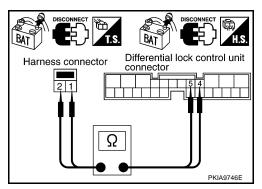
2 (L) - 5 (L) 1 (P) - 4 (P) : Continuity should exist.

: Continuity should exist.

OK or NG

OK >> Connect all the connectors and diagnose again. Refer to LAN-338, "Work Flow".

NG >> Repair harness.



# Circuit Check Between Differential Lock Control Unit and Driver Seat Control Unit

## 1. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Disconnect differential lock control unit connector and harness connector B37.
- Check continuity between differential lock control unit harness connector B77 terminals 5 (L), 4 (P) and harness connector B37 terminals 15 (L), 14 (P).

5 (L) - 15 (L)

: Continuity should exist.

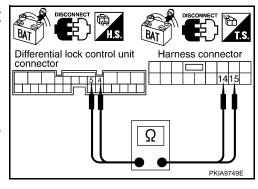
4 (P) - 14 (P)

: Continuity should exist.

OK or NG

OK >> Connect all the connectors and diagnose again. Refer to LAN-338, "Work Flow" .

NG >> Repair harness.



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## Circuit Check Between Driver Seat Control Unit and Data Link Connector

### 1. CHECK CONNECTOR

- Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector B69
- Harness connector M40

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

## 2. CHECK HARNESS FOR OPEN CIRCUIT

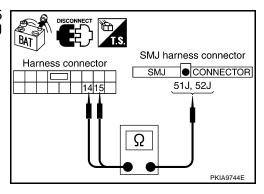
- 1. Disconnect harness connector B37 and harness connector B69.
- Check continuity between harness connector B37 terminals 15 (L), 14 (P) and harness connector B69 terminals 51J (L), 52J (P).

: Continuity should exist.

: Continuity should exist.

#### OK or NG

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



## 3. CHECK HARNESS FOR OPEN CIRCUIT

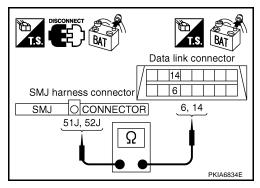
Check continuity between harness connector M40 terminals 51J (L), 52J (P) and data link connector M22 terminals 6 (L), 14 (P).

51J (L) - 6 (L) 52J (P) - 14 (P) : Continuity should exist. : Continuity should exist.

#### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to LAN-338, "Work Flow".

NG >> Repair harness.



## Circuit Check Between Data Link Connector and IPDM E/R

UKS001I4

## 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector M31
- Harness connector E152

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

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# 2. CHECK HARNESS FOR OPEN CIRCUIT

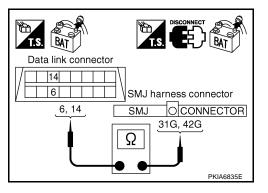
- 1. Disconnect harness connector M31.
- Check continuity between data link connector M22 terminals 6
  (L), 14 (P) and harness connector M31 terminals 31G (L), 42G
  (P).

6 (L) - 31G (L) : 0 14 (P) - 42G (P) : 0

: Continuity should exist. : Continuity should exist.

#### OK or NG

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



# 3. CHECK HARNESS FOR OPEN CIRCUIT

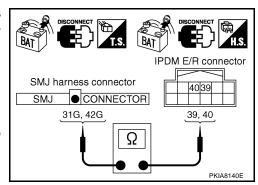
- 1. Disconnect IPDM E/R connector.
- Check continuity between harness connector E152 terminals 31G (L), 42G (P) and IPDM E/R harness connector E122 terminals 39 (L), 40 (P).

31G (L) - 39 (L) : Continuity should exist. 42G (P) - 40 (P) : Continuity should exist.

#### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to LAN-338, "Work Flow".

NG >> Repair harness.



UKS00115

#### **ECM Circuit Check**

## 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- Check following terminals and connectors for damage, bend and loose connection (control module side and harness side).
- ECM connector
- Harness connector E19
- Harness connector F33

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

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# 2. CHECK HARNESS FOR OPEN CIRCUIT

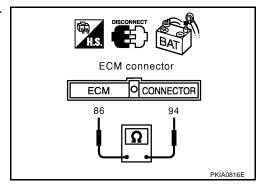
- 1. Disconnect ECM connector.
- 2. Check resistance between ECM harness connector E16 terminals 94 (L) and 86 (P).

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

#### OK or NG

OK >> Replace ECM.

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



UKS00116

#### **TCM Circuit Check**

## 1. CHECK CONNECTOR

- 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 F9 terminals 3 (L) and 8 (P).

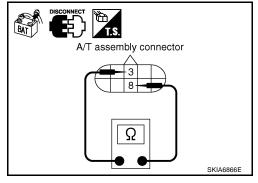
**3 (L) - 8 (P)** : Approx. 54 - 66 
$$\Omega$$

#### OK or NG

NG

OK >> Replace A/T assembly.

>> Repair harness between A/T assembly and harness connector F33.



UKS0020L

#### **Differential Lock Control Unit Circuit Check**

## 1. CHECK CONNECTOR

- Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check terminals and connector of differential lock 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 differential lock control unit connector.
- 2. Check resistance between differential lock control unit harness connector B77 terminals 5 (L) and 4 (P).

: Approx. 54 - 66 
$$\Omega$$

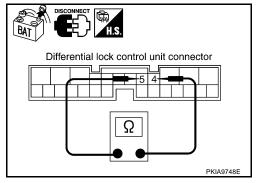
#### OK or NG

OK

>> Replace differential lock control unit.

NG

>> Repair harness between differential lock control unit and harness connector B75.



UKS00117

## **Driver Seat Control Unit Circuit Check**

### 1. CHECK CONNECTOR

1. Turn ignition switch OFF.

- 2. Disconnect the negative battery terminal.
- Check following terminals and connectors for damage, bend and loose connection (control unit side and harness side).
- Driver seat control unit connector
- Harness connector P1
- Harness connector B37

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

## 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect driver seat control unit connector.
- Check resistance between driver seat control unit harness connector P2 terminals 3 (L) and 19 (P).

: Approx. 54 - 66 
$$\Omega$$

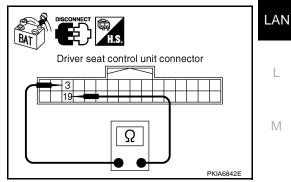
## OK or NG

OK

>> Replace driver seat control unit.

NG

>> Repair harness between driver seat control unit and harness connector B69.



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#### Combination Meter Circuit Check

### 1. CHECK CONNECTOR

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

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect combination meter connector.
- 2. Check resistance between combination meter harness connector M24 terminals 11 (L) and 12 (P).

: Approx. 54 - 66  $\Omega$ 

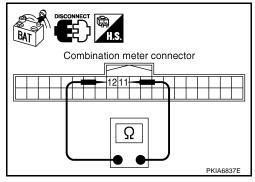
#### OK or NG

OK

>> Replace combination meter.

NG

>> Repair harness between combination meter and data link connector.



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### **BCM Circuit Check**

## 1. CHECK CONNECTOR

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

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

## 2. CHECK HARNESS FOR OPEN CIRCUIT

- Disconnect BCM connector.
- 2. Check resistance between BCM harness connector M18 terminals 39 (L) and 40 (P).

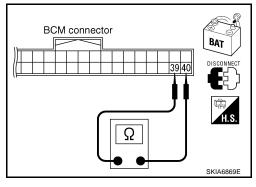
: Approx. 54 - 66  $\Omega$ 

#### OK or NG

OK :

>> Replace BCM. Refer to <u>BCS-20</u>, "Removal and Installation of <u>BCM"</u>.

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



UKS001IA

#### **Data Link Connector Circuit Check**

## 1. CHECK CONNECTOR

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

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# 2. CHECK HARNESS FOR OPEN CIRCUIT

Check resistance between data link connector M22 terminals 6 (L) and 14 (P).

: Approx. 54 - 66  $\Omega$ 

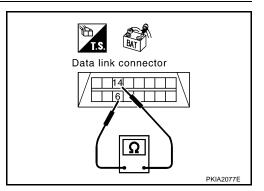
#### OK or NG

OK

>> Diagnose again. Refer to LAN-338, "Work Flow".

NG

>> Repair harness between data link connector and combination meter.



## Front Air Control Circuit Check

### 1. CHECK CONNECTOR

Turn ignition switch OFF.

2. Disconnect the negative battery terminal.

3. Check terminals and connector of front air control for damage, bend and loose connection (unit side and harness side).

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect front air control connector.

2. Check resistance between front air control harness connector M50 terminals 34 (L) and 35 (P).

: Approx. 54 - 66  $\Omega$ 

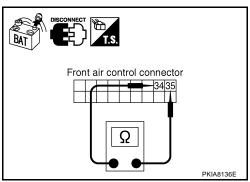
#### OK or NG

OK

>> Replace front air control.

NG

>> Repair harness between front air control and data link connector.



## Transfer Control Unit Circuit Check

## 1. CHECK CONNECTOR

Turn ignition switch OFF.

- Disconnect the negative battery terminal.
- Check terminals and connector of transfer 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

- Disconnect transfer control unit connector.
- Check resistance between transfer control unit harness connector E142 terminals 1 (L) and 2 (P).

: Approx. 54 - 66  $\Omega$ 

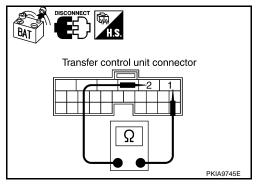
#### OK or NG

OK

>> Replace transfer control unit.

NG

>> Repair harness between transfer control unit and harness connector E152.



## **ABS Actuator and Electric Unit (Control Unit) Circuit Check**

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### 1. CHECK CONNECTOR

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

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

## 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect ABS actuator and electric unit (control unit) connector.
- 2. Check resistance between ABS actuator and electric unit (control unit) harness connector E125 terminals 11 (L) and 15 (P).

: Approx. 54 - 66  $\Omega$ 

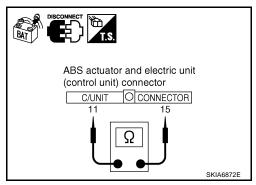
#### OK or NG

OK

>> Replace ABS actuator and electric unit (control unit).

NG

>> Repair harness between ABS actuator and electric unit (control unit) and harness connector E152.



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#### **IPDM E/R Circuit Check**

### 1. CHECK CONNECTOR

- 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.

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# 2. CHECK HARNESS FOR OPEN CIRCUIT

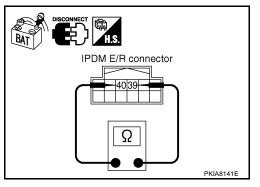
- 1. Disconnect IPDM E/R connector.
- 2. Check resistance between IPDM E/R harness connector E122 terminals 39 (L) and 40 (P).

**39 (L) - 40 (P)** : Approx. 108 - 132 
$$\Omega$$

#### OK or NG

OK >> Replace IPDM E/R.

NG >> Repair harness between IPDM E/R and harness connector E152.



## **CAN Communication Circuit Check**

## 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- Disconnect the following module and control unit connectors and check terminals for deformation, disconnection, looseness or damage.
- ECM
- A/T assembly
- Differential lock control unit
- Driver seat control unit
- Combination meter
- BCM
- Front air control
- Transfer control unit
- ABS actuator and electric unit (control unit)
- IPDM E/R

#### OK or NG

OK >> GO TO 2.

NG >> Repair or replace as necessary.

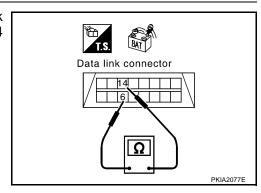
# 2. CHECK HARNESS FOR SHORT CIRCUIT

With all module and control unit connectors disconnected, check continuity between data link connector M22 terminals 6 (L) and 14 (P).

OK or NG

OK >> GO TO 3.

NG >> Repair harness.



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# 3. CHECK HARNESS FOR SHORT CIRCUIT

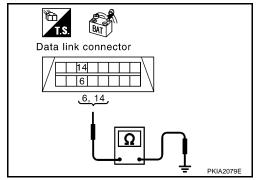
Check continuity between data link connector M22 terminals 6 (L), 14 (P) and ground.

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

#### OK or NG

OK >> Check ECM and IPDM E/R. Refer to <u>LAN-368</u>, "ECM/ <u>IPDM E/R INTERNAL CIRCUIT INSPECTION"</u>.

NG >> Repair harness.



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## IPDM E/R Ignition Relay Circuit Check

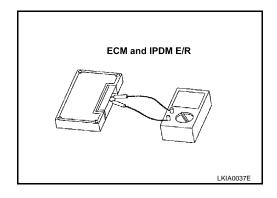
Check the following. If no malfunction is found, replace the IPDM E/R.

- IPDM E/R power supply circuit. Refer to PG-26, "IPDM E/R Power/Ground Circuit Inspection".
- Ignition power supply circuit. Refer to <u>PG-13</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 39 and 40.

Unit	Terminal	Resistance value (Ω) (Approx.)
ECM	94 - 86	108 - 132
IPDM E/R	39 - 40	100 - 132



## **CAN SYSTEM (TYPE 12)**

#### PFP:23710

## **System Description**

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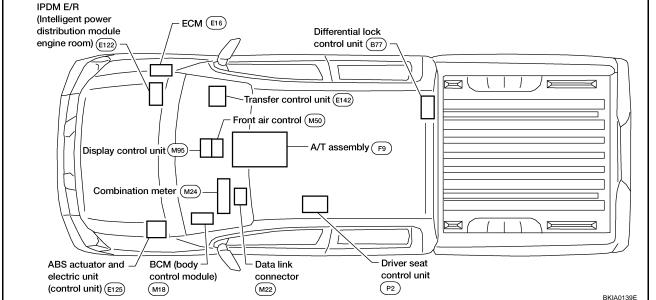
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CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped 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.

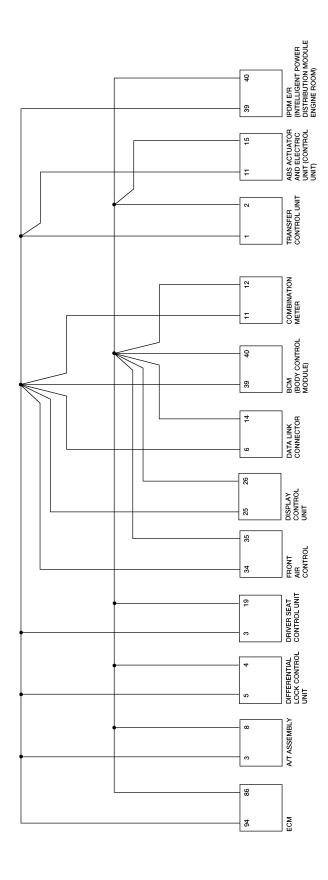
**Component Parts and Harness Connector Location** 





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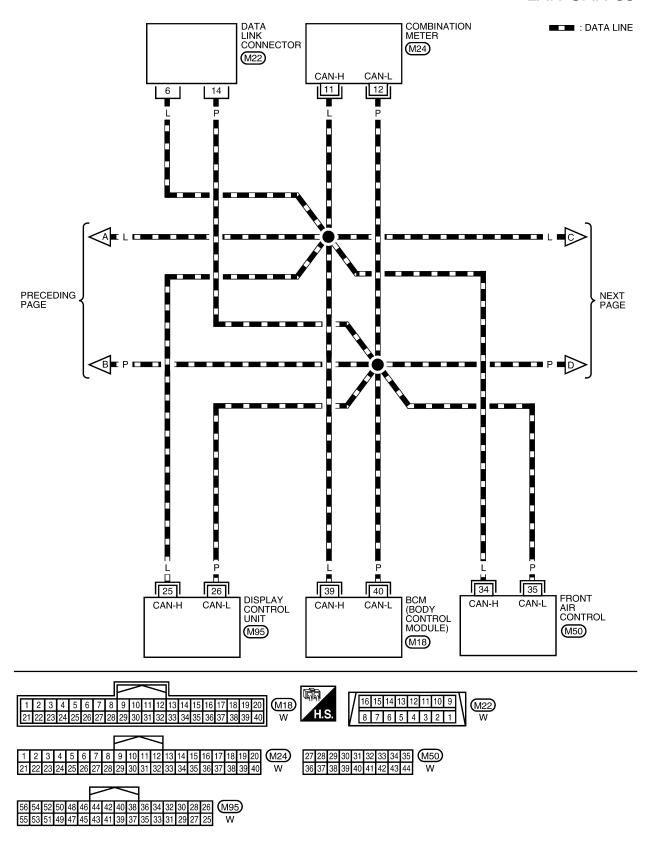


BKWA0458E

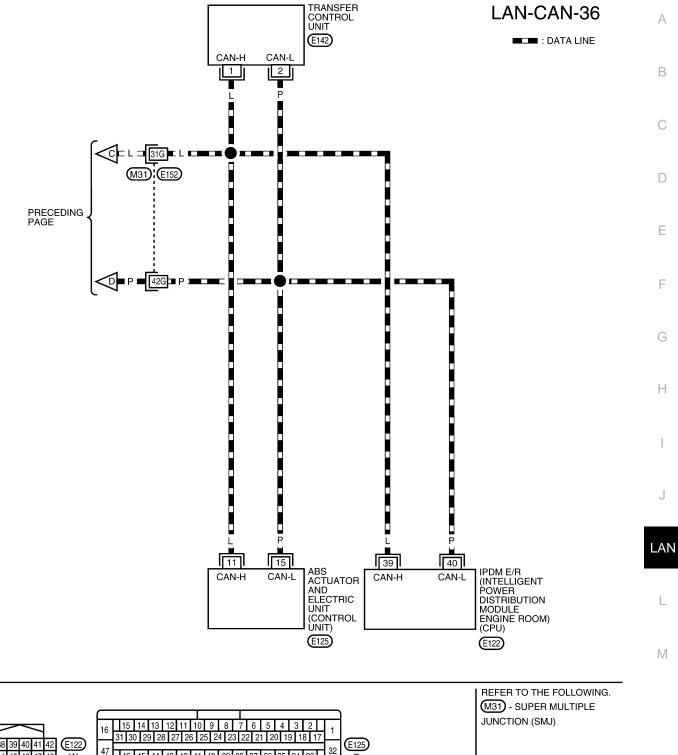
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\*: THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT" OF PG SECTION.

## LAN-CAN-35



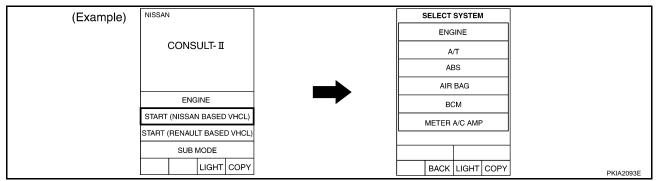
BKWA0459E



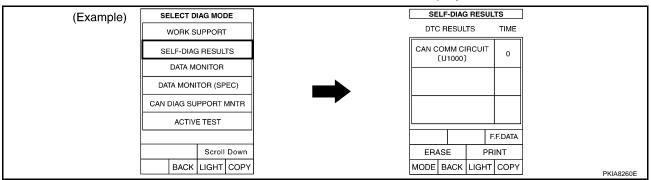
BKWA0460E

Work Flow

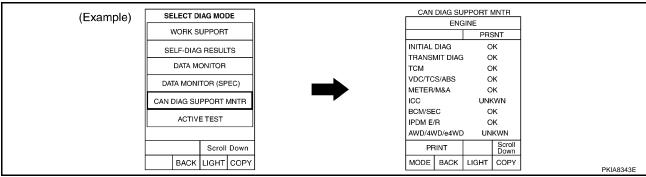
1. When there are no indications of "AUTO DRIVE POS.", "BCM", "HVAC" or "IPDM E/R" on "SELECT SYSTEM" display of CONSULT-II, print the "SELECT SYSTEM".



2. Print all the data of "SELF-DIAG RESULTS" for "ENGINE", "A/T", "DIFF LOCK", "AUTO DRIVE POS.", "BCM", "HAVC", "ALL MODE AWD/4WD", "ABS" and "IPDM E/R" displayed on CONSULT-II.



3. Print all the data of "CAN DIAG SUPPORT MNTR" for "ENGINE", "A/T", "DIFF LOCK", "AUTO DRIVE POS.", "BCM", "HVAC", "ALL MODE AWD/4WD", "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 LAN-376, "CHECK SHEET".
- Based on the indications of "SELECT SYSTEM" and the results of "CAN DIAG SUPPORT MNTR", puts a check mark onto the items with "No indication", "NG", or "UNKWN" in the check sheet table. Refer to <u>LAN-376</u>, "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. Check CAN communication line of the navigation system. Refer to <u>AV-148, "CAN Communication Line Check"</u>.
- Attach the CAN DIAG SUPPORT MONITOR check sheet onto the check sheet. Refer to <u>LAN-376</u>, <u>"CHECK SHEET"</u>.

# **CAN SYSTEM (TYPE 12)**

[CAN]

8. Mark the "NG" or "UNKWN" item of the check sheet table with "v" from the result of CAN DIAG SUPPORT MONITOR check sheet. Refer to <u>LAN-376</u>, "CHECK SHEET".

#### NOTE:

If "NG" is displayed on "CAN COMM" as "CAN DIAG SUPPORT MONITOR" for the diagnosed control unit, replace the control unit. Refer to <a href="AV-148">AV-148</a>, "CAN Communication Line Check".

9. According to the check sheet results (example), start inspection. Refer to <u>LAN-379</u>, "CHECK SHEET <u>RESULTS</u> (EXAMPLE)".

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### **CHECK SHEET**

#### NOTE:

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

						CAN	DIAG SU	PPORT M	NTR				
SELECT SYSTEM	1 ooroon	Initial	Transmit					Receive of	diagnosis				
SELECT STSTE	vi screeri		diagnosis	ECM	ТСМ	DIFF LOCK	METER /M&A	DISPLAY	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	1	UNKWN	_	UNKWN	_	UNKWN	1	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	_	UNKWN	_	_	1	UNKWN	UNKWN	_
DIFF LOCK	_	NG	UNKWN	UNKWN	_	_	_	_	_	-	UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	1	UNKWN	_	UNKWN	_	UNKWN	1	_	_	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CIRC 3	_	_	CAN CIRC 5	_	CAN CIRC 2	CAN CIRC 4	_	-	CAN CIRC 7
ВСМ	No indication	NG	UNKWN	UNKWN	_	-	UNKWN	_	_	1		ı	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	-	UNKWN	UNKWN	1	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	1	_	_	1	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	UNKWN	-	_	_	1	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	-	-	-	UNKWN	-	_	_	_

Symptoms :			
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Attach copy of SELECT SYSTEM

Attach copy of SELECT SYSTEM

Attach copy of display control unit CAN DIAG SUPPORT MONITOR check sheet

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Attach copy of Attach copy of Attach copy of **ENGINE** A/T DIFF LOCK **SELF-DIAG RESULTS SELF-DIAG RESULTS SELF-DIAG RESULTS** Attach copy of Attach copy of Attach copy of AUTO DRIVE POS. всм HVAC SELF-DIAG RESULTS SELF-DIAG RESULTS SELF-DIAG RESULTS Attach copy of Attach copy of Attach copy of ALL MODE AWD/4WD IPDM E/R ABS **SELF-DIAG RESULTS SELF-DIAG RESULTS SELF-DIAG RESULTS** PKIB6695E

Revision: October 2005 LAN-377 2005 Titan

Attach copy of Attach copy of Attach copy of ENGINE A/T DIFF LOCK CAN DIAG SUPPORT CAN DIAG SUPPORT CAN DIAG SUPPORT MNTR MNTR MNTR Attach copy of Attach copy of Attach copy of AUTO DRIVE POS. HVAC BCM CAN DIAG SUPPORT CAN DIAG SUPPORT CAN DIAG SUPPORT **MNTR** MNTR MNTR Attach copy of Attach copy of Attach copy of ALL MODE AWD/4WD IPDM E/R ABS **CAN DIAG SUPPORT CAN DIAG SUPPORT CAN DIAG SUPPORT** MNTR MNTR MNTR PKIB6696E

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

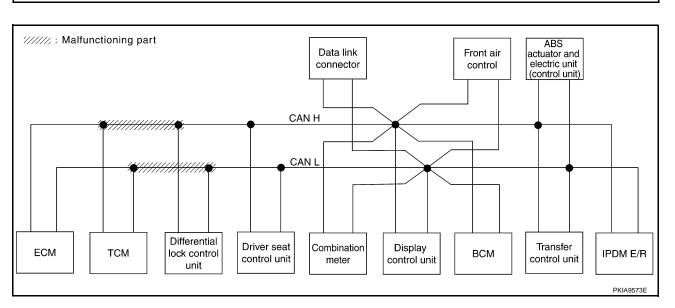
#### NOTE:

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

#### Case 1

Check harness between TCM and differential lock control unit. Refer to <u>LAN-396</u>, "Circuit Check Between <u>TCM and Differential Lock Control Unit"</u>.

						CAN	DIAG SU	PPORT M	NTR				
SELECT SYSTEM	A screen	Initial	Transmit					Receive of	diagnosis				
OLLLOT STOTE	vi screen			ECM	TCM	DIFF LOCK	METER /M&A	DISPLAY	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E
ENGINE	_	NG	UNKWN	-	UNKWN	_	UNK WN	_	UNK WN	_	UNK <b>W</b> N	UNK <b>W</b> N	UNK
A/T	_	NG	UNKWN	UNKWN	ı	-	UNK <b>I</b> VN	-	-	ı	UNK <b>A</b> NN	UNK <b>/</b> VN	ı
DIFF LOCK	_	NG	UNKWN	UNK WN	_	_	-	_	_	_	UNKWN	UNKWN	-
AUTO DRIVE POS.	No indication	NG	UNKWN	1	UN <b>K</b> ₩N	_	UNKWN	_	UNKWN	_	-	_	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CINC 3	ı	-	CAN CIRC 5	-	CAN CIRC 2	CAN CIRC 4	ı	ı	CAN CIRC
ВСМ	No indication	NG	UNKWN	UNKWN	1	_	UNKWN	-	_	1	1	1	UNKW
HVAC	No indication	-	UNKWN	UNKWN	_	_	-	UNKWN	UNKWN	_	-	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNK WN	_	-	_	-	_	ı	UNKWN	_
ABS	_	NG	UNKWN	UNK ₩N	∩ <b>NR</b> WN	UNKWN	_		_	_	UNKWN		_
IPDM E/R	No indication	_	UNKWN	UNK WN	_	_	_	-	UNKWN	_	_	_	_



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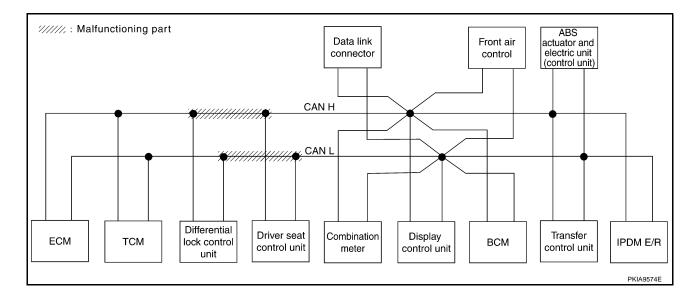
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Case 2
Check harness between differential lock control unit and driver seat control unit. Refer to <a href="LAN-397">LAN-397</a>, "Circuit Check Between Differential Lock Control Unit and Driver Seat Control Unit".

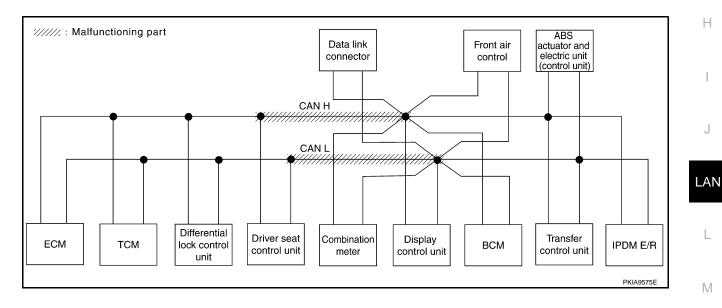
						CAN	DIAG SU	PPORT N	INTR				
SELECT SYSTEM	/ screen	Initial	Transmit					Receive of	diagnosis				
OLLLOT STOTE	n screen			ECM	TCM	DIFF LOCK	METER /M&A	DISPLAY	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E
ENGINE	_	NG	UNKWN	1	UNKWN	_	UNK WN	-	UNK WN	_	UN <b>K</b> ₩N	UNK <b>W</b> N	UNK
A/T	ı	NG	UNKWN	UNKWN	ı	_	UNK <b>∕</b> NN	ı	_	ı	UNK <b>A</b> NN	UNK <b>A</b> NN	_
DIFF LOCK	ı	NG	UNKWN	UNKWN	_	_	ı	ı	_	_	UNK WN	UNK WN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	1	UN <b>K</b> ₩N	_	UNKWN	-	UNKWN	_	-	-	_
Display control unit	ı	CAN COMM	CAN CIRC 1	CAN CINC 3	ı		CAN CIRC 5	ı	CAN CIRC 2	CAN CIRC 4		İ	CAN CIRC 7
ВСМ	No indication	NG	UNKWN	UNKWN	_	_	UNKWN	ı	_	_	_	1	UNKW
HVAC	No indication	1	UNKWN	UNKWN	ı		ı	UNKWN	UNKWN	ı		UNKWN	l
ALL MODE AWD/4WD	1	NG	UNKWN	UNKWN	UNK WN	_	ı	ı	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNK WN	∩ <b>NR</b> WN	Ω <b>ΝΚ</b> ⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄	_	_	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNK WN	_	_	_	_	UNKWN	_	_	_	_



Case 3

Check harness between driver seat control unit and data link connector. Refer to LAN-398, "Circuit Check Between Driver Seat Control Unit and Data Link Connector".

						CAN	DIAG SU	PPORT M	INTR				
SELECT SYSTEM	/ screen	Initial	Transmit					Receive of	diagnosis				
OLLLOT GTOTE	n screen			ECM	ТСМ	DIFF LOCK	METER /M&A	DISPLAY	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E
ENGINE	-	NG	UNKWN	1	UNKWN	-	UNK WN	_	UNK WN	_	UNK <b>W</b> N	UNK <b>W</b> N	UNK
A/T	ı	NG	UNKWN	UNKWN	1	ı	UNK <b>W</b> N	_	l	_	UNK <b>W</b> N	UNK <b>W</b> N	ı
DIFF LOCK	ı	NG	UNKWN	UNKWN	ı	ı	_	_	ı	_	UNK <b>W</b> N	UNK WN	-
AUTO DRIVE POS.	No indication	NG	UNKWN	1	UNKWN	-	UNKWN	_	UNKWN	_	_	_	_
Display control unit	ı	CAN COMM	CAN CIRC 1	CAN CINC 3	ı	ı	CAN CIRC 5	_	CAN CIRC 2	CAN CIRC 4	-	_	CAN CIRC
ВСМ	No indication	NG	UNKWN	UNKWN	1	1	UNKWN	_	1	_	_	_	UNKW
HVAC	No indication	-	UNKWN	UNKWN	ı	1	_	UNKWN	UNKWN	_	_	UNKWN	_
ALL MODE AWD/4WD	-	NG	UNKWN	UNKWN	UNKWN	ı	_	_	ı	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNK WN	UNK WN	Ω <b>ΝΚ</b> ⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄⁄	_	_		_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNK WN	_	_	_	_	UNKWN	_	_	_	_



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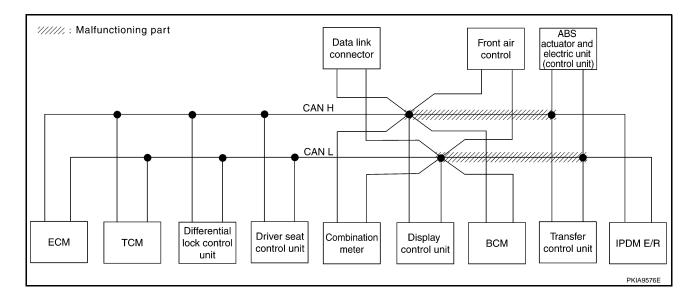
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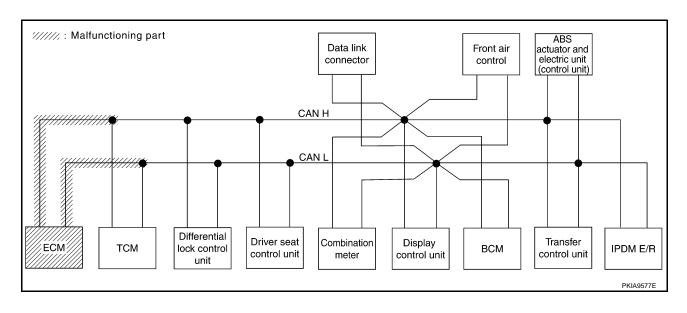
Case 4
Check harness between data link connector and IPDM E/R. Refer to <u>LAN-398</u>, "Circuit Check Between Data <u>Link Connector and IPDM E/R"</u>.

						CAN	DIAG SU	PPORT N	INTR				
SELECT SYSTEM	/ screen	Initial	Transmit					Receive of	diagnosis				
OLLEGI GIGILI	7 3010011		diagnosis	ECM	TCM	DIFF LOCK	METER /M&A	DISPLAY	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E
ENGINE	_	NG	UNKWN	-	UNKWN	_	UNKWN	_	UNKWN	_	UNK <b>W</b> N	UNK <b>W</b> N	UNKWI
A/T	-	NG	UNKWN	UNKWN	_	_	UNKWN	-	-	_	UNK <b>W</b> N	UNK <b>W</b> N	_
DIFF LOCK	ı	NG	UNKWN	UNKWN	_	_	_	_	ı	_	UNK <b>W</b> N	UNK WN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	1	UNKWN	_	UNKWN	_	UNKWN	_	_	_	_
Display control unit	ı	CAN COMM	CAN CIRC 1	CAN CIRC 3	ı		CAN CIRC 5	_	CAN CIRC 2	CAN CIRC 4	_	ı	CAM CINC 7
ВСМ	No indication	NG	UNKWN	UNKWN	1	_	UNKWN	_	1	_	_	ı	UNKWI
HVAC	No indication	1	UNKWN	UNKWN	_	_	_	UNKWN	UNKWN	_	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNK WN	_	_	_	ı	_	_	UNKWN	_
ABS	1	NG	UNKWN	UNK WN	∩ <b>NR</b> WN	UN <b>K</b> ₩N	_	_	-	_	UNKWN	ı	_
IPDM E/R	Ng ind ation	-	UNKWN	UNKWN	_	_	_	_	UNKWN	_	_	_	_



Case 5
Check ECM circuit. Refer to <u>LAN-399</u>, "ECM Circuit Check" .

						CAN	DIAG SU	PPORT N	INTR				
SELECT SYSTEM	/ screen	Initial	Transmit					Receive of	diagnosis				
OLLLOI GIGILI	n screen			ECM	TCM	DIFF LOCK	METER /M&A	DISPLAY	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E
ENGINE	ı	NG	UNK WN	ı	UNK <b>W</b> N		UNK <b>W</b> N	-	UNK WN	ı	UNK	UNK/WN	UNK
A/T	ı	NG	UNKWN	UNK WN	_	_	UNKWN	_	_	-	UNKWN	UNKWN	
DIFF LOCK	ı	NG	UNKWN	UNK WN	-	_	ı	_	_	-	UNKWN	UNKWN	-
AUTO DRIVE POS.	No indication	NG	UNKWN	1	UNKWN	_	UNKWN	_	UNKWN	_	-	_	_
Display control unit	ı	CAN COMM	CAN CIRC 1	CAN CINC 3	ı		CAN CIRC 5		CAN CIRC 2	CAN CIRC 4	ı	ı	CAN CIRC 7
ВСМ	No indication	NG	UNKWN	UNKWN	1	_	UNKWN	_	_	1	1	ı	UNKW
HVAC	No indication	-	UNKWN	UNKWN	_	_	-	UNKWN	UNKWN	_	-	UNKWN	_
ALL MODE AWD/4WD	-	NG	UNKWN	UNK WN	UNKWN	_	_	_	_	_	_	UNKWN	_
ABS	1	NG	UNKWN	UNKWN	UNKWN	UNKWN	-	_	_	_	UNKWN	-	_
IPDM E/R	No indication	-	UNKWN	UNK WN	_	_	_	_	UNKWN	_	_	_	_



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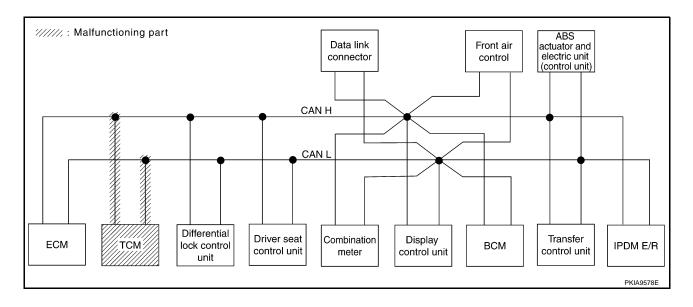
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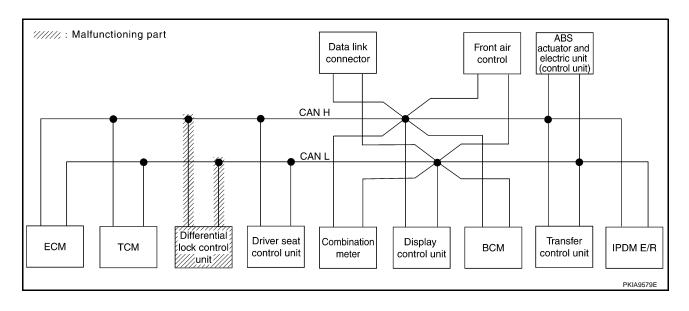
Case 6
Check TCM circuit. Refer to <u>LAN-400, "TCM Circuit Check"</u>.

						CAN	DIAG SU	PPORT M	INTR				
SELECT SYSTEM	A screen	Initial	Transmit					Receive of	diagnosis				
OLLLOT STOTE	VI SCIECTI	diagnosis	diagnosis	ECM	TCM	DIFF LOCK	METER /M&A	DISPLAY	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E
ENGINE	_	NG	UNKWN	_	UN <b>K</b> ₩N	_	UNKWN	-	UNKWN	_	UNKWN	UNKWN	UNKW
A/T	_	NG	UNKWN	UNK ₩N	ı	-	UNK WN	1	_	ı	UNKWN	UNKWN	ı
DIFF LOCK	_	NG	UNKWN	UNKWN	_	_	-	-	_	_	UNKWN	UNKWN	ı
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UN <b>K</b> ₩N	_	UNKWN	-	UNKWN	_	_	_	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CIRC 3	ı	-	CAN CIRC 5	1	CAN CIRC 2	CAN CIRC 4	ı	ı	CAN CIRC 7
ВСМ	No indication	NG	UNKWN	UNKWN	1	_	UNKWN	1	_	1	1	ı	UNKW
HVAC	No indication	_	UNKWN	UNKWN	_	_		UNKWN	UNKWN	_	1	UNKWN	1
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	_	_	UNKWN	
ABS	_	NG	UNKWN	UNKWN	UN <b>K</b> ₩N	UNKWN	1	_	_	_	UNKWN	_	-
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	_	UNKWN	_	_	_	_



Case 7
Check differential lock control unit circuit. Refer to LAN-400, "Differential Lock Control Unit Circuit Check".

						CAN	DIAG SU	PPORT M	NTR				
SELECT SYSTEM	/ screen	Initial	Transmit					Receive of	diagnosis				
SELECT STOTE	vi screen	diagnosis	diagnosis	ECM	ТСМ	DIFF LOCK	METER /M&A	DISPLAY	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/
ENGINE		NG	UNKWN	-	UNKWN	_	UNKWN	_	UNKWN	_	UNKWN	UNKWN	UNKW
A/T	-	NG	UNKWN	UNKWN	_	_	UNKWN	-	_	_	UNKWN	UNKWN	_
DIFF LOCK		NG	UNI <b>W</b> NN	UNK WN	-	_	ı	_	_	_	UNK/WN	UNK WN	-
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	_	UNKWN	_	UNKWN	_	_	_	_
Display control unit	ı	CAN COMM	CAN CIRC 1	CAN CIRC 3	ı	-	CAN CIRC 5	_	CAN CIRC 2	CAN CIRC 4	ı	ı	CAN CIRC 7
ВСМ	No indication	NG	UNKWN	UNKWN	1	_	UNKWN	_	_	1	1	ı	UNKWI
HVAC	No indication	1	UNKWN	UNKWN	_	_	1	UNKWN	UNKWN	_	1	UNKWN	_
ALL MODE AWD/4WD		NG	UNKWN	UNKWN	UNKWN	_	_	_	_	_	_	UNKWN	_
ABS	1	NG	UNKWN	UNKWN	UNKWN	UN <b>K</b> ₩N	ı	_	_	_	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	_	UNKWN	_	_	_	_



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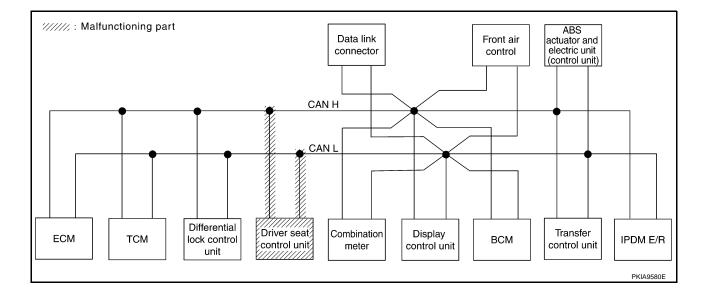
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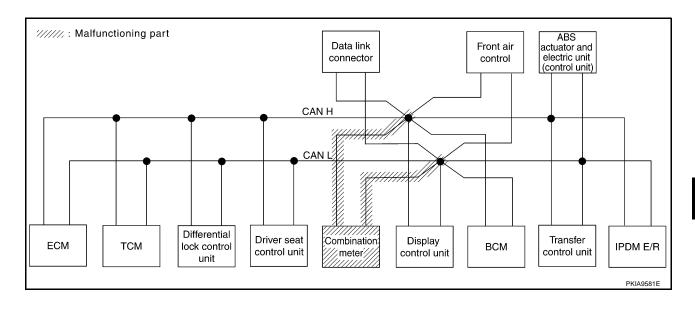
Case 8
Check driver seat control unit circuit. Refer to <u>LAN-401</u>, "<u>Driver Seat Control Unit Circuit Check</u>".

						CAN	DIAG SU	PPORT M	NTR				
SELECT SYSTEM	/I screen	Initial	Transmit					Receive of	diagnosis				
OLLLOT OTOTE	7 3010011	diagnosis		ECM	TCM	DIFF LOCK	METER /M&A	DISPLAY	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E
ENGINE	1	NG	UNKWN	ı	UNKWN	1	UNKWN	-	UNKWN	1	UNKWN	UNKWN	UNKW
A/T	1	NG	UNKWN	UNKWN	1	1	UNKWN	_	_	1	UNKWN	UNKWN	
DIFF LOCK	ı	NG	UNKWN	UNKWN	ı	ı	1	-	_	ı	UNKWN	UNKWN	-
AUTO DRIVE POS.	No indication	NG	UNKWN	1	UNKWN	-	UNKWN	_	UNKWN	1	1	_	_
Display control unit	1	CAN COMM	CAN CIRC 1	CAN CIRC 3	1	-	CAN CIRC 5	-	CAN CIRC 2	CAN CIRC 4	1	-	CAN CIRC 7
BCM	No indication	NG	UNKWN	UNKWN	ı	ı	UNKWN	_	_	1	1	-	UNKW
HVAC	No indication	_	UNKWN	UNKWN	1	-	-	UNKWN	UNKWN	1	-	UNKWN	_
ALL MODE AWD/4WD	-	NG	UNKWN	UNKWN	UNKWN	ı	-	_	_	ı	ı	UNKWN	_
ABS	-	NG	UNKWN	UNKWN	UNKWN	UNKWN		_	_	_	UNKWN	-	-
IPDM E/R	No indication	1	UNKWN	UNKWN	_	_	-	_	UNKWN	1	1	_	_



Case 9
Check combination meter circuit. Refer to <u>LAN-401</u>, "Combination Meter Circuit Check" .

						CAN	DIAG SU	PPORT M	INTR				
SELECT SYSTEM	A screen	Initial	Transmit					Receive of	diagnosis				
OLLLOT STOTE	vi screen		diagnosis	ECM	ТСМ	DIFF LOCK	METER /M&A	DISPLAY	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E
ENGINE	_	NG	UNKWN	1	UNKWN	1	UN <b>K</b> ₩N	1	UNKWN	1	UNKWN	UNKWN	UNKW
A/T	_	NG	UNKWN	UNKWN	1	1	UNKWN	ı	_	-	UNKWN	UNKWN	-
DIFF LOCK	_	NG	UNKWN	UNKWN	1	1	1	1	_	1	UNKWN	UNKWN	-
AUTO DRIVE POS.	No indication	NG	UNKWN	ı	UNKWN	ı	UNK WN	_	UNKWN	_	1	1	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CIRC 3	1	1	CAN CINC 5	1	CAN CIRC 2	CAN CIRC 4	1	ı	CAN CIRC 7
ВСМ	No indication	NG	UNKWN	UNKWN	1	1	UNK WN	1	_	1	1	1	UNKW
HVAC	No indication	-	UNKWN	UNKWN	1	-	-	UNKWN	UNKWN	_	-	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	_	ı	UNKWN	_
ABS		NG	UNKWN	UNKWN	UNKWN	UNKWN	ı	_	_	1	UNKWN	_	_
IPDM E/R	No indication	-	UNKWN	UNKWN	1	_	_	_	UNKWN	-		_	_



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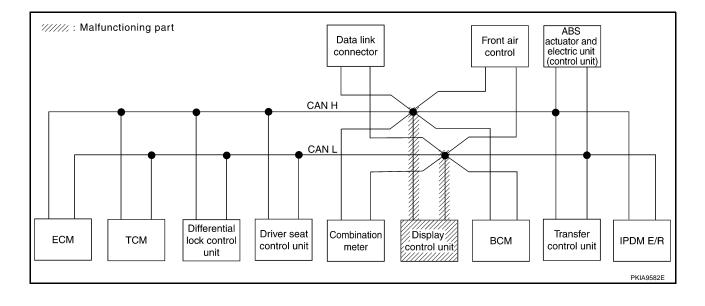
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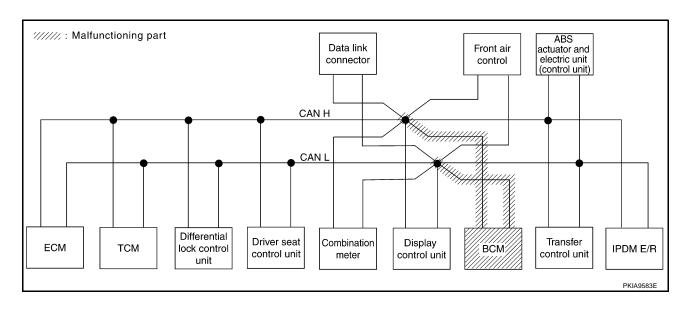
Case 10
Check display control unit circuit. Refer to <u>LAN-402</u>, "<u>Display Control Unit Circuit Check</u>" .

						CAN	DIAG SU	PPORT M	NTR				
SELECT SYSTEM	A screen	Initial	Transmit					Receive of	diagnosis				
OLLLOT STOTE	vi screen			ECM	TCM	DIFF LOCK	METER /M&A	DISPLAY	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E
ENGINE	_	NG	UNKWN	ı	UNKWN	-	UNKWN	-	UNKWN	ı	UNKWN	UNKWN	UNKW
A/T	_	NG	UNKWN	UNKWN	1	_	UNKWN	_	_	-	UNKWN	UNKWN	1
DIFF LOCK	_	NG	UNKWN	UNKWN	I	_	ı	-	_	-	UNKWN	UNKWN	1
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	_	UNKWN	_	UNKWN	_	1	-	
Display control unit	_	CAN COMM	CAN CINC 1	CAN CINC 3	1	_	CAN CINC 5	_	CAM CIAC 2	CAN CINC 4	1	ı	CANC
ВСМ	No indication	NG	UNKWN	UNKWN	1	_	UNKWN	-	_	1	1	ı	UNKW
HVAC	No indication	-	UNKWN	UNKWN	ı	_	_	UNK WN	UNKWN	_	-	UNKWN	ı
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	-	_	_	_	ı	UNKWN	ı
ABS	_	NG	UNKWN	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN	-	ı
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	-	UNKWN	_	_	_	_



Case 11 Check BCM circuit. Refer to <u>LAN-402</u>, "BCM Circuit Check" .

						CAN	DIAG SU	PPORT M	INTR				
SELECT SYSTEM	/ screen	Initial	Transmit					Receive of	diagnosis				
OLLLOT OTOTE	7 3010011		diagnosis	ECM	TCM	DIFF LOCK	METER /M&A	DISPLAY	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/
ENGINE	1	NG	UNKWN	ı	UNKWN	_	UNKWN	_	UNKWN	_	UNKWN	UNKWN	UNKWI
A/T	ı	NG	UNKWN	UNKWN	1	_	UNKWN	-	_	_	UNKWN	UNKWN	ı
DIFF LOCK	1	NG	UNKWN	UNKWN	1	_	-	_	_	_	UNKWN	UNKWN	1
AUTO DRIVE POS.	No indication	NG	UNKWN	1	UNKWN	_	UNKWN	-	UNK WN	_	1	_	-
Display control unit	ı	CAN COMM	CAN CIRC 1	CAN CIRC 3	ı	ı	CAN CIRC 5	ı	CAM CINC 2	CAN CIRC 4	-	ı	CAN CIRC 7
ВСМ	No indication	NG	UNKWN	UNKWN	1	-	UNKWN	1	_	_	-	ı	UNKW
HVAC	No indication	-	UNKWN	UNKWN	1	_	-	UNKWN	UNKWN	_	_	UNKWN	ı
ALL MODE AWD/4WD	ı	NG	UNKWN	UNKWN	UNKWN	_	1	_	_	_	_	UNKWN	ı
ABS	1	NG	UNKWN	UNKWN	UNKWN	UNKWN	1	_	_	_	UNKWN	-	ı
IPDM E/R	No indication	-	UNKWN	UNKWN	_	_		_	UNK <b>W</b> N	_	1	_	_



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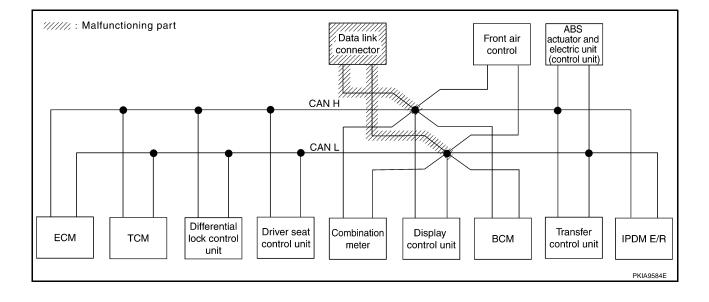
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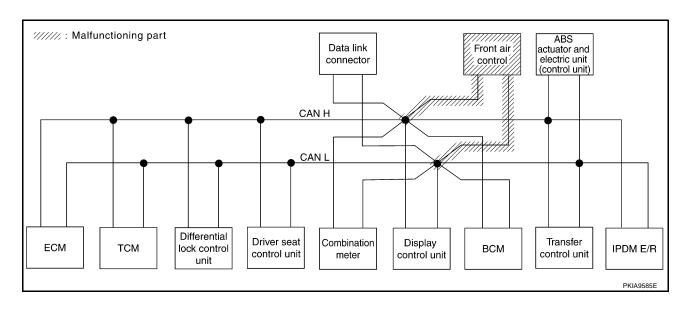
Case 12
Check data link connector circuit. Refer to LAN-403, "Data Link Connector Circuit Check" .

						CAN	DIAG SU	PPORT M	INTR				
SELECT SYSTEM	/ screen	Initial	Transmit					Receive of	diagnosis				
OLLLOT GTOTE	n screen			ECM	TCM	DIFF LOCK	METER /M&A	DISPLAY	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E
ENGINE	1	NG	UNKWN	ı	UNKWN	_	UNKWN	_	UNKWN	_	UNKWN	UNKWN	UNKW
A/T	ı	NG	UNKWN	UNKWN	_	_	UNKWN	_	_	_	UNKWN	UNKWN	_
DIFF LOCK	ı	NG	UNKWN	UNKWN	_	_	ı	-	_	_	UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	ı	UNKWN	_	UNKWN	_	UNKWN	_	1	_	_
Display control unit	-	CAN COMM	CAN CIRC 1	CAN CIRC 3	_	_	CAN CIRC 5	-	CAN CIRC 2	CAN CIRC 4	1	-	CAN CIRC
ВСМ	No indication	NG	UNKWN	UNKWN	_	_	UNKWN	-	_	-	1	1	UNKW
HVAC	No indication	-	UNKWN	UNKWN	_	_	-	UNKWN	UNKWN	_	-	UNKWN	_
ALL MODE AWD/4WD	1	NG	UNKWN	UNKWN	UNKWN	_	-	_	_	_	1	UNKWN	_
ABS	1	NG	UNKWN	UNKWN	UNKWN	UNKWN	-	_	_	_	UNKWN	-	_
IPDM E/R	No indication	1	UNKWN	UNKWN	_	_	_	_	UNKWN	_	1	_	_



Case 13
Check front air control circuit. Refer to <u>LAN-403</u>, "Front Air Control Circuit Check" .

						CAN	DIAG SU	PPORT M	INTR				
SELECT SYSTEM	A screen	Initial	Transmit					Receive of	diagnosis				
OLLLOT STOTE	vi screen	diagnosis	diagnosis	ECM	ТСМ	DIFF LOCK	METER /M&A	DISPLAY	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E
ENGINE	_	NG	UNKWN	ı	UNKWN	ı	UNKWN	_	UNKWN	_	UNKWN	UNKWN	UNKW
A/T	_	NG	UNKWN	UNKWN	1	1	UNKWN	ı	_	-	UNKWN	UNKWN	-
DIFF LOCK	_	NG	UNKWN	UNKWN	1	1	-	1	_	1	UNKWN	UNKWN	1
AUTO DRIVE POS.	No indication	NG	UNKWN	ı	UNKWN	ı	UNKWN	_	UNKWN	_	ı	1	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CIRC 3	1	1	CAN CIRC 5	1	CAN CIRC 2	CAM CINC 4	1	ı	CAN CIRC 7
ВСМ	No indication	NG	UNKWN	UNKWN	1	1	UNKWN	1	_	1	1	1	UNKW
HVAC	No indication	-	UNKWN	UNKWN	1	-	-	UNKWN	UNKWN	_	-	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	ı	-	_	_	_	-	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	UNKWN	1	_	_	1	UNKWN	-	-
IPDM E/R	No indication	_	UNKWN	UNKWN	-	_	_	_	UNKWN	_	_	_	_



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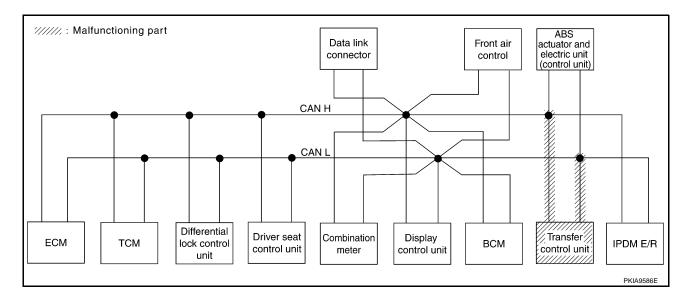
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Case 14
Check transfer control unit circuit. Refer to <u>LAN-404, "Transfer Control Unit Circuit Check"</u>.

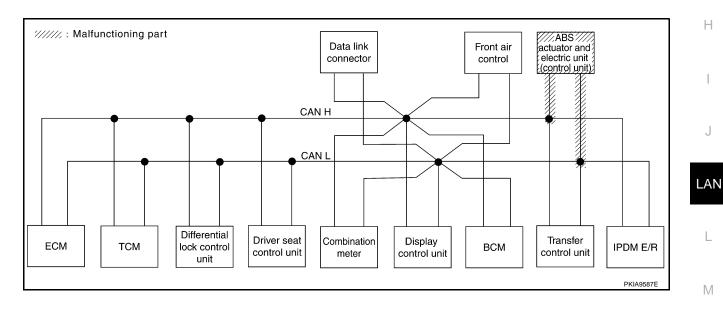
						CAN	DIAG SU	PPORT M	INTR				
SELECT SYSTEM	A screen	Initial	Transmit					Receive of	diagnosis				
SELECT STOTE	VI SCIEEII	diagnosis	diagnosis	ECM	ТСМ	DIFF LOCK	METER /M&A	DISPLAY	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/
ENGINE	_	NG	UNKWN	_	UNKWN	_	UNKWN	_	UNKWN	_	UN <b>K</b> ₩N	UNKWN	UNKW
A/T	_	NG	UNKWN	UNKWN	ı	-	UNKWN	-	l	_	UNK WN	UNKWN	ı
DIFF LOCK	_	NG	UNKWN	UNKWN	_	_	ı	_	ı	_	UNK WN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	_	UNKWN	_	UNKWN	_	_	_	_
Display control unit	_	CAN COMM	CAN CIRC 1	CAN CIRC 3	ı	-	CAN CIRC 5		CAN CIRC 2	CAN CIRC 4	_	ı	CAN CIRC 7
ВСМ	No indication	NG	UNKWN	UNKWN	1	_	UNKWN	_	1	_	_	1	UNKW
HVAC	No indication	_	UNKWN	UNKWN	_	_	1	UNKWN	UNKWN	_	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNK WN	UNKWN	UNK WN	_	ı	_	ı	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	UNKWN	ı	_	-	_	UNK WN	ı	-
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	_	UNKWN	_	_	_	_



Case 15

Check ABS actuator and electric unit (control unit) circuit. Refer to LAN-404, "ABS Actuator and Electric Unit (Control Unit) Circuit Check" .

						CAN	DIAG SU	PPORT M	NTR				
SELECT SYSTEM	/ screen	Initial	Transmit					Receive of	diagnosis				
OLLLOT OTOTE	7 3010011	diagnosis	diagnosis	ECM	TCM	DIFF LOCK	METER /M&A	DISPLAY	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E
ENGINE	1	NG	UNKWN	1	UNKWN	1	UNKWN	-	UNKWN	1	UNKWN	UNK WN	UNKW
A/T	1	NG	UNKWN	UNKWN	ı	ı	UNKWN	-	-	-	UNKWN	UNK WN	_
DIFF LOCK	ı	NG	UNKWN	UNKWN	ı	ı	1	-	_	-	UNKWN	UNK WN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	1	UNKWN	-	UNKWN	_	UNKWN	-	1	_	_
Display control unit	-	CAN COMM	CAN CIRC 1	CAN CIRC 3	-	-	CAN CIRC 5	-	CAN CIRC 2	CAN CIRC 4	1	-	CAN CIRC
ВСМ	No indication	NG	UNKWN	UNKWN	-	ı	UNKWN	_	_	1	1	-	UNKW
HVAC	No indication	ı	UNKWN	UNKWN	ı	ı	1	UNKWN	UNKWN	1	1	UNK WN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	_	-	UNK WN	_
ABS	_	N	UNK WN	UNK WN	UN <b>K</b> ₩N	UNK WN	_	_	_	_	UNK WN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	-	_	-	UNKWN	_	_	-	_



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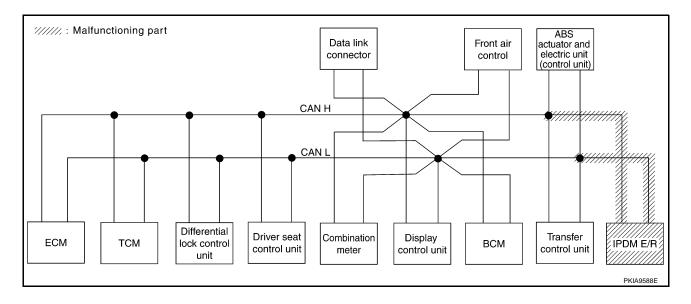
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Case 16
Check IPDM E/R circuit. Refer to <u>LAN-405</u>, "IPDM E/R Circuit Check" .

						CAN	DIAG SU	PPORT N	INTR				
SELECT SYSTEM	/ screen	Initial	Transmit					Receive of	diagnosis				
OLLEOT STOTE	n screen			ECM	TCM	DIFF LOCK	METER /M&A	DISPLAY	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/
ENGINE	ı	NG	UNKWN	ı	UNKWN	-	UNKWN	_	UNKWN	ı	UNKWN	UNKWN	UNKWI
A/T	ı	NG	UNKWN	UNKWN	ı	-	UNKWN	_	_	ı	UNKWN	UNKWN	ı
DIFF LOCK	ı	NG	UNKWN	UNKWN	ı	_	ı	_	_	-	UNKWN	UNKWN	-
AUTO DRIVE POS.	No indication	NG	UNKWN	1	UNKWN	_	UNKWN	_	UNKWN	_	-	_	_
Display control unit	ı	CAN COMM	CAN CIRC 1	CAN CIRC 3	ı	-	CAN CIRC 5	_	CAN CIRC 2	CAN CIRC 4	ı	ı	CAN CINC 7
ВСМ	No indication	NG	UNKWN	UNKWN	1	_	UNKWN	_	_	1	1	ı	UNKW
HVAC	No indication	-	UNKWN	UNKWN	_	_	-	UNKWN	UNKWN	_	-	UNKWN	_
ALL MODE AWD/4WD	ı	NG	UNKWN	UNKWN	UNKWN	_	-	_	_	_	-	UNKWN	_
ABS	1	NG	UNKWN	UNKWN	UNKWN	UNKWN	1	_	_	_	UNKWN	-	_
IPDM E/R	No indication	1	UNKWN	UNKWN	_	_	_	_	UNKWN	_	_	_	_



Case 17
Check CAN communication circuit. Refer to <u>LAN-406</u>, "CAN Communication Circuit Check" .

						CAN	DIAG SU	PPORT M	INTR				
SELECT SYSTEM	/ screen	Initial	Transmit					Receive of	diagnosis				
OLLLOT GTOTE	n screen		diagnosis	ECM	тсм	DIFF LOCK	METER /M&A	DISPLAY	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E
ENGINE	-	NG	UNK WN	1	UNK <b>W</b> N	_	UNK WN	1	UNKWN	_	UN <b>K</b> ₩N	UNK <b>W</b> N	UNK/N
A/T	_	NG	UNKWN	UNK <b>∕</b> NN	_	_	UN <b>K</b> ₩N	_	_	_	UN <b>K</b> ₩N	UNK WN	_
DIFF LOCK	_	NG	UNK WN	∩ <b>NK</b> WN	_	_	_	_	_	_	UNK\\\	UNK WN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	_	UNKWN	-	UNKWN	_	_	_	_
Display control unit	-	CAN COMM	CAM CINC 1	CAN CINC 3	_	_	CAN CINC 5	-	CAN CINC 2	CAN CINC 4	_	-	CAN
ВСМ	No indication	NG	UNKWN	UNKWN	_	_	UNKWN	1	ı	_	_	-	UNKW
HVAC	No ind ation	_	UNKWN	UNKWN	_		ı	UNKWN	UNKWN	ı	-	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNK WN	UNK WN	UNK WN	_	_	_	-	_	_	UNK <b>W</b> N	_
ABS	_	N	UNK WN	UNK ₩N	∩ <b>M</b> MN	UNKWN	-	_	_	_	Ω <b>ΝΚ</b> ⁄ΜΝ		_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	_	UNKWN	_	_	_	_

Case 18

Check IPDM E/R ignition relay circuit continuously sticks "OFF". Refer to LAN-406, "IPDM E/R Ignition Relay Circuit Check" .

						CAN	DIAG SU	PPORT M	NTR				
SELECT SYSTEM	/ coroon	Initial	Transmit					Receive of	diagnosis				
SELECT STOTE	vi screen		diagnosis	ECM	ТСМ	DIFF LOCK	METER /M&A	DISPLAY	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E
ENGINE		NG	UNKWN	ı	UN <b>K</b> ₩N	ı	UNKWN	_	UNKWN	_	UNKWN	UNK WN	UNKW
A/T	1	NG	UNKWN	UNKWN	1	1	UNKWN	_	_	_	UNKWN	UNKWN	-
DIFF LOCK	-	NG	UNKWN	UNKWN	-	_	_	-	_	_	UNKWN	UNK <b>W</b> N	_
AUTO DRIVE POS.	No indication	NG	UNKWN	1	Ω <b>ΝΚW</b> Ν	-	UNKWN	-	UNKWN	_	-	_	_
Display control unit	-	CAN COMM	CAN CIRC 1	CAN CIRC 3	ı	ı	CAN CIRC 5	_	CAN CIRC 2	CAN CIRC 4	ı	1	CAN CIRC
ВСМ	No indication	NG	UNKWN	UNKWN	ı	ı	UNKWN	_	_	_	1		UNKW
HVAC	No indication	ı	UNKWN	UNKWN	ı	ı	ı	UNKWN	UNKWN	1	1	UNK <b>W</b> N	ı
ALL MODE AWD/4WD		NG	UNKWN	UNKWN	UNK WN	1	_	_	_	_	1	UNKWN	_
ABS		NG	UNKWN	UNKWN	UNKWN	UNKWN	ı				UNKWN		_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	_	_	UNKWN	_	_	_	_

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#### Case 19

Check IPDM E/R ignition relay circuit continuously sticks "ON". Refer to <u>LAN-406, "IPDM E/R Ignition Relay Circuit Check"</u>.

						CAN	DIAG SU	PPORT M	NTR				
SELECT SYSTEM	/I screen	Initial	Transmit					Receive of	diagnosis				
OLLLOT GTOTEN	7 3010011	diagnosis		ECM	TCM	DIFF LOCK	METER /M&A	DISPLAY	BCM /SEC	Front air control	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E
ENGINE	_	NG	UNKWN	_	UNKWN	_	UNKWN	-	UNKWN	_	UNKWN	UNKWN	UNKW
A/T	-	NG	UNKWN	UNK WN	_	_	UN <b>K</b> ₩N	_	_	_	UNK WN	UNKWN	_
DIFF LOCK	-	NG	UNKWN	UNKWN	-	_	ı	-	_	_	UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	-	UNKWN	1	UNKWN	ı	ı	ı	l
Display control unit	1	CAN COMM	CAN CIRC 1	CAN CIRC 3	1	_	CAN CIRC 5	1	CAN CIRC 2	CAN CIRC 4	1	ı	CAN CIRC 7
ВСМ	No indication	NG	UNKWN	UNKWN	1	_	UNKWN	1	_	1	1	ı	UNKW
HVAC	No indication	_	UNKWN	UNKWN	_	_	-	UNKWN	UNKWN	_	-	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	_	_	UNKWN	_
ABS	1	NG	UNKWN	UNK WN	UNKWN	UNK WN	ı	_	_	_	UNK WN	ı	_
IPDM E/R	No indication	-	UNKWN	UNKWN	_	_	_	_	UNKWN	_	_	_	_

## Circuit Check Between TCM and Differential Lock 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 connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector F33
- Harness connector E19
- Harness connector E50
- Harness connector B75

#### 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 F33.
- Check continuity between A/T assembly harness connector F9 terminals 3 (L), 8 (P) and harness connector F33 terminals 12 (L), 11 (P).

3 (L) - 12 (L)

: Continuity should exist.

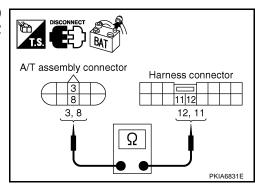
8 (P) - 11 (P)

: Continuity should exist.

#### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



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# 3. CHECK HARNESS FOR OPEN CIRCUIT

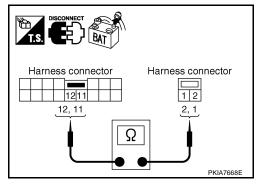
- 1. Disconnect harness connector E50.
- Check continuity between harness connector E19 terminals 12 (L), 11 (P) and harness connector E50 terminals 2 (L), 1 (P).

12 (L) - 2 (L) 11 (P) - 1 (P) : Continuity should exist.

: Continuity should exist.

#### OK or NG

OK >> GO TO 4. NG >> Repair harness.



# 4. CHECK HARNESS FOR OPEN CIRCUIT

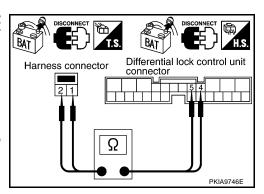
- 1. Disconnect differential lock control unit connector.
- Check continuity between harness connector B75 terminals 2 (L), 1 (P) and differential lock control unit harness connector B77 terminals 5 (L), 4 (P).

2 (L) - 5 (L) 1 (P) - 4 (P) : Continuity should exist. : Continuity should exist.

#### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to LAN-374, "Work Flow" .

NG >> Repair harness.



# Circuit Check Between Differential Lock Control Unit and Driver Seat Control Unit

# 1. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Disconnect differential lock control unit connector and harness connector B37.
- Check continuity between differential lock control unit harness connector B77 terminals 5 (L), 4 (P) and harness connector B37 terminals 15 (L), 14 (P).

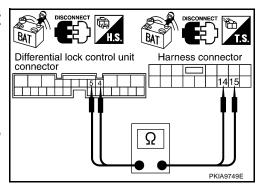
5 (L) - 15 (L) 4 (P) - 14 (P) : Continuity should exist.

: Continuity should exist.

#### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-374, "Work Flow"</u>.

NG >> Repair harness.



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# Circuit Check Between Driver Seat Control Unit and Data Link Connector

### 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector B69
- Harness connector M40

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

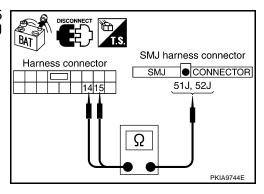
- Disconnect harness connector B37 and harness connector B69.
- Check continuity between harness connector B37 terminals 15 (L), 14 (P) and harness connector B69 terminals 51J (L), 52J (P).

15 (L) - 51J (L) 14 (P) - 52J (P) : Continuity should exist.

: Continuity should exist.

#### OK or NG

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



# 3. CHECK HARNESS FOR OPEN CIRCUIT

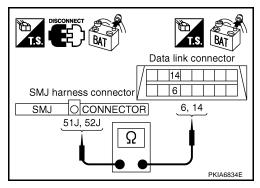
Check continuity between harness connector M40 terminals 51J (L), 52J (P) and data link connector M22 terminals 6 (L), 14 (P).

51J (L) - 6 (L) 52J (P) - 14 (P) : Continuity should exist. : Continuity should exist.

#### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to LAN-374, "Work Flow".

NG >> Repair harness.



### Circuit Check Between Data Link Connector and IPDM E/R

UKS001IP

# CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector M31
- Harness connector E152

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

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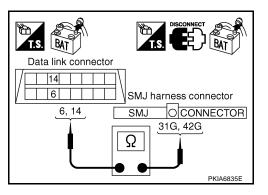
# 2. CHECK HARNESS FOR OPEN CIRCUIT

- Disconnect harness connector M31.
- Check continuity between data link connector M22 terminals 6
   (L), 14 (P) and harness connector M31 terminals 31G (L), 42G
   (P).

6 (L) - 31G (L) : Continuity should exist. 14 (P) - 42G (P) : Continuity should exist.

#### OK or NG

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



# 3. CHECK HARNESS FOR OPEN CIRCUIT

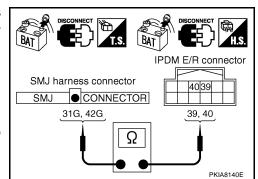
- 1. Disconnect IPDM E/R connector.
- Check continuity between harness connector E152 terminals 31G (L), 42G (P) and IPDM E/R harness connector E122 terminals 39 (L), 40 (P).

31G (L) - 39 (L) : Continuity should exist. 42G (P) - 40 (P) : Continuity should exist.

#### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to LAN-374, "Work Flow".

NG >> Repair harness.



UKS001IQ

#### **ECM Circuit Check**

### 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (control module side and harness side).
- ECM connector
- Harness connector E19
- Harness connector F33

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

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# 2. CHECK HARNESS FOR OPEN CIRCUIT

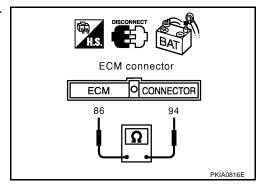
- 1. Disconnect ECM connector.
- 2. Check resistance between ECM harness connector E16 terminals 94 (L) and 86 (P).

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

#### OK or NG

OK >> Replace ECM.

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



UKS001IR

#### **TCM Circuit Check**

### 1. CHECK CONNECTOR

- 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 F9 terminals 3 (L) and 8 (P).

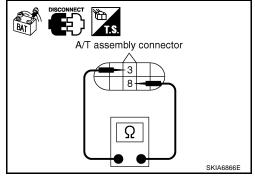
**3 (L) - 8 (P)** : Approx. 54 - 66 
$$\Omega$$

#### OK or NG

NG

OK >> Replace A/T assembly.

>> Repair harness between A/T assembly and harness connector F33.



UKS0020G

#### **Differential Lock Control Unit Circuit Check**

### 1. CHECK CONNECTOR

- Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check terminals and connector of differential lock 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 differential lock control unit connector.
- 2. Check resistance between differential lock control unit harness connector B77 terminals 5 (L) and 4 (P).

: Approx. 54 - 66 
$$\Omega$$

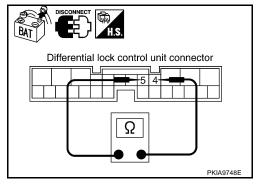
#### OK or NG

OK

>> Replace differential lock control unit.

NG

>> Repair harness between differential lock control unit and harness connector B75.



UKS001IS

### **Driver Seat Control Unit Circuit Check**

### 1. CHECK CONNECTOR

1. Turn ignition switch OFF.

- 2. Disconnect the negative battery terminal.
- Check following terminals and connectors for damage, bend and loose connection (control unit side and harness side).
- Driver seat control unit connector
- Harness connector P1
- Harness connector B37

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect driver seat control unit connector.
- Check resistance between driver seat control unit harness connector P2 terminals 3 (L) and 19 (P).

: Approx. 54 - 66 
$$\Omega$$

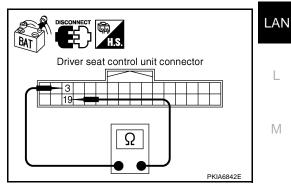
#### OK or NG

OK

>> Replace driver seat control unit.

NG

>> Repair harness between driver seat control unit and harness connector B69.



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#### Combination Meter Circuit Check

#### 1. CHECK CONNECTOR

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

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect combination meter connector.
- 2. Check resistance between combination meter harness connector M24 terminals 11 (L) and 12 (P).

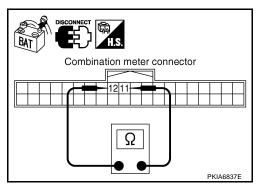
11 (L) - 12 (P) : Approx. 54 - 66 
$$\Omega$$

#### OK or NG

NG

OK >> Replace combination meter.

>> Repair harness between combination meter and data link connector.



UKS001IU

# **Display Control Unit Circuit Check**

#### 1. CHECK CONNECTOR

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

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect display control unit connector.
- 2. Check resistance between display control unit harness connector M95 terminals 25 (L) and 26 (P).

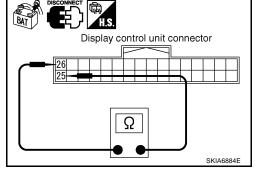
**25 (L) - 26 (P)** : Approx. 54 - 66 
$$\Omega$$

#### OK or NG

NG

OK >> Replace display control unit.

>> Repair harness between display control unit and data link connector.



UKS001IV

#### **BCM Circuit Check**

### 1. CHECK CONNECTOR

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

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

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# 2. CHECK HARNESS FOR OPEN CIRCUIT

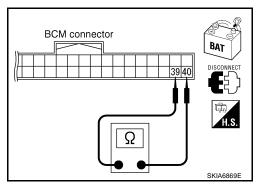
- 1. Disconnect BCM connector.
- 2. Check resistance between BCM harness connector M18 terminals 39 (L) and 40 (P).

**39 (L) - 40 (P)** : Approx. 54 - 66 
$$\Omega$$

#### OK or NG

OK >> Replace BCM. Refer to BCS-20, "Removal and Installation of BCM".

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



UKS001IW

### **Data Link Connector Circuit Check**

### 1. CHECK CONNECTOR

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

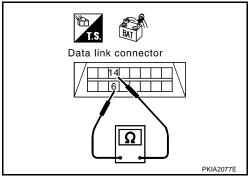
Check resistance between data link connector M22 terminals 6 (L) and 14 (P).

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

#### OK or NG

OK >> Diagnose again. Refer to LAN-374, "Work Flow".

NG >> Repair harness between data link connector and combination meter.



Front Air Control Circuit Check

#### 1. CHECK CONNECTOR

- Turn ignition switch OFF.
- Disconnect the negative battery terminal.
- Check terminals and connector of front air control for damage, bend and loose connection (unit side and harness side).

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector. UKS0020H

# 2. CHECK HARNESS FOR OPEN CIRCUIT

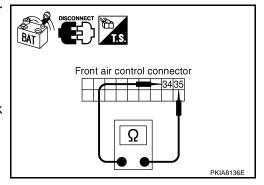
- 1. Disconnect front air control connector.
- Check resistance between front air control harness connector M50 terminals 34 (L) and 35 (P).

**34 (L) - 35 (P)** : Approx. **54 - 66** 
$$\Omega$$

#### OK or NG

OK >> Replace front air control.

NG >> Repair harness between front air control and data link connector.



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### **Transfer Control Unit Circuit Check**

#### 1. CHECK CONNECTOR

- Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- Check terminals and connector of transfer 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 transfer control unit connector.
- Check resistance between transfer control unit harness connector E142 terminals 1 (L) and 2 (P).

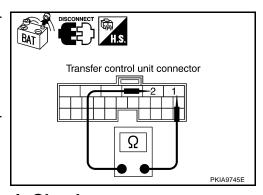
**1 (L) - 2 (P)** : Approx. 54 - 66 
$$\Omega$$

#### OK or NG

OK

NG >> Repair harness between transfer control unit and har-

>> Replace transfer control unit. ness connector E152.



# **ABS Actuator and Electric Unit (Control Unit) Circuit Check**

UKS001J0

# 1. CHECK CONNECTOR

- 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.

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# 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect ABS actuator and electric unit (control unit) connector.
- 2. Check resistance between ABS actuator and electric unit (control unit) harness connector E125 terminals 11 (L) and 15 (P).

: Approx. 54 - 66  $\Omega$ 

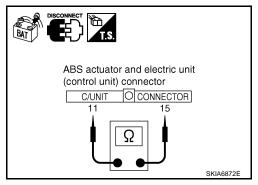
#### OK or NG

OK

>> Replace ABS actuator and electric unit (control unit).

NG

>> Repair harness between ABS actuator and electric unit (control unit) and harness connector E152.



UKS001J1

### **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 E122 terminals 39 (L) and 40 (P).

: Approx. 108 - 132  $\Omega$ 

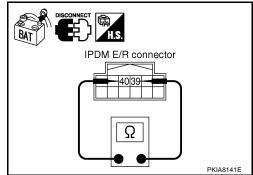
#### OK or NG

OK

>> Replace IPDM E/R.

NG

>> Repair harness between IPDM E/R and harness connector E152.



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### **CAN Communication Circuit Check**

### 1. CHECK CONNECTOR

- Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- Disconnect the following module and control unit connectors and check terminals for deformation, disconnection, looseness or damage.
- **ECM**
- A/T assembly
- Differential lock control unit
- Driver seat control unit
- Combination meter
- Display control unit
- **BCM**
- Front air control
- Transfer control unit
- ABS actuator and electric unit (control unit)
- IPDM E/R

#### OK or NG

OK >> GO TO 2.

NG >> Repair or replace as necessary.

# 2. CHECK HARNESS FOR SHORT CIRCUIT

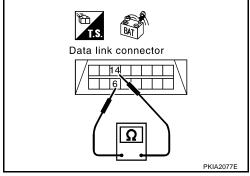
With all module and control unit connectors disconnected, check continuity between data link connector M22 terminals 6 (L) and 14 (P).

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

#### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



# 3. CHECK HARNESS FOR SHORT CIRCUIT

Check continuity between data link connector M22 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 >> Check ECM and IPDM E/R. Refer to LAN-407, "ECM/ IPDM E/R INTERNAL CIRCUIT INSPECTION".

NG >> Repair harness.

Revision: October 2005

# Data link connector 6 ر 14 ,6 PKIA2079E

UKS001J3

2005 Titan

# 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-26, "IPDM E/R Power/Ground Circuit Inspection".
- Ignition power supply circuit. Refer to PG-13, "IGNITION POWER SUPPLY IGNITION SW. IN ON AND/OR START".

# **CAN SYSTEM (TYPE 12)**

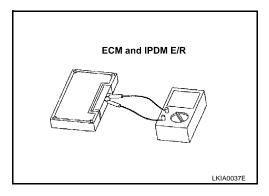
[CAN]

UKS001J4

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 39 and 40.

Unit	Terminal	Resistance value (Ω) (Approx.)
ECM	94 - 86	108 - 132
IPDM E/R	39 - 40	100 - 132



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# CAN SYSTEM (TYPE 13)

PFP:23710

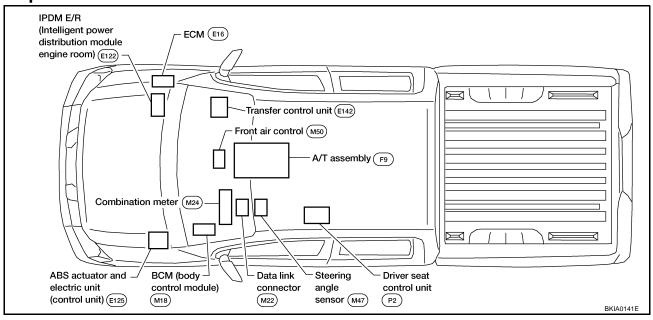
# **System Description**

UKS0038H

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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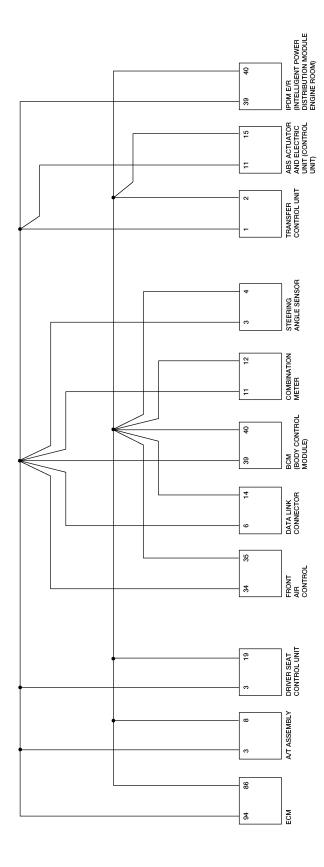
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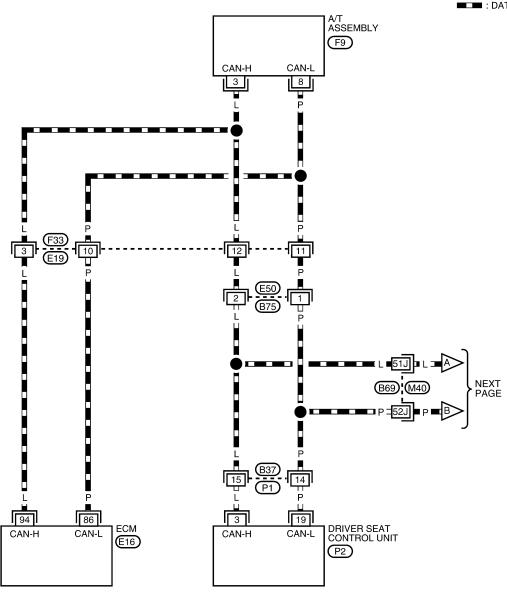
BKWA0164E

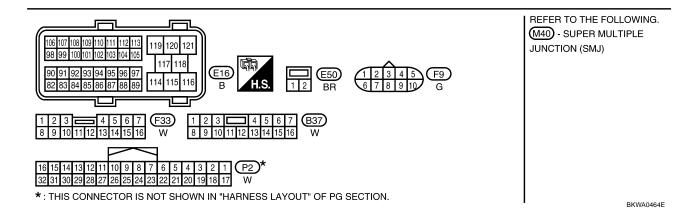
Wiring Diagram - CAN -

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# LAN-CAN-37

■□■: DATA LINE





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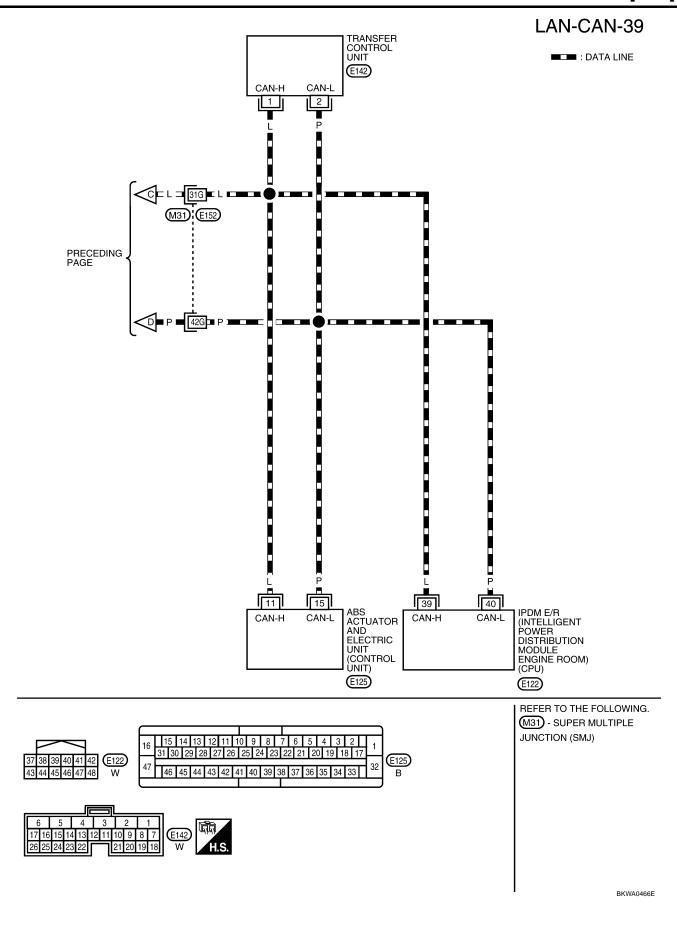
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# LAN-CAN-38 COMBINATION METER STEERING ANGLE SENSOR DATA LINK CONNECTOR ■■ : DATA LINE (M24) (M47) (M22) CAN-H CAN-L CAN-H CAN-L 12 3 4 11 14 6 PRECEDING PAGE NEXT PAGE PRECEDING B P P LAN 34 35 39 40 BCM (BODY CONTROL MODULE) **FRONT** CAN-H AIR CONTROL (M50) (M18) 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 M<sub>18</sub> 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

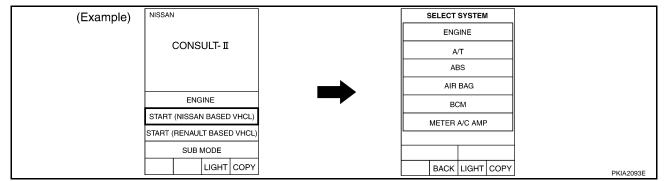
BKWA0465E

(M50)

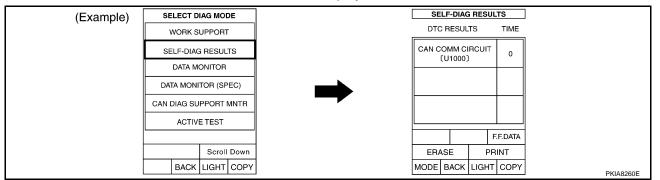


Work Flow

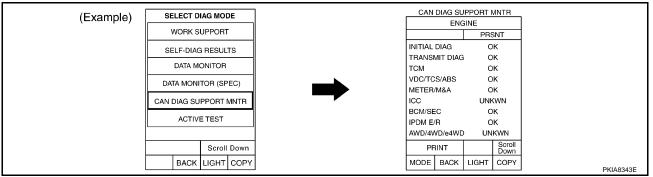
1. When there are no indications of "AUTO DRIVE POS.", "BCM", "HVAC" or "IPDM E/R" on "SELECT SYSTEM" display of CONSULT-II, print the "SELECT SYSTEM".



 Print all the data of "SELF-DIAG RESULTS" for "ENGINE", "A/T", "AUTO DRIVE POS.", "BCM", "HVAC", "ALL MODE AWD/4WD", "ABS" and "IPDM E/R" displayed on CONSULT-II.



3. Print all the data of "CAN DIAG SUPPORT MNTR" for "ENGINE", "A/T", "AUTO DRIVE POS.", "BCM", "HVAC", "ALL MODE AWD/4WD", "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 LAN-414, "CHECK SHEET".
- Based on the indications of "SELECT SYSTEM" and the results of "CAN DIAG SUPPORT MNTR", puts a check mark onto the items with "No indication", "NG", or "UNKWN" in the check sheet table. Refer to <u>LAN-414</u>, "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.
- According to the check sheet results (example), start inspection. Refer to <u>LAN-416</u>, "CHECK SHEET <u>RESULTS</u> (EXAMPLE)".

Revision: October 2005 LAN-413 2005 Titan

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#### **CHECK SHEET**

#### NOTE:

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

						CAN DIA	G SUPPOF	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit				Receive of	diagnosis			
322237 3737	LIVI SOFCOTI	diagnosis	diagnosis	ECM	TCM	METER/ M&A	BCM/SEC	STRG	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	-	_	UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	_	_
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	-	-	UNKWN	_	_	UNKWN	-
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	-	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	-	UNKWN	UNKWN	_	_
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 ENGINE SELF-DIAG RESULTS	Attach copy of A/T SELF-DIAG RESULTS	Attach copy of AUTO DRIVE POS. SELF-DIAG RESULTS	Attach copy of BCM SELF-DIAG RESULTS
Attach copy of	Attach copy of	Attach copy of	Attach copy of IPDM E/R SELF-DIAG RESULTS
HVAC	ALL MODE AWD/4WD	ABS	
SELF-DIAG RESULTS	SELF-DIAG RESULTS	SELF-DIAG RESULTS	
Attach copy of ENGINE CAN DIAG SUPPORT MNTR	Attach copy of	Attach copy of	Attach copy of
	A/T	AUTO DRIVE POS.	BCM
	CAN DIAG SUPPORT	CAN DIAG SUPPORT	CAN DIAG SUPPORT
	MNTR	MNTR	MNTR
Attach copy of	Attach copy of	Attach copy of	Attach copy of
HVAC	ALL MODE AWD/4WD	ABS	IPDM E/R
CAN DIAG SUPPORT	CAN DIAG SUPPORT	CAN DIAG SUPPORT	CAN DIAG SUPPORT
MNTR	MNTR	MNTR	MNTR

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

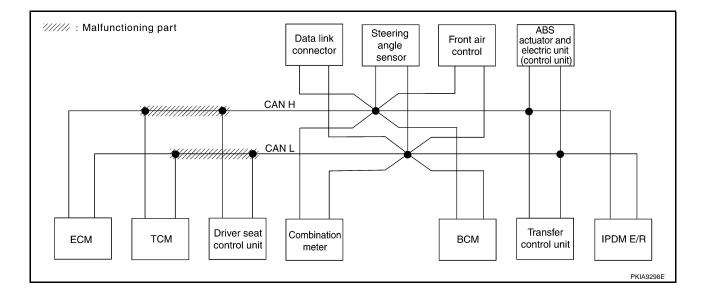
#### NOTE:

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

#### Case 1

Check harness between TCM and driver seat control unit. Refer to <u>LAN-431</u>, "Circuit Check Between TCM and Driver Seat Control Unit".

						CAN DIA	G SUPPOF	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit				Receive of	diagnosis			
022201 0101	EIVI GOICCIT	diagnosis	diagnosis	ECM	тсм	METER/ M&A	BCM/SEC	STRG	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/I
ENGINE	_	NG	UNKWN	_	UNKWN	UNK WN	UNK WN	_	UNK WN	UNK WN	UNK WN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	-	UNK WN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	_	_
ВСМ	No indication	NG	UNKWN	<b>NAK</b> WN	_	UNKWN	_	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNK WN	_	_	UNKWN	_	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNK WN	UN <b>K</b> ₩N	_	_	-	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNK WN	_	_	UNKWN	_	_	_	_



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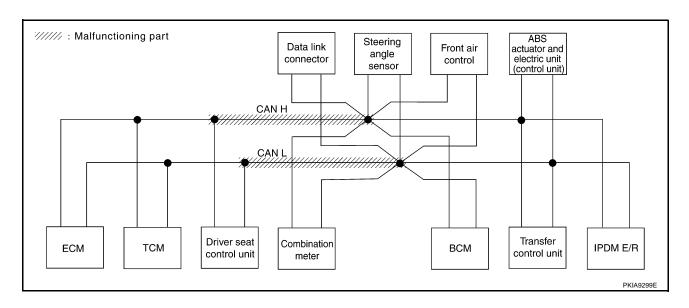
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Case 2

Check harness between driver seat control unit and data link connector. Refer to <u>LAN-432</u>, "Circuit Check <u>Between Driver Seat Control Unit and Data Link Connector"</u>.

						CAN DIA	G SUPPOF	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit				Receive of	diagnosis			
0222010101	LIVI GOTGOTT	diagnosis	diagnosis	ECM	ТСМ	METER/ M&A	BCM/SEC	STRG	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNK WN	UNK WN	-	UNK WN	UNK WN	UNK WN
A/T	_	NG	UNKWN	UNKWN	_	UNK/WN	_	-	UNK WN	UNK WN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	-	_	_	_
ВСМ	No indication	NG	UNKWN	<b>UNK</b> WN	-	UNKWN	_	-	_	_	UNKWN
HVAC	No indication	-	UNKWN	UNK WN	-	_	UNKWN	-	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNK WN	UNK WN	_	_	-	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	-	UNKWN	_	_	_	_

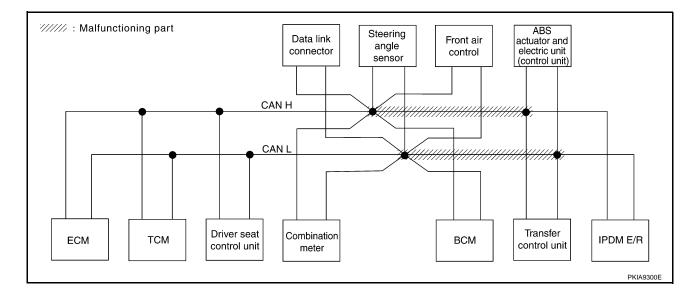


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Case 3

Check harness between data link connector and IPDM E/R. Refer to  $\underline{\text{LAN-433}}$ , "Circuit Check Between Data  $\underline{\text{Link Connector and IPDM E/R"}}$ .

						CAN DIA	G SUPPOF	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit				Receive of	diagnosis			
		diagnosis	diagnosis	ECM	ТСМ	METER/ M&A	BCM/SEC	STRG	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNK WN	UNK WN	UNK WN
A/T	_	NG	UNKWN	UNKWN	-	UNKWN	_	_	UNK WN	UNK WN	-
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	-	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	UNK/WN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNK WN	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNK WN	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_



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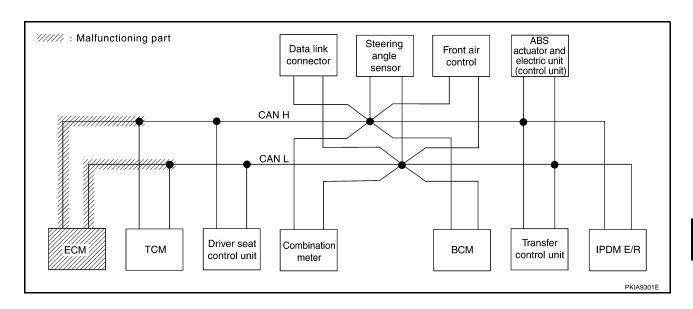
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Case 4
Check ECM circuit. Refer to <u>LAN-434</u>, "<u>ECM Circuit Check</u>" .

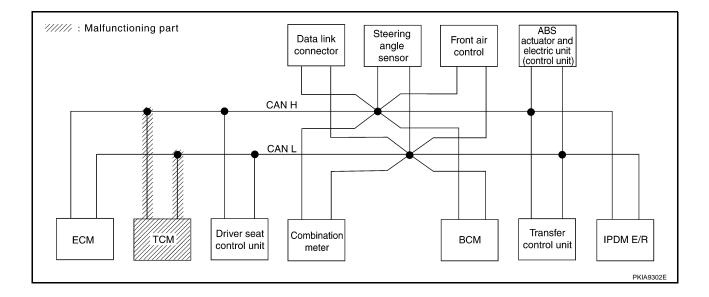
						CAN DIA	G SUPPOF	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit				Receive of	diagnosis			
022201 0101	LIVI SOFCOTI	diagnosis	diagnosis	ECM	TCM	METER/ M&A	BCM/SEC	STRG	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNK WN	_	UNK WN	UNK WN	UN <b>K</b> ₩N	_	UNK WN	UNK WN	UNKWN
A/T	_	NG	UNKWN	UNKWN	-	UNKWN	_	_	UNKWN	UNKWN	-
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	_	-
ВСМ	No indication	NG	UNKWN	Π <b>ΛΚ</b> ΜΝ	_	UNKWN	_	-	-	_	UNKWN
HVAC	No indication	-	UNKWN	UNKWN	-	-	UNKWN	-	_	UNKWN	-
ALL MODE AWD/4WD	_	NG	UNKWN	UNK WN	UNKWN	_	_	-	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNK WN	_	_	UNKWN	_	_	_	_



LAN

Case 5
Check TCM circuit. Refer to <u>LAN-434</u>, "TCM Circuit Check" .

						CAN DIA	G SUPPOR	T MNTR			
SELECT SYST	FM screen	Initial	Transmit				Receive of	diagnosis			
OLLLOT GTGT	EIVI SOICCII	diagnosis	diagnosis	ECM	тсм	METER/ M&A	BCM/SEC	STRG	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/
ENGINE	_	NG	UNKWN	_	UNK WN	UNKWN	UNKWN	_	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNK WN	_	UNK/WN	_	_	UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	-	_	_	-
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	UNKWI
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	-	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_



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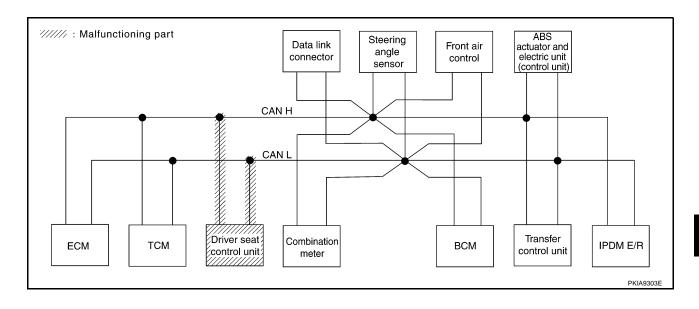
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Case 6
Check driver seat control unit circuit. Refer to <u>LAN-435</u>, "<u>Driver Seat Control Unit Circuit Check"</u>.

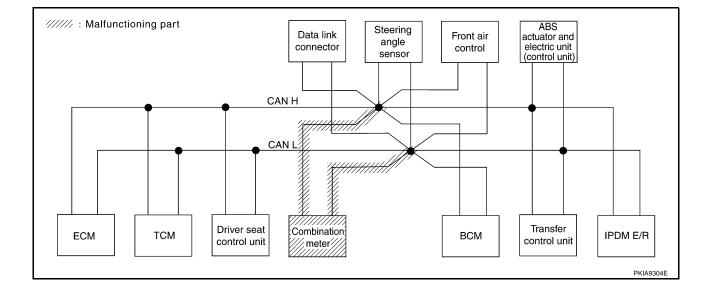
						CAN DIA	G SUPPOF	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit				Receive of	diagnosis			
3222313131	LIVI GOLGGII		diagnosis	ECM	ТСМ	METER/ M&A	BCM/SEC	STRG	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/I
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	1	UNKWN	_	_	UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN		UNKWN	UNKWN	UNKWN	-	_	1	ı
ВСМ	No indication	NG	UNKWN	UNKWN	1	UNKWN	_	-	-	_	UNKWN
HVAC	No indication	-	UNKWN	UNKWN	-	_	UNKWN	-	-	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	-	-	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_	_
IPDM E/R	No indication	-	UNKWN	UNKWN	-	_	UNKWN	_	-	_	_



LAN

Case 7
Check combination meter circuit. Refer to <u>LAN-435</u>, "Combination Meter Circuit Check" .

						CAN DIA	G SUPPOF	T MNTR			
SELECT SYST	FM screen	Initial	Transmit				Receive of	diagnosis			
OLLLOT GTGT	LIVI SOFCCIT		diagnosis	ECM	ТСМ	METER/ M&A	BCM/SEC	STRG	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNK WN	_	_	UNKWN	UNKWN	-
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	_	-
ВСМ	No indication	NG	UNKWN	UNKWN	1	UNKWN	_	-	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN	-
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_



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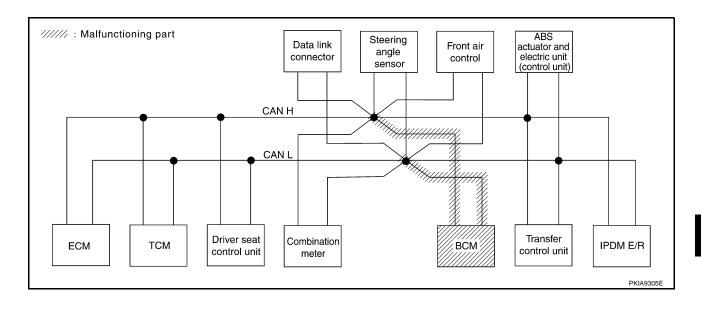
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Case 8
Check BCM circuit. Refer to <u>LAN-436</u>, "BCM Circuit Check" .

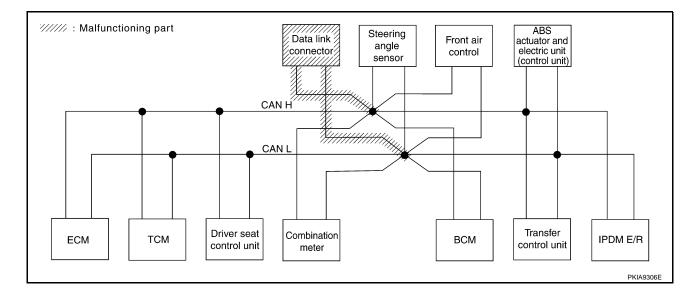
						CAN DIA	G SUPPOF	T MNTR			
SELECT SYST	FM screen	Initial	Transmit				Receive of	diagnosis			
3222313131	LIVI GOLGGII	diagnosis	diagnosis	ECM	TCM	METER/ M&A	BCM/SEC	STRG	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/I
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	-	UNKWN	UNKWN	UNKWN
A/T	-	NG	UNKWN	UNKWN	1	UNKWN	_	_	UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNK/WN	_	_	_	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	-	_	1	UNKWN
HVAC	No indication	1	UNKWN	UNKWN	1	_	UNK WN	_	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	-	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	UNKWN	-	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNK/WN	_	_	1	_



LAN

Case 9
Check data link connector circuit. Refer to LAN-436, "Data Link Connector Circuit Check" .

						CAN DIA	G SUPPOF	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit				Receive	diagnosis			
		diagnosis		ECM	TCM	METER/ M&A	BCM/SEC	STRG	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	1	UNKWN	UNKWN	UNKWN	_	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN	UNKWN	ı
AUTO DRIVE POS.	No indication	NG	UNKWN	1	UNKWN	UNKWN	UNKWN	_	_	l	ı
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	l	UNKWN
HVAC	No indication	Ì	UNKWN	UNKWN	_	_	UNKWN	_	_	UNKWN	I
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN	ı
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	UNKWN	-	-
IPDM E/R	No indication	-	UNKWN	UNKWN	_	_	UNKWN	_	_	-	_



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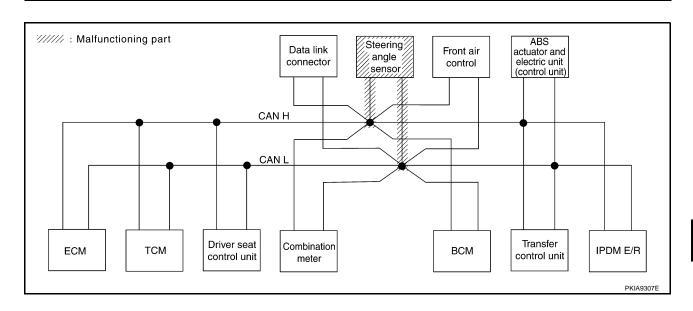
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Case 10

Check steering angle sensor circuit. Refer to LAN-437, "Steering Angle Sensor Circuit Check" .

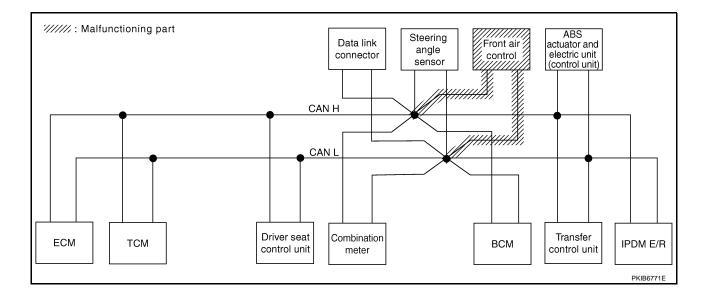
						CAN DIA	G SUPPOF	T MNTR				
SELECT SYST	FM screen	Initial	Transmit	Receive diagnosis								
		diagnosis	diagnosis	ECM	TCM	METER/ M&A	BCM/SEC	STRG	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/I	
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN	UNKWN	UNKWN	
A/T	_	NG	UNKWN	UNKWN	ı	UNKWN	_	_	UNKWN	UNKWN	_	
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	1	_	
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	-	-	1	UNKWN	
HVAC	No indication	_	UNKWN	UNKWN	-	_	UNKWN	_	_	UNKWN	_	
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN	_	
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNK WN	UNKWN	-	_	
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	-	_	



LAN

Case 11
Check front air control circuit. Refer to <u>LAN-437</u>, "Front Air Control Circuit Check" .

						CAN DIA	G SUPPOF	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit				Receive	diagnosis			
		diagnosis		ECM	TCM	METER/ M&A	BCM/SEC	STRG	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	1	UNKWN	UNKWN	UNKWN	_	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	ı	UNKWN	_	_	UNKWN	UNKWN	ı
AUTO DRIVE POS.	No indication	NG	UNKWN	1	UNKWN	UNKWN	UNKWN	_	_	l	ı
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	ı	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	-	_	UNKWN	_	_	UNKWN	-
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	-	UNKWN	_	_	_	_



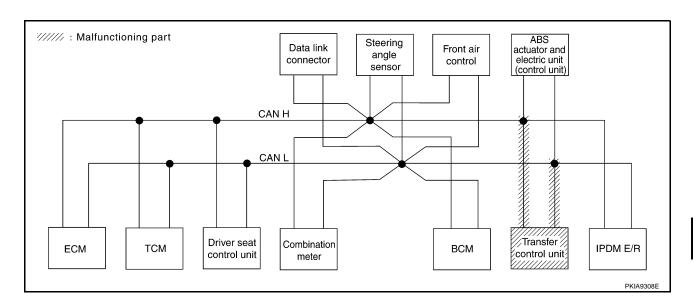
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Case 12
Check transfer control unit circuit. Refer to <u>LAN-438</u>, "Transfer Control Unit Circuit Check" .

						CAN DIA	G SUPPOF	RT MNTR				
SELECT SYST	FM screen	Initial	Transmit	Receive diagnosis								
3222313131	LIVI GOLGGII	diagnosis		ECM	ТСМ	METER/ M&A	BCM/SEC	STRG	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/I	
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN	UNKWN	UNKWN	
A/T	_	NG	UNKWN	UNKWN	1	UNKWN	_	_	UNK WN	UNKWN	ı	
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	_	ı	
ВСМ	No indication	NG	UNKWN	UNKWN	1	UNKWN	_	-	_	_	UNKWN	
HVAC	No indication	-	UNKWN	UNKWN	-	-	UNKWN	-	_	UNKWN	-	
ALL MODE AWD/4WD	_	NG	UNK WN	UNK WN	UNKWN	_	_	-	_	UNK WN	_	
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	UNK/WN	_	_	
IPDM E/R	No indication	1	UNKWN	UNKWN	-	_	UNKWN	_	_	_	_	



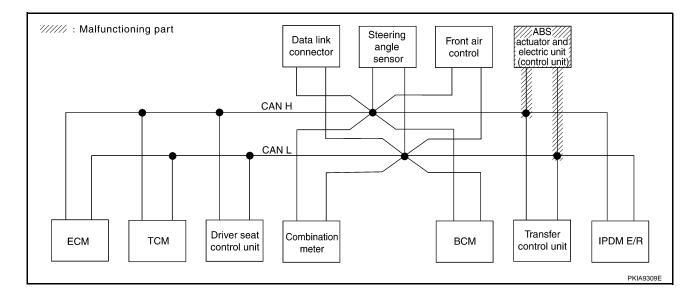
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Case 13

Check ABS actuator and electric unit (control unit) circuit. Refer to <u>LAN-438</u>, "ABS Actuator and Electric Unit (Control Unit) Circuit Check".

	ļ					CAN DIA	G SUPPOR	T MNTR			
SELECT SYST	FM screen	Initial	Transmit -	Receive diagnosis							
02220101011	ENT SOLCON	diagnosis	diagnosis	ECM	ТСМ	METER/ M&A	BCM/SEC	STRG	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN	UNK WN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	_	UNKWN	UNK WN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	_	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	UNK WN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNK WN	_
ABS	_	N	UNKWN	UNKWN	UNKWN	_	_	UNK WN	UNK/WN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_



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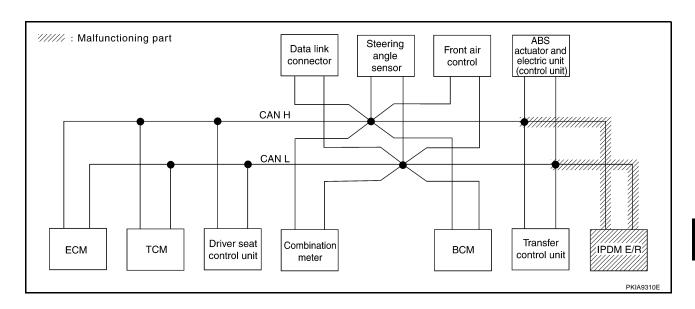
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Case 14
Check IPDM E/R circuit. Refer to <u>LAN-439</u>, "IPDM E/R Circuit Check" .

						CAN DIA	G SUPPOF	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit				Receive of	diagnosis			
3222313131	diagnosis		diagnosis	ECM	ТСМ	METER/ M&A	BCM/SEC	STRG	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/I
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN	UNKWN	UNK WN
A/T	_	NG	UNKWN	UNKWN	1	UNKWN	_	_	UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	1	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	UNKWN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	_	_	_	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_



LAN

Case 15

Check CAN communication circuit. Refer to <a href="LAN-439">LAN-439</a>, "CAN Communication Circuit Check"</a> .

						CAN DIA	G SUPPOR	T MNTR					
SELECT SYST	EM screen	Initial	Transmit -	Receive diagnosis									
	2111 0010011	diagnosis	diagnosis	ECM	ТСМ	METER/ M&A	BCM/SEC	STRG	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F		
ENGINE	_	NG	UNKWN	_	UNK WN	UNKWN	UNK WN	_	UNKWN	UNKWN	UNK WN		
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_		UNKWN	UNKWN			
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	_	_		
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	_	_	_	UNKWN		
HVAC	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	UNKWN	_		
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNK WN	_	_	_	_	UNK WN	-		
ABS	_	N	UNK WN	UNKWN	UNK WN	_	_	UNK WN	UNKWN	_	_		
IPDM E/R	No indication	_	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_		

#### Case 16

Check IPDM E/R ignition relay circuit continuously sticks "OFF". Refer to LAN-440, "IPDM E/R Ignition Relay Circuit Check" .

						CAN DIA	G SUPPOF	RT MNTR			
SELECT SYST	EM screen	Initial	Transmit				Receive of	diagnosis			
3222313131	2111 0010011	diagnosis		ECM	ТСМ	METER/ M&A	BCM/SEC	STRG	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/R
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	-	UNKWN	_	_	UNKWN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNK WN	UNKWN	UNKWN	_	_	_	_
всм	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	-	_	_	UNKWN
HVAC	No indication	_	UNKWN	UNKWN	-	_	UNKWN	_	_	UNK WN	_
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNK WN	_	_	_	_	UNK WN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN	_	_	UNKWN	UNKWN	_	_
IPDM E/R	No indication	_	UNKWN	UNKWN	-	_	UNKWN	_	_	_	_

#### Case 17

Check IPDM E/R ignition relay circuit continuously sticks "ON". Refer to <u>LAN-440</u>, "IPDM E/R Ignition Relay <u>Circuit Check"</u>.

						CAN DIA	G SUPPOF	RT MNTR			
SELECT SYST	FM screen	Initial	Transmit				Receive of	diagnosis			
3222313131	2111 0010011	diagnosis		ECM	TCM	METER/ M&A	BCM/SEC	STRG	AWD/4WD /e4WD	VDC/TCS /ABS	IPDM E/F
ENGINE	_	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	UNKWN	UNKWN	UNKWN
A/T	_	NG	UNKWN	UNKWN	_	UNKWN	_	=	UNK WN	UNKWN	_
AUTO DRIVE POS.	No indication	NG	UNKWN	_	UNKWN	UNKWN	UNKWN	_	_	_	_
ВСМ	No indication	NG	UNKWN	UNKWN	_	UNKWN	_	-	-	_	UNKWN
HVAC	No indication	-	UNKWN	UNKWN	ı	1	UNKWN	-	_	UNKWN	-
ALL MODE AWD/4WD	_	NG	UNKWN	UNKWN	UNKWN	ı	_	-	_	UNKWN	_
ABS	_	NG	UNKWN	UNKWN	UNKWN		_	UNKWN	UNK WN	_	_
IPDM E/R	No indication	-	UNKWN	UNKWN	_	_	UNKWN	_	_	_	_

### Circuit Check Between TCM and Driver Seat Control Unit

# 1. CHECK CONNECTOR

- Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector F33
- Harness connector E19
- Harness connector E50
- Harness connector B75

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

- Disconnect A/T assembly connector and harness connector F33.
- Check continuity between A/T assembly harness connector F9 terminals 3 (L), 8 (P) and harness connector F33 terminals 12 (L), 11 (P).

3 (L) - 12 (L)

: Continuity should exist.

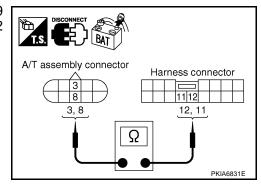
8 (P) - 11 (P)

: Continuity should exist.

#### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



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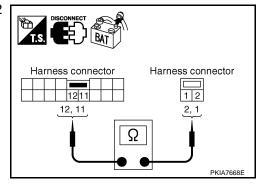
# 3. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect harness connector E50.
- Check continuity between harness connector E19 terminals 12 (L), 11 (P) and harness connector E50 terminals 2 (L), 1 (P).

12 (L) - 2 (L) 11 (P) - 1 (P) : Continuity should exist.: Continuity should exist.

OK or NG

OK >> GO TO 4. NG >> Repair harness.



### 4. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect harness connector B37.
- Check continuity between harness connector B75 terminals 2 (L), 1 (P) and harness connector B37 terminals 15 (L), 14 (P).

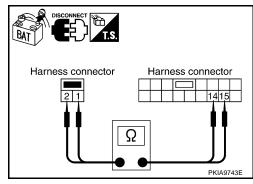
2 (L) - 15 (L) 1 (P) - 14 (P) : Continuity should exist.

: Continuity should exist.

OK or NG

OK >> Connect all the connectors and diagnose again. Refer to <u>LAN-413, "Work Flow"</u>.

NG >> Repair harness.



# Circuit Check Between Driver Seat Control Unit and Data Link Connector

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### 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (connector side and harness side).
- Harness connector B69
- Harness connector M40

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect harness connector B37 and harness connector B69.
- Check continuity between harness connector B37 terminals 15 (L), 14 (P) and harness connector B69 terminals 51J (L), 52J (P).

15 (L) - 51J (L) : Continuity should exist. 14 (P) - 52J (P) : Continuity should exist.

#### OK or NG

OK >> GO TO 3. NG >> Repair harness. Harness connector
SMJ CONNECTOR
51J, 52J

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# $3.\,$ check harness for open circuit

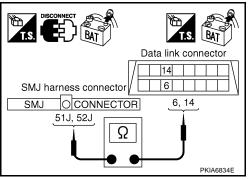
Check continuity between harness connector M40 terminals 51J (L), 52J (P) and data link connector M22 terminals 6 (L), 14 (P).

> : Continuity should exist. 51J (L) - 6 (L) 52J (P) - 14 (P) : Continuity should exist.

#### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to LAN-413, "Work Flow".

NG >> Repair harness.



# Circuit Check Between Data Link Connector and IPDM E/R

1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- Check following terminals and connectors for damage, bend and loose connection (connector side and 3. harness side).
- Harness connector M31
- Harness connector E152

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

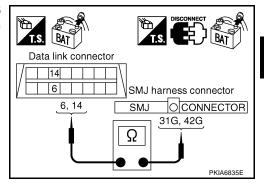
- Disconnect harness connector M31.
- Check continuity between data link connector M22 terminals 6 (L), 14 (P) and harness connector M31 terminals 31G (L), 42G (P).

6 (L) - 31G (L) : Continuity should exist. 14 (P) - 42G (P) : Continuity should exist.

#### OK or NG

OK >> GO TO 3.

NG >> Repair harness.



# 3. CHECK HARNESS FOR OPEN CIRCUIT

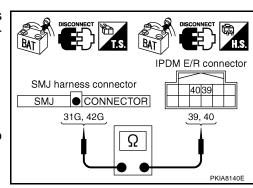
- Disconnect IPDM E/R connector. 1.
- Check continuity between harness connector E152 terminals 31G (L), 42G (P) and IPDM E/R harness connector E122 terminals 39 (L), 40 (P).

31G (L) - 39 (L) : Continuity should exist. 42G (P) - 40 (P) : Continuity should exist.

#### OK or NG

OK >> Connect all the connectors and diagnose again. Refer to LAN-413, "Work Flow".

NG >> Repair harness.



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### **ECM 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 connectors for damage, bend and loose connection (control module side and harness side).
- ECM connector
- Harness connector E19
- Harness connector F33

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

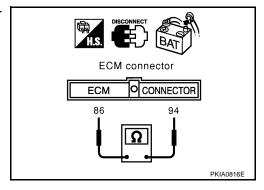
- 1. Disconnect ECM connector.
- Check resistance between ECM harness connector E16 terminals 94 (L) and 86 (P).

: Approx. 108 - 132  $\Omega$ 

#### OK or NG

OK >> Replace ECM.

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



#### **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

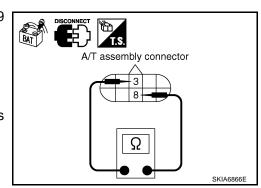
- Disconnect A/T assembly connector.
- 2. Check resistance between A/T assembly harness connector F9 terminals 3 (L) and 8 (P).

: Approx. 54 - 66  $\Omega$ 

#### OK or NG

OK >> Replace A/T assembly.

NG >> Repair harness between A/T assembly and harness connector F33.



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**Driver Seat Control Unit Circuit Check** 

# 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check following terminals and connectors for damage, bend and loose connection (control unit side and harness side).
- Driver seat control unit connector
- Harness connector P1
- Harness connector B37

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect driver seat control unit connector.
- 2. Check resistance between driver seat control unit harness connector P2 terminals 3 (L) and 19 (P).

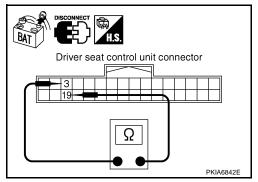
: Approx. 54 - 66  $\Omega$ 

#### OK or NG

OK >> Replace driver seat control unit.

NG

>> Repair harness between driver seat control unit and harness connector B69.



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# **Combination Meter Circuit Check**

### 1. CHECK CONNECTOR

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

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect combination meter connector.
- Check resistance between combination meter harness connector M24 terminals 11 (L) and 12 (P).

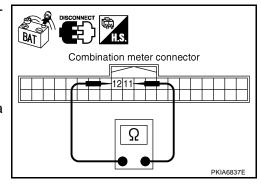
: Approx. 54 - 66  $\Omega$ 

#### OK or NG

NG

OK >> Replace combination meter.

>> Repair harness between combination meter and data link connector.



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### **BCM Circuit Check**

### 1. CHECK CONNECTOR

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- 1. 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

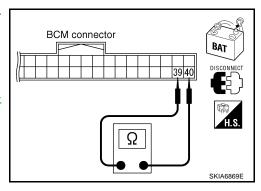
- 1. Disconnect BCM connector.
- Check resistance between BCM harness connector M18 terminals 39 (L) and 40 (P).

: Approx. 54 - 66  $\Omega$ 

#### OK or NG

OK >> Replace BCM. Refer to BCS-20, "Removal and Installation of BCM".

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



### **Data Link Connector Circuit Check**

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#### 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Check the 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 M22 terminals 6 (L) and 14 (P).

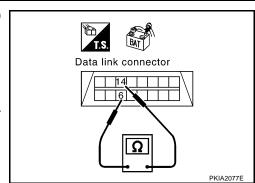
**6 (L) - 14 (P)** : Approx. 54 - 66 
$$\Omega$$

#### OK or NG

NG

OK >> Diagnose again. Refer to <u>LAN-413</u>, "Work Flow".

>> Repair harness between data link connector and combination meter.



**Steering Angle Sensor Circuit Check** 

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- 1. CHECK CONNECTOR
- 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 M47 terminals 3 (L) and 4 (P).

: Approx. 54 - 66  $\Omega$ 

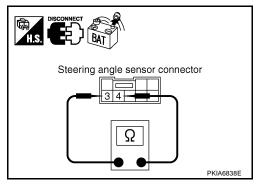
#### OK or NG

OK

>> Replace steering angle sensor.

NG

>> Repair harness between steering angle sensor and data link connector.



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### Front Air Control Circuit Check

### 1. CHECK CONNECTOR

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

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

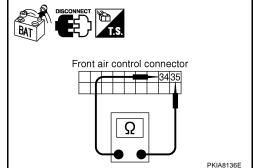
- 1. Disconnect front air control connector.
- Check resistance between front air control harness connector 2. M50 terminals 34 (L) and 35 (P).

: Approx. 54 - 66  $\Omega$ 

#### OK or NG

OK >> Replace front air control.

NG >> Repair harness between front air control and data link connector.



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### **Transfer Control Unit 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 transfer control unit for damage, bend and loose connection (control unit side and harness side).

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

- 1. Disconnect transfer control unit connector.
- Check resistance between transfer control unit harness connector E142 terminals 1 (L) and 2 (P).

: Approx. 54 - 66  $\Omega$ 

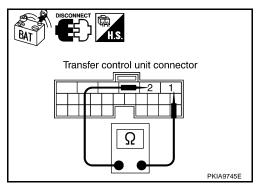
#### OK or NG

OK

>> Replace transfer control unit.

NG

>> Repair harness between transfer control unit and harness connector E152.



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

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#### 1. CHECK CONNECTOR

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

#### OK or NG

OK >> GO TO 2.

NG >> Repair terminal or connector.

# 2. CHECK HARNESS FOR OPEN CIRCUIT

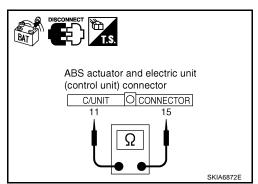
- 1. Disconnect ABS actuator and electric unit (control unit) connector.
- Check resistance between ABS actuator and electric unit (control unit) harness connector E125 terminals 11 (L) and 15 (P).

11 (L) - 15 (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 harness connector E152.



# **CAN SYSTEM (TYPE 13)**

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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 E122 terminals 39 (L) and 40 (P).

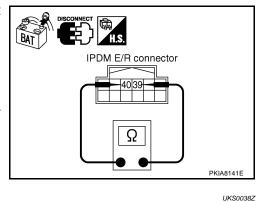
: Approx. 108 - 132  $\Omega$ 

#### OK or NG

OK >>

>> Replace IPDM E/R.

NG >> Repair harness between IPDM E/R and harness connector E152.



### **CAN Communication Circuit Check**

### 1. CHECK CONNECTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect the negative battery terminal.
- 3. Disconnect the following module and control unit connectors and check terminals for deformation, disconnection, looseness or damage.
- ECM
- A/T assembly
- Driver seat control unit
- Combination meter
- BCM
- Steering angle sensor
- Front air control
- Transfer control unit
- ABS actuator and electric unit (control unit)
- IPDM E/R

#### OK or NG

OK >> GO TO 2.

NG >> Repair or replace as necessary.

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# 2. check harness for short circuit

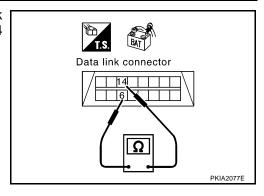
With all module and control unit connectors disconnected, check continuity between data link connector M22 terminals 6 (L) and 14 (P).

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

OK or NG

OK >> GO TO 3.

NG >> Repair harness.



# 3. CHECK HARNESS FOR SHORT CIRCUIT

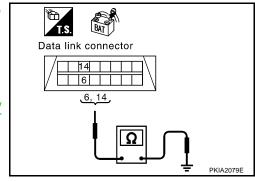
Check continuity between data link connector M22 terminals 6 (L), 14 (P) and ground.

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

OK or NG

OK >> Check ECM and IPDM E/R. Refer to <u>LAN-440</u>, <u>"ECM/IPDM E/R INTERNAL CIRCUIT INSPECTION"</u>.

NG >> Repair harness.



UKS00390

# 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-26, "IPDM E/R Power/Ground Circuit Inspection".
- Ignition power supply circuit. Refer to <u>PG-13</u>, "IGNITION POWER SUPPLY IGNITION SW. IN ON AND/OR START".

# Component Inspection ECM/IPDM E/R INTERNAL CIRCUIT INSPECTION

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- Remove ECM and IPDM E/R from vehicle.
- Check resistance between ECM terminals 94 and 86.
- Check resistance between IPDM E/R terminals 39 and 40.

Unit	Terminal	Resistance value (Ω) (Approx.)
ECM	94 - 86	108 - 132
IPDM E/R	39 - 40	100 - 132

